

# **Solved Differential Equations From Selected Books**

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# **Part I**

## **Introduction and lookup tables**

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# CHAPTER 1

## INTRODUCTION

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## 1.1 Basic statistics

The number of problems is 18629.

Number of problems solved and verified is 16889 [90.660%].

Number of problems failed to solve is 1740 [9.340%].

## 1.2 Change history

Table 1.1: Change history

date/time	summary of changes	number problems	not solved	solved but not verified
Friday Jan 3, 2025. 11PM	Solved more problems from Introductory Course On Differential Equations by Daniel A Murray. Longmans Green and Co. NY. 1924	18,629	1054 5.658%	NA
Tuesday Dec 31, 2024. 2PM	Added PDF legal size to all the book solutions in addition to the current PDF letter size.	18,548	1050 5.661%	NA
Saturday Dec 28, 2024. 2AM	Finished Solving problems from Elementary Differential Equations. By Thornton C. Fry. D Van Nostrand. NY. First Edition (1929). Finished solving problems from "A short course on differential equations. By Donald Francis Campbell. Maxmillan company. London. 1907" Solving problems from Introductory Course On Differential Equations by Daniel A Murray. Longmans Green and Co. NY. 1924	18,524	1050 5.668%	NA
Friday Dec 20, 2024. 10PM	Solving problems from Elementary Differential Equations. By Thornton C. Fry. D Van Nostrand. NY. First Edition (1929)	18,227	1046 5.739%	NA
Thursday Dec 19, 2024. 11PM	Added new solver for second order, which tries to reverse the role of the independent and dependent variables in case all other methods failed. This resulted in 7 ode's being solved now which were not solved before. Added two tables to show reverse the role for first and second order. improved solving for explicit solution from implicit. Finished solving all problems from DIFFERENTIAL EQUATIONS WITH APPLICATIONS AND HISTORICAL NOTES by George F. Simmons. 3rd edition. 2017. CRC press, Boca Raton FL. Finished solving problems from Elementary Differential Equations. By R.L.E. Schwarzenberger. Chapman and Hall. London. First Edition (1969) FULL BUILD	18,206	1044 5.734%	NA

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Table1.1 – Change history. Continued from previous page

Monday Dec 16, 2024. 9PM	<p>Added new solver for first order, which tries to reverse the role of the independent and dependent variables in case all other methods failed.</p> <p>This resulted in 20 more odes solved now. Need to do the same for second and higher order.</p> <p>Solving problems from new book: DIFFERENTIAL EQUATIONS WITH APPLICATIONS AND HISTORICAL NOTES by George F. Simmons. 3rd edition. 2017. CRC press, Boca Raton FL.</p>	17,884	1046 5.848%	NA
Wed Dec 11, 2024. 4AM	<p>Added time varying support for second order ode when solving using Laplace method. This resulted in 7 more problems now solved.</p> <p>Added new field in DB which is the book solution from the back of the textbook if it is available. This is now used to check my solution against first before using odetest. If validating against book solution works, then done, else use odetest to verify the solution. Most of the odes that do not correctly verify with odetest uses laplace method with dirac delta in the RHS.</p>	17,731	1066 6.012%	NA
Tuesday Dec 10, 2024. 10PM	<p>Added 14 of my own problems solving Laplace with variable coefficients for first order ode in my own misc. odes book as there was none in the textbooks I am using to illustrate this method.</p> <p>Removed assumption of positive when taking the inverse laplace transform as this makes dirac(t) become zero and solution then will not validate.</p> <p>Do not convert to piecewise of solution to Laplace ode, if this results in invalid verification. This resulted in 2 problems now verifying ok.</p> <p>I need now to start adding time varying support for second order ode with Laplace method as it now only does constant coefficients.</p>	17,731	1081 6.097%	NA
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Table1.1 – Change history. Continued from previous page

Sunday Dec 8, 2024. 11PM	<p>Added support to solving first order ode using Laplace transform for time varying ode. Only polynomial coefficients of the independent variable are supported. See my ode algorithms page for details.</p> <p>Still need to do the same for second order ode.</p> <p>Add check in the laplace transform solver for ode to verify the solution. This was missing for some reason. This resulted is few ode's using Laplace not verified, but the solution looks correct. It is very hard to get verification on solution from Laplace method. Even Maple's own solution using method Laplace, some of them do not validated using odetest even though solution looks correct.</p> <p>Added separate tables for Laplace for varying coefficients and constant coefficients to make it easier to lookup.</p>	17,717	1083 6.113%	NA
Sunday Dec 1, 2024. 11PM	<p>For higher order ode's, I still do not implement reduction of order. So all these are failed. Changed the code to solve without reduction of order in this case until I get to implement reduction of order for higher order ode's. This resulted in few ode's now counted as solved. There was not many. Only 6 ode's. Rebuild.</p>	17,717	1071 6.045%	NA
Sat Nov 30, 2024. 5PM	<p>Finally, added support to solving shifted Euler. These are second order ode of form <math>(x - a)^2 y'' + (x - a)y' + y = f(x)</math> which are first solved by change of variable <math>X = x - a</math> to convert to standard Euler. The shift <math>a</math> must be the same in both coefficients. See my ode algorithm page for examples.</p> <p>Completed solving all problems from book Differential equations for engineers by Wei-Chau XIE, Cambridge Press 2010.</p> <p>Completed more problems from Differential equations and their applications, 4th ed., M. Braun.</p> <p>FULL BUILD.</p>	17,717	1077 6.079%	NA
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Table1.1 – Change history. Continued from previous page

Wed Nov 27, 2024. 1AM	<p>Finished solving Differential equations. An introduction to modern methods and applications. James Brannan, William E. Boyce. Third edition. Wiley 2015 The non-linear system of ode's, I left out for now, since I do not know these well. May in the future will add them.</p> <p>Added new table for linear system of ode's solved using Laplace method.</p> <p>Solved about 190 problems from book V.V. Stepanov, A course of differential equations (in Russian), GIFML. Moscow (1958)</p> <p>Fixed detection of Euler ode for higher order ode, by also normalizing the ode and checking again.</p> <p>Also, for second order ode's, added check if particular solution using variation of parameters leads to very complicated and very large result, then keep the integral as inert (unevaluated). This resulted in number of odes now being verified OK when before they could not be validated. Also the answers are now more clear, even though the integrals are not resolved.</p> <p>Solved more problems from book Differential equations for engineers by Wei-Chau XIE, Cambridge Press 2010. Still have more to solve from this book.</p> <p>Added missing latex, which I had there but overlooked adding, to solving Euler ode for second order. Also improved handling of basis function for Euler solver. This did not affect result, but is more accurate.</p>	17,556	1064 6.061%	NA
Tuesday Nov 19, 2024. 7PM	<p>Solved more problems from Differential equations. An introduction to modern methods and applications. James Brannan, William E. Boyce. Third edition. Wiley 2015</p> <p>Fixed HTML link problem in lookup tables. Now link point to correct problems.</p>	17,149	1078 6.286%	NA
Friday Nov 15, 2024. 5AM	<p>Added new solver for reduced riccati ode. Updated my ode algorithms page for description. This is much shorter way to solving the reduced riccati <math>y' = ax^n + by^2</math> where <math>a, b, n</math> are constants.</p> <p>Solved more problems from Differential equations. An introduction to modern methods and applications. James Brannan, William E. Boyce. Third edition. Wiley 2015</p>	16,815	1066 6.339%	NA

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Table1.1 – Change history. Continued from previous page

Tuesday Nov 12, 2024. 3AM	<p>Added phase line diagram to all problems of type first order autonomous ode <math>y' = f(y)</math>. Made new ode type first_order_ode_autonomous and kept first_order_ode_quadrature for ode of form <math>y' = f(x)</math> only. i.e. split the quadrature to two types now. This is because <math>y' = f(x)</math> is not autonomous. Note that ode of type <math>y' = f(x, y)</math> are not quadrature, and fall into other types such as linear or separable and so forth.</p> <p>The phase line diagram detects stable (sink), unstable (source) and semi-stable (node) type of equilibrium points. Made it vertical line instead of horizontal line.</p> <p>I still need to make improvements to this diagram, will do that next build.</p> <p>Corrected entry for Kamke 110 ode where I was missing a term.</p>	16,789	1066 6.349%	NA
Sat Nov 9, 2024. 2AM	Solved more problems from Differential equations. An introduction to modern methods and applications. James Brannan, William E. Boyce. Third edition. Wiley 2015	16,789	1066 6.349%	NA
Thursday Nov 8, 2024. 1AM	<p>Corrected problem that made Maple trace output not show.</p> <p>Solved rest of problems from book Theory and solutions of Ordinary Differential equations, Donald Greenspan, 1960.</p> <p>Started solving problems from Differential equations. An introduction to modern methods and applications. James Brannan, William E. Boyce. Third edition. Wiley 2015</p>	16,744	1066 6.366%	NA
Monday Nov 4, 2024. 1PM	<p>Added summary of solutions at end of each solver run.</p> <p>Added to each book, a lookup table as first section.</p> <p>Completed solving all problems in book Differential equations and linear algebra, Stephen W. Goode and Scott A Annin. Fourth edition, 2015.</p> <p>Completed all problems from book Differential equations, 3rd edition by Shepley Ross. Full build.</p>	16,639	1062 6.383%	NA
Tuesday OCT 29, 2024. 11PM	<p>Finished solving all problems from Differential equations and their applications, 4th ed., M. Braun.</p> <p>Full build.</p>	16,461	1045 6.348%	NA

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Table1.1 – Change history. Continued from previous page

Sunday OCT 26, 2024. 2PM	Fixed problem in riccati solver. Removed few problems not meant to be in DB. Added handling for dAlembert when ode of form $y = g(p)$ when $g(p)$ is such it can not be solved for $p$ . i.e. form ode is not the normal $y = xf(p) + g(p)$ . But for this to apply, $g(p)$ must be not solvable for $p$ , otherwise other methods apply. Full build.	16,205	1042 6.436%	NA
Sunday OCT 20, 2024. 1PM	Solved problems from book Elementary Differential Equations. By C. Henry Edwards, David E. Penney and David Calvis. 6th edition. 2008 number of small internal fixes. I still need to add these: add support for reduction of order for third order odes and add support for solving using Laplace method for variable coefficients odes. There are few problems like this in the above book which my solver could not now solve. Currently Laplace solver only can handle constant coefficient linear odes. Hopefully by next week will have these finished. Fixed few problems in database that I have typed incorrectly from the textbooks by hand. Full build.	16,207	1057 6.522%	NA
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Table1.1 – Change history. Continued from previous page

Sunday OCT 6, 2024. 11PM	<p>Spend last 4 months working full time to rewrite the whole internal workflow between solvers. This is to simplify the logic as it was just getting too complicated as it was.</p> <p>That is why I have not added more text book solutions.</p> <p>Now only solution which are verified are given. Hence no need to run verification phase afterwards as before, as verification is done by solver itself and solver will only return solutions that are verified. Hence the solved but not verified column in this table is no longer applicable.</p> <p>Fixed number of small bugs in the process. Now the number of unsolved odes is reduced.</p> <p>Kept the default to solve same ODE in as many different ways as detected.</p> <p>Improved Abel and Chini solvers. Much work still is needed to improve the Latex steps and show steps for solving for initial conditions as now I do not show these steps. Build now takes about a whole week to complete including compiling the Latex. Need to find me a faster PC as this is just too slow.</p> <p>Full build.</p>	15,568	1032 6.628%	NA
Tuesday Sept 14, 2024. 10PM	Full build to clean a bug in detecting Bessel ode which causes some solution to be solved as Bessel ode when it was not.	15,568	1170 7.52%	N/A
Sunday June 30, 2024. 10PM	Full build to set the colors on the plot as before I use command line and that does not support colors. Also fixed two ode which had typos.	15,568	979 6.28%	42 0.269%
Monday June 23, 2024. 10PM	Full build.	15,568	980 6.30%	45 0.289%
Monday June 3, 2024. 11PM	Improved integration using <code>smart_int()</code> and fixed checking for implicit solution in some places. This resulted on 6 more ode's solved now and one more verified than last build.	15,569	981 6.301%	40 0.257%
Sat. June 1, 2024. 3AM	Full build. Improved quadrature solver for first order to better handle IC.	15,569	987 6.339%	41 0.263%
Monday. May 20, 2024. 1PM	Fixed bug in quadrature first order. There was case it was not veifying the solution satisfies the ode.	15,569	994 6.361%	40 0.256%
Thursday. May 16, 2024. 2PM	Solved more problems.	15,569	990 6.360%	40 0.256%
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Table1.1 – Change history. Continued from previous page

Monday. May 13, 2024. 1PM	Solved more problems.	15,564	990 6.361%	40 0.257%
Sat. May 11, 2024. 11PM	Solved more problems.	15,532	987 6.354%	40 0.257%
Thursday. May 8, 2024. 3PM	Added Maple step by step solution also for some problems. Fixed bug in verification of solution with IC. I had 8 solutions verified correct when they are actually not. Fixed bug where the check for dAlembert was giving true in some cases when it was not. Added check that for dAlembert and clairaut ode, the $y'$ is not linear. I was missing this check even though it works without this check, but this leads to solving the ode using dAlembert or clairaut when other methods exists. Solved more problems. Full rebuild.	15,474	969 6.262%	40 0.257%
Wed. April 24, 2024. 6PM	Solved more problems.	15,222	953 6.261%	32 0.210%
Tuesday. April 23, 2024. 7PM	Solved more problems.	15,140	951 6.28%	32 0.211%
Tuesday. April 16, 2024. 9PM	Solved more problems.	15,003	951 6.338%	29 0.193%
Friday. April 11, 2024. 11PM	Solved more problems.	14,813	950 6.413%	29 0.195%
Monday April 8, 2024. 11PM	Improved Latex. Solved more problems.	14,572	948 6.506%	29 0.199%
Thu. April 4, 2024. 3AM	Rerun Maple again over all problems, added simplify(). Added latex showing steps to the new solvers : <code>first_order_nonlinear_p_but_separable</code> and <code>first_order_nonlinear_p_but_linear_in_x_y</code>	14,408	948 6.579%	31 0.215%
Friday March 29, 2024. 4PM	Solved more problems from INTRODUCTORY DIFFERENTIAL EQUATIONS. Martha L. Abell, James P. Braselton. Fourth edition 2014. EIScAe. 2014. Added two new solvers, but need to add steps (latex) yet. <code>first_order_nonlinear_p_but_separable</code> and <code>first_order_nonlinear_p_but_linear_in_x_y</code> See my ode algorithms report on main page for details. Full build.	14,315	941 6.574%	31 0.216%

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Table1.1 – Change history. Continued from previous page

Sunday March 17, 2024. 3PM	Solved more problems from INTRODUCTORY DIFFERENTIAL EQUATIONS. Martha L. Abell, James P. Braselton. Fourth edition 2014. ElScAe. 2014. Full build on Maple 2024	14,090	939 6.664%	32 0.227%
Sunday March 10, 2024. 3PM	Solved more problems from INTRODUCTORY DIFFERENTIAL EQUATIONS. Martha L. Abell, James P. Braselton. Fourth edition 2014. ElScAe. 2014. Switched to Maple 2024.	14,000	933 6.664%	33 0.236%
Thursday March 7, 2024. 11PM	Full build. Fixed constants of integration so they are reset for each problem correctly.	13,876	941 6.775%	33 0.244%
Sunday March 3, 2024. 10PM	Solved more problems from INTRODUCTORY DIFFERENTIAL EQUATIONS. Martha L. Abell, James P. Braselton. Fourth edition 2014. ElScAe. 2014.	13,876	940 6.774%	34 0.245%
Saturday March 2, 2024. 8PM	Solving problems from new book INTRODUCTORY DIFFERENTIAL EQUATIONS. Martha L. Abell, James P. Braselton. Fourth edition 2014. ElScAe. 2014. Fixed few entries in database from last build.	13745	940 6.839%	32 0.233%
Wed Feb 28, 2024. 9PM	Solved all problems from Differential Equations by Alfred L. Nelson, Karl W. Folley, Max Coral. 3rd ed. DC heath. Boston. 1964	13724	942 6.864%	38 0.277%
Monday Feb 26, 2024. 11PM	Solved more problems from Differential Equations by Alfred L. Nelson, Karl W. Folley, Max Coral. 3rd ed. DC heath. Boston. 1964	13416	939 6.999%	36 0.268%
Friday Feb 23, 2024. 10PM	Finished solving all problems from Ordinary Differential Equations. An introduction to the fundamentals. Kenneth B. Howell. second edition. CRC Press. FL, USA. 2020	13215	936 7.083%	34 0.257%
Tuesday Feb 20, 2024. 11PM	Added support for solving higher order ode's with missing $y$ . Also improved handling of constant of integrations by automatically generating them instead of hard-coding.	13000	934 7.192%	28 0.215%
Monday Feb 19, 2024. 9PM	Solved more problems from Ordinary Differential Equations. An introduction to the fundamentals. Kenneth B. Howell. second edition. CRC Press. FL, USA. 2020	13000	960 7.385%	28 0.215%
Friday Feb 15, 2024. 8PM	Solved more problems from Ordinary Differential Equations. An introduction to the fundamentals. Kenneth B. Howell. second edition. CRC Press. FL, USA. 2020	12900	960 7.442%	28 0.217%

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Table1.1 – Change history. Continued from previous page

Thu Feb 15, 2024. 10PM	Solved more problems from Ordinary Differential Equations. An introduction to the fundamentals. Kenneth B. Howell. second edition. CRC Press. FL, USA. 2020	12611	954 7.565%	28 0.222%
Wed Feb 14, 2024. 9PM	Finished solving all problems from Schaums Outline. Theory and problems of Differential Equations, 1st edition. Frank Ayres. McGraw Hill 1952. Solving problems from Ordinary Differential Equations. An introduction to the fundamentals. Kenneth B. Howell. second edition. CRC Press. FL, USA. 2020	12495	954 7.635%	28 0.224%
Tue Feb 13, 2024. 9PM	Full build. Fixed factoring of ode.	12390	951 7.675%	28 0.226%
Tue Feb 6, 2024. 10PM	Solved more problems from Schaums Outline. Theory and problems of Differential Equations, 1st edition. Frank Ayres. McGraw Hill 1952.	12390	957 7.724%	30 0.242%
Sunday Jan 28, 2024. 11PM	Full build. Solved problems from Schaums Outline. Theory and problems of Differential Equations, 1st edition. Frank Ayres. McGraw Hill 1952.	12371	951 7.687%	30 0.245%
Sunday Jan 28, 2024. 11PM	Full build, solved more problems. Improved second order handling of transformation on $y$ to make ODE constant coefficient (method 1)	12166	952 7.825%	31 0.254%
Sunday Jan 7, 2024. 11PM	Full build	12081	927 7.673%	30 0.248%
Thu Jan 4, 2024. 2PM	Fixed quadature handling of tricky IC. Also improved homog. solver IC. Solving for IC is turning out to be the hardest of solvers actually. I need to rewrite all of this one day.	12081	922 7.673%	30 0.248%
Monday Jan 1, 2024. 3PM	Solved more problems. Full build for Mathematica to fix Latex	12081	927 7.673%	33 0.273%
Thursday Dec 28, 2023. 9PM	Rewrote laplace solver for first and second order to better handle mixed IC not all at same point or at zero. Full Build.	11,946	872 7.299%	32 0.268%
Wed Dec 25, 2023. 10PM	Solved more problems. Worked on IC handling for first order. Still need more work.	11,946	875 7.325%	31 0.2595%
Wed Dec 20, 2023. 1PM	Full build. Started working on adding existence and uniqueness analysis for linear and non-linear second order ode. But not finished.	11,897	842 7.089%	30 0.252%
Sunday Dec 17, 2023. 1PM	Added existence and uniqueness analysis for linear and non-linear first order ode.	11,897	843 7.089%	29 0.2437%

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Table1.1 – Change history. Continued from previous page

WED Dec 6, 2023. 2PM	Finished solving problems from DIFFERENTIAL EQUATIONS by Paul Blanchard, Robert L. Devaney, Glen R. Hall. 4th edition. Brooks/Cole. Boston, USA. 2012	11,897	843 7.089%	29 0.237%
Sunday Dec 3, 2023. 3PM	Solved more problems from DIFFERENTIAL EQUATIONS by Paul Blanchard, Robert L. Devaney, Glen R. Hall. 4th edition. Brooks/Cole. Boston, USA. 2012	11,878	843 7.09%	29 0.244%
Sunday Dec 3, 2023. 3PM	If first order ode is quadrature, do not attempt to solve it using other types. I still do not handle IC well on some problems. need to fix those, this is why I had 4 problems now not verify. Full build.	11,719	843 7.18%	29 0.247%
Friday Dec 1, 2023. 3PM	Just bug fixes and table improvements.	11,719	852 7.27%	25 0.213%
Wed Nov 26, 2023. 10PM	Added new solver for second order to handle special case of $Ay'' + By' + Cy = 0$ where it can reduce the order by one. Added support for special linear system and added 3 problems to test it.	11,719	855 7.32%	26 0.222%
Sat Nov 25, 2023. 6PM	Fixed bug in separable. There was one case where it could not separate it because I did not use normal().	11,716	858 7.323%	26 0.222%
Friday Nov 24, 2023. 2AM	Fixed bug in Bessel ode solver. Worked more on linear system of equations.	11,716	865 7.383%	26 0.222%
Sat Nov 18, 2023. 7PM	Split solving system of linear ode's summary table into two. One where matrix is defective and one when it is not. This makes it easier to locate problems with defective eigenvalues. Fixed table showing eigenvalues/eigenfunctions problems.	11,716	890 7.596%	26 0.222%
wed Nov 15, 2023. 9PM	Full build. Improved plots. Working on 3rd order ode, variation of parameters.	11,716	893 7.622%	26 0.222%
Sat Nov 11, 2023. 10PM	Added more plots for system of equations. (phase plots and solutions plots) and improved verification of solution to series.	11,716	890 7.596%	29 0.247%
Thursday Nov 9, 2023. 7PM	Added more problems from DIFFERENTIAL EQUATIONS by Paul Blanchard, Robert L. Devaney, Glen R. Hall. 4th edition. Brooks/Cole. Boston, USA. 2012	11,716	896 7.647%	42 0.358%
Tuesday Nov 7, 2023. 9PM	New book added. DIFFERENTIAL EQUATIONS by Paul Blanchard, Robert L. Devaney, Glen R. Hall. 4th edition. Brooks/Cole. Boston, USA. 2012	11,552	896 7.756%	42 0.363%
Sunday Nov 5, 2023. 9PM	More problems added. Full build.	11,491	894 7.78%	42 0.365%

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Table1.1 – Change history. Continued from previous page

Sat Nov 4, 2023. 1PM	More problems added. Full build.	11,434	893 7.81%	37 0.323%
Sunday Oct 29, 2023. 9PM	Full build. Modified separable solver to reject explicit result from integration if 6 times as large as the integrand. This caused speed up and reduced complexity of handling large expressions. It uses now implicit solution instead. I need to find out how many problems this affected.	11,266	887 7.899%	34 0.301%
Thu Oct 19, 2023. 10PM	Add book DIFFERENTIAL and INTEGRAL CALCULUS. VOL I. by N. PISKUNOV. MIR PUBLISHERS, Moscow 1969. Fixed some table display Added book Ordinary Differential Equations by Charles E. Roberts, Jr. CRC Press. 2010 and few problems from Nonlinear Ordinary Differential Equations by D.W.Jordna and P.Smith. 4th edition 1999. Oxford Univ. Press. N	11,228	887 7.899%	35 0.311%
Wed Oct 16, 2023. 9PM	Full rebuild. Added zoom to images.	11,069	882 7.959%	35 0.316%
Wed Oct 12, 2023. 9PM	Rebuild Lie symmetry problems. Improved final simplification. This resulted in one solution now verifying when before it did not. Also added more Latex. Improved exact solver for first order ode. This resulted in few ode's now verifying.	11,069	891 8.04%	27 0.243%
Sat Oct 7, 2023. 10PM	Full build. Fixed some tables.	11,069	891 8.04%	33 0.298%
Thursday Oct 5, 2023. 11PM	Added new book Differential Equations, Linear, Nonlinear, Ordinary, Partial. A.C. King, J.Billingham, S.R.Otto. Cambridge Univ. Press 2003	11,069	894 8.07%	30 0.271%
Monday Oct 2, 2023. 9PM	Added more problems from APPLIED DIFFERENTIAL EQUATIONS The Primary Course by Vladimir A. Dobrushkin. CRC Press 2015.	11,027	893 8.09%	30 0.272%
Sunday Oct 1, 2023. 4PM	Added more problems from APPLIED DIFFERENTIAL EQUATIONS The Primary Course by Vladimir A. Dobrushkin. CRC Press 2015.	10,963	891 8.127%	30 0.273%
Thursday Sept 28, 2023. 10PM	Improve finding Lie symmetry canonical ode for first order. Added more problems from APPLIED DIFFERENTIAL EQUATIONS The Primary Course by Vladimir A. Dobrushkin. CRC Press 2015.	10,936	891 8.14%	30 0.274%

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Table1.1 – Change history. Continued from previous page

Sat Sept 23, 2023. 11PM	Improved Latex for Lie symmetry. Added timelimit on few operations that would hang. Rebuild all first order ode's. Improved table layout to make them more clear by removing column not needed.	10,874	885 8.138%	28 0.257%
Wed Sept 19, 2023. 7PM	Speed up Lie algorithm and some improvements in solving for $\xi, \eta$ . Added latex showing more steps involved. Removed latex showing verification that $\xi, \eta$ keeps ode invariant, as this was long and not needed. I have the steps already given in my main Lie symmetry report at my main site. Added one more book APPLIED DIFFERENTIAL EQUATIONS The Primary Course by Vladimir A. Dobrushkin. CRC Press 2015.	10,874	887 8.157%	28 0.257%
Sat Sept 16, 2023. 10PM	Improved more the Lie symmetry algorithm, the part that finds $S, R$ . See updates flow chart on my Lie symmetry page. Rebuild	10,796	924 8.55%	28 0.259%
Friday Sept 15, 2023. 11PM	Full build. Improved Lie symmetry for first order. See updated algorithm in my study note for Lie on my main page. This resulted in 4 more Lie symmetry ode now to be solved.	10,796	930 8.61%	28 0.259%
Tuesday Sept 12, 2023. 11PM	Added new book AN INTRODUCTION TO ORDINARY DIFFERENTIAL EQUATIONS by JAMES C. ROBINSON. Cambridge University Press 2004	10,796	934 8.65%	28 0.259%
Monday Sept 11, 2023. 5PM	Added more problems from AN INTRODUCTION TO ORDINARY DIFFERENTIAL EQUATIONS by JAMES C. ROBINSON. Cambridge University Press 2004	10,769	934 8.67%	28 0.26%
Sunday Sept 4, 2023. 7PM	Added more problems from new book AN INTRODUCTION TO ORDINARY DIFFERENTIAL EQUATIONS by JAMES C. ROBINSON. Cambridge University Press 2004	10,711	934 8.72%	27 0.25%

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Table1.1 – Change history. Continued from previous page

Sunday Sept 3, 2023. 5PM	Found a problem setting up the canonical ode for Lie symmetry. This is the tricky part where expressions in $x, y$ need to be rewritten for that RHS of the $S'(R)$ is in terms of $R(x, y)$ only. So I fixed that. Hopefully no more problems. This resulted in solving few more problems now. Also fixed the table lookup for Lie's for Bernulli ode. Had wrong sign! Added 50 problems from new book AN INTRODUCTION TO ORDINARY DIFFERENTIAL EQUATIONS by JAMES C. ROBINSON. Cambridge University Press 2004	10,669	935 8.76%	27 0.253%
Friday August 25, 2023. 9PM	Fixed bug in first order homogeneousTypeMapleC solver. No wonder the table was empty. I did not check correctly for nops. Now the table showing these table are filled ok. Fixed and improved Lie symmetry solver for first order. Still more improvements are needed to speed it up.	10,619	946 8.91%	26 0.241%
Friday August 25, 2023. 9PM	Fixed few more problems in Lie symmetry solver for first order. Added check for trivial $\xi, \eta$ found and in this case try again. It is still very slow as I try all possible permutations of polynomials in $x, y$ up to degree 3. Need to improve this part. Finding $\xi, \eta$ is the main obstacle for this method. I also need to implement integrating factor method for Lie symmetry. I found there are short cuts to find there is the first order ode is know. So I am now making table of these, this will speed things alot.	10,619	945 8.9%	31 0.29%
Friday August 11, 2023. 10PM	Minor improvements to Lie symmetry solver for first order ode.	10,619	936 8.81%	33 0.311%
Wed August 9, 2023. 2AM	Have been working on Lie symmetry method. Currently I have it working for first order ode's $y' = f(x, y)$ using polynomial ansatz only. see my notes at <a href="https://12000.org/my_notes/symmetry_in_ode/report.htm">https://12000.org/my_notes/symmetry_in_ode/report.htm</a> . Full BUILD.	10,619	946 8.91%	33 0.311%
Friday July 21, 2023. 1AM	Added tables that show Lie symmetry found by Maple for those ode which has the symmetry. This will be useful when I add solving by Lie symmetry later on, which I am starting to workon.	10,619	1034 9.737%	28 0.264%

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Table1.1 – Change history. Continued from previous page

Tuesday July 18, 2023. 9PM	Added two new first order solvers. One called <code>homogeneousTypeD</code> and the second <code>homogeneousTypeD2</code> . The first implements solver for ode that has form $y' = \frac{y}{x} + g(x)f(\frac{y}{x})$ . This is what Maple calls homogeneous Type D. The second solver is more generic. It tries change of variables $y(x) = u(x)x$ and if this results in ode in $u(x)$ which is either quadrature or separable, then it is used. The above solvers resulted in more than 2 dozen ode's now being solved ! I still need to make these solvers more robust, but the basic setup and latex is now all in.	10,619	1034 9.737%	28 0.264%
Friday July 14, 2023. 7PM	Fixed first order ode to handle better ode's of form $y^n = f(x, y)$ . This resulted in one more ode solved.	10,619	1056 9.97%	28 0.264%
Sunday July 9, 2023. 8PM	Add new second order ode solver called <code>bessel ode form A</code> , which transforms $ay'' + by' + (ce^{rx} - m)y = 0$ to Bessel and solves it. This resulted in few more ode's solved. This uses transformation $x = \ln t$ .	10,619	1057 9.97%	28 0.264%
Wed June 28, 2023. 9PM	Fixed exact solver to allow it to accept integration factor that can't be integrated. This result in few more problem now solved.	10,619	1060 9.98%	28 0.264%
Friday June 23, 2023. 11PM	Rewrote Clairaut and dAlembert ode solvers to improve the latex and flow and speed things up. Simplified things. FULL BUILD. (2 days). Fixed separable yet again to reject <code>RootOf</code> solution and keep implicit.	10,619	1084 10.216%	28 0.264%
Thursday June 8, 2023. 7PM	Full build again to fix plots. Abandon using <code>cmacle.exe</code> as it does not work. bad postscript driver. Also fixed some problems which did not record verify status correctly.	10,590	1091 10.23%	27 0.2549%
Wed May 31, 2023. 11PM	Full build. improved latex, make build faster.	10,590	1090 10.23%	63 0.589%
Wed May 31, 2023. 11PM	Full build	10,590	1090 10.23%	43 0.406%
Thursday May 25, 2023. 7PM	Added option to solve same ode in all possible methods for second order also.	10,590	1089 10.27%	54 0.5099%
Tuesday May 23, 2023. 6PM	Added option to solve same ode in all possible methods. Now for first order ode only, next will add support for second order ode. This makes the book much larger but useful to see same ode solved in different ways. This reduces number of not verified as some methods do verify while other do not.	10,590	1087 10.26%	54 0.5099%

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Table1.1 – Change history. Continued from previous page

Friday May 19, 2023. 10AM	Added problems from A First Course in Differential Equations by J. David Logan. Third Edition. Springer-Verlag, NY. 2015 and from Differential Equations by Shepley L. Ross. Third edition. John Willey. New Delhi. 2004	10,590	1086 10.27%	84 0.787%
Sat. May 13, 2023. 9PM	Added solving by Taylor series method for first order and second order. I still need to add support for solving by power series for second order using Balance equation which will take 2-3 more days, then all work on series solver will be done. After that need to add support for solving higher order ode using Taylor series. Will not do power series for higher order ode's. I need to go back working on adding support for finding integration function for nonlinear second order ode which I started looking at few months ago. That is much harder problem.	10,330	1084 10.50%	82 0.794%
Sat. May 6, 2023. 10PM	Started new rewrite of series solver to improve it.	10,330	1084 10.50%	82 0.794%
Tuesday. Feb 21, 2023. 11PM	Fixed one table to show type used for ode when it failed also.	10,330	1086 10.51%	82 0.794%
Tuesday. Feb 21, 2023. 11PM	Minor cleanup.	10,330	1089 10.54%	81 0.784%
Friday. Feb 17, 2023. 9 AM	More fixes to separable solver due to changes made in how it handles explicit vs. implicit choice. Added new table showing ODE's solved by factoring. Now there are 34 such ode's. Improved solution from Laplace to handle undefined in piecewise result.	10,330	1087 10.523%	85 0.823%
Saturday. Feb 11, 2023. 9 AM	Improved separable solver. Now selects the solution either explicit or implicit by veifying it first. This resulted in about 10 more problems being verified OK by Maple.	10,334	1085 10.499%	91 0.881%
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Table1.1 – Change history. Continued from previous page

Friday. Feb 10, 2023. 11 PM	<p>Added few more problems from Cohen book.</p> <p>Added logic to factor the ode if possible when the original ode form produced no solutions. Needed to do this after trying the original form of the ode as is, else it can make some solvable ode's not solvable any more (exact ode's for example, Euler form for example). For an example, an exact ode if can be factored, the new factors no longer can be exact.</p> <p>Also improved separable to try isolate() as well as solve() to solve explicitly for <math>y(x)</math> before giving up and using implicit solution. This resulted in few more problems now being verified as isolate() can generate sometimes solution without RootOf compared to solve.</p>	10,334	1089 10.538%	97 0.939%
Wed. Jan 4, 2023. 4 PM	Fixed some of Kamke problems, added book problem number also to make it easier to locate the problem in the book. Only for chapter 6.	10,321	1098 10.638%	95 0.9204%
Sunday. Jan 1, 2023. 2 PM	FULL BUILD. add more problems from Cohen book. Added support for detecting and solving second order linear ode which is exact by reducing it to first order.	10,320	1097 10.6298%	95 0.9205%
Wed. Dec 14, 2022. 8 PM	FULL BUILD. Fixed labels on the phase diagram for second order. some regression need to find.	10,247	1087 10.608%	96 0.937%
Sunday Dec 11, 2022. 8 PM	Add few more problems from Cohen book	10,247	1083 10.569%	93 0.9076%
wed Dec 7, 2022. 11 PM	Add few more problems from Cohen book	10,220	1084 10.6067%	93 0.91%
Tuesday Dec 6, 2022. 9 PM	Add few more problems from Cohen book, and new table for exact odes solved by inspection.	10,204	1082 10.6037%	93 0.9114%
Monday Dec 5, 2022. 1 PM	Add function to exact solver to try few integration factors by inspection. see Cohen book, page 23. This results in 40 more odes's now being solved.	10,184	1080 10.6049%	93 0.9131%
Sat Dec 3, 2022. 11 PM	Did full build. added more problems from elementary treatise on differential equations by Abraham Cohen. improved exact solver for 1st order ode.	10,184	1120 10.9976%	92 0.9034%
Tuesday Nov 29, 2022. 11 AM	Did full build after making minor changes.	10,151	1120 11.0339%	99 0.9753%

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Table1.1 – Change history. Continued from previous page

Sunday Nov 28, 2022. 10 AM	Added more problems from An elementary treatise on differential equations by Abraham Cohen. Did full build.	10,151	1119 11.0235%	96 0.9457%
Thursday Nov 24, 2022. 2 AM	Added new book An elementary treatise on differential equations by Abraham Cohen. DC heath publishers. 1906. Added new table that shows ode's solved using implicit solution.	10,137	1119 11.0387%	96 0.947%
Monday Nov 21, 2022. 2 PM	Added routine to convert implicit to explicit at the very end when possible.	10,106	1118 11.06273%	99 0.9796%
Sat. Nov 19, 2022. 1 PM	Fixed few things in separable solver.	10,106	1120 11.0825%	103 1.0192%
Saturday. Nov 5, 2022. 9 PM	<p>Been busy writing paper for arxiv on the kovacic algorithm showing my implemenation which I had in my solver for more than one year now. But it was all new implemenation, cleaning up few things in the process and removed all the latex from it as not needed. It turned out to be 1600 lines only in total. I used better way to find coefficients of Laurent series than I was using before.</p> <p>Cleaned minor problem in solving for initial conditions and did full rebuild. My goal is to be able to verify all the ode's left not verified. But some of these do not verify because Maple's odetest itself fails to verify my solutions, even though the solutions are correct and many match Maple's own solution (those in series solution).</p> <p>There are still class of problems this solver can't solve. These are the ones which current methods implemented can't solve. For these I really need to learn and implement Lie symmetry group for solving ODE's which I have small note here about. This will be the ultimate goal. But this would take long time to do (1-2 years may be) as it is hard subject to learn. This is what Maple uses to solve these hard ode's this solver can't solve.</p>	10,107	1120	107
Tuesday. Oct 14, 2022. 10 PM	No new problems. Added new type for second order ode called <code>second_order_ode_can_be_made_integrable</code> which checks if an ode can becomes integrable as is when multiplied by $y'$ .	10,106	1112 11.0034%	109 1.0786%

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Table1.1 – Change history. Continued from previous page

Monday. Oct 10, 2022. 3 PM	No new problems. Cleaned all the string latex concatenation by making each line separate string to avoid maple warnings. This took few days. Added new table which show program solution next to Maple solution for each problem for easier comparison. Did full rebuild.	10,106	1128 11.1617%	104 1.0291%
Friday. Sept 30, 2022. 11 PM	No new problems. Added internal option to solve each ode in all possible ways found. But this will generate a very large book, over 200,000 pages or more. so I kept this option just for testing. This is a good way to find any hidden bugs by solving the same ode in all possible types found. Did full rebuild.	10,106	1128 11.16169%	105 1.03899%
Tuesday. Sept 13, 2022. 10 PM	4 new problems added. fixed minor bug. Full build	10,106	1127	162
Monday. August 29, 2022. 10 PM	No new problems added. Starting major redesign at top level, will take few more days. Updated design document/diagram. Made rebuild to make sure did not break anything so far. OK.	10,102	1132	163
Thursday. August 18, 2022. 6 PM	Added support for solving what Maple calls homogeneous, class C first order ode's. This managed to reduce the number of unsolved odes by 9. Added more problems from Earl D. Rainville, Phillip E. Bedient. Macmilliam Publishing Co. NY. 8th edition.	10,102	1135	171
Sat. August 13, 2022. 9 PM	Added more problems from differential equations. By Earl D. Rainville, Phillip E. Bedient. Macmilliam Publishing Co. NY. 8th edition. 1997. Improved tables formatting for HTML using fixed width tables.	10,068	1144	171
Tuesday August 9, 2022. 8 PM	Added phase plot for all problem where possible. Added new book differential equations. By Earl D. Rainville, Phillip E. Bedient. Macmilliam Publishing Co. NY. 8th edition. 1997. Added new type for first order ode to solve $y' = f(x)e^{a(x)+by} + g(x)$ ode's. Did full rebuild.	10,000	1144	171
Sunday July 31, 2022. 11 PM	bug fixes in new code added for type 22, 23. Added support for Laplace transform method when no initial conditions are given.	9,933	1136	161

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Table1.1 – Change history. Continued from previous page

Friday July 28, 2022. 9 PM	Added more problems from Elementary differential equations. By Earl D. Rainville, Phillip E. Bedient. Macmilliam Publishing Co. NY. 6th edition. 1981. Added new method to solve first order ode by detecting complete differentials. This simplifies many solutions that before would have taken much longer to solve. But it is not easy to detect complete differentials when solving this by hand. Also added better method to solve nonlinear second order ode's with missing independent variable. Called it type 22. Add better method to solve missing dependent variable for second order. Called it type 23.	9933	1175	159
Tuesday July 26, 2022. 10 PM	Added more problems from Elementary differential equations. By Earl D. Rainville, Phillip E. Bedient. Macmilliam Publishing Co. NY. 6th edition. 1981.	9867	1168	158
Monday July 25, 2022. 11 PM	Added new book. Elementary differential equations. By Earl D. Rainville, Phillip E. Bedient. Macmilliam Publishing Co. NY. 6th edition. 1981. Fixed bug in Bessel ode solver where it was not correctly checking for the form of Bessel in some cases. Need to do Airy ode solver also. Will do that later.	9850	1168	158
Saturday July 23, 2022. 8 PM	Changes to how to verify the solution. Rebuild all Mathematica solutions to improve the latex. ALso added Bessel ODE solver to solve second order odes'. This also converts if possible a second order ode to Bessel ODE form. It uses Bowman 1958 transformation. This is based on this	9836	1151	177
Friday July 14, 2022. 9 PM	Added new first order ode type homogeneous type c to handle ode of form $y' = f(a + bx + cy)^{\frac{1}{n}}$ which produces now better solution than when using d'Alembert since this avoids having to square or raise both sides of the ode to some power. This based on this . Added few more odes.	9836	1226	199
Friday July 8, 2022. 10 AM	Lots of code changes in ODE.mpl, the new object that now represents single ode of all types. Removed dsolver.mpl. Rebuild all Mathematica's result also as new version 13.1 was out. FULL build.	9831	1226	199

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Table1.1 – Change history. Continued from previous page

Friday July 1, 2022. 11 PM	Wrote new module <code>change_of_variable_manager</code> just to handle second order ode transformation and dsolving using these when applicable. Four cases. See this for examples. FULL build.	9831	1233	187
Monday June 20, 2022. 4 PM	changed <code>ode_type</code> to be Object with constructor. Some bug fixes. Add more problems.	9831	1231	219
Friday June 17, 2022. 1 PM	Added more problems from Handbook of exact solutions for ordinary differential equations	9766	1216	216
Wed June 8, 2022. 3 PM	Added more problems from Handbook of exact solutions for ordinary differential equations	9755	1213	216
Tuesday June 7, 2022. 10 AM	Added more problems from Handbook of exact solutions for ordinary differential equations	9740	1205	216
Thursday June 2, 2022. 2 PM	Improve latex	9703	1195	216
Sunday May 29, 2022. 3 PM	No problems added. Improved the Latex display for Mathematica by listing each solution in the list on separate line. Full rebuild for Mathematica now takes 2 days to do. Found bug in Mathematica when using FullSimplify. Posted at stackexchange.	9703	1198	217
Monday May 23, 2022. 6 PM	Added more problems from book Handbook of exact solutions for ordinary differential equations, second edition by Polyanin and Zaitsev.	9703	1198	217
Tuesday May 17, 2022. 10 AM	Added more problems from book Handbook of exact solutions for ordinary differential equations, second edition by Polyanin and Zaitsev.	9395	1126	195
wed May 11, 2022. 11 AM	Added book Handbook of exact solutions for ordinary differential equations, second edition by Polyanin and Zaitsev.	9292	1125	177
Saturday May 7, 2022. 10 AM	More problems from DIFFERENTIAL EQUATIONS with Boundary-Value Problems. by ZILL etall.	9181	1118	173
Thursday May 5, 2022. 4 PM	Added 2 books A course in Ordinary Dierential Equations. by Stephen A. Wirkus, Randall J. Swift. CRC Press NY. 2015. 2nd Edition. and DIFFERENTIAL EQUATIONS with Boundary-Value Problems. DENNIS G. ZILL, WARREN S. WRIGHT, MICHAEL R. CULLEN. Brooks/Cole. Boston, MA. 2013. 8th edition.	9157	1117	173
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Table1.1 – Change history. Continued from previous page

monday May 2, 2022. 1 PM	Added more problems from Differential Equations: Theory, Technique, and Practice by George Simmons, Steven Krantz. McGraw-Hill NY. 2007. 1st Edition. Fixed a bug in linear system of equations solver. Was not correctly checking for non-linearity. Did not check for $x(t)*y(t)$ case and it was trying to solve this as linear. So I fixed this now and rerun all problems again since my solver now can't handle system of first order ode's which is not linear. These are very hard to solve analytically and few are even possible. So will not support non-linear system of odes. These can be solved numerically.	9044	1102	168
monday April 25, 2022. 1 PM	Added more problems from Differential Equations: Theory, Technique, and Practice by George Simmons, Steven Krantz. McGraw-Hill NY. 2007. 1st Edition. Too many build problem due to large size of latex.	8903	1086	165
monday April 18, 2022. 4 PM	Full build. Removed solving second order ode using series method if all other methods fail, unless explicit hint to use series is given. This reduce the size of the solutions. Made new report from the database just for Mathematica and Maple to better compare their results.	8836	1086	161
Wed April 13, 2022. 3 PM	Added yet more problems from Differential Equations: Theory, Technique, and Practice by George Simmons, Steven Krantz. McGraw-Hill NY. 2007. 1st Edition	8836	944	174
Tuesday April 12, 2022. 11 PM	Have not been working on this for few days. Been busy with CAS integration tests. Added yet more problems from Differential Equations: Theory, Technique, and Practice by George Simmons, Steven Krantz. McGraw-Hill NY. 2007. 1st Edition	8789	944	174
Tuesday April 6, 2022. 6 PM	Added more problems from Differential Equations: Theory, Technique, and Practice by George Simmons, Steven Krantz. McGraw-Hill NY. 2007. 1st Edition	8769	944	174
Tuesday April 5, 2022. 4 PM	Added more problems from Differential Equations: Theory, Technique, and Practice by George Simmons, Steven Krantz. McGraw-Hill NY. 2007. 1st Edition	8736	943	173
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Table1.1 – Change history. Continued from previous page

Wed March 30, 2022. 6 PM	Added more problems from Differential Equations: Theory, Technique, and Practice by George Simmons, Steven Krantz. McGraw-Hill NY. 2007. 1st Edition	8687	943	173
Thursday March 24, 2022. 7 PM	Improved Latex for trace. Rebuild some ode's. No functionality added.	8648	942	173
Monday March 21, 2022. 10 PM	Completed adding all Kamke book. Lots of Latex build problem due to large size of book.	8648	947	172
Thursday March 10, 2022. 10 AM	Add most of Kamke book ode's. (1850). Only about 200 left. Added leafcount and CPU time for Maple's and Mathematica solutions and did full build. lots of ode's I can't solve from this book as many I still do not have solvers for yet.	8564	857	229
Thursday March 3, 2022. 6 PM	Fixed bug in second order ode Laplace method. Added check in linear system of first order ode solver for non autonomous system. Currently I do not have solver for this. Need to add this in the future. I was not checking for this before. This was a problem from Coddington textbook chapter 6. Add more problems from Coddington. Fixed bug in solving for IC when solution was implicit.	6694	185	124
Wed March 2, 2022. 7 PM	Added more problems from Coddington textbook. Change first order solver so that if solving an ode using a hint does not yield a solution, is to try again with no hint.	6680	184	123
Tuesday March. 1, 2022. 9 PM	Improved verification of series solution. This made number of unverified solutions less than before. Added more problems from Coddington textbook.	6652	184	123
Sunday Feb. 27, 2022. 7 AM	Finished refactoring of the application. Added new large diagram of the design which is now more complete, done using VISIO. Added UNIT TEST main call to run all UNIT TESTS for each solver. Changed second order ode solver to try series solution if all other methods fail to find closed form solution.	6621	184	297
Sat Feb. 26, 2022. 11 AM	No added problems, but large refactoring of the application. to improve the overall layout and design. This is taking more time than expected. Still more to do.	6617	218	290

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Table1.1 – Change history. Continued from previous page

Wed Feb. 23, 2022. 2 AM	Added more odes from An introduction to Ordinary Differential equations. Earl A. Coddington. Dover. NY 1961. I do not support series solution for 3rd or higher order ode's. Maybe add it in the future.	6617	217	291
Tuesday Feb. 22, 2022. 3 AM	Added book An introduction to Ordinary Differential equations. Earl A. Coddington. Dover. NY 1961. Fixed bug in higher order ode solver where I did not check for complex conjugate coming in pairs correctly. This only applies to higher order ode's not second order. So remove this for now and just kept the solution as is in terms of complex exponential. Need to fix this better in the future since using sin/cos is more clear than complex exponentials but need to figure a good way to do it for higher order ode's.	6595	215	291
Monday Feb. 21, 2022. 3 PM	Added more problems from 11th edition of Elementary Differential Equations and Boundary Value Problems. Boyce and DiPrima. Higher order ode's chapter added. I still do not support solving higher order ode's with reduction of order. I need to add this functionality sometime. so 5 such problems could not be solved now. But all the rest were solved OK.	6501	215	291
Sunday Feb. 20, 2022. 5 PM	Added new book. 11th edition of Elementary Differential Equations and Boundary Value Problems. Boyce and DiPrima. I have the 10th edition in there already. Laplace chapter Added. Improved some latex for Kovacic algorithm and fixed couple of small bugs.	6457	210	291
Sunday Feb. 20, 2022. 10 AM	Added short description of Kovacic algorithm section. Added diagrams for each case. Added new section for problems from the three papers related to this algorithm so easy to find.	6444	210	291
Tuesday Feb. 15, 2022. 11 AM	Imprved Latex, simplified.	6434	210	292
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Table1.1 – Change history. Continued from previous page

Sunday Feb. 13, 2022. midnight	Finished case 3 of original Kovacic algorithm. Now Latex shows all the steps. Added section 2 in the chapter for Kovacic which solves same ode using all cases $n = 1, 2, 4, 6, 12$ in order to compare the different algorithms on the same ode. Now there is only 9 problems in section 2. Still need to clean the Latex more and do more clean up of the Latex. Removed few duplicate ode entries I found.	6434	210	292
Thursday Feb. 10, 2022. 3 PM	Added steps for case 2 of Kovacic algorithm. Most of the main steps Latex is now there. This is based on original algorithm. Not the modified one. Split the kovacic package to 3 separates ones. One for each case.	6441	210	291
Tuesday Feb. 8, 2022. 4 PM	For second order ode's, added new function to convert solutions where the basis functions are complex exponentials to convert the solution to use sin/cos with possible damping term to make the solution easier to read and match textbook more. This only applies to linear second order ode's. It also improves how the final solution from kovacis algorithm looks using trig functions rather than complex exponentials.	6441	210	291
Monday Feb. 7, 2022. 4 AM	For case 1, for poles of order $\geq 4$ use partial fractions decomposition to find $b$ instead of undetermined coefficients. For order $< 0$ changed to use long division method. Tested and this seems to work OK. Need to do more testing.	6441	210	291
Sunday Feb. 6, 2022. 2 PM	Fixed formatting in Latex, and tables. Added more latex. Still working on case 1 of kovacic algorithm. main steps are now there but need to add little more details. Then will go to implement case 2 next week. This implemenation is based on original Kovacic paper and not Saunders/Smith modified algorithm.	6441	210	291
Sat. Feb. 5, 2022. 4 PM	Fixed labeles in tables. Added a check for ode $z'' = rz$ in Kovacic algorithm on $r$ if do not depend on $x$ , then no need to run Kovacic algorithm as solution is obvious. So this way it shortened the solution. Only do the algorithm if $r$ is rational function of $x$ .	6441	210	291

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Table1.1 – Change history. Continued from previous page

Friday Feb. 4, 2022. 5 PM	Full build. Added more information in tables for kovacic that shows pole orders and order at infinity in addition to case used and all cases found. This will help in testing also.	6441	210	291
Wed Feb. 2, 2022. 3 PM	Improved Latex, simplified some steps that were generating large output. Still in case 1 of kovacic algorithm. Made diagram.	6441	211	292
Tuesday Feb. 1, 2022. 4 PM	Finished adding all main steps to case one algorithm of kovacic solver. I need to add diagram also. But now all main steps are displayed. Will start on case 2 later this week. Case 2 is actually easier than case 1. My kovacis package now is now at about 2,600 lines of code due to Latex added. It will probably double in size before all three cases are finished.	6441	211	292
Monday. Jan. 31, 2022. 3 PM	Started to add Latex showing steps of Kovacis algorithm. Currently working on case one only. May be by end of the week will start on case 2.	6441	211	292
Wed. Jan. 26, 2022. 3 PM	Wrote new version of Kovacic algorithm based on original paper for case 1. Still need to do case 2 and 3.	6441	211	292
Friday Jan. 21, 2022. 11 PM	More testing of kovacic algorithm. Improved simplification of intermediate results. Not able to find ode which fail case 1 and case 2 but works with case 3, either $n = 4, 6, 12$ . Problems from paper seem to have typo. They do not work as claimed.	6441	211	292
Thu Jan. 20, 2022. 5 PM	update kovacic table to indicate which case number was used to solve the ode. rebuild all.	6440	213	292
Wed Jan. 19, 2022. 1 PM	Changed step 3 in kovacic algorithm so that for $n = 1$ and $n = 2$ it now follows original paper by Kovacic and not Smith paper. Case 3 remains the same. I still need to add the step by step but waiting to make sure first the implementation is correct.	6440	212	292
Tuesday Jan. 18, 2022. 8 PM	Changed few ode for Kovacic which did not have rational coefficients. Need to improve my detection on this and reject such odes. Will do that next.	6440	212	292

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Table1.1 – Change history. Continued from previous page

Monday Jan. 17, 2022. 10 PM	rebuild all kovacis problems. Changed two problems in the kovacic collection odes not to use parameters. The problem is that in kovacic algorithm it needs to decide if $d > 0$ and having unknown parameter makes it not possible to decide without assumption. And example is Bessel ode. Where it gives Liovilian solution only for $n$ being half odd integers. So for now, will only support kovacic ode's that contain no unknown parameters.	6440	212	292
Sunday Jan. 16, 2022. 10 PM	Improved handling of poles for second order in kovacic algorithm.	6434	214	292
Sat Jan. 15, 2022. 11 PM	Just a rebuild. overlooked running over some ode's again last time after the fix. do not know how this happened. Also, for the second kovacis solution, if integration results in special function, kept the integral Inert. This also prevents problems Maple has with verification of these solutions, it also now agrees with Mapel's <code>DEtools:-kovaciccols</code> . This now made the number of unverified solutions back to where it was before adding all the 840 ode. I still need to resolve the issue when few are not solved. All of these are in case 3, which takes very long time to complete.	6434	234	292
Sat Jan. 15, 2022. 6 AM	Fixed bug in step 3 of kovacic algorithm. There are still few ode's that do not get solved using kovacic algorithm even though they should. I still need to find out why. It is possible I've made some mistake in the implementation from papers I am looking at.	6434	240	315
Continued on next page				

Table1.1 – Change history. Continued from previous page

Friday Jan. 14, 2022. 10 AM	Added verification on $\omega$ solution in step 3 of kovacic algorithm that is satisfies $w' + w^2 = r$ . There are cases where solution $w$ was obtained but it does not satisfy this riccati ode. Hence reject if this happens. This explains why I was getting some solved solutions that did not verify in the last build. Added about 840 problems in new chapter called kovacic collection of problem to solve these are ode's solved using only the kovacic algorithm (using 'hint'="kovacic" option). This is for testing purposes. These problems are collected from the rest of the database which are all solved already using other methods (series, etc...) but can also be solvable using kovacic algorithm if requested. The use of 'hint'="kovacic" forces the solver to only try kovacic algorithm solver and no other. This will now make the full build to take more time.	6434	266	315
Wed Jan. 12, 2022. 5 AM	Fixed another bug in kovacic algorithm. Generating the s sequences was not correct. But need to find why some are not verified now.	5598	206	298
Tuesday Jan. 11, 2022. 5 PM	Fixed bug in kovacic algorithm. Also changed it to use solve(identity) to find the coefficients of the polynomial in step 3. This is much better.	5598	215	292
Tuesday Jan. 11, 2022. 11 AM	Full build. regression. 3 integrals fail now compared to last build. Need to find why	5598	213	296
Sunday Jan. 9, 2022. 9 PM	Minor bug fix. Refactor code in kovacic module.	5598	210	296
Sunday Jan. 9, 2022. 6 AM	Fixed bug in my kovacic alogrithm implementation. Need to add more tests.	5598	211	296
Friday Jan. 7 2022. 6 AM	Finally completed Kovacic algorithm but still need to add the latex showing the steps and need to test it more. 23 more ode's now can be solved. But 4 seem to not have been validated. So need to find why.	5598	223	296
Thursday Dec. 29 2021. 11 PM	full build. Added more problems from Makarets and Reshenyak book.	5598	246	292
Tuesday Dec. 28 2021. 5 AM	full build. changes to dAlembert solver. Removed 2 problems not useful and were slow to verify by Maple.	5584	246	292

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Table1.1 – Change history. Continued from previous page

sunday Dec. 26 2021. 9 PM	Fixed linear fractional ode solver (called polynomial type), so it can handle missing $x$ or $y(x)$ in the numerator or denominator. Added more problems from Makarets and Reshenyak book. Need to handle what is called "Homogeneous ODEs of Class D" in Maple. Currently do not have solver for this. see problem 34, page 16 in Makarets and Reshenyak book as an example. book claims this is linear fractional ode, but do not see how this is the case so it was not detected. Improved polynomial type first order ode detection part.	5586	250	291
sunday Dec. 26 2021. 2 AM	Added more problem from Makarets and Reshenyak book. Fixed bug in first order initial condition which determines the constant of integration. Changed to limit instead of eval to avoid 1/0 problem.	5574	249	290
sat Dec. 25 2021. 1 PM	Fixed a bug in Liouville ode (type 18) solver. When it can't integrate, do not call separable solver. This fixed two solutions. Adjusted type 17 solver to reject ode with rhs that depends on the independent variable. Can't solve when this is the case.	5547	248	290
Friday Dec. 24 2021. 12noon	some bug fixed	5547	248	292
Thursday Dec. 23 2021. 9AM	added few more problems from Makarets and Reshenyak book.	5547	249	297
Wed Dec. 22 2021. 10 PM	added few more problems from Theory of differential equations in engineering and mechanics by K.T. Chau. to test Liouville transformation. Book has some typos in the problem section, so two new problems could not be solved using this transformation as expected. Did full build.	5490	243	297
Tuesday Dec. 21 2021. 10 PM	Completed Liouville ode solver. Added Liouville transformation. This is for ode of form $y'' + B(x)y' + C(x)y = 0$ where transformation $y(x) = u(x)e^{\frac{-1}{2} \int B(x) dx}$ makes a new ode $u'' + Q(x)u = 0$ that could possibly be solvable now. Did full build.	5483	240	298
Monday Dec. 20 2021. 10 PM	Added solver for new second order type. Liouville ode of form $y'' + f(x)y'(x) + g(y)(y')^2 = 0$ . But need to add more LaTeX still. Added few problems. Improved isobaric and homogeneous first order detection. Added more unit test to isobatic and homogeneous first order odes.	5481	242	296

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Table1.1 – Change history. Continued from previous page

Thursday Dec. 16 2021. 3 PM	Rewrote how homogeneous first order type is detected. Also improved the isobaric ode detection. Made the code into a Object and added unit tests. This made it easier to use. Rerun all the ode's of these types. Also did full build for Mathematica version 13 results since it was released now. Maple is now at version 2021.2. Found a bug in Maple using solve.	5475	242	294
Sunday dec 12, 2021. 11 AM	improved more than handling of first order ode factoring. Added few more test problem. Did full build. This resulted in 2 more problems now solved.	5475	243	294
Friday dec 10, 2021. 10 AM	Fixed regression in last build rolled back the handling of first order ode. Now do only factor and look for $y(x)$ in the left side if the result is of type *. Do not accept result if result is rational expression. This fixed 5 results which were not versified in last build.	5472	245	294
Friday dec 10, 2021. 1 AM	Full build. In first order, added 2 checks to see if the ode can be broken into product equal to zero. If so, solve each part separately. simplifies things. use <code>factor</code> and <code>collect(ode,y(x))</code> and check if result is *. Need to go over the result more as I see 5 problems now do not verify. seems like regression.	5472	245	299
Wed dec 8, 2021. 3 PM	Full build. Added check for first ode to handle solution $y = 0$ . For example when input is $yy' + y = 0$ , before it was just giving solution to $y' + 1 = 0$ and over looking $y = 0$ . Fixed type 17 handling. Do not use particular and homogeneous solution on it. Does not work. Instead, just solve it as is when converting to first order ode. Now it gives same solutins as Maple. This took 2 days to find and fix and it is much easier method also. Maple keeps hanging on problem 2412 in the script. But when I stop the script, and start it again from 2412, it works. I have no idea why.	5472	246	294

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Table1.1 – Change history. Continued from previous page

Sunday dec 5, 2021. 7 AM	Added more problems. Working on adding Liouville ode pattern (not to be confused with eigenvalue boundary value problems with the name Sturm-Liouville which this program does not handle now). These are odes of the form $y'' + f(x)y' + F(y)(y')^2 = 0$ . Currently the program does not detect these and can not solve them. I hope to add this new type soon.	5472	249	292
Sat dec 4, 2021. 8 AM	Add new transformation (called it type 17) for reduction of order by tranforming the dependent variable. This is for second order ode of the form $f_1(y)(y'')^n + f_2(y)(y')^m = F(x)$ .	5453	240	292
Friday Dec 2 2021. 3 PM	Added more problems from new book. THEORY OF DIFFERENTIAL EQUATIONS IN ENGINEERING AND MECHANICS. K.T. CHAU, CRC Press. Boca Raton, FL. 2018. Cleaned the statistic section. Imporved Mathematica's build script. Fixed a bug in second order where kovciac method was being called twice. How did I not see this before?	5436	240	292
Wed Dec 1 2021. 5 AM	Improved how to check for type of expansion point using series method. Used Maple to check if the series expansion of coefficient is of type taylor instead of how I did it before, which was to check if limit exist. Added new Table which shows all problems not solved by this program and Maple. These are now counted as solved, as these problem can't be solved using series method.	5394	236	292
Tuesday Nov 30 2021. 7 PM	Fixed series solver for first order and second order. When the RHS is not analytic at expansion point, do not solve as it needs asymptotic analysis which I did not implement yet. Before the program did not check the RHS correctly. Changed accounting so that if a problem was not solved but also not solved by Maple, it is now counted as solved as it means problem has no known solution.	5394	245	285

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Table1.1 – Change history. Continued from previous page

Monday Nov 29 2021. 1 AM	Added Mathematica solutions to compare against in addition to Maple. Added few problems for series solution when RHS is not analytic at the expansion point. I need to fix a bug I found in this yet. May be this week will be done. When the RHS is not analytic at expansion point, do not solve.	5390	326	291
Tuesday Nov 23 2021. 11 PM	Fixed yet another bug for supporting higher degree second order odes. Did not normal the ode in one place before the call. Still Need to add more test cases. Moved the build from worksheet to command line. It is much faster now. Takes only 5 hrs instead of 2 days.	5386	326	288
Monday Nov 22 2021. 4 AM	Fixed another bug for supporting higher degree second order odes. Was not handling symbolic exponents right. I think it is all now working OK. Need to add more test cases.	5386	326	288
Sunday Nov 21 2021. 8 PM	Fixes for supporting higher degree second order odes	5386	328	288
Sat Nov 20 2021. 3 AM	Added support to solve second order odes with degree not 1. Before only degree 1 could be solved	5386	333	288
Sat Nov 20 2021. 11 AM	Add more problems in my own section for enumeration of first order odes. Full build now takes 2 days to complete.	5386	338	288
Thur nov 18 2021. 6 AM	Add more problems in my own section for mainly testing by starting to enumerate all possible forms of odes. Will take much more time to complete. Cleaned the tables generated for better Latex formating.	5333	329	287
Tuesday nov 16 2021. 1 AM	Replaced signum that shows up in few places by 1 by adding assumptions. Cleaned the verification code. Change solution that has heaviside to use piecewise. Changed lots of Latex to use breqn package	5292	325	286
Sat nov 13 2021. 4 AM	Add support for Lagrange adjoint equation method. Added few more problems	5292	326	289
Thu nov 11 2021. 5 AM	Added new book Ordinary differential equations and calculus of variations. Makarets and Reshetnyak and few problems from it	5277	320	287
Thu nov 11 2021. 3 AM	Added new transformation on independent variable to solve second order ode (type 15). see here for examples	5265	315	225

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Table1.1 – Change history. Continued from previous page

Tue nov 8 2021. 9 PM	added support for using integrating factor to solve second order ode of the form $y'' + p(x)y' + (p(x)^2 + p'(x))y = f(x)$	5265	318	223
Monday nov 8 2021. 2 AM	Added more problems from (KREYSZIG, ADVANCED ENGINEERING MATHEMATICS) mostly Laplace	5260	318	223
Sunday nov 7 2021. 7 PM	Added more Laplace problems from KREYSZIG book. Added support for solving ode with shifted data using Laplace method. This is where initial conditions are not at $t = 0$ .	5240	318	223
Sunday nov 7 2021. 1 AM	Added more problems from (KREYSZIG, ADVANCED ENGINEERING MATHEMATICS), series and Laplace. Added Table showing ODE's solved using Laplace. Fixed a bug in linear systems Latex display	5229	318	223
Friday Nov 5,2021 1 AM	Added new book (KREYSZIG, ADVANCED ENGINEERING MATHEMATICS) and some problems from it (series). Also Added count of problems for tables also. Fixed small bug in first order series.	5207	318	217
Thursday Nov 4,2021 10 PM	simplify integrals with $\exp/\ln$ in reduction of order solver	5167	318	210
Thursday Nov 4,2021 4 AM	changed reduction of order solver to use formula $y_2(x) = y_1(x) \int \frac{e^{-\int p dx}}{y_1^2} dx$ instead of how I did it before, which is by full derivation each time. This is much simpler.	5167	318	210
Thu nov 4 2021. 3 AM	cleaned riccati solver.	5166	307	223
Monday nov 1 2021. 11 PM	added more problems	5166	307	223
Monday nov 1 2021. 1 AM	added more problems	5098	289	207
Sunday oct 31 2021. 9 AM	added complex roots for indicial. This is the final act in series solution for second order.	5082	286	203
Sat. oct 30 2021. 4 PM	added more problems	5082	300	189
Friday oct 29 2021. 1 AM	Fixed another bug in coefficient to series conversion	5039	298	183
Thu oct 29 2021. 1 AM	added more problems, Fixed bug is coefficient to series conversion	5039	300	182
Thu. oct 28 2021. 3 AM	added more problems, change layout of document, fixed labels of ode's	5005	293	174
Tuesday oct 28 2021. 1 AM	added more problems	4921	285	149

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Wed oct 27 2021. 11 PM	Change all the latex to use breqn with tex4ht as well.	4918	284	147
Tuesday oct 26 2021. 7 AM	added more problems	4917	283	148
Tuesday oct 26 2021. 6 AM	added more problems	4909	280	145
Tuesday oct 26 2021. 1 AM	added more problems and fixed bug in generating series	4883	280	142
Monday oct 25 2021. 5 PM	added more problems	4857	281	125
Monday oct 25 2021. 1 PM	added more problems	4812	281	88
Monday oct 25 2021. 9 AM	Clean latex	4774	281	82
Sunday oct 24 2021. 11 PM	fixed bug. One off in series order	4774	281	82
Sunday oct 24 2021. 7 AM	fixed latex bugs	4774	288	88
Sat oct 23 2021. 9 PM	fixed bug in finding particular solution for series solver	4774	287	89
Sat oct 23 2021. 10 AM	Fixed few bugs in series solver	4774	281	83
Friday oct 22 2021. 11 PM	Finished all 3 cases for series. Complex root for indicial equation is left to do.	4774	288	78
Friday oct 22 2021. 3 PM	small fix. I was making the log term case of the above as solved by mistake.	4774	298	71
Friday oct 22 2021. 8 AM	fixed bug in series solver	4774	283	71
Friday oct 22 2021. 4 AM	add code for roots of indicial eq. differ by integer, case where log term is not needed. Series solver.	4774	294	74
Tuesday oct 19 2021. 5 PM	lots of Latex changes. Switched to breqn for PDF	4760	314	70
Monday oct 18 2021. 5 AM	working on series solver.	4760	314	70
Sunday oct 17 2021. 11 PM	working on series solver and adding problems	4724	312	66
Friday oct 15 2021. 4 AM	working on series solver and adding problems	4724	312	68
Thu oct 14 2021.	fixed latex/polynomial formating, series solver.	4724	312	68
Thu oct 14 2021. 7 AM	fixed bug. but now few do not verify more, due to polynomial issue. series solver.	4724	312	64
Wed oct 13 2021. 7 PM	regression. need to fix. Series solver	4724	326	54

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Table1.1 – Change history. Continued from previous page

Monday oct 12 2021. 10 AM	added repeated roots for frobenius series. Regression	4722	309	82
Monday oct 11 2021. 4 AM	fixed bugs in frobenius series for first order ode solver	4716	325	48
Monday oct 11 2021. 1 AM	added frobenius series for first order ode	4716	325	50
Thu oct 7 2021. 5 AM	added particular solution for frobenius se- ries. regression	4692	315	91
Wed oct 6 2021. 5 AM	add more inhomogenous regular points. se- ries solver. Still need to add the inhomoge- mous case.	4673	309	49
Monday oct 4 2021. 9 PM	Fixed bug in roots for indicial equation.	4673	308	50
Monday oct 4 2021. 3 PM	. added frobenius, but one case only. But have regression	4673	308	81
Fri oct 1 2021. 6 PM	No new code added. Added more problems only	4673	320	48
Fri oct 1 2021. 5 AM	. Fixed series bug, which affected new ode added.	4649	320	48
Fri oct 1 2021. 1 AM.	just code cleaning. Latex clean up. no new functionality	4673	320	48
Tuesday sept 28 2021. 8 AM	more fixed in series solver. REGRESSION happened. Need to fix later	4673	320	68
Monday sept 27 2021. 4 PM	regression. Changed MAX TERMS.	4637	322	111
Thu sept 23 2021. 11PM	Fixed below. still something is broke. I found why. I used to try series method on those ODEs that I can't solve exactly. I re- moved this from the code. That is why the not solved increased.	4495	276	47
Thu sept 23 2021. 7PM	made FULL BUILD	4495	258	40
Sunday sept 19 2021. 11 AM	started on series solver	4409	253	39
Monday sept 13 2021 2 pm	Added series method for ordinary point, when all other methods for second order do not work	4371	245	48
Sunday august 24 2021. 9 pm	Added laplace method to solve linear odes	4270	257	38
Thu march 11 2021. 10 PM	Full build	3944	257	14
Tue jan 19, 2021 4 PM	odetest ON, improved simplification	3769	215	9

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Table1.1 – Change history. Continued from previous page

Sunday jan 18, 2021 2 PM	odetest ON, Fixed solve bugs, ALso changes all to simplify(size). need to rerun all	3769	220	13
Sunday jan 17, 2021 10 AM	odetest ON, Fixed some bugs in check solution	3769	215	15
Sunday jan 17, 2021 6 AM	odetest ON, added more options to check solution	3769	215	20
Sat jan 16, 2021 10 AM	(turned off odetest and moved product check ABOVE)	3769	395	87
Wed jan 14, 2021 5 pm	switched back to using ONE ode type to solve instead of all, was taking too long to build.	3769	228	25
Mon jan 11, 2021 9 AM	changed assuming to same line as odetest	3769	219	19
Wed Dec 16, 2020 5 AM	removed 2 problem which keep long time and Maple does not timeout	3621	246	22
Monday Dec 14, 2020 7 PM	after full rebuild for better latex	3604	246	22
Sat Dec 6, 2020 NOON	Major rewrite. Removed OOP and used just types instead	3514	245	23
Wed Nov 25, 2020 6 AM	added kovacic for inhomogeneous ode	3478	247	22
Tuesday Nov 24, 2020 11 PM	fixed riccati. removed abs.	3469	247	22
Sat Nov 21, 2020 2 PM	improved dAlemebert solver	3466	247	25
Nov 11, 2020 5 AM	added kovacic tranformation only which helped solve few odes that were not solved before	3367	245	28
Oct 27, 2020 6 PM	started adding eigenvalues/eigenvectors	3267	266	31
Oct 27, 2020 7 AM	changed constants of integration, lots of bugs fixed	3266	266	30
Oct 18, 2020 5 AM	spend all day fixing bug which caused this difference	3126	266	32
August 7, 2020 10 PM	add second order ODE with varying coeff, special case	2517	204	29
August 5, 2020 1 PM	changes to dAlembert solver	2515	205	29
july 25, 2020 1 AM	moved all input to use sqlite DB instead of plain text file	2385	200	27
July 17, 2020 11 AM	after fixing bug in exact solver	2316	194	4
july 13, 2020 11 PM	fixed detection of homogeneous ode	2280	226	5

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Table1.1 – Change history. Continued from previous page

July 13, 2020 9 AM	rewrote dAlembert solver	2280	233	5
July 10, 2020 12:30 PM	improvement in verify due to use <code>__C1</code> instead of <code>C[1]</code>	2266	235	5
July 6, 2020 1 PM	Fixed <code>isobaric =&gt;separable</code> <code>symbolify(symbolic)</code>	2197	234	10
July 5, 2020 4 AM	stil broke something in dAlembert. Need to fix	2196	273	9
July 5, 2020 3 AM	Broke something in dAlembert	2196	276	9
July 2, 2020 11 AM	this regression due to the homogeneous solver. Took out the <code>simplify symbolic</code> . put it back.	2200	325	9
July 2, 2020 3 AM	build	2201	305	9
June 29, 2020 11 AM	changes to handle <code>A*B</code> case	2200	328	13
June 23, 2020 8 AM	build	2201	285	47
July 2018	started	1	0	0

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2.4 Tables of second order ODEs broken by type of ODE . . . . . .2415

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2.7 Table of system of ODEs . . . . . .3374

2.8 Table of system of ODEs solved using Laplace method . . . . . .3478

## 2.1 Problems not solved

Table 2.1: Problems not solved [1054]

#	ID	ODE	CAS classification	Maple solved?	Mma solved?
1	36	<i>i.c.</i> $y' = x^2 - y^2$	[_Riccati]	✓	✓
2	529	<i>i.c.</i> $y' = y^2 + x^2$	[[_Riccati, _special]]	✓	✓
3	604	$\begin{bmatrix} x' = xt - e^t y + \cos(t) \\ y' = e^{-t} x + t^2 y - \sin(t) \end{bmatrix}$	system_of_ODEs	✓	✗
4	1469	$ty''' + 2y'' - y' + ty = 0$	[[_3rd_order, _with_linear_symmetries]]	✓	✓
5	1470	$(2-t)y''' + (2t-3)y'' - y't + y = 0$	[[_3rd_order, _with_linear_symmetries]]	✓	✓
6	1471	$t^2(3+t)y''' - 3t(t+2)y'' + 6(t+1)y' - 6y = 0$	[[_3rd_order, _with_linear_symmetries]]	✓	✓
7	1610	$y' = \tan(xy)$	['y=_G(x,y)']	✓	✓
8	1728	$3x^2y^3 - y^2 + y + (-xy + 2x)y' = 0$	[_rational, [_Abel, '2nd type', 'class C']]	✓	✓
9	1753	$(3x-1)y'' - (2+3x)y' + (6x-8)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
10	1755	$(2x+1)y'' - 2(2x^2-1)y' - 4(x+1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✗
11	1823	$\sin(x)y'' + (2\sin(x) - \cos(x))y' + (\sin(x) - \cos(x))y = e^{-x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	✓
12	2348	<i>i.c.</i> $y' = 1 + y + y^2 \cos(t)$	[_Riccati]	✓	✗
13	2520	<i>i.c.</i> $y' = t^2 + y^2$	[[_Riccati, _special]]	✓	✓
14	2523	<i>i.c.</i> $y' = 1 + y + y^2 \cos(t)$	[_Riccati]	✓	✗
15	2791	$\begin{bmatrix} x' = ax - bxy \\ y' = -cy + dxy \\ z' = z + x^2 + y^2 \end{bmatrix}$	system_of_ODEs	✓	✓
16	2792	$\begin{bmatrix} x' = -x - xy^2 \\ y' = -y - yx^2 \\ z' = 1 - z + x^2 \end{bmatrix}$	system_of_ODEs	✓	✓

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Table 2.1 Problems not solved [1054]

*Continued from previous page*

#	ID	ODE	CAS classification	Maple solved?	Mma solved?
17	2793	$\begin{bmatrix} x' = x y^2 - x \\ y' = x \sin(\pi y) \end{bmatrix}$	system_of_ODEs	✓	✓
18	2794	$\begin{bmatrix} x' = \cos(y) \\ y' = \sin(x) - 1 \end{bmatrix}$	system_of_ODEs	✓	✓
19	2796	$\begin{bmatrix} x' = x - y^2 \\ y' = x^2 - y \\ z' = e^z - x \end{bmatrix}$	system_of_ODEs	✓	✓
20	2816	$\begin{bmatrix} x' = x^2 + y^2 - 1 \\ y' = 2xy \end{bmatrix}$	system_of_ODEs	✓	✓
21	2819	$\begin{bmatrix} x' = e^y - x \\ y' = e^x + y \end{bmatrix}$	system_of_ODEs	✓	✓
22	2945	$(x - x\sqrt{x^2 - y^2})y' - y = 0$	['y=_G(x,y)']	✓	✓
23	3003	$(-x^2 + 1)y' + xy = x(-x^2 + 1)\sqrt{y}$ i.c. hint: bernoulli	[_rational, _Bernoulli]	✓	✓
24	3492	$-\frac{y'^2}{y^2} + \frac{y''}{y} + \frac{2a \coth(2ax)y'}{y} = 2a^2$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _reducible, _mu_xy]]	✓	✓
25	3498	$2yy''' + 2(y + 3y')y'' + 2y'^2 = \sin(x)$	[[_3rd_order, _exact, _non-linear]]	✓	✓
26	3824	$\begin{bmatrix} x'_1 = -\tan(t)x_1 + 3\cos(t)^2 \\ x'_2 = x_1 + \tan(t)x_2 + 2\sin(t) \end{bmatrix}$ i.c.	system_of_ODEs	✓	✓
27	3832	$\begin{bmatrix} x'_1 = \frac{x_1}{t} \\ x'_2 = x_2 \end{bmatrix}$	system_of_ODEs	✓	✓
28	3833	$\begin{bmatrix} x'_1 = \frac{x_1}{t} + tx_2 \\ x'_2 = -\frac{x_1}{t} \end{bmatrix}$	system_of_ODEs	✓	✓
29	3891	$\begin{bmatrix} x'_1 = (2t - 1)x_1 \\ x'_2 = e^{-t^2+t}x_1 + x_2 \end{bmatrix}$	system_of_ODEs	✓	✓
30	4536	$\begin{bmatrix} x'' + x' + y' - 2y = 0 \\ x' + x - y' = 0 \end{bmatrix}$	system_of_ODEs	✓	✓
31	4537	$\begin{bmatrix} x'' - 3x - 4y = 0 \\ x + y'' + y = 0 \end{bmatrix}$	system_of_ODEs	✓	✓

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Table 2.1 Problems not solved [1054]

*Continued from previous page*

#	ID	ODE	CAS classification	Maple solved?	Mma solved?
32	4550	$\begin{cases} x' + 4x + 2y = \frac{2}{e^t - 1} \\ 6x - y' + 3y = \frac{3}{e^t - 1} \end{cases}$	system_of_ODEs	✓	✓
33	4556	$\begin{cases} x'' + x' + y' - 2y = 40 e^{3t} \\ x' + x - y' = 36 e^t \end{cases}$ i.c. hint: laplace	system_of_ODEs	✓	✓
34	4558	$\begin{cases} x'' + 2x - 2y' = 0 \\ 3x' + y'' - 8y = 240 e^t \end{cases}$ i.c. hint: laplace	system_of_ODEs	✓	✓
35	4573	$\begin{cases} x'_1 = -x_1 + 2x_2 \\ x'_2 = -3x_1 + 4x_2 + \frac{e^{3t}}{1+e^{2t}} \end{cases}$	system_of_ODEs	✓	✓
36	4574	$\begin{cases} x'_1 = -4x_1 - 2x_2 + \frac{2}{e^t - 1} \\ x'_2 = 6x_1 + 3x_2 - \frac{3}{e^t - 1} \end{cases}$	system_of_ODEs	✓	✓
37	4685	$y' + (ax + y)y^2 = 0$	[_Abel]	✓	✓
38	4686	$y' = (a e^x + y)y^2$	[_Abel]	✓	✓
39	4687	$y' + 3a(2x + y)y^2 = 0$	[_Abel]	✓	✓
40	4714	$y' + x(\sin(2y) - x^2 \cos(y)^2) = 0$	['y=_G(x,y)']	✓	✓
41	4722	$y' = \tan(x)(\tan(y) + \sec(x)\sec(y))$	['y=_G(x,y)']	✓	✓
42	4734	$y' = x^{m-1}y^{1-n}f(ax^m + by^n)$	[[_1st_order, '_with_symmetry_[F(x),G(y)']]]	✓	✓
43	4796	$xy' = y + x\sqrt{y^2 + x^2}$	[[_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)']]]	✓	✓
44	4797	$xy' = y - x(x - y)\sqrt{y^2 + x^2}$	[[_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)']]]	✓	✓
45	4819	$xy' + ny = f(x)g(x^n y)$	[[_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)']]]	✓	✓
46	4872	$x^2 y' = a x^2 y^2 - a y^3$	[_rational, _Abel]	✓	✓
47	4873	$x^2 y' + y^2 a + b x^2 y^3 = 0$	[_rational, _Abel]	✓	✓
48	4876	$x^2 y' = \sec(y) + 3x \tan(y)$	['y=_G(x,y)']	✓	✓
49	4898	$(-x^2 + 1)y' = n(1 - 2xy + y^2)$	[_rational, _Riccati]	✓	✓
50	4901	$(x^2 + 1)y' = 1 + y^2 - 2xy(1 + y^2)$	[_rational, _Abel]	✓	✓

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Table 2.1 Problems not solved [1054]

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#	ID	ODE	CAS classification	Maple solved?	Mma solved?
51	4902	$(x^2 + 1)y' + x \sin(y) \cos(y) = x(x^2 + 1) \cos(y)^2$	['y=_G(x,y)']	✓	✓
52	4942	$(bx + a)^2 y' + cy^2 + (bx + a)y^3 = 0$	[_rational, _Abel]	✓	✓
53	4952	$x^3 y' = \cos(y) (\cos(y) - 2x^2 \sin(y))$	['y=_G(x,y)']	✓	✓
54	4980	$x^7 y' + 5x^3 y^2 + 2(x^2 + 1)y^3 = 0$	[_rational, _Abel]	✓	✓
55	5029	$yy' + x + f(y^2 + x^2)g(x) = 0$	[NONE]	✓	✓
56	5089	$(x + 4x^3 + 5y)y' + 7x^3 + 3x^2 y + 4y = 0$	[_rational, [_Abel, '2nd type', 'class A']]	✓	✓
57	5160	$(1 - x^2 y)y' - 1 + xy^2 = 0$	[_rational, [_Abel, '2nd type', 'class B']]	✓	✓
58	5184	$x^7 yy' = 2x^2 + 2 + 5x^3 y$	[_rational, [_Abel, '2nd type', 'class B']]	✓	✓
59	5204	$(x + 2y + y^2)y' + y(1 + y) + (x + y)^2 y^2 = 0$	[_rational]	✓	✓
60	5273	$(a - 3x^2 - y^2)yy' + x(a - x^2 + y^2) = 0$	[_rational]	✓	✓
61	5278	$(x^2 - x^3 + 3xy^2 + 2y^3)y' + 2x^3 + 3x^2 y + y^2 - y^3 = 0$	[_rational]	✓	✓
62	5310	$f(x)y^m y' + g(x)y^{m+1} + h(x)y^n = 0$	[_Bernoulli]	✓	✓
63	5320	$x(1 - \sqrt{x^2 - y^2})y' = y$	['y=_G(x,y)']	✓	✓
64	5668	$ax\sqrt{1 + y'^2} + xy' - y = 0$ hint: dAlembert	[[_homogeneous, 'class A'], _dAlembert]	✓	✓
65	5764	$y = xy' + ax\sqrt{1 + y'^2}$ hint: dAlembert	[[_homogeneous, 'class A'], _dAlembert]	✓	✓
66	5765	$x - yy' = ay'^2$ hint: dAlembert	[_dAlembert]	✓	✓
67	5766	$x + yy' = a\sqrt{1 + y'^2}$ hint: dAlembert	[[_1st_order, _with_linear_symmetries], _rational, _dAlembert]	✓	✓
68	5884	$(xy\sqrt{x^2 - y^2} + x)y' = y - x^2\sqrt{x^2 - y^2}$	[NONE]	✓	✓
69	6018	$xyy'' - 2xy'^2 + (1 + y)y' = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓	✓

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Table 2.1 Problems not solved [1054]

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#	ID	ODE	CAS classification	Maple solved?	Mma solved?
70	6022	$y' - (y - f(x))(y - g(x)) \left( y - \frac{af(x) + bg(x)}{a + b} \right) h(x) - \frac{f'(x)(y - g(x))}{f(x) - g(x)} - \frac{g'(x)(y - f(x))}{g(x) - f(x)} = 0$	[_Abel]	✓	✓
71	6023	$x^2y' + xy^3 + y^2a = 0$	[_rational, _Abel]	✓	✓
72	6024	$(ax + b)^2 y' + (ax + b)y^3 + cy^2 = 0$	[_rational, _Abel]	✓	✓
73	6418	$xy'' + (1 - x)y' + my = 0$	[_Laguerre]	✓	✓
74	6605	$x - 2 \sin(y) + 3 + (2x - 4 \sin(y) - 3) \cos(y) y' = 0$	[[_1st_order, '_with_symmetry_[F(x),G(y)]']]	✓	✓
75	6653	$(x - x\sqrt{x^2 - y^2}) y' - y = 0$	['y=_G(x,y)']	✓	✓
76	6663	$4x^2yy' = 3x(3y^2 + 2) + 2(3y^2 + 2)^3$	[_rational]	✓	✓
77	6780	$(2x - 3)y''' - (6x - 7)y'' + 4xy' - 4y = 8$	[[_3rd_order, '_with_linear_symmetries]]	✓	✓
78	6784	$(1 + 2y + 3y^2)y''' + 6y'(y'' + y'^2 + 3yy'') = x$	[[_3rd_order, _exact, _nonlinear]]	✓	✓
79	6785	$3x(y^2y''' + 6yy'y'' + 2y^3) - 3y(yy'' + 2y'^2) = -\frac{2}{x}$	[[_3rd_order, _exact, _nonlinear], [_3rd_order, _with_linear_symmetries]]	✓	✓
80	6786	$yy''' + 3y'y'' - 2yy'' - 2y'^2 + yy' = e^{2x}$	[[_3rd_order, _exact, _nonlinear], [_3rd_order, _with_linear_symmetries]]	✓	✓
81	6817	$x^3(x + 1)y''' - (2 + 4x)x^2y'' + (4 + 10x)xy' - (4 + 12x)y = 0$ hint: series	[[_3rd_order, '_with_linear_symmetries]]	✓	✓
82	6818	$x^3(x^2 + 1)y''' - (4x^2 + 2)x^2y'' + (10x^2 + 4)xy' - (12x^2 + 4)y = 0$ hint: series	[[_3rd_order, '_with_linear_symmetries]]	✓	✓
83	7157	$y'' - \cot(x)y' + y \cos(x) = 0$	[[_2nd_order, '_with_linear_symmetries]]	✓	✗
84	7172	$x^2(x + 1)y'' + x(4x + 3)y' - y = x + \frac{1}{x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	✓
85	7190	$x + yy' = ay'^2$ hint: dAlembert	[_dAlembert]	✓	✓

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Table 2.1 Problems not solved [1054]

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#	ID	ODE	CAS classification	Maple solved?	Mma solved?
86	7204	$x^2yy'' = x^2y'^2 - y^2$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _reducible, _mu_y_y1], [_2nd_order, _reducible, _mu_xy]]	✓	✓
87	7234	$(-x^2 + 1)z'' + (1 - 3x)z' + kz = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
88	7235	$(-x^2 + 1)\eta'' - (x + 1)\eta' + (k + 1)\eta = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
89	7239	$-y + xy' = x\sqrt{x^2 - y^2}y'$	['y=_G(x,y)']	✓	✓
90	7371	$y''' - xy = 0$ i.c.	[[_3rd_order, _with_linear_symmetries]]	✓	✓
91	7374	$y'' - 2xy' + 2\alpha y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
92	7836	$x^3y''' + 2x^2y'' + (x^2 + x)y' + xy = 0$ hint: series	[[_3rd_order, _with_linear_symmetries]]	✓	✓
93	7837	$x^3y''' + x^2y'' - 3xy' + (x - 1)y = 0$ hint: series	[[_3rd_order, _with_linear_symmetries]]	✓	✓
94	7838	$x^3y''' - 2x^2y'' + (x^2 + 2x)y' - xy = 0$ hint: series	[[_3rd_order, _with_linear_symmetries]]	✓	✓
95	7839	$x^3y''' + (2x^3 - x^2)y'' - xy' + y = 0$ hint: series	[[_3rd_order, _with_linear_symmetries]]	✓	✓
96	8200	$y''^2 - 2y'' + y'^2 - 2xy' + x^2 = 0$ i.c.	[[_2nd_order, _missing_y]]	✓	✗
97	8248	$y''' + x^2y'' + 5xy' + 3y = 0$	[[_3rd_order, _exact, _linear, _homogeneous]]	✓	✓
98	8440	$y'' + \frac{(t^2 - 1)y'}{t} + \frac{t^2y}{(1 + e^{\frac{t^2}{2}})^2} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
99	8452	$y^2y'' = x$	[[_Emden, _Fowler], [_2nd_order, _with_linear_symmetries]]	✓	✗
100	8479	$y'' - yy' = 2x$	[[_2nd_order, _exact, _nonlinear], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_y_y1], [_2nd_order, _reducible, _mu_xy]]	✓	✓
101	8491	$y'' - axy' - bxy - cx = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓

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Table 2.1 Problems not solved [1054]

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#	ID	ODE	CAS classification	Maple solved?	Mma solved?
102	8492	$y'' - axy' - bxy - cx^2 = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
103	8493	$y'' - axy' - bxy - cx^3 = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	✓
104	8522	$y'' - x^2y' - x^2y - x^2 = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✗
105	8525	$y'' - x^2y' - xy - x^2 = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
106	8526	$y'' - x^2y' - x^2y - x^3 - x^2 = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✗
107	8527	$y'' - x^2y' - x^3y - x^4 - x^2 = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✗
108	8532	$y'' - x^3y' - x^2y - x^3 = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
109	8534	$y''' - x^3y' - x^2y - x^3 = 0$	[[_3rd_order, _with_linear_symmetries]]	✓	✓
110	8556	$(x^2 + 1)y'' + 1 + y'^2 = x$	[[_2nd_order, _missing_y]]	✓	✗
111	8598	$(y - 2xy')^2 = y'^3$ hint: dAlembert	[[_1st_order, _with_linear_symmetries], _dAlembert]	✓	✗
112	8629	$\frac{xy''}{1-x} + y = \frac{1}{1-x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	✓
113	8631	$\frac{xy''}{1-x} + y = \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	✓
114	8802	$y'' + (1-x)y' + y^2y'^2 = 0$	[_Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓	✓
115	8803	$y'' + (\sin(x) + 2x)y' + \cos(y)yy'^2 = 0$	[_Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓	✓
116	8807	$y'' + (x+3)y' + (y^2+3)y'^2 = 0$	[_Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓	✓

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Table 2.1 Problems not solved [1054]  
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#	ID	ODE	CAS classification	Maple solved?	Mma solved?
117	8812	$10y'' + (e^x + 3x)y' + \frac{3e^y y^2}{\sin(y)} = 0$	[_Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓	✓
118	8820	$(x^2 + 1)y'' + (x + 1)y' + y = 4 \cos(\ln(x + 1))$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	✗
119	8835	$x^2 y'' + (-y + xy')^2 = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
120	8846	$y''' - xy = 0$	[[_3rd_order, _with_linear_symmetries]]	✓	✓
121	9723	$y' - \frac{y^2 f'(x)}{g(x)} + \frac{g'(x)}{f(x)} = 0$	[_Riccati]	✓	✓
122	9726	$y' + y^3 + axy^2 = 0$	[_Abel]	✓	✓
123	9727	$y' - y^3 - ae^x y^2 = 0$	[_Abel]	✓	✓
124	9730	$y' + 3ay^3 + 6axy^2 = 0$	[_Abel]	✓	✓
125	9732	$y' - x(x + 2)y^3 - (x + 3)y^2 = 0$	[_Abel]	✓	✓
126	9733	$y' + (4a^2 x + 3x^2 a + b)y^3 + 3xy^2 = 0$	[_Abel]	✓	✓
127	9735	$y' + 2(a^2 x^3 - b^2 x)y^3 + 3by^2 = 0$	[_Abel]	✓	✓
128	9741	$y' - (y - f(x))(y - g(x)) \left( y - \frac{af(x) + bg(x)}{a + b} \right) h(x) - \frac{f'(x)(y - g(x))}{f(x) - g(x)} - \frac{g'(x)(y - f(x))}{g(x) - f(x)} = 0$	[_Abel]	✓	✓
129	9743	$y' - f(x)^{1-n} g'(x) y^n (ag(x) + b)^{-n} - \frac{f'(x)y}{f(x)} - f(x)g'(x) = 0$	[_Chini, [_1st_order, 'with_symmetry_[F(x),G(x)*y+H(x)]']]	✓	✓
130	9744	$y' - a^n f(x)^{1-n} g'(x) y^n - \frac{f'(x)y}{f(x)} - f(x)g'(x) = 0$	[_Chini, [_1st_order, 'with_symmetry_[F(x),G(x)*y+H(x)]']]	✓	✓
131	9752	$y' - \frac{y - x^2 \sqrt{x^2 - y^2}}{xy \sqrt{x^2 - y^2} + x} = 0$	[NONE]	✓	✓
132	9770	$y' + f(x) \sin(y) + (1 - f'(x)) \cos(y) - f'(x) - 1 = 0$	['y=_G(x,y)']	✓	✓

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Table 2.1 Problems not solved [1054]

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#	ID	ODE	CAS classification	Maple solved?	Mma solved?
133	9771	$y' + 2 \tan(y) \tan(x) - 1 = 0$	['y=_G(x,y)']	✓	✓
134	9773	$y' - \tan(xy) = 0$	['y=_G(x,y)']	✓	✓
135	9775	$y' - x^{a-1} y^{1-b} f\left(\frac{x^a}{a} + \frac{y^b}{b}\right) = 0$	[[_1st_order, '_with_symmetry_[F(x),G(y)]']]	✓	✓
136	9801	$xy' + y^3 + 3xy^2 = 0$	[_rational, _Abel]	✓	✓
137	9804	$xy' - x\sqrt{y^2 + x^2} - y = 0$	[[_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]']]	✓	✓
138	9805	$xy' - x(y-x)\sqrt{y^2 + x^2} - y = 0$	[[_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]']]	✓	✓
139	9809	$xy' - y\left(x \ln\left(\frac{x^2}{y}\right) + 2\right) = 0$	[[_1st_order, '_with_symmetry_[F(x),G(y)]']]	✓	✓
140	9817	$xy' + ay - f(x)g(x^a y) = 0$	[[_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]']]	✓	✓
141	9834	$x^2 y' + ay^3 - ax^2 y^2 = 0$	[_rational, _Abel]	✓	✓
142	9835	$x^2 y' + xy^3 + y^2 a = 0$	[_rational, _Abel]	✓	✓
143	9836	$x^2 y' + ax^2 y^3 + by^2 = 0$	[_rational, _Abel]	✓	✓
144	9840	$(x^2 + 1)y' + (1 + y^2)(2xy - 1) = 0$	[_rational, _Abel]	✓	✓
145	9841	$(x^2 + 1)y' + x \sin(y) \cos(y) - x(x^2 + 1) \cos(y)^2 = 0$	['y=_G(x,y)']	✓	✓
146	9846	$(x^2 - 1)y' + a(1 - 2xy + y^2) = 0$	[_rational, _Riccati]	✓	✓
147	9858	$(ax + b)^2 y' + (ax + b)y^3 + cy^2 = 0$	[_rational, _Abel]	✓	✓
148	9874	$x^7 y' + 5x^3 y^2 + 2(x^2 + 1)y^3 = 0$	[_rational, _Abel]	✓	✓
149	9901	$yy' + x + f(y^2 + x^2)g(x) = 0$	[NONE]	✓	✓
150	9941	$(x^2 y - 1)y' - xy^2 + 1 = 0$	[_rational, [_Abel, '2nd type', 'class B']]	✓	✓
151	9946	$x(xy + x^4 - 1)y' - y(xy - x^4 - 1) = 0$	[_rational, [_Abel, '2nd type', 'class B']]	✓	✓
152	9955	$(y - x)\sqrt{x^2 + 1}y' - a\sqrt{(1 + y^2)^3} = 0$	['x=_G(y,y)']	✓	✓
153	9968	$(x + 2y + y^2)y' + y(1 + y) + (x + y)^2 y^2 = 0$	[_rational]	✓	✓

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Table 2.1 Problems not solved [1054]

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#	ID	ODE	CAS classification	Maple solved?	Mma solved?
154	10001	$\left(\frac{y^2}{b} + \frac{x^2}{a}\right)(x + yy') + \frac{(-b+a)(yy' - x)}{a+b} = 0$	[_rational]	✓	✓
155	10002	$(2ay^3 + 3axy^2 - bx^3 + cx^2)y' - ay^3 + cy^2 + 3bx^2y + 2bx^3 = 0$	[_rational]	✓	✓
156	10039	$y' \cos(y) - \cos(x) \sin(y)^2 - \sin(y) = 0$	unknown	✓	✓
157	10040	$y' \cos(y) + x \sin(y) \cos(y)^2 - \sin(y)^3 = 0$	['y=_G(x,y)']	✓	✓
158	10046	$xy' \ln(x) \sin(y) + \cos(y)(1 - x \cos(y)) = 0$	['y=_G(x,y)']	✓	✓
159	10055	$f(x^2 + y^2 a)(ayy' + x) - y - xy' = 0$	[_exact]	✓	✓
160	10093	$ay'^2 + yy' - x = 0$ hint: dAlembert	[_dAlembert]	✓	✓
161	10094	$ay'^2 - yy' - x = 0$ hint: dAlembert	[_dAlembert]	✓	✓
162	10118	$(a2x + c2)y'^2 + (a1x + b1y + c1)y' + a0x + b0y + c0 = 0$ hint: dAlembert	[_rational, _dAlembert]	✓	✗
163	10268	$y' = \frac{1 + 2F\left(\frac{4x^2y+1}{4x^2}\right)x}{2x^3}$	[[_1st_order, '_with_symmetry_[F(x),G(x)]]']	✓	✓
164	10269	$y' = \frac{1 + F\left(\frac{axy+1}{ax}\right)ax^2}{ax^2}$	[[_1st_order, '_with_symmetry_[F(x),G(y)]]']	✓	✓
165	10270	$y' = -\frac{\left(x^2a - 2F\left(y + \frac{ax^4}{8}\right)\right)x}{2}$	[[_1st_order, '_with_symmetry_[F(x),G(x)]]']	✓	✓
166	10272	$y' = F(\ln(\ln(y)) - \ln(x))y$	[[_1st_order, '_with_symmetry_[F(x),G(y)]]']	✓	✓
167	10273	$y' = \frac{F\left(\frac{y}{\sqrt{x^2+1}}\right)x}{\sqrt{x^2+1}}$	[[_1st_order, '_with_symmetry_[F(x),G(y)]]']	✓	✓
168	10274	$y' = \frac{\left(x^{3/2} + 2F\left(y - \frac{x^3}{6}\right)\right)\sqrt{x}}{2}$	[[_1st_order, '_with_symmetry_[F(x),G(x)]]']	✓	✓
169	10275	$y' = \frac{x + F(-(x-y)(x+y))}{y}$	[[_1st_order, '_with_symmetry_[F(x),G(y)]]']	✓	✓
170	10277	$y' = \frac{x}{-y + F(y^2 + x^2)}$	[[_1st_order, '_with_symmetry_[F(x),G(y)]]']	✓	✓

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Table 2.1 Problems not solved [1054]

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#	ID	ODE	CAS classification	Maple solved?	Mma solved?
171	10278	$y' = \frac{F\left(\frac{y^2 a + b x^2}{a}\right) x}{\sqrt{a} y}$	[[_1st_order, '_with_symmetry_[F(x),G(y)]']]	✓	✓
172	10279	$y' = \frac{6x^3 + 5\sqrt{x} + 5F\left(y - \frac{2x^3}{5} - 2\sqrt{x}\right)}{5x}$	[[_1st_order, '_with_symmetry_[F(x),G(x)]']]	✓	✓
173	10280	$y' = \frac{F(y^{3/2} - \frac{3e^x}{2}) e^x}{\sqrt{y}}$	[[_1st_order, '_with_symmetry_[F(x),G(y)]']]	✓	✓
174	10281	$y' = \frac{F\left(-\frac{y^2 + b}{x^2}\right) x}{y}$	[[_1st_order, '_with_symmetry_[F(x),G(y)]']]	✓	✓
175	10282	$y' = \frac{F\left(\frac{xy^2 + 1}{x}\right)}{yx^2}$	[[_1st_order, '_with_symmetry_[F(x),G(y)]']]	✓	✓
176	10286	$y' = \frac{-x + F(y^2 + x^2)}{y}$	[[_1st_order, '_with_symmetry_[F(x),G(y)]']]	✓	✓
177	10288	$y' = \frac{F(-(x-y)(x+y)) x}{y}$	[[_1st_order, '_with_symmetry_[F(x),G(y)]']]	✓	✓
178	10289	$y' = \frac{y^2 \left(2 + F\left(\frac{x^2 - y}{yx^2}\right) x^2\right)}{x^3}$	[NONE]	✓	✓
179	10290	$y' = \frac{2F(y + \ln(2x + 1)) x + F(y + \ln(2x + 1))}{2x + 1}$	[[_1st_order, '_with_symmetry_[F(x),G(y)]']]	✓	✓
180	10291	$y' = \frac{2y^3}{1 + 2F\left(\frac{4xy^2 + 1}{y^2}\right) y}$	['x=_G(y,y)']	✓	✓
181	10293	$y' = -\left(-e^{-x^2} + x^2 e^{-x^2} - F\left(y - \frac{x^2 e^{-x^2}}{2}\right)\right) x$	[[_1st_order, '_with_symmetry_[F(x),G(x)]']]	✓	✓
182	10294	$y' = \frac{2y + F\left(\frac{y}{x^2}\right) x^3}{x}$	[[_1st_order, '_with_symmetry_[F(x),G(y)]']]	✓	✓
183	10296	$y' = \frac{-3x^2 y + F(x^3 y)}{x^3}$	[[_1st_order, '_with_symmetry_[F(x),G(y)]']]	✓	✓
184	10298	$y' = \frac{-2x - y + F(x(x + y))}{x}$	[[_1st_order, '_with_symmetry_[F(x),G(y)]']]	✓	✓
185	10300	$y' = \frac{x + y + F\left(-\frac{-y + x \ln(x)}{x}\right) x^2}{x}$	[[_1st_order, '_with_symmetry_[F(x),G(y)]']]	✓	✓

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Table 2.1 Problems not solved [1054]

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#	ID	ODE	CAS classification	Maple solved?	Mma solved?
186	10301	$y' = \frac{x(a-1)(a+1)}{y + F\left(\frac{y^2}{2} - \frac{a^2x^2}{2} + \frac{x^2}{2}\right)a^2 - F\left(\frac{y^2}{2} - \frac{a^2x^2}{2}\right)}$	[[_1st_order, '_with_symmetry_[F(x),G(y)]']]	✓	✓
187	10302	$y' = \frac{y}{x(-1 + F(xy)y)}$	[[_1st_order, '_with_symmetry_[F(x),G(y)]']]	✓	✓
188	10304	$y' = \frac{F\left(\frac{(y+3)e^{\frac{3x^2}{2}}}{3y}\right)xy^2e^{3x^2}e^{-\frac{9x^2}{2}}}{9}$	[[_1st_order, '_with_symmetry_[F(x),G(y)]']]	✓	✓
189	10305	$y' = \frac{(1+y)((y - \ln(1+y) - \ln(x))x + 1)}{yx}$	['y=_G(x,y)']	✓	✓
190	10306	$y' = \frac{6y}{8y^4 + 9y^3 + 12y^2 + 6y - F\left(-\frac{y^4}{3} - \frac{y^3}{2} - y^2 - y + x\right)}$	['x=_G(y,y)']	✓	✓
191	10312	$y' = \frac{ix^2(i - 2\sqrt{-x^3 + 6y})}{2}$	[[_1st_order, '_with_symmetry_[F(x),G(y)]']]	✓	✓
192	10313	$y' = \frac{x}{y + \sqrt{x^2 + 1}}$	[_rational, [_Abel, '2nd type', 'class C']]	✓	✓
193	10321	$y' = \frac{1 + 2x^5\sqrt{4x^2y + 1}}{2x^3}$	[[_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]']]	✓	✓
194	10324	$y' = \frac{e^{-x^2}x}{ye^{x^2} + 1}$	[[_Abel, '2nd type', 'class C'], [_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]']]	✓	✓
195	10325	$y' = -(-\ln(\ln(y)) + \ln(x))y$	['x=_G(y,y)']	✓	✓
196	10326	$y' = (-\ln(\ln(y)) + \ln(x))^2y$	['y=_G(x,y)']	✓	✓
197	10327	$y' = \frac{y}{\ln(\ln(y)) - \ln(x) + 1}$	['y=_G(x,y)']	✓	✓
198	10328	$y' = \frac{1 + 2\sqrt{4x^2y + 1}x^4}{2x^3}$	[[_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]']]	✓	✓
199	10329	$y' = \frac{(-y^2 + 4ax)^2}{y}$	[_rational]	✓	✓
200	10331	$y' = -\frac{x^2(ax - 2\sqrt{a(ax^4 + 8y)})}{2}$	[[_1st_order, '_with_symmetry_[F(x),G(x)]']]	✓	✓

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Table 2.1 Problems not solved [1054]

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#	ID	ODE	CAS classification	Maple solved?	Mma solved?
201	10334	$y' = \frac{(y^2 a + b x^2)^2 x}{a^{5/2} y}$	[_rational, [_1st_order, '_with_symmetry_[F(x),G(y)]']]	✓	✓
202	10335	$y' = -\frac{x^3(\sqrt{a}x + \sqrt{a} - 2\sqrt{ax^4 + 8y})\sqrt{a}}{2(x+1)}$	[[_1st_order, '_with_symmetry_[F(x),G(x)]']]	✓	✓
203	10339	$y' = \frac{2a + x\sqrt{-y^2 + 4ax}}{y}$	['y=_G(x,y)']	✓	✓
204	10350	$y' = \frac{2a + x^2\sqrt{-y^2 + 4ax}}{y}$	['y=_G(x,y)']	✓	✓
205	10352	$y' = -\frac{(\sqrt{a}x^4 + \sqrt{a}x^3 - 2\sqrt{ax^4 + 8y})\sqrt{a}}{2(x+1)}$	[[_1st_order, '_with_symmetry_[F(x),G(x)]']]	✓	✓
206	10356	$y' = \frac{(-2y^{3/2} + 3e^x)^2 e^x}{4\sqrt{y}}$	[[_1st_order, '_with_symmetry_[F(x),G(y)]']]	✓	✓
207	10357	$y' = \frac{ix(i - 2\sqrt{-x^2 + 4\ln(a) + 4\ln(y)})y}{2}$	[[_1st_order, '_with_symmetry_[F(x),G(y)]']]	✓	✓
208	10358	$y' = \frac{(xy^2 + 1)^2}{yx^4}$	[_rational]	✓	✓
209	10359	$y' = \frac{x^2(3x + \sqrt{-9x^4 + 4y^3})}{y^2}$	['y=_G(x,y)']	✓	✓
210	10363	$y' = \frac{x + 1 + 2x^6\sqrt{4x^2y + 1}}{2x^3(x+1)}$	[[_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]']]	✓	✓
211	10365	$y' = \frac{x^2(x + 1 + 2x\sqrt{x^3 - 6y})}{2x + 2}$	[[_1st_order, '_with_symmetry_[F(x),G(x)]']]	✓	✓
212	10371	$y' = \frac{y + \sqrt{y^2 + x^2}x^2}{x}$	[[_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]']]	✓	✓
213	10373	$y' = \frac{y^3 x e^{2x^2}}{y e^{x^2} + 1}$	[[_Abel, '2nd type', 'class C'], [_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]']]	✓	✓
214	10377	$y' = \frac{-x^2 + 1 + 4x^3\sqrt{x^2 - 2x + 1 + 8y}}{4x + 4}$	[[_1st_order, '_with_symmetry_[F(x),G(x)]']]	✓	✓

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Table 2.1 Problems not solved [1054]

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#	ID	ODE	CAS classification	Maple solved?	Mma solved?
215	10379	$y' = \frac{y + x^3 \sqrt{y^2 + x^2}}{x}$	[[_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]']]	✓	✓
216	10381	$y' = \frac{x + 1 + 2\sqrt{4x^2y + 1}x^3}{2x^3(x + 1)}$	[[_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]']]	✓	✓
217	10386	$y' = \frac{x(-2x - 2 + 3x^2\sqrt{x^2 + 3y})}{3x + 3}$	[[_1st_order, '_with_symmetry_[F(x),G(x)]']]	✓	✓
218	10388	$y' = \frac{2xe^x - 2x - \ln(x) - 1 + x^4 \ln(x) + x^4 - 2yx^2 \ln(x) - 2x^2y + y^2 \ln(x) + y^2}{e^x - 1}$	[[2_1st_order, '_with_symmetry_[F(x),G(x)]'], _Riccati]	✓	✓
219	10393	$y' = \frac{(-\ln(y - 1) + \ln(1 + y) + 2\ln(x))x(1 + y)}{8}$	['y=_G(x,y)']	✓	✓
220	10394	$y' = \frac{(-\ln(y - 1) + \ln(1 + y) + 2\ln(x))^2 x(1 + y)}{16}$	['y=_G(x,y)']	✓	✓
221	10396	$y' = \frac{2ax + 2a + x^3 \sqrt{-y^2 + 4ax}}{(x + 1)y}$	['y=_G(x,y)']	✓	✓
222	10398	$y' = -\frac{(\ln(y)x + \ln(y) - 1)y}{x + 1}$	[[_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]']]	✓	✓
223	10399	$y' = \frac{x^2 + 2x + 1 + 2x^3 \sqrt{x^2 + 2x + 1 - 4y}}{2x + 2}$	[[_1st_order, '_with_symmetry_[F(x),G(x)]']]	✓	✓
224	10402	$y' = \frac{-x^2 + x + 2 + 2x^3 \sqrt{x^2 - 4x + 4y}}{2x + 2}$	[[_1st_order, '_with_symmetry_[F(x),G(x)]']]	✓	✓
225	10403	$y' = \frac{3x^4 + 3x^3 + \sqrt{9x^4 - 4y^3}}{(x + 1)y^2}$	[_rational]	✓	✓
226	10407	$y' = \frac{x^3(3x + 3 + \sqrt{9x^4 - 4y^3})}{(x + 1)y^2}$	['y=_G(x,y)']	✓	✓
227	10414	$y' = \frac{(2x + 2 + y)y}{(\ln(y) + 2x - 1)(x + 1)}$	['x=_G(y,y)']	✓	✓
228	10417	$y' = \frac{(2y^{3/2} - 3e^x)^3 e^x}{4(2y^{3/2} - 3e^x + 2)\sqrt{y}}$	[[_1st_order, '_with_symmetry_[F(x),G(y)]']]	✓	✓

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Table 2.1 Problems not solved [1054]

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#	ID	ODE	CAS classification	Maple solved?	Mma solved?
229	10419	$y' = \frac{-x^2 - x - ax - a + 2x^3 \sqrt{x^2 + 2ax + a^2 + 4y}}{2x + 2}$	[[_1st_order, '_with_symmetry_[F(x),G(x)]']]	✓	✓
230	10421	$y' = \frac{(-\ln(y)x - \ln(y) + x^3)y}{x + 1}$	[[_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]']]	✓	✓
231	10424	$y' = \frac{x(-1 + x - 2xy + 2x^3)}{x^2 - y}$	[_rational, [_1st_order, '_with_symmetry_[F(x),G(x)]'], [_Abel, '2nd type', 'class A']]	✓	✓
232	10427	$y' = \frac{x + y^4 - 2y^2x^2 + x^4}{y}$	[_rational]	✓	✓
233	10428	$y' = \frac{(y^2a + bx^2)^3 x}{a^{5/2}(y^2a + bx^2 + a)y}$	[_rational, [_1st_order, '_with_symmetry_[F(x),G(y)]']]	✓	✓
234	10429	$y' = -\frac{\cos(y)(x - \cos(y) + 1)}{(x \sin(y) - 1)(x + 1)}$	['y=_G(x,y)']	✓	✓
235	10430	$y' = -\frac{i(8ix + 16y^4 + 8y^2x^2 + x^4)}{32y}$	[_rational]	✓	✓
236	10431	$y' = \frac{x}{-y + x^4 + 2y^2x^2 + y^4}$	[_rational]	✓	✓
237	10433	$y' = -\frac{i(ix + x^4 + 2y^2x^2 + y^4)}{y}$	[_rational]	✓	✓
238	10436	$y' = \frac{(x - y)^2 (x + y)^2 x}{y}$	[_rational]	✓	✓
239	10439	$y' = \frac{\cos(y)(\cos(y)x^3 - x - 1)}{(x \sin(y) - 1)(x + 1)}$	['y=_G(x,y)']	✓	✓
240	10440	$y' = \frac{(x + 1 + x^4 \ln(y))y \ln(y)}{x(x + 1)}$	['x=_G(y,y)']	✓	✓
241	10443	$y' = \frac{2x^3y + x^6 + y^2x^2 + y^3}{x^4}$	[_rational, _Abel]	✓	✓
242	10445	$y' = \frac{(2x + 2 + x^3y)y}{(\ln(y) + 2x - 1)(x + 1)}$	['x=_G(y,y)']	✓	✓
243	10446	$y' = -\frac{i(54ix^2 + 81y^4 + 18x^4y^2 + x^8)x}{243y}$	[_rational]	✓	✓
244	10447	$y' = \frac{(xy^2 + 1)^3}{x^4(xy^2 + 1 + x)y}$	[_rational]	✓	✓

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Table 2.1 Problems not solved [1054]

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#	ID	ODE	CAS classification	Maple solved?	Mma solved?
245	10449	$y' = -\frac{(\ln(y)x + \ln(y) - x)y}{x(x+1)}$	[[_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]']]	✓	✓
246	10451	$y' = \frac{(-\ln(y)x - \ln(y) + x^4)y}{x(x+1)}$	[[_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]']]	✓	✓
247	10456	$y' = -\frac{i(16ix^2 + 16y^4 + 8x^4y^2 + x^8)x}{32y}$	[_rational]	✓	✓
248	10459	$y' = \frac{(x+1 + \ln(y)x)\ln(y)y}{x(x+1)}$	['x=_G(y,y)']	✓	✓
249	10465	$y' = \frac{-3x^2y + 1 + y^2x^6 + y^3x^9}{x^3}$	[_rational, _Abel]	✓	✓
250	10467	$y' = \frac{xy + y + x\sqrt{y^2 + x^2}}{x(x+1)}$	[[_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]']]	✓	✓
251	10474	$y' = \frac{x(-x-1 + x^2 - 2x^2y + 2x^4)}{(x^2-y)(x+1)}$	[_rational, [_1st_order, '_with_symmetry_[F(x),G(x)]'], [_Abel, '2nd type', 'class B']]	✓	✓
252	10478	$y' = \frac{2x^2 \cosh\left(\frac{1}{x-1}\right) - 2x \cosh\left(\frac{1}{x-1}\right) - 1 + y^2}{(x-1) \cosh\left(\frac{1}{x-1}\right)}$	[[_1st_order, '_with_symmetry_[F(x),G(x)]'], [_Riccati]]	✓	✓
253	10481	$y' = \frac{y}{x(-1 + y + x^2y^3 + y^4x^3)}$	[_rational]	✓	✓
254	10483	$y' = \frac{y^3x e^{3x^2} e^{-\frac{9x^2}{2}}}{9e^{\frac{3x^2}{2}} + 3e^{\frac{3x^2}{2}}y + 9y}$	[[_Abel, '2nd type', 'class C']]	✓	✓
255	10485	$y' = \frac{(x+y+1)y}{(2y^3+y+x)(x+1)}$	[_rational]	✓	✓
256	10489	$y' = -\frac{-\frac{1}{x} - F1(y + \frac{1}{x})}{x}$	[[_1st_order, '_with_symmetry_[F(x),G(x)]']]	✓	✓
257	10490	$y' = \frac{-F1(y^2 - 2\ln(x))}{\sqrt{y^2}x}$	[[_1st_order, '_with_symmetry_[F(x),G(y)]']]	✓	✓
258	10491	$y' = \frac{-\sin(2y)x - \sin(2y) + \cos(2y)x^4 + x^4}{2x(x+1)}$	['y=_G(x,y)']	✓	✓

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Table 2.1 Problems not solved [1054]  
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#	ID	ODE	CAS classification	Maple solved?	Mma solved?
259	10492	$y' = \frac{xy + y + x^4 \sqrt{y^2 + x^2}}{x(x+1)}$	[[_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]']]	✓	✓
260	10493	$y' = \frac{-\sin(2y)x - \sin(2y) + x \cos(2y) + x}{2x(x+1)}$	['y=_G(x,y)']	✓	✓
261	10494	$y' = -\frac{1}{-x - {}_F1(y - \ln(x)) y e^y}$	[NONE]	✓	✓
262	10498	$y' = \frac{x^3 e^y + x^4 + e^y y - e^y \ln(e^y + x) + xy - \ln(e^y + x)}{x^2}$	['y=_G(x,y)']	✓	✓
263	10499	$y' = \frac{x^2}{2} + \sqrt{x^3 - 6y} + x^2 \sqrt{x^3 - 6y} + x^3 \sqrt{x^3 - 6y}$	[[_1st_order, '_with_symmetry_[F(x),G(x)]']]	✓	✓
264	10500	$y' = \frac{(-\sqrt{a}x^3 + 2\sqrt{ax^4 + 8y} + 2x^2\sqrt{ax^4 + 8y})}{2}$	[[_1st_order, '_with_symmetry_[F(x),G(x)]']]	✓	✓
265	10501	$y' = \frac{y(-3x^3y - 3 + y^2x^7)}{x(x^3y + 1)}$	[_rational, [_Abel, '2nd type', 'class C'], [_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]']]	✓	✓
266	10502	$y' = \frac{(y+3)^3 e^{\frac{9x^2}{2}} x e^{\frac{3x^2}{2}} e^{-3x^2}}{243 e^{\frac{3x^2}{2}} + 81 e^{\frac{3x^2}{2}} y + 243y}$	[[_Abel, '2nd type', 'class C']]	✓	✓
267	10503	$y' = \frac{(x-y)^3 (x+y)^3 x}{(-y^2 + x^2 - 1)y}$	[_rational]	✓	✓
268	10504	$y' = \frac{-2 \cos(y) + x^3 \cos(2y) \ln(x) + x^3 \ln(x)}{2 \sin(y) \ln(x) x}$	['y=_G(x,y)']	✓	✓
269	10506	$y' = -\frac{2x}{3} + \sqrt{x^2 + 3y} + x^2 \sqrt{x^2 + 3y} + x^3 \sqrt{x^2 + 3y}$	[[_1st_order, '_with_symmetry_[F(x),G(x)]']]	✓	✓
270	10507	$y' = \frac{-2 \cos(y) + x^2 \cos(2y) \ln(x) + x^2 \ln(x)}{2 \sin(y) \ln(x) x}$	['y=_G(x,y)']	✓	✓
271	10512	$y' = \frac{((x^2 + 1)^{3/2} x^2 + (x^2 + 1)^{3/2} + y^2 (x^2 + 1)^{3/2} + y^3) x}{(x^2 + 1)^3}$	[_Abel]	✓	✓
272	10513	$y' = \frac{(3xy^2 + x + 3y^2) y}{(6y^2 + x) x (x + 1)}$	[_rational, [_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]']]	✓	✓

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Table 2.1 Problems not solved [1054]

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#	ID	ODE	CAS classification	Maple solved?	Mma solved?
273	10514	$y' = -\frac{-y + x^3\sqrt{y^2 + x^2} - x^2\sqrt{y^2 + x^2}y}{x}$	[[_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]']]	✓	✓
274	10516	$y' = \frac{1 + 2\sqrt{4x^2y + 1}x^3 + 2x^5\sqrt{4x^2y + 1} + 2x^6\sqrt{4x^2y + 1}}{2x^3}$	[[_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]']]	✓	✓
275	10518	$y' = \frac{2a + \sqrt{-y^2 + 4ax} + x^2\sqrt{-y^2 + 4ax} + x^3\sqrt{-y^2 + 4ax}}{y}$	['y= G(x,y)']	✓	✓
276	10519	$y' = \frac{(x + y + 1)y}{(y^4 + y^3 + y^2 + x)(x + 1)}$	[_rational]	✓	✓
277	10520	$y' = -\frac{-y + x^4\sqrt{y^2 + x^2} - x^3\sqrt{y^2 + x^2}y}{x}$	[[_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]']]	✓	✓
278	10521	$y' = \frac{(x^4 + 3xy^2 + 3y^2)y}{(6y^2 + x)x(x + 1)}$	[_rational, [_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]']]	✓	✓
279	10528	$y' = \frac{bx^3 + c^2\sqrt{a} - 2cbx^2\sqrt{a} + 2cy^2a^{3/2} + b^2x^4\sqrt{a} - 2y^2a^{3/2}bx^2 + a^{5/2}y^4}{ax^2y}$	[_rational]	✓	✓
280	10532	$y' = \frac{3x^3 + \sqrt{-9x^4 + 4y^3} + x^2\sqrt{-9x^4 + 4y^3} + x^3\sqrt{-9x^4 + 4y^3}}{y^2}$	[NONE]	✓	✓
281	10533	$y' = \frac{1}{-x + \left(\frac{1}{y} + 1\right)x + \_F1\left(\left(\frac{1}{y} + 1\right)x\right)x^2 - \_F1\left(\left(\frac{1}{y} + 1\right)x\right)x^2\left(\frac{1}{y} + 1\right)}$	['y= G(x,y)']	✓	✓
282	10534	$y' = \frac{x}{2} + \frac{1}{2} + \sqrt{x^2 + 2x + 1 - 4y} + x^2\sqrt{x^2 + 2x + 1 - 4y} + x^3\sqrt{x^2 + 2x + 1 - 4y}$	[[_1st_order, '_with_symmetry_[F(x),G(x)]']]	✓	✓
283	10535	$y' = \frac{\cosh(x)}{\sinh(x)} + \_F1(y - \ln(\sinh(x)))$	[[_1st_order, '_with_symmetry_[F(x),G(y)]']]	✓	✓
284	10536	$y' = -\frac{x}{2} + 1 + \sqrt{x^2 - 4x + 4y} + x^2\sqrt{x^2 - 4x + 4y} + x^3\sqrt{x^2 - 4x + 4y}$	[[_1st_order, '_with_symmetry_[F(x),G(x)]']]	✓	✓
285	10537	$y' = \frac{1}{\sin(x)} + \_F1(y - \ln(\sin(x)) + \ln(\cos(x) + 1))$	[[_1st_order, '_with_symmetry_[F(x),G(y)]']]	✓	✓

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Table 2.1 Problems not solved [1054]  
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#	ID	ODE	CAS classification	Maple solved?	Mma solved?
286	10541	$y' = \frac{y(\ln(x) + \ln(y) - 1 + x^2 \ln(x)^2 + 2x^2 \ln(y) \ln(x) + x^2 \ln(y)^2)}{x}$	[NONE]	✓	✓
287	10542	$y' = \frac{y(\ln(y) - 1 + \ln(x) + x^3 \ln(x)^2 + 2x^3 \ln(y) \ln(x) + x^3 \ln(y)^2)}{x}$	[NONE]	✓	✓
288	10543	$y' = -\frac{(-\frac{1}{x} - F1(y^2 - 2x))x}{\sqrt{y^2}}$	[NONE]	✓	✓
289	10544	$y' = -\frac{x}{4} + \frac{1}{4} + \frac{\sqrt{x^2 - 2x + 1 + 8y}}{x^2 \sqrt{x^2 - 2x + 1 + 8y}} + \frac{x^3 \sqrt{x^2 - 2x + 1 + 8y}}{x^2 \sqrt{x^2 - 2x + 1 + 8y}}$	[[_1st_order, '_with_symmetry_[F(x),G(x)]']]	✓	✓
290	10546	$y' = -\frac{-x - F1(y^2 - 2x)}{\sqrt{y^2}x}$	[NONE]	✓	✓
291	10548	$y' = -\frac{\left(-\frac{ye^{\frac{1}{x}}}{x} - F1\left(ye^{\frac{1}{x}}\right)\right)e^{-\frac{1}{x}}}{x}$	[[_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]']]	✓	✓
292	10549	$y' = \frac{y + x\sqrt{y^2 + x^2} + x^3\sqrt{y^2 + x^2} + x^4\sqrt{y^2 + x^2}}{x}$	[[_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]']]	✓	✓
293	10551	$y' = \left(\frac{\ln(y-1)y}{(1-y)\ln(x)x} - \frac{\ln(y-1)}{(1-y)\ln(x)x} - f(x)\right)(1-y)$	[[_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]']]	✓	✓
294	10552	$y' = -\frac{x}{2} - \frac{a}{2} + \frac{\sqrt{x^2 + 2ax + a^2 + 4y}}{x^2 \sqrt{x^2 + 2ax + a^2 + 4y}} + \frac{x^3 \sqrt{x^2 + 2ax + a^2 + 4y}}{x^2 \sqrt{x^2 + 2ax + a^2 + 4y}}$	[[_1st_order, '_with_symmetry_[F(x),G(x)]']]	✓	✓
295	10555	$y' = \frac{-x + 1 - 2y + 3x^2 - 2x^2y + 2x^4 + x^3 - 2x^3y + 2x^5}{x^2 - y}$	[_rational, [_1st_order, '_with_symmetry_[F(x),G(x)]'], [_Abel, '2nd type', 'class A']]	✓	✓
296	10556	$y' = \frac{(e^{-\frac{y}{x}}y + e^{-\frac{y}{x}}x + x + x^3 + x^4)e^{\frac{y}{x}}}{x}$	[[_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]']]	✓	✓
297	10561	$y' = -\frac{-xy - y + x^5\sqrt{y^2 + x^2} - x^4\sqrt{y^2 + x^2}}{x(x+1)}y$	[[_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]']]	✓	✓

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Table 2.1 Problems not solved [1054]  
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#	ID	ODE	CAS classification	Maple solved?	Mma solved?
298	10564	$y' = \frac{1 + y^4 - 8axy^2 + 16a^2x^2 + y^6 - 12y^4ax + 48y^2a^3x^2 - 64a^3x^3}{y}$	[_rational]	✓	✓
299	10565	$y' = -\frac{-xy - y + \sqrt{y^2 + x^2}x^2 - x\sqrt{y^2 + x^2}y}{x(x+1)}$	[[_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]']]	✓	✓
300	10569	$y' = \frac{(a^3 + y^4a^3 + 2y^2a^2bx^2 + ax^4b^2 + y^6a^3 + 3y^4a^2bx^2 + 3y^2ab^2x^4 + b^3x^6)}{a^{7/2}y}$	[_rational, '_with_symmetry_[F(x),G(y)]']	✓	✓
301	10570	$y' = \frac{(-1 - y^4 + 2y^2x^2 - x^4 - y^6 + 3x^2y^4 - 3x^4y^2 + x^6)}{y}$	[_rational]	✓	✓
302	10575	$y' = \frac{(-8 - 8y^3 + 24y^{3/2}e^x - 18e^{2x} - 8y^{9/2} + 36y^3e^{3x} - 54y^{9/2}e^{2x} + 27e^{4x})e^{3x}}{8\sqrt{y}}$	[[_1st_order, '_with_symmetry_[F(x),G(y)]']]	✓	✓
303	10576	$y' = \frac{x}{-y + 1 + y^4 + 2y^2x^2 + x^4 + y^6 + 3x^2y^4 + 3x^4y^2 + x^6}$	[_rational]	✓	✓
304	10577	$y' = \frac{y^2(-2y + 2x^2 + 2x^2y + yx^4)}{x^3(x^2 - y + x^2y)}$	[_rational, [_Abel, '2nd type', 'class C']]	✓	✓
305	10579	$y' = \frac{6x + x^3 + x^3y^2 + 4x^2y + x^3y^3 + 6y^2x^2 + 12xy + 8}{x^3}$	[_rational, [_1st_order, '_with_symmetry_[F(x),G(x)]'], _Abel]	✓	✓
306	10581	$y' = \frac{(-256ax^2y - 32a^2x^6 - 256x^2a + 512y^3 + 192x^2ay^2 + 24ya^2x^8 + a^3x^{10})x}{512y + 64ax^4 + 512}$	[_rational, '_with_symmetry_[F(x),G(x)]'], [_Abel, '2nd type', 'class C']]	✓	✓
307	10582	$y' = \frac{x + 1 + y^4 - 2y^2x^2 + x^4 + y^6 - 3x^2y^4 + 3x^4y^2 - x^6}{y}$	[_rational]	✓	✓
308	10583	$y' = \frac{(-108x^{3/2}y + 18x^{9/2} - 108x^{3/2} - 216y^3 + 108x^3y^2 - 18yx^6 + x^9)\sqrt{x}}{-216y + 36x^3 - 216}$	[_rational, [_1st_order, '_with_symmetry_[F(x),G(x)]'], [_Abel, '2nd type', 'class C']]	✓	✓
309	10584	$y' = \frac{32x^5y + 8x^3 + 32x^5 + 64x^6y^3 + 48x^4y^2 + 12x^2y + 1}{16x^6(4x^2y + 1 + 4x^2)}$	[_rational, [_1st_order, '_with_symmetry_[F(x),G(x)]'], [_Abel, '2nd type', 'class C']]	✓	✓

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#	ID	ODE	CAS classification	Maple solved?	Mma solved?
310	10588	$y' = \frac{-xy^2 + x^3 - x - y^6 + 3x^2y^4 - 3x^4y^2 + x^6}{(-y^2 + x^2 - 1)y}$	[_rational]	✓	✓
311	10591	$y' = \frac{a^2x + a^3x^3 + a^3x^3y^2 + 2a^2x^2y + ax + y^3a^3}{a^3x^3}$	[_3_rational, _1st_order, _with_symmetry_[F(x),G(x)], _Abel]	✓	✓
312	10592	$y' = \frac{x(1 + x^2 + y^2)}{-y^3 - x^2y - y + y^6 + 3x^2y^4 + 3x^4y^2 + x^6}$	[_rational]	✓	✓
313	10594	$y' = \frac{4x(a-1)(a+1)}{4y + a^2y^4 - 2a^4y^2x^2 + 4y^2a^2x^2 + a^6x^4 - 3a^4x^4 + 3a^2x^4 - y^4 - 2y^2x^2 - x^4}$	[_rational]	✓	✓
314	10595	$y' = \frac{x^3 + y^4x^3 + 2y^2x^2 + x + x^3y^6 + 3x^2y^4 + 3xy^2 + x^6}{x^5y}$	[_2_rational]	✓	✓
315	10596	$y' = \frac{-2x - y + 1 + y^2x^2 + 2x^3y + x^4 + x^3y^3 + 3x^4y^2 + 3x^3y + x^6}{x}$	[_4_rational, _Abel]	✓	✓
316	10602	$y' = \frac{y(\ln(y)x + \ln(y) - x - 1 + x \ln(x) + \ln(x) + x^2 \ln(x)^2 + 2x^4 \ln(y) \ln(x) + x^4 \ln(y)^2)}{x(x+1)}$	[NONE]	✓	✓
317	10603	$y' = \frac{y(x \ln(x) + \ln(x) + \ln(y)x + \ln(y) - x - 1 + x \ln(x)^2 + 2x \ln(y) \ln(x) + x \ln(y)^2)}{x(x+1)}$	[NONE]	✓	✓
318	10614	$y' = \frac{(e^{-\frac{y}{x}}yx + e^{-\frac{y}{x}}y + e^{-\frac{y}{x}}x^2 + e^{-\frac{y}{x}}x + x)e^{\frac{y}{x}}}{x(x+1)}$	[_1st_order, _with_symmetry_[F(x),G(x)*y+H(x)]]	✓	✓
319	10616	$y' = \frac{(e^{-\frac{y}{x}}yx + e^{-\frac{y}{x}}y + e^{-\frac{y}{x}}x^2 + e^{-\frac{y}{x}}x + x^4)e^{\frac{y}{x}}}{x(x+1)}$	[_1st_order, _with_symmetry_[F(x),G(x)*y+H(x)]]	✓	✓
320	10618	$y' = \frac{(27y^3 + 27e^{3x^2}y + 18e^{3x^2}y^2 + 3y^3e^{3x^2} + 27e^{\frac{9x^2}{2}} + 27e^{\frac{9x^2}{2}}y + 9e^{\frac{9x^2}{2}}y^2 + e^{\frac{9x^2}{2}}y^3)e^{3x^2}xe^{\frac{9x^2}{2}}}{243y}$	[_Abel, '2nd type', 'class C']	✓	✓
321	10619	$y' = \frac{-x^2 - xy - x^3 - xy^2 + 2yx^2 \ln(x) - x^3 \ln(x)^3 - y^3 + 3xy^2 \ln(x) - 3x^2 \ln(x)^2 y + x^3 \ln(x)^3}{x^2}$	[_Abel]	✓	✓
322	10623	$y' = \frac{-2y - 2 \ln(2x+1) - 2 + 2xy^3 + y^3 + 6y^2 \ln(2x+1)x + 3y^2 \ln(2x+1) + 6y \ln(2x+1)^2 x + 3y \ln(2x+1)}{(2x+1)y + \ln(2x+1) + 1}$	[_1st_order, _with_symmetry_[F(x),G(x)], _Abel, '2nd type', 'class C']	✓	✓

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#	ID	ODE	CAS classification	Maple solved?	Mma solved?
323	10626	$y' = \frac{y \ln(x) x + x^2 \ln(x) - 2xy - x^2 - y^2 - y^3 + 3xy^2 \ln(x) - 3x^2 \ln(x)^2 y + x^3 \ln(x)^3}{x(-y + x \ln(x))}$	[[_Abel, '2nd type', 'class C'], [_1st_order, 'with_symmetry_[F(x),G(x)*y+H(x)]]]	✓	✓
324	10632	$y' = \frac{(-8e^{-x^2} y + 4x^2 e^{-2x^2} - 8e^{-x^2} + 8x^2 e^{-x^2} y - 4x^4 e^{-2x^2} + 8x^2 e^{-x^2} y - 8y^3 + 12x^2 e^{-x^2} y^2 - 6yx^4 e^{-2x^2})}{-8y + 4x^2 e^{-x^2}}$	[[_1st_order, 'with_symmetry_[F(x),G(x)]]], [_Abel, '2nd type', 'class C']]	✓	✓
325	10638	$y' = \frac{-y + \sqrt{y^2 + x^2} x^2 - x \sqrt{y^2 + x^2} y + x^4 \sqrt{y^2 + x^2} - x^3 \sqrt{y^2 + x^2} y + x^5 \sqrt{y^2 + x^2} - x^4 \sqrt{y^2 + x^2} y}{x^2 + x^2}$	[[_1st_order, 'with_symmetry_[F(x),G(x)*y+H(x)]]]	✓	✓
326	10639	$y' = \frac{y(\ln(x) + \ln(y) - 1 + x \ln(x)^2 + 2x \ln(y) \ln(x) + x^3 \ln(x)^2 + 2x^3 \ln(y) \ln(x) + x^3 \ln(y)^2)}{x}$	[NONE]	✓	✓
327	10641	$y' = \frac{-150x^3 y + 60x^6 + 350x^{7/2} - 150x^3 - 125\sqrt{x} y + 250x - 125\sqrt{x} - 125y^3 + 150x^3 y^2 + 750y^2 \sqrt{x} - 60x^3}{25(-5y + 2x^3 + 10\sqrt{x} - 5)x}$	[_rational], [_Abel, '2nd type', 'class C']]	✓	✓
328	10642	$y' = \frac{y \left( -1 - x \frac{2}{\ln(x)+1} e^{\frac{2 \ln(x)^2}{\ln(x)+1}} x^2 - x \frac{2}{\ln(x)+1} e^{\frac{2 \ln(x)^2}{\ln(x)+1}} x^2 \ln(x) + x \frac{2}{\ln(x)+1} e^{\frac{2 \ln(x)^2}{\ln(x)+1}} x^2 y + 2x \frac{2}{\ln(x)+1} e^{\frac{2 \ln(x)^2}{\ln(x)+1}} x^2 y \ln(x) \right)}{(\ln(x) + 1) x}$	[2_Bernoulli]	✓	✓
329	10643	$y' = \frac{y \left( -1 - x^3 x \frac{2}{\ln(x)+1} e^{\frac{2 \ln(x)^2}{\ln(x)+1}} - x^3 x \frac{2}{\ln(x)+1} e^{\frac{2 \ln(x)^2}{\ln(x)+1}} \ln(x) + x^3 x \frac{2}{\ln(x)+1} e^{\frac{2 \ln(x)^2}{\ln(x)+1}} y + 2x^3 x \frac{2}{\ln(x)+1} e^{\frac{2 \ln(x)^2}{\ln(x)+1}} y \ln(x) \right)}{(\ln(x) + 1) x}$	[2_Bernoulli]	✓	✓
330	10644	$y' = \frac{2x + 4y \ln(2x + 1) x + 6y^2 \ln(2x + 1) x + 6y \ln(2x + 1) x + 2 \ln(2x + 1) x + 2xy^3 + 2 \ln(2x + 1)^2 x}{2x}$	[[_1st_order, 'with_symmetry_[F(x),G(x)]]], [_Abel]	✓	✓
331	10648	$y' = \frac{4x(a-1)(a+1)(-y^2 + a^2 x^2 - x^2 - 2)}{-4y^3 + 4a^2 x^2 y - 4x^2 y - 8y - a^2 y^6 + 3a^4 y^4 x^2 - 6y^4 a^2 x^2 - 3a^6 y^2 x^4 + 9y^2 a^4 x^4 - 9y^2 a^2 x^4 + a^8 x^6 - 4}$	[_rational]	✓	✓
332	10650	$y' = \frac{-8 + x^6 + 2x^4 - 8a^2 + 2y^4 + 4y^2 x^2 + 3x^4 y^2 - 8y + 3x^2 y^4 - 2a^2 y^4 + y^6 - 4a^2 x^6 + 4a^4 y^2 x^2 - 2a^6 x^4}{8}$	[_rational]	✓	✓
333	10656	$y' = \frac{-216x^3 - 324x^2 y^3 - 1296xy - 1944xy^2 - 315y^9 + 2808y^4 - 648y^2 x^2 - 432xy^4 + 1728y^3 - 1296y - 1296y^3 + 1296y^5 - 1296y^7 + 1296y^9}{315y^9 + 2808y^4 - 648y^2 x^2 - 432xy^4 + 1728y^3 - 1296y - 1296y^3 + 1296y^5 - 1296y^7 + 1296y^9}$	[_rational]	✓	✓

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Table 2.1 Problems not solved [1054]  
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#	ID	ODE	CAS classification	Maple solved?	Mma solved?
334	10658	$y' = \frac{x(-x^2 + 2x^2y - 2x^4 + 1)}{y - x^2}$	[_rational, [_1st_order, '_with_symmetry_[F(x),G(x)]'], [_Abel, '2nd type', 'class A']]	✓	✓
335	10662	$y' = \frac{y(y^2x^7 + yx^4 + x - 3)}{x}$	[_rational, _Abel]	✓	✓
336	10670	$y' = \frac{y(y^2x^2 + yxe^x + e^{2x})e^{-2x}(x - 1)}{x}$	[[_1st_order, '_with_symmetry_[F(x),G(y)]'], _Abel]	✓	✓
337	10698	$y'' - (x^2 + a)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
338	10702	$y'' + (ax^{2c} + bx^{c-1})y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
339	10706	$y'' + (ae^{2x} + be^x + c)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
340	10707	$y'' + (a \cosh(x)^2 + b)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
341	10708	$y'' + (a \cos(2x) + b)y = 0$	[_ellipsoidal]	✓	✓
342	10709	$y'' + (a \cos(x)^2 + b)y = 0$	[_ellipsoidal]	✓	✓
343	10710	$y'' - (1 + 2 \tan(x)^2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
344	10711	$y'' - \left(\frac{m(m-1)}{\cos(x)^2} + \frac{n(n-1)}{\sin(x)^2} + a\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
345	10713	$y'' - (n(n+1)k^2 \text{JacobiSN}(x, k)^2 + b)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
346	10715	$y'' - (f(x)^2 + f'(x))y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
347	10722	$y'' + ay' - (b^2x^2 + c)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
348	10726	$y'' + xy' + (n+1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
349	10727	$y'' + xy' - ny = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
350	10729	$y'' - xy' - ay = 0$	[_Hermite]	✓	✓
351	10731	$y'' - 2xy' + ay = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓

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Table 2.1 Problems not solved [1054]

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#	ID	ODE	CAS classification	Maple solved?	Mma solved?
352	10733	$y'' - 4xy' + (3x^2 + 2n - 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
353	10737	$y'' + axy' + by = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
354	10739	$y'' + (ax + b)y' + (cx + d)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
355	10740	$y'' + (ax + b)y' + (a_1x^2 + b_1x + c_1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
356	10745	$y'' + ax^{q-1}y' + bx^{q-2}y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
357	10750	$y'' + 2ny' \cot(x) + (-a^2 + n^2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
358	10753	$y'' + \cot(x)y' + v(v+1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
359	10755	$y'' + ay' \tan(x) + by = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
360	10764	$y'' - \left(\frac{f'(x)}{f(x)} + 2a\right)y' + \left(\frac{af'(x)}{f(x)} + a^2 - b^2f(x)^2\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
361	10766	$y'' - \left(\frac{2f'(x)}{f(x)} + \frac{g''(x)}{g'(x)} - \frac{g'(x)}{g(x)}\right)y' + \left(\frac{f'(x)\left(\frac{2f'(x)}{f(x)} + \frac{g''(x)}{g'(x)} - \frac{g'(x)}{g(x)}\right)}{f(x)} - \frac{f''(x)}{f(x)} - \frac{v^2g'(x)^2}{g(x)^2} + g'(x)^2\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
362	10767	$y'' - \left(\frac{g''(x)}{g'(x)} + \frac{(2v-1)g'(x)}{g(x)} + \frac{2h'(x)}{h(x)}\right)y' + \left(\frac{h'(x)\left(\frac{g''(x)}{g'(x)} + \frac{(2v-1)g'(x)}{g(x)} + \frac{2h'(x)}{h(x)}\right)}{h(x)} - \frac{h''(x)}{h(x)} + g'(x)^2\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
363	10769	$4y'' - (x^2 + a)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
364	10770	$4y'' + 4y' \tan(x) - (5 \tan(x)^2 + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
365	10771	$ay'' - (ab + c + x)y' + (b(x + c) + d)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓

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Table 2.1 Problems not solved [1054]  
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#	ID	ODE	CAS classification	Maple solved?	Mma solved?
366	10774	$xy'' + (x + a)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
367	10778	$xy'' + y' + (x + a)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
368	10781	$xy'' - y' + x^3(e^{x^2} - v^2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
369	10789	$xy'' + (x + b)y' + ay = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
370	10790	$xy'' + (x + a + b)y' + ay = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
371	10792	$xy'' - xy' - ay = 0$	[_Laguerre]	✓	✓
372	10795	$xy'' + (b - x)y' - ay = 0$	[_Laguerre]	✓	✓
373	10796	$xy'' - 2(x - 1)y' - y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
374	10797	$xy'' - (3x - 2)y' - (2x - 3)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
375	10798	$xy'' + (ax + b + n)y' + nay = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
376	10799	$xy'' - (a + b)(x + 1)y' + abxy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
377	10800	$xy'' + (x(a + b) + m + n)y' + (abx + an + bm)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
378	10802	$xy'' + (ax + b)y' + (cx + d)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
379	10806	$xy'' - 2(x^2 - a)y' + 2nxy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
380	10813	$2xy'' - (x - 1)y' + ay = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
381	10814	$2xy'' - (2x - 1)y' + ay = 0$	[_Laguerre]	✓	✓
382	10816	$4xy'' - (x + a)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
383	10819	$4xy'' + 4y - (x + 2)y + ly = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
384	10820	$4xy'' + 4my' - (x - 2m - 4n)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
385	10821	$16xy'' + 8y' - (x + a)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓

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Table 2.1 Problems not solved [1054]

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#	ID	ODE	CAS classification	Maple solved?	Mma solved?
386	10824	$5(ax + b)y'' + 8ay' + c(ax + b)^{1/5}y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
387	10825	$2axy'' + (bx + a)y' + cy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
388	10826	$2axy'' + (bx + 3a)y' + cy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
389	10827	$(a_2x + b_2)y'' + (a_1x + b_1)y' + (a_0x + b_0)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
390	10836	$x^2y'' + (x^2a + bx + c)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
391	10838	$x^2y'' + \frac{y}{\ln(x)} - xe^x(2 + x \ln(x)) = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	✓
392	10853	$x^2y'' + 2xy' + (lx^2 + ax - n(n + 1))y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
393	10854	$x^2y'' + 2(x - 1)y' + ay = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
394	10855	$x^2y'' + 2(x + a)y' - b(b - 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
395	10870	$x^2y'' + (ax + b)y' + cy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
396	10872	$x^2y'' + x^2y' + (ax + b)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
397	10877	$x^2y'' + (x + 3)xy' - y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
398	10879	$x^2y'' - (x^2 - 2x)y' - (x + a)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
399	10882	$x^2y'' + 2x^2y' - v(v - 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
400	10888	$x^2y'' + (2ax + b)xy' + (abx + cx^2 + d)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
401	10889	$x^2y'' + (ax + b)y'x + (a_1x^2 + b_1x + c_1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
402	10892	$x^2y'' - 2x(x^2 - a)y' + (2nx^2 + ((-1)^n - 1)a)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
403	10895	$x^2y'' + (x^3 + 1)xy' - y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓

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Table 2.1 Problems not solved [1054]

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#	ID	ODE	CAS classification	Maple solved?	Mma solved?
404	10896	$x^2 y'' + (-x^4 + (2n + 2a + 1)x^2 + (-1)^n a - a^2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
405	10897	$x^2 y'' + (ax^n + b)y'x + (a_1 x^{2n} + b_1 x^n + c_1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
406	10899	$x^2 y'' - (2x^2 \tan(x) - x)y' - (x \tan(x) + a)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
407	10900	$x^2 y'' + (2x^2 \cot(x) + x)y' + (x \cot(x) + a)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
408	10901	$x^2 y'' + 2xf(x)y' + (f'(x)x + f(x)^2 - f(x) + x^2 a + bx + c)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
409	10902	$x^2 y'' + 2x^2 f(x)y' + (x^2(f'(x) + f(x)^2 + a) - v(v - 1))y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
410	10903	$x^2 y'' + (x - 2f(x)x^2)y' + (x^2(1 + f(x)^2 - f'(x)) - f(x)x - v^2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
411	10908	$(x^2 + 1)y'' + 2xy' - v(v - 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
412	10913	$(x^2 - 1)y'' - v(v + 1)y = 0$	[_Gegenbauer]	✓	✓
413	10914	$(x^2 - 1)y'' - n(n + 1)y + \frac{d}{dx} \text{LegendreP}(n, x) = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	✓
414	10920	$(x^2 - 1)y'' + 2xy' - ly = 0$	[_Gegenbauer]	✓	✓
415	10921	$(x^2 - 1)y'' + 2xy' - v(v + 1)y = 0$	[_Gegenbauer]	✓	✓
416	10922	$(x^2 - 1)y'' - 2xy' - (v + 2)(v - 1)y = 0$	[_Gegenbauer]	✓	✓
417	10925	$(x^2 - 1)y'' + 2(n + 1)xy' - (v + n + 1)(v - n)y = 0$	[_Gegenbauer]	✓	✓
418	10926	$(x^2 - 1)y'' - 2(n - 1)xy' - (v - n + 1)(v + n)y = 0$	[_Gegenbauer]	✓	✓
419	10929	$(x^2 - 1)y'' + axy' + (bx^2 + cx + d)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
420	10930	$(x^2 - 1)y'' + (ax + b)y' + cy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓

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Table 2.1 Problems not solved [1054]

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#	ID	ODE	CAS classification	Maple solved?	Mma solved?
421	10933	$x(x+1)y'' + (ax+b)y' + cy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
422	10937	$x(x-1)y'' + (2x-1)y' - v(v+1)y = 0$	[_Jacobi]	✓	✓
423	10939	$x(x-1)y'' + (ax+b)y' + cy = 0$	[_Jacobi]	✓	✓
424	10940	$x(x-1)y'' + ((a+1)x+b)y' - ly = 0$	[_Jacobi]	✓	✓
425	10942	$x(x+2)y'' + 2(n+1+(n+1-2l)x-lx^2)y' + (2l(p-n-1)x+2pl+m)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
426	10946	$(x-1)(-2+x)y'' - (2x-3)y' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
427	10949	$2x(x-1)y'' + (2x-1)y' + (ax+b)y = 0$	[_Jacobi]	✓	✓
428	10950	$2x(x-1)y'' + ((2v+5)x-2v-3)y' + (v+1)y = 0$	[_Jacobi]	✓	✓
429	10954	$4x^2y'' - (-4kx+4m^2+x^2-1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
430	10956	$4x^2y'' + 4xy' + (-x^2+2(1-m+2l)x-m^2+1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
431	10966	$x(4x-1)y'' + ((4a+2)x-a)y' + a(a-1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
432	10972	$48x(x-1)y'' + (152x-40)y' + 53y = 0$	[_Jacobi]	✓	✓
433	10974	$144x(x-1)y'' + (120x-48)y' + y = 0$	[_Jacobi]	✓	✓
434	10975	$144x(x-1)y'' + (168x-96)y' + y = 0$	[_Jacobi]	✓	✓
435	10976	$ax^2y'' + bxy' + (cx^2+dx+f)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
436	10977	$a_2x^2y'' + (a_1x^2+b_1x)y' + (a_0x^2+b_0x+c_0)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
437	10982	$A_2(ax+b)^2y'' + A_1(ax+b)y' + A_0(ax+b)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
438	10983	$(x^2a+bx+c)y'' + (dx+f)y' + gy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
439	10985	$x^3y'' + 2xy' - y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
440	10986	$x^3y'' + x^2y' + (x^2a+bx+a)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✗

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Table 2.1 Problems not solved [1054]

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#	ID	ODE	CAS classification	Maple solved?	Mma solved?
441	10989	$x^3 y'' - (x^2 - 1) y' + xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
442	10991	$x(x^2 + 1) y'' + (2x^2 + 1) y' - v(v + 1) xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
443	10993	$x(x^2 + 1) y'' + (2(n + 1)x^2 + 2n + 1) y' - (v - n)(v + n + 1) xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
444	10994	$x(x^2 + 1) y'' - (2(n - 1)x^2 + 2n - 1) y' + (v + n)(-v + n - 1) xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
445	10996	$x(x^2 - 1) y'' + (x^2 - 1) y' - xy = 0$	[[_elliptic, _class_II]]	✓	✓
446	10997	$x(x^2 - 1) y'' + (3x^2 - 1) y' + xy = 0$	[[_elliptic, _class_I]]	✓	✓
447	10998	$x(x^2 - 1) y'' + (x^2 a + b) y' + cxy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
448	11005	$y'' = -\frac{((a + b + 1)x + \alpha + \beta - 1)y'}{x(x - 1)} - \frac{(abx - \alpha\beta)y}{x^2(x - 1)}$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
449	11007	$y'' = \frac{2y'}{x(-2 + x)} - \frac{y}{x^2(-2 + x)}$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
450	11009	$y'' = -\frac{((\alpha + \beta + 1)x^2 - (\alpha + \beta + 1 + a(\gamma + \delta) - \delta)x + a\gamma)y'}{x(x - 1)(x - a)} - \frac{(\alpha\beta x - q)y}{x(x - 1)(x - a)}$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
451	11010	$y'' = -\frac{(Ax^2 + Bx + C)y'}{(x - a)(x - b)(x - c)} - \frac{(DDx + E)y}{(x - a)(x - b)(x - c)}$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
452	11013	$y'' = -\frac{(3x - 1)y'}{2x(x - 1)} + \frac{v(v + 1)y}{4x^2}$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
453	11014	$y'' = -\frac{((a + 1)x - 1)y'}{x(x - 1)} - \frac{((a^2 - b^2)x + c^2)y}{4x^2(x - 1)}$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
454	11015	$y'' = -\frac{(3x - 1)y'}{2x(x - 1)} - \frac{(ax + b)y}{4x(x - 1)^2}$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
455	11019	$y'' = -\frac{(a(b + 2)x^2 + (c - d + 1)x)y'}{(ax + 1)x^2} - \frac{(abx - cd)y}{(ax + 1)x^2}$	[[_2nd_order, _with_linear_symmetries]]	✓	✓

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Table 2.1 Problems not solved [1054]

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#	ID	ODE	CAS classification	Maple solved?	Mma solved?
456	11021	$y'' = -\frac{(2ax+b)y'}{x(ax+b)} - \frac{(avx-b)y}{(ax+b)x^2} + Ax$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	✓
457	11023	$y'' = -\frac{(x^2a(-a+1) - b(x+b))y}{x^4}$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
458	11024	$y'' = -\frac{(e^{\frac{2}{x}} - v^2)y}{x^4}$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
459	11028	$y'' = -\frac{y'}{x} - \frac{(bx^2 + a(x^4 + 1))y}{x^4}$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
460	11029	$y'' = -\frac{(x^2+1)y'}{x^3} - \frac{y}{x^4}$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
461	11036	$y'' = -\frac{(2x^2+1)y'}{x(x^2+1)} - \frac{(-v(v+1)x^2 - n^2)y}{x^2(x^2+1)}$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
462	11037	$y'' = -\frac{(x^2a+a-1)y'}{x(x^2+1)} - \frac{(bx^2+c)y}{x^2(x^2+1)}$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
463	11039	$y'' = -\frac{2xy'}{x^2-1} - \frac{v(v+1)y}{x^2(x^2-1)}$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
464	11040	$y'' = -\frac{2xy'}{x^2-1} + \frac{v(v+1)y}{x^2}$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
465	11042	$x^2(x^2-1)y'' - 2x^3y' - ((a-n)(a+n+1)x^2(x^2-1) + 2x^2a + n(n+1)(x^2-1))y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✗
466	11043	$y'' = -\frac{(x^2a+a-2)y'}{x(x^2-1)} - \frac{by}{x^2}$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
467	11044	$y'' = \frac{(2bcx^c(x^2-1) + 2(a-1)x^2 - 2a)y'}{x(x^2-1)} - \frac{(b^2c^2x^{2c}(x^2-1) + bcx^{c+2}(2a-c-1) - bcx^c(2a-c-1) + x^{2(a(a-1)-v(v+1)) - a(a+1)})y}{x^2(x^2-1)}$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
468	11047	$y'' = -\frac{2xy'}{x^2+1} - \frac{(a^2(x^2+1)^2 - n(n+1)(x^2+1) + m^2)y}{(x^2+1)^2}$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
469	11048	$y'' = -\frac{axy'}{x^2+1} - \frac{by}{(x^2+1)^2}$	[[_2nd_order, _with_linear_symmetries]]	✓	✓

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Table 2.1 Problems not solved [1054]

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#	ID	ODE	CAS classification	Maple solved?	Mma solved?
470	11051	$y'' = -\frac{2xy'}{x^2-1} - \frac{(-a^2 - \lambda(x^2-1))y}{(x^2-1)^2}$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
471	11052	$y'' = -\frac{2xy'}{x^2-1} - \frac{((x^2-1)(x^2a+bx+c)-k^2)y}{(x^2-1)^2}$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
472	11053	$y'' = -\frac{2xy'}{x^2-1} - \frac{(-a^2(x^2-1)^2 - n(n+1)(x^2-1) - m^2)y}{(x^2-1)^2}$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
473	11054	$y'' = \frac{2x(2a-1)y'}{x^2-1} - \frac{(x^2(2a(2a-1) - v(v+1)) + 2a + v(v+1))y}{(x^2-1)^2}$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
474	11055	$y'' = -\frac{2x(n+1-2a)y'}{x^2-1} - \frac{(4ax^2(a-n) - (x^2-1)(2a+(v-n)(v+n+1)))y}{(x^2-1)^2}$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
475	11064	$y'' = -\frac{(-x^2(a^2-1) + 2(a+3)bx - b^2)y}{4x^2}$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
476	11068	$y'' = -\frac{(3x-1)y'}{2x(x-1)} - \frac{(v(v+1)(x-1) - a^2x)y}{4x^2(x-1)^2}$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
477	11069	$y'' = -\frac{(3x-1)y'}{2x(x-1)} - \frac{(-v(v+1)(x-1)^2 - 4n^2x)y}{4x^2(x-1)^2}$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
478	11072	$y'' = -\frac{bxy'}{(x^2-1)a} - \frac{(cx^2+dx+e)y}{a(x^2-1)^2}$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
479	11073	$y'' = -\frac{(bx^2+cx+d)y}{ax^2(x-1)^2}$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
480	11078	$y'' = -\frac{(3x^2-1)y'}{(x^2-1)x} - \frac{(x^2-1-(2v+1)^2)y}{(x^2-1)^2}$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
481	11082	$y'' = -\frac{((1-4a)x^2-1)y'}{x(x^2-1)} - \frac{((-v^2+x^2)(x^2-1)^2 + 4a(a+1)x^4 - 2ax^2(x^2-1))y}{x^2(x^2-1)^2}$	[[_2nd_order, _with_linear_symmetries]]	✓	✗

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Table 2.1 Problems not solved [1054]  
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#	ID	ODE	CAS classification	Maple solved?	Mma solved?
482	11083	$y'' = -\left(\frac{1 - a_1 - b_1}{x - c_1} + \frac{1 - a_2 - b_2}{x - c_2} + \frac{1 - a_3 - b_3}{x - c_3}\right) y' - \frac{\left(\frac{a_1 b_1 (c_1 - c_3)(c_1 - c_2)}{x - c_1} + \frac{a_2 b_2 (c_2 - c_1)(c_2 - c_3)}{x - c_2} + \frac{a_3 b_3 (c_3 - c_2)(c_3 - c_1)}{x - c_3}\right) y}{(x - c_1)(x - c_2)(x - c_3)}$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
483	11087	$y'' = -\left(\frac{(1 - a_1 - b_1) b_1}{b_1 x - a_1} + \frac{(1 - a_2 - b_2) b_2}{b_2 x - a_2} + \frac{(1 - a_3 - b_3) b_3}{b_3 x - a_3}\right) y' - \frac{\left(\frac{a_1 b_1 (a_1 b_2 - a_2 b_1)(-a_1 b_3 + a_3 b_1)}{b_1 x - a_1} + \frac{a_2 b_2 (a_2 b_3 - a_3 b_2)(a_1 b_2 - a_2 b_1)}{b_2 x - a_2} + \frac{a_3 b_3 (-a_1 b_3 + a_3 b_1)(a_2 b_3 - a_3 b_2)}{b_3 x - a_3}\right) y}{(b_1 x - a_1)(b_2 x - a_2)(b_3 x - a_3)}$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
484	11090	$y'' = -\frac{(ap x^b + q) y'}{x (a x^b - 1)} - \frac{(ar x^b + s) y}{x^2 (a x^b - 1)}$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
485	11091	$y'' = \frac{y}{1 + e^x}$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, 'with_symmetry_[0,F(x)]']]	✓	✓
486	11094	$y'' = -\frac{(-a^2 \sinh(x)^2 - n(n - 1)) y}{\sinh(x)^2}$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
487	11095	$y'' = -\frac{2n \cosh(x) y'}{\sinh(x)} - (-a^2 + n^2) y$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
488	11096	$y'' = -\frac{(2n + 1) \cos(x) y'}{\sin(x)} - (v + n + 1)(v - n) y$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
489	11100	$\cos(x)^2 y'' - (a \cos(x)^2 + n(n - 1)) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
490	11102	$y'' = \frac{2y}{\sin(x)^2}$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
491	11103	$y'' = -\frac{ay}{\sin(x)^2}$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
492	11104	$\sin(x)^2 y'' - (a \sin(x)^2 + n(n - 1)) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
493	11105	$y'' = -\frac{(-a^2 \cos(x)^2 - (3 - 2a) \cos(x) - 3 + 3a) y}{\sin(x)^2}$	[[_2nd_order, _with_linear_symmetries]]	✓	✓

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Table 2.1 Problems not solved [1054]  
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#	ID	ODE	CAS classification	Maple solved?	Mma solved?
494	11106	$\sin(x)^2 y'' - \left( a^2 \cos(x)^2 + b \cos(x) + \frac{b^2}{(2a-3)^2} + 3a + 2 \right) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
495	11107	$y'' = \frac{-\left( a^2 b^2 - (a+1)^2 \right) \sin(x)^2 - a(a+1)b \sin(2x) - a(a-1)}{\sin(x)^2} y$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
496	11108	$y'' = -\frac{(a \cos(x)^2 + b \sin(x)^2 + c) y}{\sin(x)^2}$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
497	11110	$y'' = -\frac{\cos(x) y'}{\sin(x)} - \frac{(v(v+1) \sin(x)^2 - n^2) y}{\sin(x)^2}$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
498	11111	$y'' = \frac{\cos(2x) y'}{\sin(2x)} - 2y$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
499	11113	$y'' = -\frac{\sin(x) y'}{\cos(x)} - \frac{(2x^2 + x^2 \sin(x)^2 - 24 \cos(x)^2) y}{4x^2 \cos(x)^2} + \sqrt{\cos(x)}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	✓
500	11114	$y'' = -\frac{b \cos(x) y'}{\sin(x) a} - \frac{(c \cos(x)^2 + d \cos(x) + e) y}{a \sin(x)^2}$	[[_2nd_order, _with_linear_symmetries]]	✓	✗
501	11115	$y'' = -\frac{4 \sin(3x) y}{\sin(x)^3}$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
502	11116	$y'' = \frac{(4v(v+1) \sin(x)^2 - \cos(x)^2 + 2 - 4n^2) y}{4 \sin(x)^2}$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
503	11118	$y'' = \frac{(-a \cos(x)^2 \sin(x)^2 - m(m-1) \sin(x)^2 - n(n-1) \cos(x)^2) y}{\cos(x)^2 \sin(x)^2}$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
504	11124	$y'' = \frac{(2f(x) g'(x)^2 g(x) - (g(x)^2 - 1) (f(x) g''(x) + 2f'(x) g'(x))) y'}{f(x) g'(x) (g(x)^2 - 1)} - \frac{((g(x)^2 - 1) (f'(x) (f(x) g''(x) + 2f'(x) g'(x)) - f(x) f''(x) y'(x)) - (2f'(x) g(x) + v(v+1) f(x) g'(x))}{f(x)^2 g'(x) (g(x)^2 - 1)}$	[[_2nd_order, _with_linear_symmetries]]	✓	✓

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Table 2.1 Problems not solved [1054]

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#	ID	ODE	CAS classification	Maple solved?	Mma solved?
505	11129	$y''' + ya x^3 - bx = 0$	[[_3rd_order, _linear, _nonhomogeneous]]	✓	✓
506	11130	$y''' - a x^b y = 0$	[[_3rd_order, _with_linear_symmetries]]	✓	✓
507	11133	$y''' + 2axy' + ay = 0$	[[_3rd_order, _with_linear_symmetries]]	✓	✓
508	11134	$y''' - x^2 y'' + (a + b - 1) xy' - bya = 0$	[[_3rd_order, _with_linear_symmetries]]	✓	✓
509	11135	$y''' + x^{2c-2} y' + (c - 1) x^{2c-3} y = 0$	[[_3rd_order, _with_linear_symmetries]]	✓	✓
510	11147	$y''' - 6xy'' + 2(4x^2 + 2a - 1) y' - 8axy = 0$	[[_3rd_order, _with_linear_symmetries]]	✓	✓
511	11148	$y''' + 3axy'' + 3a^2 x^2 y' + a^3 x^3 y = 0$	[[_3rd_order, _with_linear_symmetries]]	✓	✓
512	11149	$y''' - y'' \sin(x) - 2 \cos(x) y' + y \sin(x) - \ln(x) = 0$	[[_3rd_order, _fully, _exact, _linear]]	✓	✓
513	11150	$y''' + f(x) y'' + y' + f(x) y = 0$	[[_3rd_order, _with_linear_symmetries]]	✓	✓
514	11151	$y''' + f(x) (x^2 y'' - 2xy' + 2y) = 0$	[[_3rd_order, _with_linear_symmetries]]	✓	✓
515	11156	$xy''' + 3y'' + xy = 0$	[[_3rd_order, _with_linear_symmetries]]	✓	✓
516	11157	$xy''' + 3y'' - a x^2 y = 0$	[[_3rd_order, _with_linear_symmetries]]	✓	✓
517	11158	$xy''' + (a + b) y'' - xy' - ay = 0$	[[_3rd_order, _with_linear_symmetries]]	✓	✓
518	11159	$xy''' - (x + 2v) y'' - (x - 2v - 1) y' + (x - 1) y = 0$	[[_3rd_order, _with_linear_symmetries]]	✓	✓
519	11160	$xy''' + (x^2 - 3) y'' + 4xy' + 2y - f(x) = 0$	[[_3rd_order, _fully, _exact, _linear]]	✓	✓
520	11161	$2xy''' + 3y'' + axy - b = 0$	[[_3rd_order, _linear, _nonhomogeneous]]	✓	✓
521	11162	$2xy''' - 4(x + \nu - 1) y'' + (2x + 6\nu - 5) y' + (1 - 2\nu) y = 0$	[[_3rd_order, _with_linear_symmetries]]	✓	✓
522	11164	$(-2 + x) xy''' - (-2 + x) xy'' - 2y' + 2y = 0$	[[_3rd_order, _exact, _linear, _homogeneous]]	✓	✓

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Table 2.1 Problems not solved [1054]

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#	ID	ODE	CAS classification	Maple solved?	Mma solved?
523	11165	$(2x - 1)y''' - 8xy' + 8y = 0$	[[_3rd_order, _with_linear_symmetries]]	✓	✓
524	11167	$y'''x^2 - 6y' + ax^2y = 0$	[[_3rd_order, _with_linear_symmetries]]	✓	✓
525	11171	$y'''x^2 - 3(x - m)xy'' + (2x^2 + 4(n - m)x + m(2m - 1))y' - 2n(2x - 2m + 1)y = 0$	[[_3rd_order, _with_linear_symmetries]]	✓	✓
526	11172	$y'''x^2 + 4xy'' + (x^2 + 2)y' + 3xy - f(x) = 0$	[[_3rd_order, _linear, _nonhomogeneous]]	✓	✓
527	11175	$y'''x^2 + 6xy'' + 6y' + ax^2y = 0$	[[_3rd_order, _with_linear_symmetries]]	✓	✓
528	11176	$y'''x^2 - 3(p + q)xy'' + 3p(3q + 1)y' - x^2y = 0$	[[_3rd_order, _with_linear_symmetries]]	✓	✓
529	11177	$y'''x^2 - 2(n + 1)xy'' + (x^2a + 6n)y' - 2axy = 0$	[[_3rd_order, _with_linear_symmetries]]	✓	✗
530	11178	$y'''x^2 - (x^2 - 2x)y'' - \left(x^2 + \nu^2 - \frac{1}{4}\right)y' + \left(x^2 - 2x + \nu^2 - \frac{1}{4}\right)y = 0$	[[_3rd_order, _with_linear_symmetries]]	✓	✓
531	11179	$y'''x^2 - (x + \nu)xy'' + \nu(2x + 1)y' - \nu(x + 1)y = 0$	[[_3rd_order, _with_linear_symmetries]]	✓	✗
532	11180	$y'''x^2 - 2(x^2 - x)y'' + \left(x^2 - 2x + \frac{1}{4} - \nu^2\right)y' + \left(\nu^2 - \frac{1}{4}\right)y = 0$	[[_3rd_order, _with_linear_symmetries]]	✓	✓
533	11181	$y'''x^2 - (x^4 - 6x)y'' - (2x^3 - 6)y' + 2x^2y = 0$	[[_3rd_order, _with_linear_symmetries]]	✓	✓
534	11183	$(x^2 + 2)y''' - 2xy'' + (x^2 + 2)y' - 2xy = 0$	[[_3rd_order, _with_linear_symmetries]]	✓	✓
535	11184	$2x(x - 1)y''' + 3(2x - 1)y'' + (2ax + b)y' + ay = 0$	[[_3rd_order, _with_linear_symmetries]]	✓	✓
536	11185	$x^3y''' + (-\nu^2 + 1)xy' + (ax^3 + \nu^2 - 1)y = 0$	[[_3rd_order, _with_linear_symmetries]]	✓	✓
537	11186	$x^3y''' + (4x^3 + (-4\nu^2 + 1)x)y' + (4\nu^2 - 1)y = 0$	[[_3rd_order, _with_linear_symmetries]]	✓	✓
538	11190	$x^3y''' - 4x^2y'' + (x^2 + 8)xy' - 2(x^2 + 4)y = 0$	[[_3rd_order, _with_linear_symmetries]]	✓	✓

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Table 2.1 Problems not solved [1054]  
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#	ID	ODE	CAS classification	Maple solved?	Mma solved?
539	11193	$x^3 y''' + (x + 3) x^2 y'' + 5(x - 6) xy' + (4x + 30) y = 0$	[[_3rd_order, __with_linear_symmetries]]	✓	✗
540	11195	$(x^2 + 1) xy''' + 3(2x^2 + 1) y'' - 12y = 0$	[[_3rd_order, __with_linear_symmetries]]	✓	✓
541	11196	$(x + 3) x^2 y''' - 3x(x + 2) y'' + 6(x + 1) y' - 6y = 0$	[[_3rd_order, __with_linear_symmetries]]	✓	✓
542	11197	$2(x - a1)(x - a2)(x - a3) y''' + (9x^2 - 6(a1 + a2 + a3)x + 3a1a2 + 3a1a3 + 3a2a3) y'' - 2((n^2 + n - 3)x + b) y' - n(n + 1) y = 0$	[[_3rd_order, __with_linear_symmetries]]	✓	✓
543	11198	$x^3(x + 1) y''' - (2 + 4x) x^2 y'' + (4 + 10x) xy' - 4(3x + 1) y = 0$	[[_3rd_order, __with_linear_symmetries]]	✓	✓
544	11200	$x^3(x^2 + 1) y''' - (4x^2 + 2) x^2 y'' + (10x^2 + 4) xy' - 4(3x^2 + 1) y = 0$	[[_3rd_order, __with_linear_symmetries]]	✓	✓
545	11201	$x^6 y''' + x^2 y'' - 2y = 0$	[[_3rd_order, __with_linear_symmetries]]	✓	✓
546	11202	$x^6 y''' + 6x^5 y'' + ay = 0$	[[_3rd_order, __with_linear_symmetries]]	✓	✓
547	11203	$x^2(x^4 + 2x^2 + 2x + 1) y''' - (2x^6 + 3x^4 - 6x^2 - 6x - 1) y'' + (x^6 - 6x^3 - 15x^2 - 12x - 2) y' + (x^4 + 4x^3 + 8x^2 + 6x + 1) y = 0$	[[_3rd_order, __with_linear_symmetries]]	✓	✓
548	11204	$(x - a)^3(x - b)^3 y''' - cy = 0$	[[_3rd_order, __with_linear_symmetries]]	✓	✓
549	11206	$(\sin(x) + x) y''' + 3(\cos(x) + 1) y'' - 3y' \sin(x) - y \cos(x) + \sin(x) = 0$	[[_3rd_order, __fully_exact, __linear]]	✓	✓
550	11207	$y''' \sin(x)^2 + 3y'' \sin(x) \cos(x) + (\cos(2x) + 4\nu(\nu + 1) \sin(x)^2) y' + 2\nu(\nu + 1) y \sin(2x) = 0$	[[_3rd_order, __with_linear_symmetries]]	✓	✓
551	11209	$y''' + xy' + ny = 0$	[[_3rd_order, __with_linear_symmetries]]	✓	✓
552	11210	$y''' - xy' - ny = 0$	[[_3rd_order, __with_linear_symmetries]]	✓	✓
553	11222	$y'''' + 4axy'' + 6a^2 x^2 y'' + 4a^3 x^3 y' + a^4 x^4 y = 0$	[[_high_order, __with_linear_symmetries]]	✓	✓

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Table 2.1 Problems not solved [1054]

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#	ID	ODE	CAS classification	Maple solved?	Mma solved?
554	11225	$xy'''' - (6x^2 + 1)y''' + 12x^3y'' - (9x^2 - 7)x^2y' + 2(x^2 - 3)x^3y = 0$	[[_high_order, _with_linear_symmetries]]	✓	✓
555	11226	$x^2y'''' - 2(\nu^2x^2 + 6)y''' + \nu^2(\nu^2x^2 + 4)y = 0$	[[_high_order, _with_linear_symmetries]]	✓	✓
556	11227	$x^2y'''' + 2xy''' + ay - bx^2 = 0$	[[_high_order, _linear, _nonhomogeneous]]	✓	✗
557	11230	$x^2y'''' + 6xy''' + 6y'' - \lambda^2y = 0$	[[_high_order, _with_linear_symmetries]]	✓	✓
558	11232	$x^2y'''' + 8xy''' + 12y'' - \lambda^2y = 0$	[[_high_order, _with_linear_symmetries]]	✓	✓
559	11233	$x^2y'''' + (2n - 2\nu + 4)xy''' + (n - \nu + 1)(n - \nu + 2)y'' - \frac{b^4y}{16} = 0$	[[_high_order, _with_linear_symmetries]]	✓	✓
560	11234	$x^3y'''' + 2y'''x^2 - xy'' + y' - a^4x^3y = 0$	[[_high_order, _with_linear_symmetries]]	✓	✓
561	11236	$x^4y'''' - 2n(n + 1)x^2y'' + 4n(n + 1)xy' + (ax^4 + n(n + 1)(3 + n)(n - 2))y = 0$	[[_high_order, _with_linear_symmetries]]	✓	✓
562	11237	$x^4y'''' + 4x^3y''' - (4n^2 - 1)x^2y'' + (4n^2 - 1)xy' - 4yx^4 = 0$	[[_high_order, _with_linear_symmetries]]	✓	✓
563	11238	$x^4y'''' + 4x^3y''' - (4n^2 - 1)x^2y'' - (4n^2 - 1)xy' + (-4x^4 + 4n^2 - 1)y = 0$	[[_high_order, _with_linear_symmetries]]	✓	✓
564	11239	$x^4y'''' + 4x^3y''' - (4n^2 + 3)x^2y'' + (12n^2 - 3)xy' - (4x^4 + 12n^2 - 3)y = 0$	[[_high_order, _with_linear_symmetries]]	✓	✓
565	11240	$x^4y'''' + 6x^3y''' + (4x^4 + (-\rho^2 - \sigma^2 + 7)x^2)y'' + (16x^3 + (-\rho^2 - \sigma^2 + 1)x)y' + (\rho^2\sigma^2 + 8x^2)y = 0$	[[_high_order, _with_linear_symmetries]]	✓	✓
566	11241	$x^4y'''' + 6x^3y''' + (4x^4 + (-2\mu^2 - 2\nu^2 + 7)x^2)y'' + (16x^3 + (-2\mu^2 - 2\nu^2 + 1)x)y' + (8x^2 + (\mu^2 - \nu^2)^2)y = 0$	[[_high_order, _with_linear_symmetries]]	✓	✓

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Table 2.1 Problems not solved [1054]  
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#	ID	ODE	CAS classification	Maple solved?	Mma solved?
567	11244	$x^4 y'''' + (6 - 4a) x^3 y'''' + (4b^2 c^2 x^{2c} + 6(a - 1)^2 - 2c^2(\mu^2 + \nu^2) + 1) x^2 y'' + (4(3c - 2a + 1) b^2 c^2 x^{2c} + (2a - 1)(2c^2(\mu^2 + \nu^2) - 2a(a - 1) - 1)) x y' + (4(a - c)(a - 2c) b^2 c^2 x^{2c} + (c\mu + c\nu + a)(c\mu + c\nu - a)(c\mu - c\nu + a)(c\mu - c\nu - a)) y = 0$	[[_high_order, _with_linear_symmetries]]	✓	✓
568	11245	$x^4 y'''' + (6 - 4a - 4c) x^3 y'''' + (-2\nu^2 c^2 + 2a^2 + 4(a + c - 1)^2 + 4(a - 1)(c - 1) - 1) x^2 y'' + (2\nu^2 c^2 - 2a^2 - (2a - 1)(2c - 1))(2a + 2c - 1) x y' + ((-\nu^2 c^2 + a^2)(-\nu^2 c^2 + a^2 + 4ac + 4c^2) - b^4 c^4 x^{4c}) y = 0$	[[_high_order, _with_linear_symmetries]]	✓	✓
569	11246	$\nu^4 x^4 y'''' + (4\nu - 2) \nu^3 x^3 y'''' + (\nu - 1)(2\nu - 1) \nu^2 x^2 y'' - \frac{b^4 x^{\frac{2}{\nu}} y}{16} = 0$	[[_high_order, _with_linear_symmetries]]	✓	✓
570	11247	$(x^2 - 1)^2 y'''' + 10x(x^2 - 1) y'''' + (24x^2 - 8 - 2(\mu(\mu + 1) + \nu(\nu + 1))(x^2 - 1)) y'' - 6x(\mu(\mu + 1) + \nu(\nu + 1) - 2) y' + ((\mu(\mu + 1) - \nu(\nu + 1))^2 - 2\mu(\mu + 1) - 2\nu(\nu + 1)) y = 0$	[[_high_order, _with_linear_symmetries]]	✓	✗
571	11248	$(e^x + 2x) y'''' + 4(e^x + 2) y'''' + 6e^x y'' + 4e^x y' + y e^x - \frac{1}{x^5} = 0$	[[_high_order, _fully_exact, _linear]]	✓	✓
572	11249	$y'''' \sin(x)^4 + 2y'''' \sin(x)^3 \cos(x) + y'' \sin(x)^2 (\sin(x)^2 - 3) + y' \sin(x) \cos(x) (2 \sin(x)^2 + 3) + (a^4 \sin(x)^4 - 3) y = 0$	[[_high_order, _with_linear_symmetries]]	✓	✓
573	11250	$y'''' \sin(x)^6 + 4y'''' \sin(x)^5 \cos(x) - 6y'' \sin(x)^6 - 4y' \sin(x)^5 \cos(x) + y \sin(x)^6 - f = 0$	[[_high_order, _linear, _nonhomogeneous]]	✓	✓
574	11253	$y'''' - 2a^2 y'' + a^4 y - \lambda(ax - b)(y'' - a^2 y) = 0$	[[_high_order, _with_linear_symmetries]]	✓	✓
575	11259	$x y^{(5)} - m n y'''' + a x y = 0$	[[_high_order, _with_linear_symmetries]]	✓	✓

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Table 2.1 Problems not solved [1054]

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#	ID	ODE	CAS classification	Maple solved?	Mma solved?
576	11262	$x^2 y'''' - ay = 0$	[[_high_order, _with_linear_symmetries]]	✓	✓
577	11263	$x^{10} y^{(5)} - ay = 0$	[[_high_order, _with_linear_symmetries]]	✓	✓
578	11264	$x^{5/2} y^{(5)} - ay = 0$	[[_high_order, _with_linear_symmetries]]	✓	✓
579	11278	$y'' - \frac{1}{(y^2 a + bxy + cx^2 + \alpha y + \beta x + \gamma)^{3/2}} = 0$	[NONE]	✓	✗
580	11285	$y'' = \frac{f\left(\frac{y}{\sqrt{x}}\right)}{x^{3/2}}$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
581	11288	$y'' + 5ay' - 6y^2 + 6a^2 y = 0$	[[_2nd_order, _missing_x]]	✓	✓
582	11289	$y'' + 3ay' - 2y^3 + 2a^2 y = 0$	[[_2nd_order, _missing_x]]	✓	✓
583	11296	$y'' + yy' - y^3 + ay = 0$	[[_2nd_order, _missing_x]]	✓	✓
584	11297	$y'' + (y + 3a)y' - y^3 + y^2 a + 2a^2 y = 0$	[[_2nd_order, _missing_x]]	✓	✓
585	11304	$y'' + (3y + f(x))y' + y^3 + y^2 f(x) = 0$	[[_2nd_order, _with_potential_symmetries]]	✓	✓
586	11305	$y'' - 3yy' - 3y^2 a - 4a^2 y - b = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓	✓
587	11306	$y'' - (3y + f(x))y' + y^3 + y^2 f(x) = 0$	[[_2nd_order, _with_potential_symmetries]]	✓	✓
588	11322	$y'' - a(-y + xy')^v = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
589	11331	$y'' = 2a(c + bx + y) (1 + y'^2)^{3/2}$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_y_y1]]	✓	✓
590	11344	$xy'' - x^2 y'^2 + 2y' + y^2 = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _reducible, _mu_xy]]	✓	✓
591	11345	$xy'' + a(-y + xy')^2 - b = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
592	11351	$x^2 y'' + a(-y + xy')^2 - bx^2 = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓

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Table 2.1 Problems not solved [1054]

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#	ID	ODE	CAS classification	Maple solved?	Mma solved?
593	11353	$x^2 y'' - \sqrt{a x^2 y'^2 + b y^2} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✗
594	11356	$9x^2 y'' + a y^3 + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
595	11358	$x^3 y'' - a(-y + x y')^2 = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _reducible, _mu_xy]]	✓	✓
596	11362	$x^4 y'' - x(x^2 + 2y) y' + 4y^2 = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓	✓
597	11363	$x^4 y'' - x^2(x + y') y' + 4y^2 = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _reducible, _mu_xy]]	✓	✓
598	11364	$x^4 y'' + (-y + x y')^3 = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
599	11366	$(x^2 a + b x + c)^{3/2} y'' - F\left(\frac{y}{\sqrt{x^2 a + b x + c}}\right) = 0$	[NONE]	✓	✓
600	11386	$yy'' - y'^2 + (\tan(x) + \cot(x)) yy' + (\cos(x)^2 - n^2 \cot(x)^2) y^2 \ln(y) = 0$	[[_2nd_order, _reducible, _mu_xy]]	✓	✓
601	11387	$yy'' - y'^2 - f(x) yy' - g(x) y^2 = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _reducible, _mu_xy]]	✓	✓
602	11393	$yy'' + a y'^2 + b y y' + c y^2 + d y^{-a+1} = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_xy]]	✓	✓
603	11399	$y''(x - y) + 2y'(1 + y') = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_y_y1]]	✓	✓
604	11400	$y''(x - y) - (1 + y')(1 + y'^2) = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_y_y1]]	✓	✓

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Table 2.1 Problems not solved [1054]

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#	ID	ODE	CAS classification	Maple solved?	Mma solved?
605	11401	$y''(x - y) - h(y') = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_y_y1]]	✓	✓
606	11421	$3yy'' - 2y'^2 - x^2a - bx - c = 0$	[NONE]	✓	✓
607	11435	$xyy'' + xy'^2 + ayy' + f(x) = 0$	[[_2nd_order, _exact, _nonlinear], [_2nd_order, _reducible, _mu_xy]]	✓	✓
608	11439	$xyy'' - 2xy'^2 + (1 + y)y' = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓	✓
609	11442	$xyy'' + \left(\frac{ax}{\sqrt{b^2 - x^2}} - x\right)y'^2 - yy' = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
610	11445	$x^2(y - 1)y'' - 2x^2y'^2 - 2x(y - 1)y' - 2y(y - 1)^2 = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _reducible, _mu_y_y1], [_2nd_order, _reducible, _mu_xy]]	✓	✓
611	11446	$x^2(x + y)y'' - (-y + xy')^2 = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _reducible, _mu_xy]]	✓	✓
612	11447	$x^2(x - y)y'' + a(-y + xy')^2 = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _reducible, _mu_xy]]	✓	✓
613	11448	$2x^2yy'' - x^2(1 + y'^2) + y^2 = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
614	11449	$ax^2yy'' + bx^2y'^2 + cxyy' + dy^2 = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _reducible, _mu_xy]]	✓	✓
615	11450	$x(x + 1)^2yy'' - x(x + 1)^2y'^2 + 2(x + 1)^2yy' - a(x + 2)y^2 = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _reducible, _mu_xy]]	✓	✓
616	11451	$8(-x^3 + 1)yy'' - 4(-x^3 + 1)y'^2 - 12x^2yy' + 3xy^2 = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _reducible, _mu_xy]]	✓	✗

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Table 2.1 Problems not solved [1054]

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#	ID	ODE	CAS classification	Maple solved?	Mma solved?
617	11454	$y^2 y'' + yy'^2 + ax = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✗
618	11455	$y^2 y'' + yy'^2 - ax - b = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✗
619	11458	$(x + y^2) y'' - 2(x - y^2) y'^3 + y'(1 + 4yy') = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _reducible, _mu_y_y1]]	✓	✓
620	11459	$(y^2 + x^2) y'' - (1 + y'^2) (-y + xy') = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_y_y1]]	✓	✓
621	11460	$(y^2 + x^2) y'' - 2(1 + y'^2) (-y + xy') = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_y_y1]]	✓	✓
622	11461	$2y(1 - y) y'' - (1 - 2y) y'^2 + y(1 - y) y' f(x) = 0$	[_Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓	✓
623	11470	$xy^2 y'' - a = 0$	[[_Emden, _Fowler], [_2nd_order, _with_linear_symmetries]]	✓	✓
624	11471	$(a^2 - x^2) (a^2 - y^2) y'' + (a^2 - x^2) yy'^2 - x(a^2 - y^2) y' = 0$	[_Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓	✓
625	11473	$x^3 y^2 y'' + (x + y) (-y + xy')^3 = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
626	11484	$(c + 2bx + x^2 a + y^2)^2 y'' + dy = 0$	[NONE]	✓	✓
627	11486	$\sqrt{y^2 + x^2} y'' - a(1 + y'^2)^{3/2} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✗
628	11492	$(-y + xy') y'' + 4y'^2 = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
629	11493	$(-y + xy') y'' - (1 + y'^2)^2 = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✗

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Table 2.1 Problems not solved [1054]  
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#	ID	ODE	CAS classification	Maple solved?	Mma solved?
630	11494	$ax^3y'y'' + by^2 = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✗
631	11498	$(y'^2 + a(-y + xy'))y'' - b = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
632	11499	$(a\sqrt{1+y'^2} - xy')y'' - y'^2 - 1 = 0$	[[_2nd_order, _missing_y]]	✓	✓
633	11501	$y''^2 - ay - b = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓	✓
634	11502	$a^2y''^2 - 2axy'' + y' = 0$	[[_2nd_order, _missing_y]]	✓	✗
635	11503	$2(x^2 + 1)y''^2 - xy''(x + 4y') + 2(x + y')y' - 2y = 0$	[NONE]	✓	✓
636	11504	$3x^2y''^2 - 2(3xy' + y)y'' + 4y'^2 = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
637	11505	$x^2(2 - 9x)y''^2 - 6x(1 - 6x)y'y'' + 6yy'' - 36xy'^2 = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
638	11517	$y'''x^2 + x(y - 1)y'' + xy'^2 + (1 - y)y' = 0$	[[_3rd_order, _exact, _nonlinear], [_3rd_order, _with_linear_symmetries], [_3rd_order, _reducible, _mu_y2]]	✓	✓
639	11518	$yy''' - y'y'' + y^3y' = 0$	[[_3rd_order, _missing_x], [_3rd_order, _exact, _nonlinear], [_3rd_order, _with_linear_symmetries]]	✓	✓
640	11519	$4y^2y''' - 18yy'y'' + 15y'^3 = 0$	[[_3rd_order, _missing_x], [_3rd_order, _with_linear_symmetries]]	✓	✓
641	11520	$9y^2y''' - 45yy'y'' + 40y'^3 = 0$	[[_3rd_order, _missing_x], [_3rd_order, _with_linear_symmetries]]	✓	✓
642	11528	$9y''^2y^{(5)} - 45y''y''''y'''' + 40y'''' = 0$	[[_high_order, _missing_x], [_high_order, _missing_y], [_high_order, _with_linear_symmetries]]	✓	✓
643	11549	$\begin{bmatrix} x' = xf(t) + yg(t) \\ y' = -xg(t) + yf(t) \end{bmatrix}$	system_of_ODEs	✓	✓

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Table 2.1 Problems not solved [1054]  
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#	ID	ODE	CAS classification	Maple solved?	Mma solved?
644	11550	$\begin{bmatrix} x' + (ax + by) f(t) = g(t) \\ y' + (cx + dy) f(t) = h(t) \end{bmatrix}$	system_of_ODEs	✓	✓
645	11551	$\begin{bmatrix} x' = x \cos(t) \\ y' = x e^{-\sin(t)} \end{bmatrix}$	system_of_ODEs	✓	✓
646	11552	$\begin{bmatrix} tx' + y = 0 \\ ty' + x = 0 \end{bmatrix}$	system_of_ODEs	✓	✓
647	11553	$\begin{bmatrix} tx' + 2x = t \\ ty' - (t + 2)x - ty = -t \end{bmatrix}$	system_of_ODEs	✓	✓
648	11554	$\begin{bmatrix} tx' + 2x - 2y = t \\ ty' + x + 5y = t^2 \end{bmatrix}$	system_of_ODEs	✓	✓
649	11555	$\begin{bmatrix} t^2(1 - \sin(t)) x' = t(1 - 2 \sin(t)) x + t^2 y \\ t^2(1 - \sin(t)) y' = (t \cos(t) - \sin(t)) x + t(1 - t \cos(t)) y \end{bmatrix}$	system_of_ODEs	✓	✓
650	11556	$\begin{bmatrix} x' + y' + y = f(t) \\ x'' + y'' + y' + x + y = g(t) \end{bmatrix}$	system_of_ODEs	✓	✓
651	11557	$\begin{bmatrix} 2x' + y' - 3x = 0 \\ x'' + y' - 2y = e^{2t} \end{bmatrix}$	system_of_ODEs	✓	✓
652	11558	$\begin{bmatrix} x' + x - y' = 2t \\ x'' + y' - 9x + 3y = \sin(2t) \end{bmatrix}$	system_of_ODEs	✓	✓
653	11559	$\begin{bmatrix} x' - x + 2y = 0 \\ x'' - 2y' = 2t - \cos(2t) \end{bmatrix}$	system_of_ODEs	✓	✓
654	11560	$\begin{bmatrix} tx' - ty' - 2y = 0 \\ tx'' + 2x' + xt = 0 \end{bmatrix}$	system_of_ODEs	✓	✓
655	11561	$\begin{bmatrix} x'' + ay = 0 \\ y'' - a^2y = 0 \end{bmatrix}$	system_of_ODEs	✓	✓
656	11562	$\begin{bmatrix} x'' = ax + by \\ y'' = cx + dy \end{bmatrix}$	system_of_ODEs	✓	✓
657	11563	$\begin{bmatrix} x'' = a_1x + b_1y + c_1 \\ y'' = a_2x + b_2y + c_2 \end{bmatrix}$	system_of_ODEs	✓	✓
658	11564	$\begin{bmatrix} x'' + x + y = -5 \\ y'' - 4x - 3y = -3 \end{bmatrix}$	system_of_ODEs	✓	✓
659	11566	$\begin{bmatrix} x'' + 6x + 7y = 0 \\ y'' + 3x + 2y = 2t \end{bmatrix}$	system_of_ODEs	✓	✓

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Table 2.1 Problems not solved [1054]

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#	ID	ODE	CAS classification	Maple solved?	Mma solved?
660	11567	$\begin{bmatrix} x'' - ay' + bx = 0 \\ y'' + ax' + by = 0 \end{bmatrix}$	system_of_ODEs	✓	✓
661	11568	$\begin{bmatrix} a_1x'' + b_1x' + c_1x - Ay' = B e^{i\omega t} \\ a_2y'' + b_2y' + c_2y + Ax' = 0 \end{bmatrix}$	system_of_ODEs	✓	✓
662	11569	$\begin{bmatrix} x'' + a(x' - y') + b_1x = c_1e^{i\omega t} \\ y'' + a(y' - x') + b_2y = c_2e^{i\omega t} \end{bmatrix}$	system_of_ODEs	✓	✓
663	11570	$\begin{bmatrix} a_{11}x'' + b_{11}x' + c_{11}x + a_{12}y'' + b_{12}y' + c_{12}y = 0 \\ a_{21}x'' + b_{21}x' + c_{21}x + a_{22}y'' + b_{22}y' + c_{22}y = 0 \end{bmatrix}$	system_of_ODEs	✓	✓
664	11571	$\begin{bmatrix} x'' - 2x' - y' + y = 0 \\ y''' - y'' + 2x' - x = t \end{bmatrix}$	system_of_ODEs	✓	✓
665	11572	$\begin{bmatrix} x'' + y'' + y' = \sinh(2t) \\ 2x'' + y'' = 2t \end{bmatrix}$	system_of_ODEs	✓	✓
666	11573	$\begin{bmatrix} x'' - x' + y' = 0 \\ x'' + y'' - x = 0 \end{bmatrix}$	system_of_ODEs	✓	✓
667	11585	$\begin{bmatrix} tx' = 2x - t \\ t^3y' = -x + t^2y + t \\ t^4z' = -x - t^2y + t^3z + t \end{bmatrix}$	system_of_ODEs	✓	✓
668	11586	$\begin{bmatrix} atx' = bc(y - z) \\ bty' = ca(z - x) \\ ctz' = ab(x - y) \end{bmatrix}$	system_of_ODEs	✓	✓
669	11587	$\begin{bmatrix} x'_1 = ax_2 + bx_3 \cos(ct) + bx_4 \sin(ct) \\ x'_2 = -ax_1 + bx_3 \sin(ct) - bx_4 \cos(ct) \\ x'_3 = -bx_1 \cos(ct) - bx_2 \sin(ct) + ax_4 \\ x'_4 = -bx_1 \sin(ct) + bx_2 \cos(ct) - ax_3 \end{bmatrix}$	system_of_ODEs	✓	✓
670	11588	$\begin{bmatrix} x' = -x(x + y) \\ y' = y(x + y) \end{bmatrix}$	system_of_ODEs	✓	✓
671	11589	$\begin{bmatrix} x' = (ay + b)x \\ y' = (cx + d)y \end{bmatrix}$	system_of_ODEs	✓	✓
672	11591	$\begin{bmatrix} x' = h(a - x)(c - x - y) \\ y' = k(b - y)(c - x - y) \end{bmatrix}$	system_of_ODEs	✓	✓
673	11592	$\begin{bmatrix} x' = y^2 - \cos(x) \\ y' = -y \sin(x) \end{bmatrix}$	system_of_ODEs	✓	✓

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Table 2.1 Problems not solved [1054]

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#	ID	ODE	CAS classification	Maple solved?	Mma solved?
674	11598	$\begin{bmatrix} (t^2 + 1) x' = -xt + y \\ (t^2 + 1) y' = -x - ty \end{bmatrix}$	system_of_ODEs	✓	✓
675	11599	$\begin{bmatrix} (x^2 + y^2 - t^2) x' = -2xt \\ (x^2 + y^2 - t^2) y' = -2ty \end{bmatrix}$	system_of_ODEs	✓	✓
676	11600	$\begin{bmatrix} x'^2 + tx' + ay' - x = 0 \\ x'y' + ty' - y = 0 \end{bmatrix}$	system_of_ODEs	✓	✓
677	11601	$\begin{bmatrix} x = tx' + f(x', y') \\ y = ty' + g(x', y') \end{bmatrix}$	system_of_ODEs	✓	✓
678	11604	$\begin{bmatrix} x' = y - z \\ y' = x^2 + y \\ z' = x^2 + z \end{bmatrix}$	system_of_ODEs	✓	✓
679	11605	$\begin{bmatrix} ax' = (b - c) yz \\ by' = (c - a) zx \\ cz' = (-b + a) xy \end{bmatrix}$	system_of_ODEs	✓	✓
680	11607	$\begin{bmatrix} x' + y' = xy \\ y' + z' = yz \\ x' + z' = xz \end{bmatrix}$	system_of_ODEs	✓	✗
681	11610	$\begin{bmatrix} x' = x(y^2 - z^2) \\ y' = -y(z^2 + x^2) \\ z' = z(x^2 + y^2) \end{bmatrix}$	system_of_ODEs	✓	✗
682	11612	$\begin{bmatrix} (x - y)(x - z) x' = f(t) \\ (y - x)(y - z) y' = f(t) \\ (z - x)(z - y) z' = f(t) \end{bmatrix}$	system_of_ODEs	✓	✓
683	11687	$y' = y^2 + an x^{n-1} - a^2 x^{2n}$	[_Riccati]	✓	✓
684	11692	$y' = a x^n y^2 + bm x^{m-1} - a b^2 x^{n+2m}$	[_Riccati]	✓	✓
685	11710	$y' = y^2 + a x^n y - ab x^n - b^2$	[_Riccati]	✓	✓
686	11712	$y' = a x^n y^2 + b x^m y + bc x^m - a c^2 x^n$	[_Riccati]	✓	✓
687	11736	$x^2 y' = (\alpha x^{2n} + \beta x^n + \gamma) y^2 + (a x^n + b) xy + c x^2$	[_rational, _Riccati]	✓	✓
688	11737	$(x^2 - 1) y' + \lambda(y^2 - 2xy + 1) = 0$	[_rational, _Riccati]	✓	✓
689	11742	$(x^2 a + bx + c) y' = y^2 + (ax + \mu) y - \lambda^2 x^2 + \lambda(b - \mu) x + \lambda c$	[_rational, _Riccati]	✓	✓

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Table 2.1 Problems not solved [1054]

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#	ID	ODE	CAS classification	Maple solved?	Mma solved?
690	11757	$(ax^n + bx^m + c)y' = cy^2 - bx^{m-1}y + ax^{n-2}$	[_rational, _Riccati]	✓	✗
691	11759	$(ax^n + bx^m + c)y' = \alpha x^k y^2 + \beta x^s y - \alpha \lambda^2 x^k + \beta \lambda x^s$	[_rational, _Riccati]	✓	✓
692	11775	$y' = ae^{\mu x} y^2 + abe^{(\lambda+\mu)x} y - b\lambda e^{\lambda x}$	[_Riccati]	✓	✓
693	11780	$(ae^{\lambda x} + be^{\mu x} + c)y' = y^2 + ke^{\nu x} y - m^2 + km e^{\nu x}$	[_Riccati]	✓	✓
694	11785	$y' = e^{\lambda x} y^2 + ax^n y + a\lambda x^n e^{-\lambda x}$	[_Riccati]	✓	✓
695	11796	$xy' = ax^{2n} e^{\lambda x} y^2 + (bx^n e^{\lambda x} - n)y + ce^{\lambda x}$	[_Riccati]	✓	✓
696	11806	$(a \sinh(\lambda x) + b)y' = y^2 + c \sinh(\mu x) y - d^2 + cd \sinh(\mu x)$	[_Riccati]	✓	✓
697	11816	$(a \cosh(\lambda x) + b)y' = y^2 + c \cosh(\mu x) y - d^2 + cd \cosh(\mu x)$	[_Riccati]	✓	✓
698	11821	$(a \tanh(\lambda x) + b)y' = y^2 + c \tanh(\mu x) y - d^2 + cd \tanh(\mu x)$	[_Riccati]	✓	✓
699	11825	$(a \coth(\lambda x) + b)y' = y^2 + c \coth(\mu x) y - d^2 + cd \coth(\mu x)$	[_Riccati]	✓	✓
700	11843	$y' = a \ln(x)^n y^2 + b \ln(x)^m y + bc \ln(x)^m - ac^2 \ln(x)^n$	[_Riccati]	✓	✓
701	11849	$(a \ln(x) + b)y' = y^2 + c \ln(x)^n y - \lambda^2 + \lambda c \ln(x)^n$	[_Riccati]	✓	✓
702	11850	$(a \ln(x) + b)y' = \ln(x)^n y^2 + cy - \lambda^2 \ln(x)^n + \lambda c$	[_Riccati]	✓	✓
703	11862	$(a \sin(\lambda x) + b)y' = y^2 + c \sin(\mu x) y - d^2 + cd \sin(\mu x)$	[_Riccati]	✓	✓
704	11875	$(a \cos(\lambda x) + b)y' = y^2 + c \cos(\mu x) y - d^2 + cd \cos(\mu x)$	[_Riccati]	✓	✓
705	11887	$(a \tan(\lambda x) + b)y' = y^2 + k \tan(\mu x) y - d^2 + kd \tan(\mu x)$	[_Riccati]	✓	✓
706	11894	$y' = a \cot(\lambda x + \mu)^k (y - bx^n - c)^2 + bn x^{n-1}$	[[_1st_order, 'with_symmetry_[F(x),G(x)]'], _Riccati]	✓	✓
707	11896	$(a \cot(\lambda x) + b)y' = y^2 + c \cot(\mu x) y - d^2 + cd \cot(\mu x)$	[_Riccati]	✓	✓
708	11902	$\sin(2x)^{n+1} y' = ay^2 \sin(x)^{2n} + b \cos(x)^{2n}$	[_Riccati]	✓	✓

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Table 2.1 Problems not solved [1054]  
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#	ID	ODE	CAS classification	Maple solved?	Mma solved?
709	11913	$y' = \lambda \arcsin(x)^n y^2 + ay + ab - b^2 \lambda \arcsin(x)^n$	[_Riccati]	✓	✓
710	11916	$y' = \lambda \arcsin(x)^n (y - a x^m - b)^2 + am x^{m-1}$	[[_1st_order, '_with_symmetry_[F(x),G(x)]'], _Riccati]	✓	✓
711	11919	$y' = y^2 + \lambda \arccos(x)^n y - a^2 + a \lambda \arccos(x)^n$	[_Riccati]	✓	✓
712	11922	$y' = \lambda \arccos(x)^n y^2 + ay + ab - b^2 \lambda \arccos(x)^n$	[_Riccati]	✓	✓
713	11925	$y' = \lambda \arccos(x)^n (y - a x^m - b)^2 + am x^{m-1}$	[[_1st_order, '_with_symmetry_[F(x),G(x)]'], _Riccati]	✓	✓
714	11931	$y' = \lambda \arctan(x)^n y^2 + ay + ab - b^2 \lambda \arctan(x)^n$	[_Riccati]	✓	✓
715	11934	$y' = \lambda \arctan(x)^n (y - a x^m - b)^2 + am x^{m-1}$	[[_1st_order, '_with_symmetry_[F(x),G(x)]'], _Riccati]	✓	✓
716	11940	$y' = \lambda \operatorname{arccot}(x)^n y^2 + ay + ab - b^2 \lambda \operatorname{arccot}(x)^n$	[_Riccati]	✓	✓
717	11943	$y' = \lambda \operatorname{arccot}(x)^n (y - a x^m - b)^2 + am x^{m-1}$	[[_1st_order, '_with_symmetry_[F(x),G(x)]'], _Riccati]	✓	✓
718	11953	$xy' = x^{2n} f(x) y^2 + (a x^n f(x) - n) y + b f(x)$	[_Riccati]	✓	✓
719	11971	$xy' = f(x) (y + a \ln(x))^2 - a$	[[_1st_order, '_with_symmetry_[F(x),G(x)]'], _Riccati]	✓	✓
720	11983	$y' = \frac{f'(x) y^2}{g(x)} - \frac{g'(x)}{f(x)}$	[_Riccati]	✓	✓
721	12004	$yy' - y = -\frac{2x}{9} + A + \frac{B}{\sqrt{x}}$	[_rational, [_Abel, '2nd type', 'class B']]	✓	✓
722	12005	$yy' - y = 2A \left( \sqrt{x} + 4A + \frac{3A^2}{\sqrt{x}} \right)$	[_rational, [_Abel, '2nd type', 'class B']]	✓	✗
723	12006	$yy' - y = Ax + \frac{B}{x} - \frac{B^2}{x^3}$	[_rational, [_Abel, '2nd type', 'class B']]	✓	✗
724	12008	$yy' - y = \frac{A}{x} - \frac{A^2}{x^3}$	[_rational, [_Abel, '2nd type', 'class B']]	✓	✓
725	12009	$yy' - y = A + B e^{-\frac{2x}{A}}$	[[_Abel, '2nd type', 'class A']]	✓	✗

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Table 2.1 Problems not solved [1054]

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#	ID	ODE	CAS classification	Maple solved?	Mma solved?
726	12010	$yy' - y = A\left(e^{\frac{2x}{A}} - 1\right)$	[[_Abel, '2nd type', 'class A']]	✓	✗
727	12012	$yy' - y = -\frac{2x}{9} + 6A^2\left(1 + \frac{2A}{\sqrt{x}}\right)$	[_rational, [_Abel, '2nd type', 'class B']]	✓	✓
728	12014	$yy' - y = \frac{(2m+1)x}{4m^2} + \frac{A}{x} - \frac{A^2}{x^3}$	[_rational, [_Abel, '2nd type', 'class B']]	✓	✗
729	12015	$yy' - y = \frac{4}{9}x + 2Ax^2 + 2A^2x^3$	[_rational, [_Abel, '2nd type', 'class A']]	✓	✓
730	12017	$yy' - y = \frac{A}{x}$	[_rational, [_Abel, '2nd type', 'class B']]	✓	✓
731	12018	$yy' - y = -\frac{x}{4} + \frac{A\left(\sqrt{x} + 5A + \frac{3A^2}{\sqrt{x}}\right)}{4}$	[_rational, [_Abel, '2nd type', 'class B']]	✓	✗
732	12019	$yy' - y = \frac{2a^2}{\sqrt{8a^2 + x^2}}$	[[_Abel, '2nd type', 'class B']]	✓	✗
733	12020	$yy' - y = 2x + \frac{A}{x^2}$	[_rational, [_Abel, '2nd type', 'class B']]	✓	✓
734	12023	$yy' - y = -\frac{4x}{25} + \frac{A}{\sqrt{x}}$	[_rational, [_Abel, '2nd type', 'class B']]	✓	✗
735	12024	$yy' - y = -\frac{9x}{100} + \frac{A}{x^{5/3}}$	[_rational, [_Abel, '2nd type', 'class B']]	✓	✓
736	12025	$yy' - y = -\frac{12x}{49} + \frac{2A\left(5\sqrt{x} + 34A + \frac{15A^2}{\sqrt{x}}\right)}{49}$	[_rational, [_Abel, '2nd type', 'class B']]	✓	✗
737	12026	$yy' - y = -\frac{12x}{49} + \frac{A\left(25\sqrt{x} + 41A + \frac{10A^2}{\sqrt{x}}\right)}{98}$	[_rational, [_Abel, '2nd type', 'class B']]	✓	✗
738	12027	$yy' - y = -\frac{2x}{9} + \frac{A}{\sqrt{x}}$	[_rational, [_Abel, '2nd type', 'class B']]	✓	✓
739	12033	$yy' - y = \frac{A}{\sqrt{x}}$	[_rational, [_Abel, '2nd type', 'class B']]	✓	✓
740	12034	$yy' - y = \frac{A}{x^2}$	[_rational, [_Abel, '2nd type', 'class B']]	✓	✓
741	12035	$yy' - y = A(2+n)\left(\sqrt{x} + 2(2+n)A + \frac{(n+1)(3+n)A^2}{\sqrt{x}}\right)$	[_rational, [_Abel, '2nd type', 'class B']]	✓	✗

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Table 2.1 Problems not solved [1054]

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#	ID	ODE	CAS classification	Maple solved?	Mma solved?
742	12036	$yy' - y = A(2+n) \left( \sqrt{x} + 2(2+n)A + \frac{(2n+3)A^2}{\sqrt{x}} \right)$	[_rational, [_Abel, '2nd type', 'class B']]	✓	✗
743	12037	$yy' - y = A\sqrt{x} + 2A^2 + \frac{B}{\sqrt{x}}$	[_rational, [_Abel, '2nd type', 'class B']]	✓	✗
744	12038	$yy' - y = 2A^2 - A\sqrt{x}$	[_rational, [_Abel, '2nd type', 'class A']]	✓	✗
745	12041	$yy' - y = -\frac{3x}{16} + \frac{3A}{x^{1/3}} - \frac{12A^2}{x^{5/3}}$	[_rational, [_Abel, '2nd type', 'class B']]	✓	✗
746	12045	$yy' - y = Ax^2 - \frac{9}{625A}$	[_rational, [_Abel, '2nd type', 'class A']]	✓	✓
747	12046	$yy' - y = -\frac{6}{25}x - Ax^2$	[_rational, [_Abel, '2nd type', 'class A']]	✓	✓
748	12047	$yy' - y = \frac{6}{25}x - Ax^2$	[_rational, [_Abel, '2nd type', 'class A']]	✓	✓
749	12048	$yy' - y = 12x + \frac{A}{x^{5/2}}$	[_rational, [_Abel, '2nd type', 'class B']]	✓	✗
750	12050	$yy' - y = 2x + 2A \left( 10\sqrt{x} + 31A + \frac{30A^2}{\sqrt{x}} \right)$	[_rational, [_Abel, '2nd type', 'class B']]	✓	✗
751	12053	$yy' - y = -\frac{12x}{49} + \frac{A \left( 5\sqrt{x} + 262A + \frac{65A^2}{\sqrt{x}} \right)}{49}$	[_rational, [_Abel, '2nd type', 'class B']]	✓	✗
752	12054	$yy' - y = -\frac{12x}{49} + A\sqrt{x}$	[_rational, [_Abel, '2nd type', 'class A']]	✓	✗
753	12055	$yy' - y = 6x + \frac{A}{x^4}$	[_rational, [_Abel, '2nd type', 'class B']]	✓	✓
754	12058	$yy' - y = -\frac{10x}{49} + \frac{2A \left( 4\sqrt{x} + 61A + \frac{12A^2}{\sqrt{x}} \right)}{49}$	[_rational, [_Abel, '2nd type', 'class B']]	✓	✗
755	12059	$yy' - y = -\frac{12x}{49} + \frac{2A \left( \sqrt{x} + 166A + \frac{55A^2}{\sqrt{x}} \right)}{49}$	[_rational, [_Abel, '2nd type', 'class B']]	✓	✗
756	12066	$yy' - y = -\frac{6x}{25} + \frac{4B^2 \left( (2-A)x^{1/3} - \frac{3B(2A+1)}{2} + \frac{B^2(1-3A)}{x^{1/3}} \right)}{75}$	[_rational, [_Abel, '2nd type', 'class B']]	✓	✗
757	12078	$yy' = (ax + b)y + 1$	[_rational, [_Abel, '2nd type', 'class A']]	✓	✓

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Table 2.1 Problems not solved [1054]

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#	ID	ODE	CAS classification	Maple solved?	Mma solved?
758	12079	$yy' = \frac{y}{(ax+b)^2} + 1$	[_rational, [_Abel, '2nd type', 'class B']]	✓	✓
759	12080	$yy' = \left(a - \frac{1}{ax}\right)y + 1$	[_rational, [_Abel, '2nd type', 'class B']]	✓	✓
760	12082	$yy' = \frac{3y}{\sqrt{ax^{3/2} + 8x}} + 1$	[[_Abel, '2nd type', 'class B']]	✓	✗
761	12083	$yy' = \left(\frac{a}{x^{2/3}} - \frac{2}{3ax^{1/3}}\right)y + 1$	[_rational, [_Abel, '2nd type', 'class B']]	✓	✗
762	12084	$yy' = ae^{\lambda x}y + 1$	[[_Abel, '2nd type', 'class A']]	✓	✓
763	12090	$yy' = (ax + 3b)y + cx^3 - abx^2 - 2b^2x$	[_rational, [_Abel, '2nd type', 'class A']]	✓	✗
764	12092	$2yy' = (7ax + 5b)y - 3a^2x^3 - 2cx^2 - 3b^2x$	[_rational, [_Abel, '2nd type', 'class A']]	✓	✗
765	12094	$yy' + x(x^2a + b)y + x = 0$	[_rational, [_Abel, '2nd type', 'class A']]	✓	✓
766	12095	$yy' + a\left(1 - \frac{1}{x}\right)y = a^2$	[_rational, [_Abel, '2nd type', 'class B']]	✓	✓
767	12096	$yy' - a\left(1 - \frac{b}{x}\right)y = a^2b$	[_rational, [_Abel, '2nd type', 'class B']]	✓	✓
768	12097	$yy' = x^{n-1}((2n+1)x + an)y - nx^{2n}(x+a)$	[_rational, [_Abel, '2nd type', 'class A']]	✓	✗
769	12098	$yy' = a(-bn+x)x^{n-1}y + c(x^2 - (2n+1)bx + n(n+1)b^2)x^{2n-1}$	[_rational, [_Abel, '2nd type', 'class A']]	✓	✓
770	12104	$yy' - \frac{a((m-1)x+1)y}{x} = \frac{a^2(mx+1)(x-1)}{x}$	[_rational, [_Abel, '2nd type', 'class B']]	✓	✗
771	12105	$yy' - a\left(1 - \frac{b}{\sqrt{x}}\right)y = \frac{a^2b}{\sqrt{x}}$	[_rational, [_Abel, '2nd type', 'class B']]	✓	✓
772	12106	$yy' = \frac{3y}{(ax+b)^{1/3}x^{5/3}} + \frac{3}{(ax+b)^{2/3}x^{7/3}}$	[[_Abel, '2nd type', 'class B']]	✓	✓
773	12108	$yy' + \frac{a(6x-1)y}{2x} = -\frac{a^2(x-1)(4x-1)}{2x}$	[_rational, [_Abel, '2nd type', 'class B']]	✓	✗
774	12117	$yy' + \frac{a(7x-12)y}{10x^{7/5}} = -\frac{a^2(x-1)(x-16)}{10x^{9/5}}$	[_rational, [_Abel, '2nd type', 'class B']]	✓	✗

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Table 2.1 Problems not solved [1054]

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#	ID	ODE	CAS classification	Maple solved?	Mma solved?
775	12120	$yy' - \frac{a(x+1)y}{2x^{7/4}} = \frac{a^2(x-1)(3x+5)}{4x^{5/2}}$	[_rational, [_Abel, '2nd type', 'class B']]	✓	✗
776	12125	$yy' - \frac{a(5x-4)y}{x^4} = \frac{a^2(x-1)(3x-1)}{x^7}$	[_rational, [_Abel, '2nd type', 'class B']]	✓	✗
777	12128	$yy' + \frac{a(-2+x)y}{x} = \frac{2a^2(x-1)}{x}$	[_rational, [_Abel, '2nd type', 'class B']]	✓	✗
778	12132	$yy' + \frac{a(33x+2)y}{30x^{6/5}} = -\frac{a^2(x-1)(9x-4)}{30x^{7/5}}$	[_rational, [_Abel, '2nd type', 'class B']]	✓	✗
779	12140	$yy' - \frac{a(4+x)y}{5x^{8/5}} = \frac{a^2(x-1)(3x+7)}{5x^{11/5}}$	[_rational, [_Abel, '2nd type', 'class B']]	✓	✗
780	12141	$yy' - \frac{a(2x-1)y}{x^{5/2}} = \frac{a^2(x-1)(3x+1)}{2x^4}$	[_rational, [_Abel, '2nd type', 'class B']]	✓	✗
781	12142	$yy' + \frac{a(x-6)y}{5x^{7/5}} = \frac{2a^2(x-1)(4+x)}{5x^{9/5}}$	[_rational, [_Abel, '2nd type', 'class B']]	✓	✗
782	12145	$yy' - \frac{a((k+1)x-1)y}{x^2} = \frac{a^2(k+1)(x-1)}{x^2}$	[_rational, [_Abel, '2nd type', 'class B']]	✓	✗
783	12148	$yy' - ((2n-1)x - an)x^{-1-n}y = n(x-a)x^{-2n}$	[_rational, [_Abel, '2nd type', 'class A']]	✓	✗
784	12155	$yy' - a\left(\frac{2+n}{n} + bx^n\right)y = -\frac{a^2x\left(\frac{n+1}{n} + bx^n\right)}{n}$	[_rational, [_Abel, '2nd type', 'class A']]	✓	✗
785	12156	$yy' = (ae^x + b)y + ce^{2x} - abe^x - b^2$	[[_Abel, '2nd type', 'class A']]	✓	✗
786	12158	$yy' = (ae^{\lambda x} + b)y + c(a^2e^{2\lambda x} + ab(\lambda x + 1)e^{\lambda x} + b^2\lambda x)$	[[_Abel, '2nd type', 'class A']]	✓	✓
787	12159	$yy' = e^{\lambda x}(2a\lambda x + a + b)y - e^{2\lambda x}(a^2\lambda x^2 + abx + c)$	[[_Abel, '2nd type', 'class A']]	✓	✗
788	12161	$yy' + a(2bx + 1)e^{bx}y = -a^2bx^2e^{2bx}$	[[_Abel, '2nd type', 'class A']]	✓	✓
789	12162	$yy' - a(1 + 2n + 2n(n+1)x)e^{(n+1)x}y = -a^2n(n+1)(nx+1)x e^{2(n+1)x}$	[[_Abel, '2nd type', 'class A']]	✓	✗
790	12163	$yy' + a(1 + 2b\sqrt{x})e^{2b\sqrt{x}}y = -a^2bx^{3/2}e^{4b\sqrt{x}}$	[[_Abel, '2nd type', 'class A']]	✓	✗

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Table 2.1 Problems not solved [1054]

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#	ID	ODE	CAS classification	Maple solved?	Mma solved?
791	12166	$yy' = (2\ln(x) + a + 1)y + x(-\ln(x)^2 - a\ln(x) + b)$	[[_Abel, '2nd type', 'class A']]	✓	✗
792	12176	$xyy' = -ny^2 + a(2n + 1)xy + by - a^2nx^2 - abx + c$	[_rational, [_Abel, '2nd type', 'class B']]	✓	✗
793	12180	$y'' - (x^2a + b)y = 0$	[[_2nd_order, __with_linear_symmetries]]	✓	✓
794	12182	$y'' - (x^2a + bxc)y = 0$	[[_2nd_order, __with_linear_symmetries]]	✓	✓
795	12184	$y'' - a(ax^{2n} + nx^{n-1})y = 0$	[[_2nd_order, __with_linear_symmetries]]	✓	✓
796	12185	$y'' - ax^{n-2}(ax^n + n + 1)y = 0$	[[_2nd_order, __with_linear_symmetries]]	✓	✗
797	12186	$y'' + (ax^{2n} + bx^{n-1})y = 0$	[[_2nd_order, __with_linear_symmetries]]	✓	✓
798	12189	$y'' + ay' - (bx^2 + c)y = 0$	[[_2nd_order, __with_linear_symmetries]]	✓	✓
799	12192	$y'' + ay' + b(-bx^{2n} + ax^n + nx^{n-1})y = 0$	[[_2nd_order, __with_linear_symmetries], [_2nd_order, _linear, 'with_symmetry_[0,F(x)']]	✓	✗
800	12193	$y'' + ay' + b(-bx^{2n} - ax^n + nx^{n-1})y = 0$	[[_2nd_order, __with_linear_symmetries]]	✓	✗
801	12194	$y'' + xy' + (n - 1)y = 0$	[[_2nd_order, __with_linear_symmetries]]	✓	✓
802	12195	$y'' - 2xy' + 2ny = 0$	[[_2nd_order, __with_linear_symmetries]]	✓	✓
803	12196	$y'' + axy' + by = 0$	[[_2nd_order, __with_linear_symmetries]]	✓	✓
804	12197	$y'' + axy' + bxy = 0$	[[_2nd_order, __with_linear_symmetries]]	✓	✓
805	12198	$y'' + axy' + (bx + c)y = 0$	[[_2nd_order, __with_linear_symmetries]]	✓	✓
806	12199	$y'' + 2axy' + (bx^4 + a^2x^2 + cx + a)y = 0$	[[_2nd_order, __with_linear_symmetries]]	✓	✓
807	12204	$y'' + (ax + b)y' + (cx + d)y = 0$	[[_2nd_order, __with_linear_symmetries]]	✓	✓
808	12205	$y'' + (ax + b)y' + c((a - c)x^2 + bx + 1)y = 0$	[[_2nd_order, __with_linear_symmetries]]	✓	✓

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Table 2.1 Problems not solved [1054]  
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#	ID	ODE	CAS classification	Maple solved?	Mma solved?
809	12207	$y'' + (ax + b)y' + (\alpha x^2 + \beta x + \gamma)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
810	12213	$y'' + (x^2a + bx)y' + (\alpha x^2 + \beta x + \gamma)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✗
811	12221	$y'' + ax^n y' + bx^{n-1}y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
812	12223	$y'' + ax^n y' + (bx^{2n} + cx^{n-1})y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
813	12225	$y'' + 2ax^n y' + (a^2x^{2n} + bx^{2m} + anx^{n-1} + cx^{m-1})y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
814	12227	$y'' + (ax^n + 2b)y' + (abx^n - ax^{n-1} + b^2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✗
815	12230	$y'' + x^n(x^2a + (ac + b)x + bc)y' - x^n(ax + b)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✗
816	12240	$xy'' + ay' + (bx + c)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
817	12242	$xy'' + (1 - 3n)y' - a^2n^2x^{2n-1}y = 0$	[[_Emden, _Fowler]]	✓	✓
818	12244	$xy'' + ay' + bx^n(-x^{n+1}b + a + n)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✗
819	12246	$xy'' + (b - x)y' - ay = 0$	[_Laguerre]	✓	✓
820	12247	$xy'' + (ax + b)y' + c((a - c)x + b)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
821	12249	$xy'' + (x(a + b) + n + m)y' + (abx + an + bm)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
822	12250	$xy'' + (ax + b)y' + (cx + d)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
823	12254	$xy'' - (2ax + 1)y' + bx^3y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✗
824	12255	$xy'' + (abx^2 + b - 5)y' + 2a^2(b - 2)x^3y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
825	12260	$xy'' + (x^2a + bx + c)y' + (Ax^2 + Bx + C0)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✗
826	12261	$xy'' + (x^2a + bx + 2)y' + (cx^2 + dx + b)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓

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Table 2.1 Problems not solved [1054]

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#	ID	ODE	CAS classification	Maple solved?	Mma solved?
827	12269	$xy'' + (x^n + 1 - n)y' + bx^{2n-1}y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
828	12275	$xy'' + (ax^n + b)y' + (cx^{2n-1} + dx^{n-1})y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
829	12276	$xy'' + (ax^n + bx^{n-1} + 2)y' + bx^{n-2}y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✗
830	12282	$(a_1x + a_0)y'' + (b_1x + b_0)y' - mb_1y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
831	12283	$(ax + b)y'' + s(cx + d)y' - s^2((a + c)x + b + d)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
832	12284	$(a_2x + b_2)y'' + (a_1x + b_1)y' + (a_0x + b_0)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
833	12290	$x^2y'' - (a^2x^2 + 2abx + b^2 - b)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
834	12291	$x^2y'' + (x^2a + bx + c)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
835	12293	$x^2y'' - (a^2x^4 + a(2b - 1)x^2 + b(b + 1))y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
836	12295	$x^2y'' - (a^2x^{2n} + a(2b + n - 1)x^n + b(b - 1))y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✗
837	12296	$x^2y'' + (ax^{2n} + bx^n + c)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
838	12297	$x^2y'' + \left(ax^{3n} + bx^{2n} + \frac{1}{4} - \frac{n^2}{4}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✗
839	12307	$x^2y'' + \lambda xy' + (x^2a + bx + c)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
840	12309	$x^2y'' + axy' + x^n(bx^n + c)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
841	12310	$x^2y'' + (ax + b)y' + cy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
842	12311	$x^2y'' + ax^2y' + (bx^2 + cx + d)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
843	12312	$x^2y'' + (x^2a + b)y' + c((a - c)x^2 + b)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
844	12314	$x^2y'' + (x^2a + bx)y' + (k(a - k)x^2 + (an + bk - 2kn)x + n(-n + b - 1))y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓

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Table 2.1 Problems not solved [1054]

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#	ID	ODE	CAS classification	Maple solved?	Mma solved?
845	12315	$a_2x^2y'' + (a_1x^2 + b_1x)y' + (a_0x^2 + b_0x + c_0)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
846	12317	$x^2y'' - 2x(x^2 - a)y' + (2nx^2 + ((-1)^n - 1)a)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
847	12318	$x^2y'' + x(x^2a + bx + c)y' + (Ax^3 + Bx^2 + Cx + d)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✗
848	12322	$x^2y'' + x(ax^n + b)y' + (\alpha x^{2n} + \beta x^n + \gamma)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
849	12323	$x^2y'' + x(2ax^n + b)y' + (a^2x^{2n} + a(n + b - 1)x^n + \alpha x^{2m} + \beta x^m + \gamma)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
850	12325	$(-x^2 + 1)y'' + n(n - 1)y = 0$	[_Gegenbauer]	✓	✓
851	12326	$(-a^2 + x^2)y'' + by' - 6y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
852	12329	$(-x^2 + 1)y'' - 2xy' + n(n + 1)y = 0$	[_Gegenbauer]	✓	✓
853	12330	$(-x^2 + 1)y'' - 2xy' + \nu(\nu + 1)y = 0$	[_Gegenbauer]	✓	✓
854	12332	$(x^2 - 1)y'' + 2(n + 1)xy' - (\nu + n + 1)(\nu - n)y = 0$	[_Gegenbauer]	✓	✓
855	12333	$(x^2 - 1)y'' - 2(n - 1)xy' - (\nu - n + 1)(\nu + n)y = 0$	[_Gegenbauer]	✓	✓
856	12334	$(x^2 - 1)y'' + (2a + 1)y' - b(2a + b)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
857	12335	$(-x^2 + 1)y'' + (2a - 3)xy' + (n + 1)(n + 2a - 1)y = 0$	[_Gegenbauer]	✓	✓
858	12336	$(-x^2 + 1)y'' + (\beta - \alpha - (\alpha + \beta + 2)x)y' + n(n + \alpha + \beta + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
859	12337	$(-x^2 + 1)y'' + (\alpha - \beta + (\alpha + \beta - 2)x)y' + (n + 1)(n + \alpha + \beta)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
860	12342	$(x^2a + b)y'' + (2n + 1)axy' + cy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
861	12343	$(-x^2 + 1)y'' - xy' + (2x^2a + b)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
862	12344	$(-x^2 + 1)y'' + (ax + b)y' + cy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓

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Table 2.1 Problems not solved [1054]

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#	ID	ODE	CAS classification	Maple solved?	Mma solved?
863	12345	$(x^2a + b)y'' + (cx^2 + d)y' + \lambda((-a\lambda + c)x^2 + d - b\lambda)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
864	12346	$(x^2a + b)y'' + (\lambda(a + c)x^2 + (c - a)x + 2b\lambda)y' + \lambda^2(cx^2 + b)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
865	12347	$x(x - 1)y'' + ((\alpha + \beta + 1)x - \gamma)y' + \alpha\beta y = 0$	[_Jacobi]	✓	✓
866	12348	$x(x + a)y'' + (bx + c)y' + dy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
867	12349	$2x(x - 1)y'' + (2x - 1)y' + (ax + b)y = 0$	[_Jacobi]	✓	✓
868	12355	$(a_2x^2 + b_2x + c_2)y'' + (b_1x + c_1)y' + c_0y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
869	12356	$(x^2a + bx + c)y'' - (-k^2 + x^2)y' + (x + k)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
870	12357	$(x^2a + bx + c)y'' + (k^3 + x^3)y' - (k^2 - kx + x^2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
871	12359	$x^3y'' + (x^2a + b)y' + cxy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
872	12360	$x^3y'' + (x^2a + bx)y' + by = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
873	12361	$x^3y'' + (x^2a + bx)y' + cy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
874	12362	$x^3y'' + (x^2a + bx)y' + (cx + d)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
875	12363	$x^3y'' + (ax^3 + abx - x^2 + b)y' + a^2bxy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
876	12366	$x(x^2 + a)y'' + (bx^2 + c)y' + sxy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
877	12367	$x^2(ax + b)y'' + (cx^2 + (a\lambda + 2b)x + b\lambda)y' + \lambda(c - 2a)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
878	12370	$x^2(x + a_2)y'' + x(b_1x + a_1)y' + (b_0x + a_0)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
879	12371	$(ax^3 + bx^2 + cx)y'' + (\alpha x^2 + \beta x + 2c)y' + (\beta - 2b)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓

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Table 2.1 Problems not solved [1054]

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#	ID	ODE	CAS classification	Maple solved?	Mma solved?
880	12372	$(ax^3 + bx^2 + cx)y'' + (\alpha x^2 + \beta x + 2c)y' - (\alpha x + 2b - \beta)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
881	12373	$(ax^3 + bx^2 + cx)y'' + (-2x^2a - (b+1)x + k)y' + 2(ax+1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
882	12377	$(ax^3 + x^2 + b)y'' + a^2x(x^2 - b)y' - a^3bxy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✗
883	12380	$x(x-1)(x-a)y'' + ((\alpha + \beta + 1)x^2 - (\alpha + \beta + 1 + a(\gamma + d) - a)x + a\gamma)y' + (\alpha\beta x - q)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
884	12381	$(ax^3 + bx^2 + cx + d)y'' - (-\lambda^2 + x^2)y' + (x + \lambda)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✗
885	12383	$2(ax^3 + bx^2 + cx + d)y'' + 3(3x^2a + 2bx + c)y' + (6ax + 2b + \lambda)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
886	12385	$(ax^3 + bx^2 + cx + d)y'' + (\lambda^3 + x^3)y' - (\lambda^2 - \lambda x + x^2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
887	12388	$x^4y'' + (x^2a + bx + c)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✗
888	12394	$ax^2(x-1)^2y'' + (bx^2 + cx + d)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
889	12395	$x^2(x^2 + a)y'' + (bx^2 + c)xy' + dy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
890	12402	$(x^2 - 1)^2y'' + 2x(x^2 - 1)y' - (\nu(\nu + 1)(x^2 - 1) + n^2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
891	12403	$(-x^2 + 1)^2y'' - 2x(-x^2 + 1)y' + (\nu(\nu + 1)(-x^2 + 1) - \mu^2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
892	12404	$a(x^2 - 1)^2y'' + bx(x^2 - 1)y' + (cx^2 + dx + e)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
893	12412	$(x^2 - 1)^2y'' + 2x(x^2 - 1)y' + ((x^2 - 1)(a^2x^2 - \lambda) - m^2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
894	12413	$(x^2 + 1)^2y'' + 2x(x^2 + 1)y' + ((x^2 + 1)(a^2x^2 - \lambda) + m^2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
895	12420	$x^n y'' + (ax^{n-1} + bx)y' + (a-1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✗

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Table 2.1 Problems not solved [1054]

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#	ID	ODE	CAS classification	Maple solved?	Mma solved?
896	12421	$x^n y'' + (2x^{n-1} + x^2 a + bx) y' + by = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✗
897	12427	$x(x^n + 1) y'' + ((-b + a) x^n + a - n) y' + b(-a + 1) x^{n-1} y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
898	12429	$x^2(a^2 x^{2n} - 1) y'' + x(a^2(n + 1) x^{2n} + n - 1) y' - \nu(\nu + 1) a^2 n^2 x^{2n} y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
899	12430	$x^2(a^2 x^{2n} - 1) y'' + x(ap x^n + q) y' + (ar x^n + s) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✗
900	12431	$(x^n + a)^2 y'' - b x^{n-2}((b - 1) x^n + a(n - 1)) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✗
901	12432	$(a x^n + b)^2 y'' + (a x^n + b)(c x^n + d) y' + n(-ad + bc) x^{n-1} y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
902	12435	$x^2(a x^n + b)^2 y'' + (n + 1) x(a^2 x^{2n} - b^2) y' + cy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
903	12438	$(a x^n + b x^m + c) y'' + (\lambda^2 - x^2) y' + (x + \lambda) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✗
904	12443	$y'' + a(\lambda e^{\lambda x} - a e^{2\lambda x}) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
905	12444	$y'' - (a^2 e^{2x} + a(2b + 1) e^x + b^2) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
906	12445	$y'' - (a e^{2\lambda x} + b e^{\lambda x} + c) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
907	12446	$y'' + \left(a e^{4\lambda x} + b e^{3\lambda x} + c e^{2\lambda x} - \frac{\lambda^2}{4}\right) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
908	12447	$y'' + \left(a e^{2\lambda x} (b e^{\lambda x} + c)^n - \frac{\lambda^2}{4}\right) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✗
909	12451	$y'' - y' + \left(a e^{3\lambda x} + b e^{2\lambda x} + \frac{1}{4} - \frac{\lambda^2}{4}\right) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
910	12452	$y'' - y' + \left(a e^{2\lambda x} (b e^{\lambda x} + c)^n + \frac{1}{4} - \frac{\lambda^2}{4}\right) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✗
911	12454	$y'' + (a + b) e^{\lambda x} y' + a e^{\lambda x} (b e^{\lambda x} + \lambda) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
912	12455	$y'' + a e^{\lambda x} y' - b e^{\mu x} (a e^{\lambda x} + b e^{\mu x} + \mu) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✗

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Table 2.1 Problems not solved [1054]

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#	ID	ODE	CAS classification	Maple solved?	Mma solved?
913	12458	$y'' + (a e^{2\lambda x} + \lambda) y' - a\lambda e^{2\lambda x} y = 0$	[[_2nd_order, __with_linear_symmetries]]	✓	✓
914	12460	$y'' + (a e^{\lambda x} + b) y' + c(a e^{\lambda x} + b - c) y = 0$	[[_2nd_order, __with_linear_symmetries]]	✓	✓
915	12462	$y'' + (a + b e^{\lambda x} + b - 3\lambda) y' + a^2\lambda(b - \lambda) e^{2\lambda x} y = 0$	[[_2nd_order, __with_linear_symmetries]]	✓	✓
916	12465	$y'' + (a e^{\lambda x} + 2b - \lambda) y' + (c e^{2\lambda x} + ab e^{\lambda x} + b^2 - b\lambda) y = 0$	[[_2nd_order, __with_linear_symmetries]]	✓	✓
917	12466	$y'' + (a e^x + b) y' + (c(a - c) e^{2x} + (ak + bc - 2ck + c) e^x + k(b - k)) y = 0$	[[_2nd_order, __with_linear_symmetries]]	✓	✓
918	12467	$y'' + (a e^{\lambda x} + b) y' + (\alpha e^{2\lambda x} + \beta e^{\lambda x} + \gamma) y = 0$	[[_2nd_order, __with_linear_symmetries]]	✓	✓
919	12471	$y'' + e^{\lambda x} (a e^{2\mu x} + b) y' + \mu (e^{\lambda x} (b - a e^{2\mu x}) - \mu) y = 0$	[[_2nd_order, __with_linear_symmetries]]	✓	✗
920	12543	$(y^2 + x^2) (x + yy') = (x^2 + y^2 + x) (-y + xy')$	[_rational]	✓	✓
921	12647	$4x^2 y'' + 4x^3 y' + (x^2 + 1) y = 0$	[[_2nd_order, __with_linear_symmetries]]	✓	✓
922	12662	$x^2 y'' - 2nx(x + 1) y' + (a^2 x^2 + n^2 + n) y = 0$	[[_2nd_order, __with_linear_symmetries]]	✓	✗
923	12663	$x^4 y'' + 2x^3(x + 1) y' + n^2 y = 0$	[[_2nd_order, __with_linear_symmetries]]	✓	✗
924	12673	$(x^2 - 2x + 2) y''' - x^2 y'' + 2xy' - 2y = 0$	[[_3rd_order, __with_linear_symmetries]]	✓	✓
925	12674	$xy''' - y'' - xy' + y = -x^2 + 1$	[[_3rd_order, __with_linear_symmetries]]	✓	✓
926	12678	$(x^3 - x) y''' + (8x^2 - 3) y'' + 14xy' + 4y = 0$	[[_3rd_order, __fully_exact, __linear]]	✓	✓
927	12679	$2x^3 yy''' + 6x^3 y' y'' + 18x^2 yy'' + 18x^2 y'^2 + 36xyy' + 6y^2 = 0$	[[_3rd_order, __exact, __nonlinear], [_3rd_order, __with_linear_symmetries]]	✓	✓
928	12682	$y''' x^2 - 5xy'' + (4x^4 + 5) y' - 8x^3 y = 0$	[[_3rd_order, __with_linear_symmetries]]	✓	✓

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Table 2.1 Problems not solved [1054]  
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#	ID	ODE	CAS classification	Maple solved?	Mma solved?
929	12684	$x^2yy'' + (-y + xy')^2 = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _reducible, _mu_y_y1], [_2nd_order, _reducible, _mu_xy]]	✓	✓
930	12685	$x^3y'' - (-y + xy')^2 = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _reducible, _mu_xy]]	✓	✓
931	12686	$yy'' - y'^2 = y^2 \ln(y) - y^2x^2$	[[_2nd_order, _reducible, _mu_xy]]	✓	✓
932	12687	$\sin(x)^2 y'' - 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
933	12691	$(x^3 + 1)y''' + 9x^2y'' + 18xy' + 6y = 0$	[[_3rd_order, _fully, _exact, _linear]]	✓	✓
934	12755	$xx' = 1 - xt$	[_rational, [_Abel, '2nd type', 'class A']]	✓	✓
935	13067	<i>i.c.</i> $y'' + xy' + x^2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
936	13341	$t^3x''' - (3+t)t^2x'' + 2t(3+t)x' - 2(3+t)x = 0$	[[_3rd_order, _with_linear_symmetries]]	✓	✓
937	13347	$\sin(t)x'' + \cos(t)x' + 2x = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✗
938	13350	$(t^4 + t^2)x'' + 2t^3x' + 3x = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
939	13351	$x'' - \tan(t)x' + x = 0$	[_Lienard]	✓	✓
940	13379	$\begin{cases} x' = x - x^2 \\ y' = 2y - y^2 \end{cases}$	system_of_ODEs	✓	✓
941	13587	$y'''^2 + y''^2 = 1$	[[_3rd_order, _missing_x], [_3rd_order, _missing_y], [_3rd_order, _with_linear_symmetries], [_3rd_order, _reducible, _mu_y2]]	✓	✓
942	13623	$\begin{cases} x' = y \\ y' = \frac{y^2}{x} \end{cases}$	system_of_ODEs	✓	✓
943	13635	$y''' + xy = \sin(x)$	[[_3rd_order, _linear, _nonhomogeneous]]	✓	✓

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Table 2.1 Problems not solved [1054]  
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#	ID	ODE	CAS classification	Maple solved?	Mma solved?
944	13636	$y'' + yy' = 1$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓	✓
945	13639	$y''' + xy = \cosh(x)$	[[_3rd_order, _linear, _nonhomogeneous]]	✓	✗
946	13641	$y''' + xy = \cosh(x)$	[[_3rd_order, _linear, _nonhomogeneous]]	✓	✓
947	13646	$2y'' + 3y' + 4x^2y = 1$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	✓
948	13661	<i>i.c.</i> $y'' + \tan(x)y' + y \cot(x) = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✗
949	13662	<i>i.c.</i> $(x^2 + 1)y'' + (x - 1)y' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✗
950	13665	<i>i.c.</i> $y'' - (x - 1)y' + x^2y = \tan(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	✓
951	13667	$x^2y'' - 4x^2y' + (x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
952	13668	$y'' + \frac{kx}{y^4} = 0$	[[_Emden, _Fowler], [_2nd_order, _with_linear_symmetries]]	✓	✗
953	13674	$x^2y'' + x^2y' + 2(1 - x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
954	13692	$(2 \sin(x) - \cos(x))y'' + (7 \sin(x) + 4 \cos(x))y' + 10y \cos(x) = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
955	13760	<i>i.c.</i> hint: laplace $y''' - 5y'' + y' - y = -t^2 + 2t - 10$	[[_3rd_order, _with_linear_symmetries]]	✓	✓
956	13765	$y'' + 3y' + \frac{y}{t} = t$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	✓
957	13767	$t^3y'' - 2ty' + y = t^4$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	✓
958	13828	$(-x^2 + 1)y'' - 2xy' + n(n + 1)y = 0$	[_Gegenbauer]	✓	✓
959	14160	<i>i.c.</i> $\sqrt{1 - x}y'' - 4y = \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	✗

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Table 2.1 Problems not solved [1054]

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#	ID	ODE	CAS classification	Maple solved?	Mma solved?
960	14236	$\begin{cases} y_1' = \frac{2y_1}{x} - \frac{y_2}{x^2} - 3 + \frac{1}{x} - \frac{1}{x^2} \\ y_2' = 2y_1 + 1 - 6x \end{cases}$ i.c.	system_of_ODEs	✓	✓
961	14237	$\begin{cases} y_1' = \frac{5y_1}{x} + \frac{4y_2}{x} - 2x \\ y_2' = -\frac{6y_1}{x} - \frac{5y_2}{x} + 5x \end{cases}$ i.c.	system_of_ODEs	✓	✓
962	14257	$\begin{cases} y_1' = \frac{5y_1}{x} + \frac{4y_2}{x} \\ y_2' = -\frac{6y_1}{x} - \frac{5y_2}{x} \end{cases}$	system_of_ODEs	✓	✓
963	14258	$\begin{cases} y_1' = \frac{5y_1}{x} + \frac{4y_2}{x} - 2x \\ y_2' = -\frac{6y_1}{x} - \frac{5y_2}{x} + 5x \end{cases}$	system_of_ODEs	✓	✓
964	14938	$y'' + x^2y' - 4y = x^3$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	✓
965	14939	$y'' + x^2y' - 4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
966	14940	$y'' + x^2y' = 4y$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
967	15435	$\begin{cases} tx' + 2x = 15y \\ ty' = x \end{cases}$	system_of_ODEs	✓	✓
968	15458	$yy' + y^4 = \sin(x)$	['y=_G(x,y)']	✓	✗
969	15794	$y^4 + (t^4 - ty^3)y' = 0$ i.c.	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓	✗
970	15924	$y''^2 - 5y''y' + 4y^2 = 0$	[[_2nd_order, _missing_x]]	✓	✗
971	15925	$y''^2 - 2y''y' + y^2 = 0$	[[_2nd_order, _missing_x]]	✓	✗
972	16316	$x'' + x = \begin{cases} \cos(t) & 0 \leq t < \pi \\ 0 & \pi \leq t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	✓
973	16327	$\begin{cases} x' = x^2 \\ y' = e^t \end{cases}$	system_of_ODEs	✓	✓
974	16350	$y' = \sin(xy)$ i.c.	['y=_G(x,y)']	✓	✓
975	16405	$x^2y' \cos(y) + 1 = 0$ i.c.	[_separable]	✓	✗
976	16406	$x^2y' + \cos(2y) = 1$ i.c.	[_separable]	✓	✗

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Table 2.1 Problems not solved [1054]

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#	ID	ODE	CAS classification	Maple solved?	Mma solved?
977	16412	$x^2 y' + \sin(2y) = 1$ i.c.	[_separable]	✓	✗
978	16460	$y' - 2y e^x = 2\sqrt{y} e^x$	[[_1st_order, _with_symmetry_[F(x),G(x)*y+H(x)]]]	✓	✓
979	16466	$y' = y(e^x + \ln(y))$	[[_1st_order, _with_symmetry_[F(x),G(x)*y+H(x)]]]	✓	✓
980	16468	$yy' + 1 = (x - 1)e^{-\frac{y^2}{2}}$	['y=_G(x,y)']	✓	✓
981	16469	$y' + \sin(2y)x = 2xe^{-x^2} \cos(y)^2$	['y=_G(x,y)']	✓	✓
982	16627	$y''' = 3yy'$ i.c.	[[_3rd_order, _missing_x], [_3rd_order, _exact, _nonlinear], [_3rd_order, _with_linear_symmetries], [_3rd_order, _reducible, _mu_y2]]	✓	✗
983	16788	$y'' + 4y' + 3y = 8e^x + 9$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	✗
984	16790	$y'' + 4y' + 4y = 2e^x(\sin(x) + 7\cos(x))$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	✗
985	16841	$(1 - x)y'' + xy' - y = (x - 1)^2 e^x$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	✓
986	16845	$(x^2 - 2x)y'' + (-x^2 + 2)y' - 2(1 - x)y = 2x - 2$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	✓
987	16881	$y''' + x \sin(y) = 0$ i.c. hint: series	[NONE]	✓	✗
988	16905	$\begin{bmatrix} x_1' = -2tx_1^2 \\ x_2' = \frac{x_2+t}{t} \end{bmatrix}$	system_of_ODEs	✓	✓
989	16906	$\begin{bmatrix} x_1' = e^{t-x_1} \\ x_2' = 2e^{x_1} \end{bmatrix}$	system_of_ODEs	✓	✓
990	16907	$\begin{bmatrix} x' = y \\ y' = \frac{y^2}{x} \end{bmatrix}$	system_of_ODEs	✓	✓
991	16908	$\begin{bmatrix} x_1' = \frac{x_1^2}{x_2} \\ x_2' = x_2 - x_1 \end{bmatrix}$	system_of_ODEs	✓	✓

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Table 2.1 Problems not solved [1054]

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#	ID	ODE	CAS classification	Maple solved?	Mma solved?
992	16909	$\begin{bmatrix} x' = \frac{e^{-x}}{t} \\ y' = \frac{x e^{-y}}{t} \end{bmatrix}$	system_of_ODEs	✓	✓
993	16910	$\begin{bmatrix} x' = \frac{y+t}{x+y} \\ y' = \frac{x-t}{x+y} \end{bmatrix}$	system_of_ODEs	✓	✓
994	16911	$\begin{bmatrix} x' = \frac{t-y}{y-x} \\ y' = \frac{x-t}{y-x} \end{bmatrix}$	system_of_ODEs	✓	✓
995	16912	$\begin{bmatrix} x' = \frac{y+t}{x+y} \\ y' = \frac{t+x}{x+y} \end{bmatrix}$	system_of_ODEs	✓	✗
996	16920	$\begin{bmatrix} x'' = y \\ y'' = x \end{bmatrix}$	system_of_ODEs	✓	✓
997	16921	$\begin{bmatrix} x'' + y' + x = 0 \\ x' + y'' = 0 \end{bmatrix}$	system_of_ODEs	✓	✓
998	16922	$\begin{bmatrix} x'' = 3x + y \\ y' = -2x \end{bmatrix}$	system_of_ODEs	✓	✓
999	16923	$\begin{bmatrix} x'' = x^2 + y \\ y' = -2xx' + x \end{bmatrix}$ i.c.	system_of_ODEs	✓	✗
1000	16924	$\begin{bmatrix} x' = x^2 + y^2 \\ y' = 2xy \end{bmatrix}$	system_of_ODEs	✓	✓
1001	16925	$\begin{bmatrix} x' = -\frac{1}{y} \\ y' = \frac{1}{x} \end{bmatrix}$	system_of_ODEs	✓	✓
1002	16926	$\begin{bmatrix} x' = \frac{x}{y} \\ y' = \frac{y}{x} \end{bmatrix}$	system_of_ODEs	✓	✓
1003	16927	$\begin{bmatrix} x' = \frac{y}{x-y} \\ y' = \frac{x}{x-y} \end{bmatrix}$	system_of_ODEs	✓	✓
1004	16928	$\begin{bmatrix} x' = \sin(x) \cos(y) \\ y' = \cos(x) \sin(y) \end{bmatrix}$	system_of_ODEs	✓	✓
1005	16929	$\begin{bmatrix} e^t x' = \frac{1}{y} \\ e^t y' = \frac{1}{x} \end{bmatrix}$	system_of_ODEs	✓	✓

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Table 2.1 Problems not solved [1054]

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#	ID	ODE	CAS classification	Maple solved?	Mma solved?
1006	16942	$\begin{bmatrix} x' = -4x - 2y + \frac{2}{e^t - 1} \\ y' = 6x + 3y - \frac{3}{e^t - 1} \end{bmatrix}$	system_of_ODEs	✓	✓
1007	17134	$\begin{bmatrix} x' = -2xt + y \\ y' = 3x - y \end{bmatrix}$	system_of_ODEs	✓	✓
1008	17137	$\begin{bmatrix} x' = -x + ty \\ y' = xt - y \end{bmatrix}$	system_of_ODEs	✓	✓
1009	17138	$\begin{bmatrix} x' = x + y + 4 \\ y' = -2x + \sin(t)y \end{bmatrix}$	system_of_ODEs	✓	✗
1010	17208	$\begin{bmatrix} x' = -x + y + x^2 \\ y' = y - 2xy \end{bmatrix}$	system_of_ODEs	✓	✓
1011	17209	$\begin{bmatrix} x' = 2yx^2 - 3x^2 - 4y \\ y' = -2xy^2 + 6xy \end{bmatrix}$	system_of_ODEs	✓	✓
1012	17210	$\begin{bmatrix} x' = 3x - x^2 \\ y' = 2xy - 3y + 2 \end{bmatrix}$	system_of_ODEs	✓	✓
1013	17211	$\begin{bmatrix} x' = x - xy \\ y' = y + 2xy \end{bmatrix}$	system_of_ODEs	✓	✓
1014	17217	$\begin{bmatrix} x' = -x + 2xy \\ y' = y - x^2 - y^2 \end{bmatrix}$	system_of_ODEs	✓	✓
1015	17223	$(-x^2 + 1)y'' - 2xy' + \alpha(1 + \alpha)y = 0$	[_Gegenbauer]	✓	✓
1016	17234	<i>i.c.</i> $(t - 1)y'' - 3ty' + 4y = \sin(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	✓
1017	17235	<i>i.c.</i> $t(-4 + t)y'' + 3ty' + 4y = 2$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
1018	17465	<i>i.c.</i> hint: laplace $y'''' + y'' + 16y = g(t)$	[[_high_order, _linear, _nonhomogeneous]]	✓	✓
1019	17565	$\begin{bmatrix} x' = -2y + xy \\ y' = x + 4xy \end{bmatrix}$	system_of_ODEs	✓	✓
1020	17566	$\begin{bmatrix} x' = 1 + 5y \\ y' = 1 - 6x^2 \end{bmatrix}$	system_of_ODEs	✓	✓
1021	17596	$y'(x^2 + y^2 + 3) = 2x\left(2y - \frac{x^2}{y}\right)$	[_rational]	✓	✓
1022	17611	$2x^3 + 3x^2y + y^2 - y^3 + (2y^3 + 3xy^2 + x^2 - x^3)y' = 0$	[_rational]	✓	✓

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Table 2.1 Problems not solved [1054]

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#	ID	ODE	CAS classification	Maple solved?	Mma solved?
1023	17655	$n x^3 y'' = (y - xy')^2$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _reducible, _mu_xy]]	✓	✓
1024	17656	$y^2(x^2 y'' - xy' + y) = x^3$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
1025	17657	$x^2 y^2 y'' - 3xy^2 y' + 4y^3 + x^6 = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
1026	17663	$x^2 y y'' + x^2 y'^2 - 5xy y' = 4y^2$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _reducible, _mu_xy]]	✓	✓
1027	17666	$40y''''^3 - 45y'' y''' y'''' + 9y''^2 y^{(5)} = 0$	[[_high_order, _missing_x], [_high_order, _missing_y], [_high_order, _with_linear_symmetries]]	✓	✓
1028	17671	$(-x^2 + 1) y'' - 2xy' + n(n + 1) y = 0$	[_Gegenbauer]	✓	✓
1029	17673	$\sin(x)^2 y'' = 2y$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
1030	17675	$xy''' - y'' + xy' - y = 0$	[[_3rd_order, _with_linear_symmetries]]	✓	✓
1031	17679	$(x^2 + 2) y''' - 2xy'' + (x^2 + 2) y' - 2xy = x^4 + 12$	[[_3rd_order, _linear, _nonhomogeneous]]	✓	✓
1032	17682	$y'' + \frac{y}{x^2 \ln(x)} = e^x \left( \frac{2}{x} + \ln(x) \right)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	✓
1033	17716	$\begin{bmatrix} y' = \frac{y^2}{z} \\ z' = \frac{y}{2} \end{bmatrix}$	system_of_ODEs	✓	✓
1034	17717	$\begin{bmatrix} y' = 1 - \frac{1}{z} \\ z' = \frac{1}{y-x} \end{bmatrix}$	system_of_ODEs	✓	✓
1035	17721	$\begin{bmatrix} y' = \frac{z^2}{y} \\ z' = \frac{y^2}{z} \end{bmatrix}$	system_of_ODEs	✓	✓
1036	17722	$\begin{bmatrix} y' = \frac{y^2}{z} \\ z' = \frac{z^2}{y} \end{bmatrix}$	system_of_ODEs	✓	✓
1037	17726	$\begin{bmatrix} y'' + z' - 2z = e^{2x} \\ z' + 2y' - 3y = 0 \end{bmatrix}$	system_of_ODEs	✓	✓

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Table 2.1 Problems not solved [1054]

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#	ID	ODE	CAS classification	Maple solved?	Mma solved?
1038	17728	$\begin{bmatrix} y' + \frac{2z}{x^2} = 1 \\ z' + y = x \end{bmatrix}$	system_of_ODEs	✓	✓
1039	17729	$\begin{bmatrix} tx' - x - 3y = t \\ ty' - x + y = 0 \end{bmatrix}$	system_of_ODEs	✓	✓
1040	17730	$\begin{bmatrix} tx' + 6x - y - 3z = 0 \\ ty' + 23x - 6y - 9z = 0 \\ tz' + x + y - 2z = 0 \end{bmatrix}$	system_of_ODEs	✓	✓
1041	17963	$y'' - f(x)y' + (f(x) - 1)y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓	✗
1042	17998	$y'' + 3xy' + x^2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
1043	18135	$xy'' + (2x + 3)y' + (x + 3)y = 3e^{-x}$ i.c. hint: laplace	[[_2nd_order, _linear, _nonhomogeneous]]	✓	✗
1044	18136	$y'' + x^2y = 0$ i.c. hint: laplace	[[_Emden, _Fowler]]	✓	✓
1045	18207	$x^2y'' - \frac{x^2y'^2}{2y} + 4xy' + 4y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _reducible, _mu_xy]]	✓	✓
1046	18210	$y'' \sin(x) + y' \cos(x) + ny \sin(x) = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓
1047	18288	$y'''y' - 3y''^2 + 3y''y'^2 - 2y'^4 - xy'^5 = 0$	[[_3rd_order, _missing_y], [_3rd_order, _with_exponential_symmetries], [_3rd_order, _with_linear_symmetries]]	✓	✗
1048	18298	$(x^2 + 1)y' + x^2y = x^3 - x^2 \arctan(x)$	[_linear]	✓	✓
1049	18372	$\begin{aligned} (x^3 + x^2 - 3x + 1)y''' \\ + (9x^2 + 6x - 9)y'' \\ + (18x + 6)y' + 6y = x^3 \end{aligned}$	[[_3rd_order, _fully, _exact, _linear]]	✓	✓
1050	18444	$-y + xy' = x\sqrt{y^2 + x^2}$	[[_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]']]	✓	✓
1051	18607	$(5 + 2x)^2 y'' - 6(5 - 2x)y' + 8y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	✓

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Table 2.1 Problems not solved [1054]

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#	ID	ODE	CAS classification	Maple solved?	Mma solved?
1052	18615	$16(x+1)^4 y'''' + 96(x+1)^3 y''' + 104(x+1)^2 y'' + 8(x+1) y' + y = x^2 + 4x + 3$	[[_high_order, _with_linear_symmetries]]	✓	✓
1053	18623	$xy''' + (x^2 - 3)y'' + 4xy' + 2y = 0$	[[_3rd_order, _fully_exact, _linear]]	✓	✓
1054	18627	$\sqrt{x} y'' + 2xy' + 3y = x$	[[_2nd_order, _with_linear_symmetries]]	✓	✓

## 2.2 All problems sorted sequentially

Table 2.2: Main lookup table. Sorted sequentially by problem number.

#	ODE	CAS classification	Solved?	time (sec)
1	<i>i.c.</i> $y' = 2x + 1$	[_quadrature]	✓	0.426
2	<i>i.c.</i> $y' = (-2 + x)^2$	[_quadrature]	✓	0.487
3	<i>i.c.</i> $y' = \sqrt{x}$	[_quadrature]	✓	0.510
4	<i>i.c.</i> $y' = \frac{1}{x^2}$	[_quadrature]	✓	0.476
5	<i>i.c.</i> $y' = \frac{1}{\sqrt{x+2}}$	[_quadrature]	✓	0.549
6	<i>i.c.</i> $y' = x\sqrt{x^2+9}$	[_quadrature]	✓	0.875
7	<i>i.c.</i> $y' = \frac{10}{x^2+1}$	[_quadrature]	✓	0.559
8	<i>i.c.</i> $y' = \cos(2x)$	[_quadrature]	✓	0.636
9	<i>i.c.</i> $y' = \frac{1}{\sqrt{-x^2+1}}$	[_quadrature]	✓	0.676
10	<i>i.c.</i> $y' = xe^{-x}$	[_quadrature]	✓	0.533
11	<i>i.c.</i> $x'' = 50$	[[_2nd_order, _quadrature]]	✓	2.015
12	<i>i.c.</i> $x'' = -20$	[[_2nd_order, _quadrature]]	✓	2.017
13	<i>i.c.</i> $x'' = 3t$	[[_2nd_order, _quadrature]]	✓	1.540
14	<i>i.c.</i> $x'' = 2t + 1$	[[_2nd_order, _quadrature]]	✓	4.871
15	<i>i.c.</i> $x'' = 4(3+t)^2$	[[_2nd_order, _quadrature]]	✓	1.698

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
Continued from previous page

#	ODE	CAS classification	Solved?	time (sec)
16	$x'' = \frac{1}{\sqrt{t+4}}$ i.c.	[[_2nd_order, _quadrature]]	✓	5.714
17	$x'' = \frac{1}{(t+1)^3}$ i.c.	[[_2nd_order, _quadrature]]	✓	1.867
18	$x'' = 50 \sin(5t)$ i.c.	[[_2nd_order, _quadrature]]	✓	6.967
19	$y' = -y - \sin(x)$	[[_linear, 'class A']]	✓	1.254
20	$y' = x + y$	[[_linear, 'class A']]	✓	1.053
21	$y' = y - \sin(x)$	[[_linear, 'class A']]	✓	1.272
22	$y' = x - y$	[[_linear, 'class A']]	✓	1.016
23	$y' = y - x + 1$	[[_linear, 'class A']]	✓	1.176
24	$y' = x + 1 - y$	[[_linear, 'class A']]	✓	1.187
25	$y' = x^2 - y$	[[_linear, 'class A']]	✓	1.047
26	$y' = x^2 - y - 2$	[[_linear, 'class A']]	✓	1.075
27	$y' = 2y^2x^2$ i.c.	[_separable]	✓	2.201
28	$y' = \ln(y)x$ i.c.	[_separable]	✓	2.082
29	$y' = y^{1/3}$ i.c.	[_quadrature]	✓	2.098
30	$y' = y^{1/3}$ i.c.	[_quadrature]	✓	1.823
31	$y' = \sqrt{x-y}$ i.c.	[[_homogeneous, 'class C'], _dAlembert]	✓	2.538
32	$y' = \sqrt{x-y}$ i.c.	[[_homogeneous, 'class C'], _dAlembert]	✓	4.248
33	$yy' = x - 1$ i.c.	[_separable]	✓	5.044
34	$yy' = x - 1$ i.c.	[_separable]	✓	3.921

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
Continued from previous page

#	ODE	CAS classification	Solved?	time (sec)
35	<i>i.c.</i> $y' = \ln(1 + y^2)$	[_quadrature]	✓	1.316
36	<i>i.c.</i> $y' = x^2 - y^2$	[_Riccati]	✗	1.612
37	<i>i.c.</i> $y' = x + y$	[[_linear, 'class A']]	✓	1.291
38	<i>i.c.</i> $y' = y - x$	[[_linear, 'class A']]	✓	1.362
39	<i>i.c.</i> $y' = x^2 + y^2 - 1$	[_Riccati]	✗	4.654
40	<i>i.c.</i> $y' = x + \frac{y^2}{2}$	[[_Riccati, _special]]	✓	1.718
41	$y' + 2xy = 0$	[_separable]	✓	1.261
42	$y' + 2xy^2 = 0$	[_separable]	✓	1.587
43	$y' = y \sin(x)$	[_separable]	✓	1.451
44	$(x + 1)y' = 4y$	[_separable]	✓	1.704
45	$2\sqrt{x}y' = \sqrt{1 - y^2}$	[_separable]	✓	1.591
46	$y' = 3\sqrt{xy}$	[[_homogeneous, 'class G']]	✓	8.607
47	$y' = 64^{1/3}(xy)^{1/3}$	[[_homogeneous, 'class G']]	✓	3.882
48	$y' = 2x \sec(y)$	[_separable]	✓	1.204
49	$(-x^2 + 1)y' = 2y$	[_separable]	✓	1.467
50	$(x + 1)^2 y' = (1 + y)^2$	[_separable]	✓	1.918
51	$y' = xy^3$	[_separable]	✓	2.224
52	$yy' = x(1 + y^2)$	[_separable]	✓	1.791
53	$y^3 y' = (1 + y^4) \cos(x)$	[_separable]	✓	5.016
54	$y' = \frac{1 + \sqrt{x}}{1 + \sqrt{y}}$	[_separable]	✓	1.593

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
55	$y' = \frac{(x-1)y^5}{x^2(2y^3-y)}$	[_separable]	✓	1.776
56	$(x^2+1)\tan(y)y' = x$	[_separable]	✓	1.730
57	$y' = 1+x+y+xy$	[_separable]	✓	1.234
58	$x^2y' = 1-x^2+y^2-y^2x^2$	[_separable]	✓	2.239
59	$y' = ye^x$ i.c.	[_separable]	✓	1.471
60	$y' = 3x^2(1+y^2)$ i.c.	[_separable]	✓	4.203
61	$2yy' = \frac{x}{\sqrt{x^2-16}}$ i.c.	[_separable]	✓	2.943
62	$y' = 4x^3y - y$ i.c.	[_separable]	✓	1.675
63	$1+y' = 2y$ i.c.	[_quadrature]	✓	1.339
64	$\tan(x)y' = y$ i.c.	[_separable]	✓	2.179
65	$-y + xy' = 2x^2y$ i.c.	[_separable]	✓	1.877
66	$y' = 2xy^2 + 3y^2x^2$ i.c.	[_separable]	✓	2.013
67	$y' = 6e^{2x-y}$ i.c.	[_separable]	✓	3.246
68	$2\sqrt{x}y' = \cos(y)^2$ i.c.	[_separable]	✓	2.339
69	$y' = y^2$ i.c.	[_quadrature]	✓	1.116
70	$y'^2 = 4y$ i.c.	[_quadrature]	✓	0.693
71	$y' = 2\sqrt{y}$ i.c.	[_quadrature]	✓	1.559

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
72	<i>i.c.</i> $y' = y\sqrt{y^2 - 1}$	[_quadrature]	✓	23.726
73	<i>i.c.</i> $y' + y = 2$	[_quadrature]	✓	1.275
74	<i>i.c.</i> $y' - 2y = 3e^{2x}$	[[_linear, 'class A']]	✓	1.334
75	$y' + 3y = 2xe^{-3x}$	[[_linear, 'class A']]	✓	1.583
76	$y' - 2xy = e^{x^2}$	[_linear]	✓	1.442
77	<i>i.c.</i> $xy' + 2y = 3x$	[_linear]	✓	2.763
78	<i>i.c.</i> $xy' + 5y = 7x^2$	[_linear]	✓	1.868
79	$2xy' + y = 10\sqrt{x}$	[_linear]	✓	4.156
80	$3xy' + y = 12x$	[_linear]	✓	2.058
81	<i>i.c.</i> $-y + xy' = x$	[_linear]	✓	1.640
82	$2xy' - 3y = 9x^3$	[_linear]	✓	1.431
83	<i>i.c.</i> $xy' + y = 3xy$	[_separable]	✓	1.665
84	<i>i.c.</i> $xy' + 3y = 2x^5$	[_linear]	✓	1.734
85	<i>i.c.</i> $y' + y = e^x$	[[_linear, 'class A']]	✓	1.344
86	<i>i.c.</i> $xy' - 3y = x^3$	[_linear]	✓	1.414
87	<i>i.c.</i> $y' + 2xy = x$	[_separable]	✓	1.538
88	<i>i.c.</i> $y' = (1 - y)\cos(x)$	[_separable]	✓	1.887
89	<i>i.c.</i> $(x + 1)y' + y = \cos(x)$	[_linear]	✓	1.728
90	$xy' = 2y + x^3\cos(x)$	[_linear]	✓	1.700

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
91	$y' + y \cot(x) = \cos(x)$	[_linear]	✓	1.755
92	<i>i.c.</i> $y' = 1 + x + y + xy$	[_separable]	✓	1.562
93	<i>i.c.</i> $xy' = 3y + x^4 \cos(x)$	[_linear]	✓	2.675
94	<i>i.c.</i> $y' = 2xy + 3x^2 e^{x^2}$	[_linear]	✓	2.698
95	$xy' + (2x - 3)y = 4x^4$	[_linear]	✓	2.376
96	<i>i.c.</i> $(x^2 + 4)y' + 3xy = x$	[_separable]	✓	2.028
97	<i>i.c.</i> $(x^2 + 1)y' + 3x^3y = 6x e^{-\frac{3x^2}{2}}$	[_linear]	✓	2.321
98	$\frac{1 - 4xy^2}{x'} = y^3$	[_linear]	✓	1.348
99	$\frac{x + y e^y}{x'} = 1$	[[_linear, 'class A']]	✓	1.381
100	$\frac{1 + 2xy}{x'} = y^2 + 1$	[_linear]	✓	1.360
101	$y' = 1 + 2xy$	[_linear]	✓	0.967
102	<i>i.c.</i> $2xy' = y + 2x \cos(x)$	[_linear]	✓	1.964
103	$y' + p(x)y = 0$	[_separable]	✓	1.178
104	$y' + p(x)y = q(x)$	[_linear]	✓	1.604
105	$(x + y)y' = x - y$	[[_homogeneous, 'class A'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓	3.923
106	$2xyy' = x^2 + 2y^2$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓	5.285
107	$xy' = y + 2\sqrt{xy}$	[[_homogeneous, 'class A'], _dAlembert]	✓	6.525

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
108	$(x - y)y' = x + y$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓	2.859
109	$x(x + y)y' = y(x - y)$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓	3.392
110	$(x + 2y)y' = y$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓	3.729
111	$xy^2y' = x^3 + y^3$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓	8.348
112	$x^2y' = xy + x^2e^{\frac{y}{x}}$	[[_homogeneous, 'class A'], _dAlembert]	✓	10.879
113	$x^2y' = xy + y^2$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓	1.963
114	$xyy' = x^2 + 3y^2$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓	5.095
115	$(x^2 - y^2)y' = 2xy$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	4.775
116	$xyy' = y^2 + x\sqrt{4x^2 + y^2}$	[[_homogeneous, 'class A'], _dAlembert]	✓	26.696
117	$xy' = y + \sqrt{y^2 + x^2}$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	6.961
118	$x + yy' = \sqrt{y^2 + x^2}$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	5.438
119	$x(x + y)y' + y(3x + y) = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓	5.077
120	$y' = \sqrt{x + y + 1}$	[[_homogeneous, 'class C'], _dAlembert]	✓	2.526
121	$y' = (4x + y)^2$	[[_homogeneous, 'class C'], _Riccati]	✓	1.639

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
Continued from previous page

#	ODE	CAS classification	Solved?	time (sec)
122	$(x + y) y' = 1$	[[_homogeneous, 'class C'], [_Abel, '2nd type', 'class C'], _dAlembert]	✓	1.504
123	$x^2 y' + 2xy = 5y^3$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓	2.718
124	$y^2 y' + 2xy^3 = 6x$	[_separable]	✓	1.908
125	$y' = y + y^3$	[_quadrature]	✓	3.908
126	$x^2 y' + 2xy = 5y^4$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓	2.887
127	$xy' + 6y = 3xy^{4/3}$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓	55.946
128	$2xy' + y^3 e^{-2x} = 2xy$	[_Bernoulli]	✓	2.136
129	$y^2(xy' + y) \sqrt{x^4 + 1} = x$	[_Bernoulli]	✓	5.828
130	$3y^2 y' + y^3 = e^{-x}$	[[_1st_order, _with_linear_symmetries], _Bernoulli]	✓	1.833
131	$3xy^2 y' = 3x^4 + y^3$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓	3.059
132	$x e^y y' = 2e^y + 2x^3 e^{2x}$	[[_1st_order, '_with_symmetry_[F(x),G(x)]']]	✓	1.615
133	$2x \sin(y) \cos(y) y' = 4x^2 + \sin(y)^2$	['y=_G(x,y)']	✓	3.244
134	$(e^y + x) y' = x e^{-y} - 1$	[[_1st_order, _with_linear_symmetries]]	✓	1.810
135	$2x + 3y + (3x + 2y) y' = 0$	[[_homogeneous, 'class A'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓	3.982
136	$4x - y + (6y - x) y' = 0$	[[_homogeneous, 'class A'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓	3.475

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
137	$3x^2 + 2y^2 + (4xy + 6y^2) y' = 0$	[[_homogeneous, 'class A'], _exact, _rational, _dAlembert]	✓	8.661
138	$2xy^2 + 3x^2 + (2x^2y + 4y^3) y' = 0$	[_exact, _rational]	✓	1.911
139	$x^3 + \frac{y}{x} + (y^2 + \ln(x)) y' = 0$	[_exact]	✓	1.558
140	$1 + y e^{xy} + (2y + x e^{xy}) y' = 0$	[_exact]	✓	2.053
141	$\cos(x) + \ln(y) + \left(\frac{x}{y} + e^y\right) y' = 0$	[_exact]	✓	2.894
142	$x + \arctan(y) + \frac{(x+y)y'}{1+y^2} = 0$	[_exact]	✓	1.734
143	$3x^2y^3 + y^4 + (3x^3y^2 + y^4 + 4xy^3) y' = 0$	[_exact, _rational]	✓	1.538
144	$e^x \sin(y) + \tan(y) + (e^x \cos(y) + x \sec(y)^2) y' = 0$	[_exact]	✓	16.946
145	$\frac{2x}{y} - \frac{3y^2}{x^4} + \left(\frac{2y}{x^3} - \frac{x^2}{y^2} + \frac{1}{\sqrt{y}}\right) y' = 0$	[_exact, _rational]	✓	11.021
146	$\frac{2x^{5/2} - 3y^{5/3}}{2x^{5/2}y^{2/3}} + \frac{(3y^{5/3} - 2x^{5/2}) y'}{3x^{3/2}y^{5/3}} = 0$	[[_1st_order, _with_linear_symmetries], _exact, _rational]	✓	2.236
147	$xy'' = y'$	[[_2nd_order, _missing_y]]	✓	0.942
148	$yy'' + y'^2 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓	0.473
149	$y'' + 4y = 0$	[[_2nd_order, _missing_x]]	✓	1.987
150	$xy'' + y' = 4x$	[[_2nd_order, _missing_y]]	✓	1.063
151	$y'' = y'^2$	[[_2nd_order, _missing_x], _Liouville, [_2nd_order, _reducible, _mu_xy]]	✓	0.194

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
152	$x^2y'' + 3xy' = 2$	[[_2nd_order, _missing_y]]	✓	0.981
153	$yy'' + y'^2 = yy'$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓	0.708
154	$y'' = (x + y')^2$	[[_2nd_order, _missing_y], [_2nd_order, _reducible, _mu_xy]]	✓	0.470
155	$y'' = 2yy'^3$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_y_y1]]	✓	0.280
156	$y^3y'' = 1$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓	1.110
157	$y'' = 2yy'$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Lagerstrom, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓	0.604
158	$yy'' = 3y'^2$	[[_2nd_order, _missing_x], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓	0.355
159	$y' = f(ax + by + c)$	[[_homogeneous, 'class C'], _dAlembert]	✓	1.184
160	$y' + p(x)y = q(x)y^n$	[_Bernoulli]	✓	2.227
161	$y' + p(x)y = q(x)y \ln(y)$	[[_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)']]]	✓	0.486

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
162	$xy' - 4x^2y + 2y \ln(y) = 0$	[[_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]]]	✓	2.523
163	$y' = \frac{x - y - 1}{x + y + 3}$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	2.716
164	$y' = \frac{2y - x + 7}{4x - 3y - 18}$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	3.308
165	$y' = \sin(x - y)$	[[_homogeneous, 'class C'], _dAlembert]	✓	2.556
166	$y' = -\frac{y(2x^3 - y^3)}{x(2y^3 - x^3)}$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	6.928
167	$y' + y^2 = x^2 + 1$	[_Riccati]	✓	1.423
168	$y' + 2xy = 1 + x^2 + y^2$	[[_homogeneous, 'class C'], _Riccati]	✓	2.727
169	$y = xy' - \frac{y'^2}{4}$	[[_1st_order, _with_linear_symmetries], _Clairaut]	✓	0.432
170	$ry'' = (1 + y'^2)^{3/2}$	[[_2nd_order, __missing_x]]	✓	3.898
171	<i>i.c.</i> $x' = x - x^2$	[_quadrature]	✓	2.440
172	<i>i.c.</i> $x' = 10x - x^2$	[_quadrature]	✓	2.454
173	<i>i.c.</i> $x' = 1 - x^2$	[_quadrature]	✓	1.437
174	<i>i.c.</i> $x' = 9 - 4x^2$	[_quadrature]	✓	1.838
175	<i>i.c.</i> $x' = 3x(5 - x)$	[_quadrature]	✓	2.567
176	<i>i.c.</i> $x' = 3x(5 - x)$	[_quadrature]	✓	2.536

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
177	$x' = 4x(7 - x)$ i.c.	[_quadrature]	✓	2.615
178	$x' = 7x(x - 13)$ i.c.	[_quadrature]	✓	2.202
179	$x^3 + 3y - xy' = 0$	[_linear]	✓	1.095
180	$xy^2 + 3y^2 - x^2y' = 0$	[_separable]	✓	1.668
181	$xy + y^2 - x^2y' = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓	1.964
182	$2xy^3 + e^x + (3y^2x^2 + \sin(y))y' = 0$	[_exact]	✓	2.253
183	$3y + x^4y' = 2xy$	[_separable]	✓	1.629
184	$2xy^2 + x^2y' = y^2$	[_separable]	✓	1.671
185	$2x^2y + x^3y' = 1$	[_linear]	✓	1.127
186	$x^2y' + 2xy = y^2$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓	2.621
187	$xy' + 2y = 6x^2\sqrt{y}$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓	3.634
188	$y' = 1 + x^2 + y^2 + y^2x^2$	[_separable]	✓	2.348
189	$x^2y' = xy + 3y^2$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓	2.022
190	$6xy^3 + 2y^4 + (9y^2x^2 + 8xy^3)y' = 0$	[[_homogeneous, 'class A'], _exact, _rational, [_Abel, '2nd type', 'class B']]	✓	6.751
191	$4xy^2 + y' = 5x^4y^2$	[_separable]	✓	1.658
192	$x^3y' = x^2y - y^3$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓	81.191
193	$y' + 3y = 3x^2e^{-3x}$	[[_linear, 'class A']]	✓	1.670

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
194	$y' = x^2 - 2xy + y^2$	[[_homogeneous, 'class C', _Riccati]	✓	1.934
195	$e^x + y e^{xy} + (e^y + x e^{xy}) y' = 0$	[_exact]	✓	2.529
196	$2x^2 y - x^3 y' = y^3$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓	96.059
197	$3x^5 y^2 + x^3 y' = 2y^2$	[_separable]	✓	1.664
198	$xy' + 3y = \frac{3}{x^{3/2}}$	[_linear]	✓	1.824
199	$(x^2 - 1) y' + (x - 1) y = 1$	[_linear]	✓	1.332
200	$xy' = 6y + 12x^4 y^{2/3}$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓	5.203
201	$e^y + y \cos(x) + (x e^y + \sin(x)) y' = 0$	[_exact]	✓	37.684
202	$9y^2 x^2 + x^{3/2} y' = y^2$	[_separable]	✓	1.842
203	$2y + (x + 1) y' = 3x + 3$	[_linear]	✓	1.658
204	$9\sqrt{x} y^{4/3} - 12x^{1/5} y^{3/2} + (8x^{3/2} y^{1/3} - 15x^{6/5} \sqrt{y}) y' = 0$	[[_homogeneous, 'class G', _exact, _rational]	✓	37.260
205	$3y + x^3 y^4 + 3xy' = 0$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓	2.612
206	$xy' + y = 2e^{2x}$	[_linear]	✓	1.186
207	$(2x + 1) y' + y = (2x + 1)^{3/2}$	[_linear]	✓	3.815
208	$y' = \sqrt{x + y}$	[[_homogeneous, 'class C', _dAlembert]	✓	2.627
209	$y' = 3(y + 7) x^2$	[_separable]	✓	1.234
210	$y' = xy^3 - xy$	[_separable]	✓	3.555
211	$y' = -\frac{3x^2 + 2y^2}{4xy}$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓	63.019

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
212	$y' = \frac{3y + x}{y - 3x}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓	4.009
213	$y' = \frac{2xy + 2x}{x^2 + 1}$	[_separable]	✓	1.352
214	$y' = \frac{\sqrt{y} - y}{\tan(x)}$	[_separable]	✓	8.621
215	$y'' - y = 0$	[[_2nd_order, _missing_x]]	✓	2.604
216	$y'' - 9y = 0$	[[_2nd_order, _missing_x]]	✓	2.687
217	$y'' + 4y = 0$	[[_2nd_order, _missing_x]]	✓	3.252
218	$y'' + 25y = 0$	[[_2nd_order, _missing_x]]	✓	3.198
219	$y'' - 3y' + 2y = 0$	[[_2nd_order, _missing_x]]	✓	1.109
220	$y'' + y' - 6y = 0$	[[_2nd_order, _missing_x]]	✓	1.472
221	$y'' + y' = 0$	[[_2nd_order, _missing_x]]	✓	1.967
222	$y'' - 3y' = 0$	[[_2nd_order, _missing_x]]	✓	1.902
223	$y'' + 2y' + y = 0$	[[_2nd_order, _missing_x]]	✓	1.199
224	$y'' - 10y' + 25y = 0$	[[_2nd_order, _missing_x]]	✓	1.204
225	$y'' - 2y' + 2y = 0$	[[_2nd_order, _missing_x]]	✓	1.520
226	$y'' + 6y' + 13y = 0$	[[_2nd_order, _missing_x]]	✓	2.670
227	$x^2y'' - 2xy' + 2y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)']]]	✓	2.217

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
228	<i>i.c.</i> $x^2y'' + 2xy' - 6y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓	1.489
229	<i>i.c.</i> $x^2y'' - xy' + y = 0$	[[_Emden, _Fowler]]	✓	2.173
230	<i>i.c.</i> $x^2y'' + xy' + y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓	1.881
231	$y' + y^2 = 0$	[_quadrature]	✓	1.033
232	$yy'' = 6x^4$	[[_Emden, _Fowler], [_2nd_order, _with_linear_symmetries]]	✗	0.086
233	$yy'' + y'^2 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓	0.426
234	$y'' - 3y' + 2y = 0$	[[_2nd_order, _missing_x]]	✓	0.846
235	$y'' + 2y' - 15y = 0$	[[_2nd_order, _missing_x]]	✓	0.874
236	$y'' + 5y' = 0$	[[_2nd_order, _missing_x]]	✓	1.411
237	$2y'' + 3y' = 0$	[[_2nd_order, _missing_x]]	✓	1.468
238	$2y'' - y' - y = 0$	[[_2nd_order, _missing_x]]	✓	0.868
239	$4y'' + 8y' + 3y = 0$	[[_2nd_order, _missing_x]]	✓	0.882
240	$4y'' + 4y' + y = 0$	[[_2nd_order, _missing_x]]	✓	0.875
241	$9y'' - 12y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓	0.871

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

*Continued from previous page*

#	ODE	CAS classification	Solved?	time (sec)
242	$6y'' - 7y' - 20y = 0$	[[_2nd_order, __missing_x]]	✓	0.864
243	$35y'' - y' - 12y = 0$	[[_2nd_order, __missing_x]]	✓	0.885
244	$x^2y'' + xy' - y = 0$	[[_2nd_order, __exact, __linear, __homogeneous]]	✓	1.303
245	$x^2y'' + 2xy' - 12y = 0$	[[_Emden, __Fowler]]	✓	1.047
246	$4x^2y'' + 8xy' - 3y = 0$	[[_Emden, __Fowler], [_2nd_order, __linear, __with_symmetry_[0,F(x)]]]	✓	1.111
247	$x^2y'' + xy' = 0$	[[_2nd_order, __missing_y]]	✓	0.847
248	$x^2y'' - 3xy' + 4y = 0$	[[_Emden, __Fowler], [_2nd_order, __linear, __with_symmetry_[0,F(x)]]]	✓	1.323
249	<i>i.c.</i> $y''' + 2y'' - y' - 2y = 0$	[[_3rd_order, __missing_x]]	✓	0.151
250	<i>i.c.</i> $y''' - 6y'' + 11y' - 6y = 0$	[[_3rd_order, __missing_x]]	✓	0.159
251	<i>i.c.</i> $y''' - 3y'' + 3y' - y = 0$	[[_3rd_order, __missing_x]]	✓	0.150
252	<i>i.c.</i> $y''' - 5y'' + 8y' - 4y = 0$	[[_3rd_order, __missing_x]]	✓	0.144
253	<i>i.c.</i> $y''' + 9y' = 0$	[[_3rd_order, __missing_x]]	✓	0.081
254	<i>i.c.</i> $y''' - 3y'' + 4y' - 2y = 0$	[[_3rd_order, __missing_x]]	✓	0.092
255	<i>i.c.</i> $x^3y''' - 3x^2y'' + 6xy' - 6y = 0$	[[_3rd_order, __with_linear_symmetries]]	✓	0.200
256	<i>i.c.</i> $x^3y''' + 6x^2y'' + 4xy' - 4y = 0$	[[_3rd_order, __with_linear_symmetries]]	✓	0.234
257	<i>i.c.</i> $y'' + y = 3x$	[[_2nd_order, __with_linear_symmetries]]	✓	2.198

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
258	<i>i.c.</i> $y'' - 4y = 12$	[[_2nd_order, _missing_x]]	✓	2.997
259	<i>i.c.</i> $y'' - 2y' - 3y = 6$	[[_2nd_order, _missing_x]]	✓	1.633
260	<i>i.c.</i> $y'' - 2y' + 2y = 2x$	[[_2nd_order, _with_linear_symmetries]]	✓	8.985
261	$y'' + 2y = 4 + 6x$	[[_2nd_order, _with_linear_symmetries]]	✓	3.157
262	$x^2y'' - 2xy' + 2y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]]	✓	1.270
263	<i>i.c.</i> $y'' - 2y' - 5y = 0$	[[_2nd_order, _missing_x]]	✓	1.520
264	$x^2y'' + xy' - 9y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]]	✓	0.320
265	$4y'' - 4y' + y = 0$	[[_2nd_order, _missing_x]]	✓	0.404
266	$x^2y'' - x(x+2)y' + (x+2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.342
267	$(x+1)y'' - (x+2)y' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.345
268	$(-x^2+1)y'' + 2xy' - 2y = 0$	[_Gegenbauer]	✓	0.358
269	$(-x^2+1)y'' - 2xy' + 2y = 0$	[_Gegenbauer]	✓	0.356
270	$x^2y'' + xy' + \left(x^2 - \frac{1}{4}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.397
271	$y'' - 4y = 0$	[[_2nd_order, _missing_x]]	✓	2.191
272	$2y'' - 3y' = 0$	[[_2nd_order, _missing_x]]	✓	1.412
273	$y'' + y' - 10y = 0$	[[_2nd_order, _missing_x]]	✓	1.065
274	$2y'' - 7y' + 3y = 0$	[[_2nd_order, _missing_x]]	✓	0.934

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
275	$y'' + 6y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓	0.882
276	$y'' + 5y' + 5y = 0$	[[_2nd_order, _missing_x]]	✓	1.122
277	$4y'' - 12y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓	0.898
278	$y'' - 6y' + 13y = 0$	[[_2nd_order, _missing_x]]	✓	1.863
279	$y'' + 8y' + 25y = 0$	[[_2nd_order, _missing_x]]	✓	1.897
280	$5y'''' + 3y''' = 0$	[[_high_order, _missing_x]]	✓	0.070
281	$y'''' - 8y''' + 16y'' = 0$	[[_high_order, _missing_x]]	✓	0.074
282	$y'''' - 3y''' + 3y'' - y' = 0$	[[_high_order, _missing_x]]	✓	0.074
283	$9y''' + 12y'' + 4y' = 0$	[[_3rd_order, _missing_x]]	✓	0.071
284	$y'''' + 3y''' - 4y = 0$	[[_high_order, _missing_x]]	✓	0.079
285	$y'''' - 8y'' + 16y = 0$	[[_high_order, _missing_x]]	✓	0.078
286	$y'''' + 18y'' + 81y = 0$	[[_high_order, _missing_x]]	✓	0.089
287	$6y'''' + 11y'' + 4y = 0$	[[_high_order, _missing_x]]	✓	0.086
288	$y'''' = 16y$	[[_high_order, _missing_x]]	✓	0.077
289	$y''' + y'' - y' - y = 0$	[[_3rd_order, _missing_x]]	✓	0.072
290	$y'''' + 2y''' + 3y'' + 2y' + y = 0$	[[_high_order, _missing_x]]	✓	0.102
291	<i>i.c.</i> $y'' - 4y' + 3y = 0$	[[_2nd_order, _missing_x]]	✓	1.462
292	<i>i.c.</i> $9y'' + 6y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓	2.761

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
293	<i>i.c.</i> $y'' - 6y' + 25y = 0$	[[_2nd_order, _missing_x]]	✓	2.732
294	<i>i.c.</i> $2y''' - 3y'' - 2y' = 0$	[[_3rd_order, _missing_x]]	✓	0.145
295	<i>i.c.</i> $3y''' + 2y'' = 0$	[[_3rd_order, _missing_x]]	✓	0.144
296	<i>i.c.</i> $y''' + 10y'' + 25y' = 0$	[[_3rd_order, _missing_x]]	✓	0.153
297	$y''' + 3y'' - 4y = 0$	[[_3rd_order, _missing_x]]	✓	0.072
298	$2y''' - y'' - 5y' - 2y = 0$	[[_3rd_order, _missing_x]]	✓	0.113
299	$y''' + 27y = 0$	[[_3rd_order, _missing_x]]	✓	0.081
300	$y'''' - y''' + y'' - 3y' - 6y = 0$	[[_high_order, _missing_x]]	✓	0.086
301	$y''' + 3y'' + 4y' - 8y = 0$	[[_3rd_order, _missing_x]]	✓	0.078
302	$y'''' + y''' - 3y'' - 5y' - 2y = 0$	[[_high_order, _missing_x]]	✓	0.076
303	$y''' + 3y'' - 54y = 0$	[[_3rd_order, _missing_x]]	✓	0.083
304	$3y''' - 2y'' + 12y' - 8y = 0$	[[_3rd_order, _missing_x]]	✓	0.083
305	$6y'''' + 5y''' + 25y'' + 20y' + 4y = 0$	[[_high_order, _missing_x]]	✓	0.094
306	$9y''' + 11y'' + 4y' - 14y = 0$	[[_3rd_order, _missing_x]]	✓	0.087
307	<i>i.c.</i> $y'''' = y'''$	[[_high_order, _missing_x]]	✓	0.140
308	<i>i.c.</i> $y''' - 5y'' + 100y' - 500y = 0$	[[_3rd_order, _missing_x]]	✓	0.100
309	$y'' + 2iy' + 3y = 0$	[[_2nd_order, _missing_x]]	✓	0.817
310	$y'' - iy' + 6y = 0$	[[_2nd_order, _missing_x]]	✓	0.829

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
311	$y'' = (-2 + 2i\sqrt{3})y$	[[_2nd_order, _missing_x]]	✓	3.687
312	<i>i.c.</i> $y''' = y$	[[_3rd_order, _missing_x]]	✓	0.135
313	<i>i.c.</i> $y'''' = y''' + y'' + y' + 2y$	[[_high_order, _missing_x]]	✓	0.093
314	$ax^3y''' + bx^2y'' + cxy' + dy = 0$	[[_3rd_order, _with_linear_symmetries]]	✓	0.638
315	$x^2y'' + xy' + 9y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)']]]	✓	1.533
316	$x^2y'' + 7xy' + 25y = 0$	[[_Emden, _Fowler]]	✓	2.546
317	$x^3y''' + 6x^2y'' + 4xy' = 0$	[[_3rd_order, _missing_y]]	✓	0.126
318	$x^3y''' - x^2y'' + xy' = 0$	[[_3rd_order, _missing_y]]	✓	0.125
319	$x^3y''' + 3x^2y'' + xy' = 0$	[[_3rd_order, _missing_y]]	✓	0.125
320	$x^3y''' - 3x^2y'' + xy' = 0$	[[_3rd_order, _missing_y]]	✓	0.131
321	$x^3y''' + 6x^2y'' + 7xy' + y = 0$	[[_3rd_order, _exact, _linear, _homogeneous]]	✓	0.128
322	$y'' + 16y = e^{3x}$	[[_2nd_order, _with_linear_symmetries]]	✓	2.418
323	$y'' - y' + 2y = 3x + 4$	[[_2nd_order, _with_linear_symmetries]]	✓	28.241
324	$y'' - y' - 6y = 2\sin(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.522
325	$4y'' + 4y' + y = 3xe^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.098
326	$y'' + y' + y = \sin(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	74.843
327	$2y'' + 4y' + 7y = x^2$	[[_2nd_order, _with_linear_symmetries]]	✓	23.562

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
328	$y'' - 4y = \sinh(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.938
329	$y'' - 4y = \cosh(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.161
330	$y'' + 2y' - 3y = 1 + x e^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.311
331	$2y'' + 9y = 2 \cos(3x) + 3 \sin(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	6.910
332	$y''' + 4y' = 3x - 1$	[[_3rd_order, _missing_y]]	✓	0.115
333	$y''' + y' = 2 - \sin(x)$	[[_3rd_order, _missing_y]]	✓	0.444
334	$y'' + 2y' + 5y = e^x \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	17.825
335	$y'''' - 2y'' + y = x e^x$	[[_high_order, _linear, _nonhomogeneous]]	✓	0.139
336	$y^{(5)} + 5y'''' - y = 17$	[[_high_order, _missing_x]]	✓	0.143
337	$y'' + 9y = 2x^2 e^{3x} + 5$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.566
338	$y'' + y = \sin(x) + x \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.691
339	$y'''' - y'' + 4y = e^x - x e^{2x}$	[[_high_order, _linear, _nonhomogeneous]]	✓	0.243
340	$y^{(5)} + 2y'''' + 2y'' = 3x^2 - 1$	[[_high_order, _missing_y]]	✓	0.185
341	$y''' - y = e^x + 7$	[[_3rd_order, _with_linear_symmetries]]	✓	0.138
342	$y'' - 2y' + 2y = e^x \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	5.609
343	$y^{(5)} - y''' = e^x + 2x^2 - 5$	[[_high_order, _missing_y]]	✓	0.167
344	$y'' + 4y = 3x \cos(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	5.012
345	$y''' - y'' - 12y' = x - 2x e^{-3x}$	[[_3rd_order, _missing_y]]	✓	0.163

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
346	$y'' + 3y' + 2y = x(e^{-x} - e^{-2x})$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.316
347	$y'' - 6y' + 13y = x e^{3x} \sin(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	17.094
348	$y'''' + 5y'' + 4y = \sin(x) + \cos(2x)$	[[_high_order, _linear, _nonhomogeneous]]	✓	1.213
349	$y'''' + 9y'' = (x^2 + 1) \sin(3x)$	[[_high_order, _missing_y]]	✓	0.620
350	$y'''' - 2y'' + y = x^2 \cos(x)$	[[_high_order, _linear, _nonhomogeneous]]	✓	0.195
351	<i>i.c.</i> $y'' + 4y = 2x$	[[_2nd_order, _with_linear_symmetries]]	✓	3.399
352	<i>i.c.</i> $y'' + 3y' + 2y = e^x$	[[_2nd_order, _with_linear_symmetries]]	✓	1.352
353	<i>i.c.</i> $y'' + 9y = \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.723
354	<i>i.c.</i> $y'' + y = \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.889
355	<i>i.c.</i> $y'' - 2y' + 2y = x + 1$	[[_2nd_order, _with_linear_symmetries]]	✓	9.280
356	<i>i.c.</i> $y'''' - 4y'' = x^2$	[[_high_order, _missing_y]]	✓	0.199
357	<i>i.c.</i> $y''' - 2y'' + y' = 1 + x e^x$	[[_3rd_order, _missing_y]]	✓	0.219
358	<i>i.c.</i> $y'' + 2y' + 2y = \sin(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	10.277
359	<i>i.c.</i> $y''' + y'' = x + e^{-x}$	[[_3rd_order, _missing_y]]	✓	0.211
360	<i>i.c.</i> $y'''' - y = 5$	[[_high_order, _missing_x]]	✓	0.119
361	<i>i.c.</i> $y'''' - y''' - y'' - y' - 2y = 8x^5$	[[_high_order, _linear, _nonhomogeneous]]	✓	0.156
362	$y'''' + 4y = \cos(x)^3$	[[_high_order, _linear, _nonhomogeneous]]	✓	0.214

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
363	$y'' + y' + y = \sin(x) \sin(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	75.556
364	$y'' + 9y = \sin(x)^4$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.922
365	$y'' + y = x \cos(x)^3$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	6.740
366	$y'' + 3y' + 2y = 4e^x$	[[_2nd_order, _with_linear_symmetries]]	✓	1.097
367	$y'' - 2y' - 8y = 3e^{-2x}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.240
368	$y'' - 4y' + 4y = 2e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.102
369	$y'' - 4y = \sinh(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.325
370	$y'' + 4y = \cos(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.035
371	$y'' + 9y = \sin(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	4.060
372	$y'' + 9y = 2 \sec(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.442
373	$y'' + y = \csc(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	2.283
374	$y'' + 4y = \sin(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.690
375	$y'' - 4y = xe^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.229
376	$x^2y'' + xy' - y = 72x^5$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓	1.888
377	$x^2y'' - 4xy' + 6y = x^3$	[[_2nd_order, _with_linear_symmetries]]	✓	2.073
378	$x^2y'' - 3xy' + 4y = x^4$	[[_2nd_order, _with_linear_symmetries]]	✓	1.783
379	$4x^2y'' - 4xy' + 3y = 8x^{4/3}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.960

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
380	$x^2 y'' + xy' + y = \ln(x)$	[[_2nd_order, _with_linear_symmetries]]	✓	3.609
381	$(x^2 - 1)y'' - 2xy' + 2y = x^2 - 1$	[[_2nd_order, _with_linear_symmetries]]	✓	1.668
382	$y'' + y = 2 \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.066
383	$x'' + 9x = 10 \cos(2t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	4.096
384	$x'' + 4x = 5 \sin(3t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.521
385	$x'' + 100x = 225 \cos(5t) + 300 \sin(5t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	5.207
386	$x'' + 25x = 90 \cos(4t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	7.558
387	$mx'' + kx = F_0 \cos(\omega t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.644
388	$x'' + 4x' + 4x = 10 \cos(3t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.506
389	$x'' + 3x' + 5x = -4 \cos(5t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	76.446
390	$2x'' + 2x' + x = 3 \sin(10t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	20.106
391	$x'' + 3x' + 3x = 8 \cos(10t) + 6 \sin(10t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	34.404
392	$x'' + 4x' + 5x = 10 \cos(3t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	10.125
393	$x'' + 6x' + 13x = 10 \sin(5t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	29.270
394	$x'' + 2x' + 26x = 600 \cos(10t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	18.487
395	$x'' + 8x' + 25x = 200 \cos(t) + 520 \sin(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	16.862
396	$x'' + 2x' + 2x = 2 \cos(\omega t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	24.925

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
397	$x'' + 4x' + 5x = 10 \cos(\omega t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	24.811
398	$x'' + 6x' + 45x = 50 \cos(\omega t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	69.050
399	$x'' + 10x' + 650x = 100 \cos(\omega t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	71.915
400	$y' = y$	[_quadrature]	✓	0.280
401	$y' = 4y$	[_quadrature]	✓	0.566
402	$2y' + 3y = 0$	[_quadrature]	✓	0.566
403	$y' + 2xy = 0$	[_separable]	✓	0.588
404	$y' = xy$	[_separable]	✓	0.575
405	$(-2 + x)y' + y = 0$	[_separable]	✓	0.606
406	$(2x - 1)y' + 2y = 0$	[_separable]	✓	0.614
407	$2(x + 1)y' + y = 0$	[_separable]	✓	0.633
408	$(x - 1)y' + 2y = 0$	[_separable]	✓	0.671
409	$2(x - 1)y' = 3y$	[_separable]	✓	0.612
410	$y'' = y$	[[_2nd_order, _missing_x]]	✓	0.527
411	$y'' = 4y$	[[_2nd_order, _missing_x]]	✓	0.564
412	$y'' + 9y = 0$	[[_2nd_order, _missing_x]]	✓	0.562
413	$y'' + y = x$	[[_2nd_order, _with_linear_symmetries]]	✓	0.359
414	$xy' + y = 0$	[_separable]	✓	0.494
415	$2xy' = y$	[_separable]	✓	0.496
416	$x^2y' + y = 0$	[_separable]	✗	0.098
417	$x^3y' = 2y$	[_separable]	✗	0.107
418	<i>i.c.</i> $y'' + 4y = 0$	[[_2nd_order, _missing_x]]	✓	0.582

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

*Continued from previous page*

#	ODE	CAS classification	Solved?	time (sec)
419	<i>i.c.</i> $y'' - 4y = 0$	[[_2nd_order, _missing_x]]	✓	0.602
420	<i>i.c.</i> $y'' - 2y' + y = 0$	[[_2nd_order, _missing_x]]	✓	0.599
421	<i>i.c.</i> $y'' + y' - 2y = 0$	[[_2nd_order, _missing_x]]	✓	0.614
422	$x^2y'' + x^2y' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.927
423	<i>i.c.</i> $y'' = y' + y$	[[_2nd_order, _missing_x]]	✓	0.631
424	<i>i.c.</i> $y' = 1 + y^2$	[_quadrature]	✓	0.232
425	<i>i.c.</i> $y''' = y$	[[_3rd_order, _missing_x]]	✓	0.137
426	$(x^2 - 1)y'' + 4xy' + 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.629
427	$(x^2 + 2)y'' + 4xy' + 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.635
428	$y'' + xy' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.542
429	$(x^2 + 1)y'' + 6xy' + 4y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.647
430	$(x^2 - 3)y'' + 2xy' = 0$	[[_2nd_order, _missing_y]]	✓	0.596
431	$(x^2 - 1)y'' - 6xy' + 12y = 0$	[_Gegenbauer]	✓	0.549
432	$(x^2 + 3)y'' - 7xy' + 16y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.636
433	$(-x^2 + 2)y'' - xy' + 16y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, ' _with_symmetry_[0,F(x)]']]	✓	0.637
434	$(x^2 - 1)y'' + 8xy' + 12y = 0$	[_Gegenbauer]	✓	0.635
435	$3y'' + xy' - 4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.587

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
Continued from previous page

#	ODE	CAS classification	Solved?	time (sec)
436	$5y'' - 2xy' + 10y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.599
437	$y'' - x^2y' - 3xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.600
438	$y'' + x^2y' + 2xy = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.595
439	$y'' + xy = 0$	[[_Emden, _Fowler]]	✓	0.497
440	$y'' + x^2y = 0$	[[_Emden, _Fowler]]	✓	0.493
441	<i>i.c.</i> $(x^2 + 1)y'' + 2xy' - 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.559
442	<i>i.c.</i> $y'' + xy' - 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.506
443	<i>i.c.</i> $y'' + (x - 1)y' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.562
444	<i>i.c.</i> $(-x^2 + 2x)y'' - 6(x - 1)y' - 4y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.679
445	<i>i.c.</i> $(x^2 - 6x + 10)y'' - 4(x - 3)y' + 6y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.607
446	<i>i.c.</i> $(4x^2 + 16x + 17)y'' = 8y$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.660
447	<i>i.c.</i> $(x^2 + 6x)y'' + (3x + 9)y' - 3y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.650
448	$y'' + (x + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.548
449	$(x^2 - 1)y'' + 2xy' + 2xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.674
450	$y'' + x^2y' + x^2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.592
451	$(x^3 + 1)y'' + x^4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.650
452	<i>i.c.</i> $y'' + xy' + (2x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.617
453	$y'' + e^{-x}y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.780

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
Continued from previous page

#	ODE	CAS classification	Solved?	time (sec)
454	$\cos(x) y'' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.879
455	$xy'' + \sin(x) y' + xy = 0$	[_Lienard]	✓	1.610
456	$y'' - 2xy' + 2\alpha y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.648
457	$xy'' + (-x^3 + x) y' + y \sin(x) = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	2.086
458	$xy'' + x^2 y' + (e^x - 1) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.889
459	$x^2 y'' + y' \cos(x) + xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.195
460	$3x^3 y'' + 2x^2 y' + (-x^2 + 1) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.130
461	$x(x+1) y'' + 2y' + 3xy = 0$	[[_Emden, _Fowler]]	✓	1.422
462	$x^2(-x^2 + 1) y'' + 2xy' - 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.898
463	$x^2 y'' + 6 \sin(x) y' + 6y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.004
464	$(2x^3 + 6x^2) y'' + 21xy' + 9(x^2 - 1) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.063
465	$(1-x) y'' + xy' + x^2 y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.658
466	$(1-x)^2 y'' + (2x-2) y' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.689
467	$(-x^2 + 1) y'' - 2xy' + 12y = 0$	[_Gegenbauer]	✓	0.641
468	$(-2+x)^3 y'' + 3(-2+x)^2 y' + x^3 y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.724
469	$(x^2-4) y'' + (-2+x) y' + (x+2) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.718
470	$(x^2-9)^2 y'' + (x^2+9) y' + (x^2+4) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.821
471	$(-2+x)^2 y'' - (x^2-4) y' + (x+2) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.727

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
Continued from previous page

#	ODE	CAS classification	Solved?	time (sec)
472	$x^3(1-x)y'' + (2+3x)y' + xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.141
473	$4xy'' + 2y' + y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓	0.908
474	$2xy'' + 3y' - y = 0$	[[_Emden, _Fowler]]	✓	0.868
475	$2xy'' - y' - y = 0$	[[_Emden, _Fowler]]	✓	0.880
476	$3xy'' + 2y' + 2y = 0$	[[_Emden, _Fowler]]	✓	0.889
477	$2x^2y'' + xy' - (2x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.903
478	$2x^2y'' + xy' - (-2x^2 + 3)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.913
479	$6x^2y'' + 7xy' - (x^2 + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.865
480	$3x^2y'' + 2xy' + x^2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.774
481	$2xy'' + (x+1)y' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.925
482	$2xy'' + (-2x^2 + 1)y' - 4xy = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.831
483	$xy'' + 2y' + 9xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.823
484	$xy'' + 2y' - 4xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.812
485	$4xy'' + 8y' + xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.817
486	$xy'' - y' + 4x^3y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓	0.778
487	$4x^2y'' - 4xy' + (-4x^2 + 3)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.888
488	$2x^2y'' + x(x+1)y' - (2x+1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.045

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
Continued from previous page

#	ODE	CAS classification	Solved?	time (sec)
489	$(5x^3 + 2x^2)y'' + (-x^2 + 3x)y' - (x + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.152
490	$2x^2y'' + \sin(x)y' - y \cos(x) = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.980
491	$x^2y'' + (3x - 1)y' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✗	0.179
492	$x^3y'' - xy' + y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]]	✗	0.125
493	$x^2y'' + xy' + \left(x^2 - \frac{1}{4}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.897
494	$x^2y'' + xy' + (x^2 - 1)y = 0$	[_Bessel]	✓	1.266
495	$x^2y'' + xy' + (1 - x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.924
496	$x(x - 1)(x + 1)^2y'' + 2x(x - 3)(x + 1)y' - 2(x - 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.599
497	$x(1 - x)y'' + (\gamma - (\alpha + \beta + 1)x)y' - \alpha\beta y = 0$	[_Jacobi]	✓	1.239
498	$xy'' + (3 - x)y' - y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.877
499	$xy'' + (5 - x)y' - y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.939
500	$xy'' + (5 + 3x)y' + 3y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.953
501	$5xy'' + (30 + 3x)y' + 3y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.915
502	$xy'' - (4 + x)y' + 3y = 0$	[_Laguerre]	✓	0.983
503	$2xy'' - (6 + 2x)y' + y = 0$	[_Laguerre]	✓	1.375
504	$x^2y'' + (3x^2 + 2x)y' - 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.948

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
505	$x(1-x)y'' - 3y' + 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.946
506	$xy'' + y' - xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.711
507	$x^2y'' - xy' + (x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.819
508	$x^2y'' + (x^2 - 3x)y' + 4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.921
509	$x^2y'' + x^2y' - 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.049
510	$x^2y'' + (2x^2 - 3x)y' + 3y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.472
511	$x^2y'' + x(x+1)y' - 4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.039
512	$x^2y'' + xy' + \left(x^2 - \frac{9}{4}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.982
513	$x^2y'' - x(x+1)y' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.869
514	$x^2y'' - xy' + (x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.647
515	$xy'' + 3y' + xy = 0$	[_Lienard]	✓	0.960
516	$xy'' - y' + 36x^3y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)']]]	✓	1.526
517	$x^2y'' - 5xy' + (8+x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.903
518	$36x^2y'' + 60xy' + (9x^3 - 5)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	2.329
519	$16x^2y'' + 24xy' + (144x^3 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.731
520	$x^2y'' + 3xy' + (x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.500
521	$4x^2y'' - 12xy' + (15 + 16x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.883

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
522	$16x^2y'' - (-144x^3 + 5)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	5.773
523	$2x^2y'' - 3xy' - 2(-x^5 + 14)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	2.566
524	$y'' + x^4y = 0$	[[_Emden, _Fowler]]	✓	1.011
525	$xy'' + 4x^3y = 0$	[[_Emden, _Fowler]]	✓	0.940
526	$xy'' + 2y' + xy = 0$	[_Lienard]	✓	1.656
527	$y' = y^2 + x^2$	[[_Riccati, _special]]	✓	1.091
528	$y' = y^2 + x^2$ i.c.	[[_Riccati, _special]]	✓	1.968
529	$y' = y^2 + x^2$ i.c.	[[_Riccati, _special]]	✗	1.547
530	$x'' + 4x = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	0.292
531	$x'' + 9x = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	0.333
532	$x'' - x' - 2x = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	0.275
533	$x'' + 8x' + 15x = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	0.310
534	$x'' + x = \sin(2t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.365
535	$x'' + 4x = \cos(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.355
536	$x'' + x = \cos(3t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.382
537	$x'' + 9x = 1$ i.c.	[[_2nd_order, _missing_x]]	✓	0.323
538	$x'' + 4x' + 3x = 1$ i.c.	[[_2nd_order, _missing_x]]	✓	0.276
539	$x'' + 3x' + 2x = t$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	0.291

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
540	$\begin{cases} x' = 2x + y \\ y' = 6x + 3y \end{cases}$ i.c.	system_of_ODEs	✓	0.469
541	$x'' + 6x' + 25x = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	0.348
542	$x'' - 6x' + 8x = 2$ i.c.	[[_2nd_order, _missing_x]]	✓	0.283
543	$x'' - 4x = 3t$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	0.321
544	$x'' + 4x' + 8x = e^{-t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	0.391
545	$x''' + x'' - 6x' = 0$ i.c.	[[_3rd_order, _missing_x]]	✓	0.294
546	$x'''' - x = 0$ i.c.	[[_high_order, _missing_x]]	✓	0.369
547	$x'''' + x = 0$ i.c.	[[_high_order, _missing_x]]	✓	0.673
548	$x'''' + 13x'' + 36x = 0$ i.c.	[[_high_order, _missing_x]]	✓	0.504
549	$x'''' + 8x'' + 16x = 0$ i.c.	[[_high_order, _missing_x]]	✓	0.486
550	$x'''' + 2x'' + x = e^{2t}$ i.c.	[[_high_order, _with_linear_symmetries]]	✓	0.515
551	$x'' + 4x' + 13x = t e^{-t}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.464
552	$x'' + 6x' + 18x = \cos(2t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.523
553	$x'' + 9x = 6 \cos(3t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.317
554	$x'' + \frac{2x'}{5} + \frac{226x}{25} = 6 e^{-\frac{t}{5}} \cos(3t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.355
555	$tx'' + (t - 2)x' + x = 0$ i.c.	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.218
556	$tx'' + (3t - 1)x' + 3x = 0$ i.c.	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.217

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
557	$tx'' - (4t + 1)x' + 2(2t + 1)x = 0$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	0.229
558	$tx'' + 2(t - 1)x' - 2x = 0$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	0.236
559	$tx'' - 2x' + xt = 0$ i.c.	[_Lienard]	✓	0.246
560	$tx'' + (4t - 2)x' + (13t - 4)x = 0$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	0.271
561	$x'' + 4x = f(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.070
562	$x'' + 2x' + x = f(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.683
563	$x'' + 4x' + 13x = f(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.988
564	$x'' + 4x = \delta(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.253
565	$x'' + 4x = \delta(t) + \delta(t - \pi)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.764
566	$x'' + 4x' + 4x = 1 + \delta(t - 2)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.545
567	$x'' + 2x' + x = t + \delta(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.245
568	$x'' + 2x' + 2x = 2\delta(t - \pi)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.499
569	$x'' + 9x = \delta(t - 3\pi) + \cos(3t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.622
570	$x'' + 4x' + 5x = \delta(t - \pi) + \delta(t - 2\pi)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.014
571	$x'' + 2x' + x = \delta(t) - \delta(t - 2)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.885
572	$x'' + 4x = f(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.070
573	$x'' + 6x' + 9x = f(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.682

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
574	<i>i.c.</i> $x'' + 6x' + 8x = f(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.689
575	<i>i.c.</i> $x'' + 4x' + 8x = f(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.661
576	$\begin{bmatrix} x' = y \\ y' = -x \end{bmatrix}$	system_of_ODEs	✓	0.349
577	$\begin{bmatrix} x' = y \\ y' = x \end{bmatrix}$	system_of_ODEs	✓	0.311
578	<i>i.c.</i> $\begin{bmatrix} x' = -2y \\ y' = 2x \end{bmatrix}$	system_of_ODEs	✓	0.431
579	<i>i.c.</i> $\begin{bmatrix} x' = 10y \\ y' = -10x \end{bmatrix}$	system_of_ODEs	✓	0.423
580	$\begin{bmatrix} x' = \frac{y}{2} \\ y' = -8x \end{bmatrix}$	system_of_ODEs	✓	0.376
581	$\begin{bmatrix} x' = 8y \\ y' = -2x \end{bmatrix}$	system_of_ODEs	✓	0.388
582	<i>i.c.</i> $\begin{bmatrix} x' = y \\ y' = 6x - y \end{bmatrix}$	system_of_ODEs	✓	0.530
583	<i>i.c.</i> $\begin{bmatrix} x' = -y \\ y' = 10x - 7y \end{bmatrix}$	system_of_ODEs	✓	0.540
584	<i>i.c.</i> $\begin{bmatrix} x' = -y \\ y' = 13x + 4y \end{bmatrix}$	system_of_ODEs	✓	0.557
585	$\begin{bmatrix} x' = y \\ y' = -9x + 6y \end{bmatrix}$	system_of_ODEs	✓	0.318
586	$\begin{bmatrix} 10x'_1 = -x_1 + x_3 \\ 10x'_2 = x_1 - x_2 \\ 10x'_3 = x_2 - x_3 \end{bmatrix}$	system_of_ODEs	✓	0.937

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
Continued from previous page

#	ODE	CAS classification	Solved?	time (sec)
587	$\begin{bmatrix} x' = -x + 3y \\ y' = 2y \end{bmatrix}$	system_of_ODEs	✓	0.306
588	$\begin{bmatrix} x' = x - 2y \\ y' = 2x - 3y \end{bmatrix}$	system_of_ODEs	✓	0.320
589	$\begin{bmatrix} x' = -3x + 2y \\ y' = -3x + 4y \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.479
590	$\begin{bmatrix} x' = 3x - y \\ y' = 5x - 3y \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.507
591	$\begin{bmatrix} x' = -3x - 4y \\ y' = 2x + y \end{bmatrix}$	system_of_ODEs	✓	0.422
592	$\begin{bmatrix} x' = x + 9y \\ y' = -2x - 5y \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.555
593	$\begin{bmatrix} x' = 4x + y + 2t \\ y' = -2x + y \end{bmatrix}$	system_of_ODEs	✓	0.540
594	$\begin{bmatrix} x' = 2x + y \\ y' = x + 2y - e^{2t} \end{bmatrix}$	system_of_ODEs	✓	0.422
595	$\begin{bmatrix} x' = 2x - 3y + 2 \sin(2t) \\ y' = x - 2y - \cos(2t) \end{bmatrix}$	system_of_ODEs	✓	0.706
596	$\begin{bmatrix} x' + 2y' = 4x + 5y \\ 2x' - y' = 3x \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.486
597	$\begin{bmatrix} -x' + 2y' = x + 3y + e^t \\ 3x' - 4y' = x - 15y + e^{-t} \end{bmatrix}$	system_of_ODEs	✓	0.896
598	$\begin{bmatrix} x' = x + 2y + z \\ y' = 6x - y \\ z' = -x - 2y - z \end{bmatrix}$	system_of_ODEs	✓	0.579

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
599	$\begin{bmatrix} x' = x - 2y \\ y' = -4x + 4y - 2z \\ z' = -4y + 4z \end{bmatrix}$	system_of_ODEs	✓	54.758
600	$\begin{bmatrix} x' = y + z + e^{-t} \\ y' = x + z \\ z' = x + y \end{bmatrix}$	system_of_ODEs	✓	0.598
601	$\begin{bmatrix} x' = -3y \\ y' = 3x \end{bmatrix}$	system_of_ODEs	✓	0.365
602	$\begin{bmatrix} x' = 3x - 2y \\ y' = 2x + y \end{bmatrix}$	system_of_ODEs	✓	0.639
603	$\begin{bmatrix} x' = 2x + 4y + 3e^t \\ y' = 5x - y - t^2 \end{bmatrix}$	system_of_ODEs	✓	0.976
604	$\begin{bmatrix} x' = xt - e^t y + \cos(t) \\ y' = e^{-t} x + t^2 y - \sin(t) \end{bmatrix}$	system_of_ODEs	✗	0.055
605	$\begin{bmatrix} x' = y + z \\ y' = x + z \\ z' = x + y \end{bmatrix}$	system_of_ODEs	✓	0.360
606	$\begin{bmatrix} x' = 2x - 3y \\ y' = x + y + 2z \\ z' = 5y - 7z \end{bmatrix}$	system_of_ODEs	✓	8.092
607	$\begin{bmatrix} x' = 3x - 4y + z + t \\ y' = x - 3z + t^2 \\ z' = 6y - 7z + t^3 \end{bmatrix}$	system_of_ODEs	✓	61.560
608	$\begin{bmatrix} x' = xt - y + e^t z \\ y' = 2x + t^2 y - z \\ z' = e^{-t} x + 3ty + t^3 z \end{bmatrix}$	system_of_ODEs	✗	0.060
609	$\begin{bmatrix} x'_1 = x_2 \\ x'_2 = 2x_3 \\ x'_3 = 3x_4 \\ x'_4 = 4x_1 \end{bmatrix}$	system_of_ODEs	✓	2.037

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
610	$\begin{bmatrix} x'_1 = x_2 + x_3 + 1 \\ x'_2 = x_3 + x_4 + t \\ x'_3 = x_1 + x_4 + t^2 \\ x'_4 = x_1 + x_2 + t^3 \end{bmatrix}$	system_of_ODEs	✓	1.935
611	$\begin{bmatrix} x'_1 = 4x_1 + 2x_2 \\ x'_2 = -3x_1 - x_2 \end{bmatrix}$	system_of_ODEs	✓	0.351
612	$\begin{bmatrix} x'_1 = -3x_1 + 2x_2 \\ x'_2 = -3x_1 + 4x_2 \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.504
613	$\begin{bmatrix} x'_1 = 3x_1 - x_2 \\ x'_2 = 5x_1 - 3x_2 \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.480
614	$\begin{bmatrix} x'_1 = 4x_1 + x_2 \\ x'_2 = -2x_1 + x_2 \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.457
615	$\begin{bmatrix} x'_1 = 4x_1 - 3x_2 \\ x'_2 = 6x_1 - 7x_2 \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.571
616	$\begin{bmatrix} x'_1 = 3x_1 - 2x_2 \\ x'_2 = -x_1 + 3x_2 - 2x_3 \\ x'_3 = -x_2 + 3x_3 \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.506
617	$\begin{bmatrix} x'_1 = x_2 + x_3 \\ x'_2 = x_1 + x_3 \\ x'_3 = x_1 + x_2 \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.385
618	$\begin{bmatrix} x'_1 = x_1 + 2x_2 + x_3 \\ x'_2 = 6x_1 - x_2 \\ x'_3 = -x_1 - 2x_2 - x_3 \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.600
619	$\begin{bmatrix} x'_1 = -8x_1 - 11x_2 - 2x_3 \\ x'_2 = 6x_1 + 9x_2 + 2x_3 \\ x'_3 = -6x_1 - 6x_2 + x_3 \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.590

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
620	$\begin{bmatrix} x'_1 = x_1 - 4x_2 - 2x_4 \\ x'_2 = x_2 \\ x'_3 = 6x_1 - 12x_2 - x_3 - 6x_4 \\ x'_4 = -4x_2 - x_4 \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.620
621	$\begin{bmatrix} x'_1 = x_1 + 2x_2 \\ x'_2 = 2x_1 + x_2 \end{bmatrix}$	system_of_ODEs	✓	0.326
622	$\begin{bmatrix} x'_1 = 2x_1 + 3x_2 \\ x'_2 = 2x_1 + x_2 \end{bmatrix}$	system_of_ODEs	✓	0.354
623	$\begin{bmatrix} x'_1 = 3x_1 + 4x_2 \\ x'_2 = 3x_1 + 2x_2 \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.483
624	$\begin{bmatrix} x'_1 = 4x_1 + x_2 \\ x'_2 = 6x_1 - x_2 \end{bmatrix}$	system_of_ODEs	✓	0.368
625	$\begin{bmatrix} x'_1 = 6x_1 - 7x_2 \\ x'_2 = x_1 - 2x_2 \end{bmatrix}$	system_of_ODEs	✓	0.346
626	$\begin{bmatrix} x'_1 = 9x_1 + 5x_2 \\ x'_2 = -6x_1 - 2x_2 \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.508
627	$\begin{bmatrix} x'_1 = -3x_1 + 4x_2 \\ x'_2 = 6x_1 - 5x_2 \end{bmatrix}$	system_of_ODEs	✓	0.367
628	$\begin{bmatrix} x'_1 = x_1 - 5x_2 \\ x'_2 = x_1 - x_2 \end{bmatrix}$	system_of_ODEs	✓	0.413
629	$\begin{bmatrix} x'_1 = 2x_1 - 5x_2 \\ x'_2 = 4x_1 - 2x_2 \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.549
630	$\begin{bmatrix} x'_1 = -3x_1 - 2x_2 \\ x'_2 = 9x_1 + 3x_2 \end{bmatrix}$	system_of_ODEs	✓	0.493
631	$\begin{bmatrix} x'_1 = x_1 - 2x_2 \\ x'_2 = 2x_1 + x_2 \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.439

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
632	$\begin{bmatrix} x_1' = x_1 - 5x_2 \\ x_2' = x_1 + 3x_2 \end{bmatrix}$	system_of_ODEs	✓	0.447
633	$\begin{bmatrix} x_1' = 5x_1 - 9x_2 \\ x_2' = 2x_1 - x_2 \end{bmatrix}$	system_of_ODEs	✓	0.467
634	$\begin{bmatrix} x_1' = 3x_1 - 4x_2 \\ x_2' = 4x_1 + 3x_2 \end{bmatrix}$	system_of_ODEs	✓	0.398
635	$\begin{bmatrix} x_1' = 7x_1 - 5x_2 \\ x_2' = 4x_1 + 3x_2 \end{bmatrix}$	system_of_ODEs	✓	0.471
636	$\begin{bmatrix} x_1' = -50x_1 + 20x_2 \\ x_2' = 100x_1 - 60x_2 \end{bmatrix}$	system_of_ODEs	✓	0.410
637	$\begin{bmatrix} x_1' = 4x_1 + x_2 + 4x_3 \\ x_2' = x_1 + 7x_2 + x_3 \\ x_3' = 4x_1 + x_2 + 4x_3 \end{bmatrix}$	system_of_ODEs	✓	0.493
638	$\begin{bmatrix} x_1' = x_1 + 2x_2 + 2x_3 \\ x_2' = 2x_1 + 7x_2 + x_3 \\ x_3' = 2x_1 + x_2 + 7x_3 \end{bmatrix}$	system_of_ODEs	✓	0.494
639	$\begin{bmatrix} x_1' = 4x_1 + x_2 + x_3 \\ x_2' = x_1 + 4x_2 + x_3 \\ x_3' = x_1 + x_2 + 4x_3 \end{bmatrix}$	system_of_ODEs	✓	0.395
640	$\begin{bmatrix} x_1' = 5x_1 + x_2 + 3x_3 \\ x_2' = x_1 + 7x_2 + x_3 \\ x_3' = 3x_1 + x_2 + 5x_3 \end{bmatrix}$	system_of_ODEs	✓	0.500
641	$\begin{bmatrix} x_1' = 5x_1 - 6x_3 \\ x_2' = 2x_1 - x_2 - 2x_3 \\ x_3' = 4x_1 - 2x_2 - 4x_3 \end{bmatrix}$	system_of_ODEs	✓	0.522
642	$\begin{bmatrix} x_1' = 3x_1 + 2x_2 + 2x_3 \\ x_2' = -5x_1 - 4x_2 - 2x_3 \\ x_3' = 5x_1 + 5x_2 + 3x_3 \end{bmatrix}$	system_of_ODEs	✓	0.540
643	$\begin{bmatrix} x_1' = 3x_1 + x_2 + x_3 \\ x_2' = -5x_1 - 3x_2 - x_3 \\ x_3' = 5x_1 + 5x_2 + 3x_3 \end{bmatrix}$	system_of_ODEs	✓	0.523

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
644	$\begin{bmatrix} x'_1 = 2x_1 + x_2 - x_3 \\ x'_2 = -4x_1 - 3x_2 - x_3 \\ x'_3 = 4x_1 + 4x_2 + 2x_3 \end{bmatrix}$	system_of_ODEs	✓	0.628
645	$\begin{bmatrix} x'_1 = 5x_1 + 5x_2 + 2x_3 \\ x'_2 = -6x_1 - 6x_2 - 5x_3 \\ x'_3 = 6x_1 + 6x_2 + 5x_3 \end{bmatrix}$	system_of_ODEs	✓	0.665
646	$\begin{bmatrix} x'_1 = 3x_1 + x_3 \\ x'_2 = 9x_1 - x_2 + 2x_3 \\ x'_3 = -9x_1 + 4x_2 - x_3 \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.757
647	$\begin{bmatrix} x'_1 = x_1 \\ x'_2 = 2x_1 + 2x_2 \\ x'_3 = 3x_2 + 3x_3 \\ x'_4 = 4x_3 + 4x_4 \end{bmatrix}$	system_of_ODEs	✓	0.652
648	$\begin{bmatrix} x'_1 = -2x_1 + 9x_4 \\ x'_2 = 4x_1 + 2x_2 - 10x_4 \\ x'_3 = -x_3 + 8x_4 \\ x'_4 = x_4 \end{bmatrix}$	system_of_ODEs	✓	0.653
649	$\begin{bmatrix} x'_1 = 2x_1 \\ x'_2 = -21x_1 - 5x_2 - 27x_3 - 9x_4 \\ x'_3 = 5x_3 \\ x'_4 = -21x_3 - 2x_4 \end{bmatrix}$	system_of_ODEs	✓	0.689
650	$\begin{bmatrix} x'_1 = 4x_1 + x_2 + x_3 + 7x_4 \\ x'_2 = x_1 + 4x_2 + 10x_3 + x_4 \\ x'_3 = x_1 + 10x_2 + 4x_3 + x_4 \\ x'_4 = 7x_1 + x_2 + x_3 + 4x_4 \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.884
651	i.c. $y' = 2x + 1$	[_quadrature]	✓	0.460
652	i.c. $y' = (-2 + x)^2$	[_quadrature]	✓	0.503
653	i.c. $y' = \sqrt{x}$	[_quadrature]	✓	0.599

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
654	$y' = \frac{1}{x^2}$ i.c.	[_quadrature]	✓	0.490
655	$y' = \frac{1}{\sqrt{x+2}}$ i.c.	[_quadrature]	✓	0.567
656	$y' = x\sqrt{x^2+9}$ i.c.	[_quadrature]	✓	0.878
657	$y' = \frac{10}{x^2+1}$ i.c.	[_quadrature]	✓	0.620
658	$y' = \cos(2x)$ i.c.	[_quadrature]	✓	0.581
659	$y' = \frac{1}{\sqrt{-x^2+1}}$ i.c.	[_quadrature]	✓	0.693
660	$y' = xe^{-x}$ i.c.	[_quadrature]	✓	0.545
661	$y' = -\sin(x) - y$	[[_linear, 'class A']]	✓	1.314
662	$y' = x + y$	[[_linear, 'class A']]	✓	1.076
663	$y' = y - \sin(x)$	[[_linear, 'class A']]	✓	1.275
664	$y' = x - y$	[[_linear, 'class A']]	✓	1.109
665	$y' = y - x + 1$	[[_linear, 'class A']]	✓	1.240
666	$y' = x + 1 - y$	[[_linear, 'class A']]	✓	1.197
667	$y' = x^2 - y$	[[_linear, 'class A']]	✓	1.053
668	$y' = -2 + x^2 - y$	[[_linear, 'class A']]	✓	1.073
669	$y' = 2y^2x^2$ i.c.	[_separable]	✓	2.243
670	$y' = \ln(y)x$	[_separable]	✓	1.105
671	$y' = y^{1/3}$ i.c.	[_quadrature]	✓	2.082
672	$y' = y^{1/3}$ i.c.	[_quadrature]	✓	1.868

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
673	<i>i.c.</i> $yy' = x - 1$	[_separable]	✓	5.076
674	<i>i.c.</i> $yy' = x - 1$	[_separable]	✓	4.062
675	<i>i.c.</i> $y' = \ln(1 + y^2)$	[_quadrature]	✓	1.320
676	$y' = x^2 - y^2$	[_Riccati]	✓	1.122
677	$y' + 2xy = 0$	[_separable]	✓	1.255
678	$2xy^2 + y' = 0$	[_separable]	✓	1.670
679	$y' = y \sin(x)$	[_separable]	✓	1.496
680	$(x + 1)y' = 4y$	[_separable]	✓	1.684
681	$2\sqrt{x}y' = \sqrt{1 - y^2}$	[_separable]	✓	1.652
682	$y' = 3\sqrt{xy}$	[[_homogeneous, 'class G']]	✓	8.299
683	$y' = 4(xy)^{1/3}$	[[_homogeneous, 'class G']]	✓	3.510
684	$y' = 2x \sec(y)$	[_separable]	✓	1.183
685	$(-x^2 + 1)y' = 2y$	[_separable]	✓	1.386
686	$(x^2 + 1)y' = (1 + y)^2$	[_separable]	✓	2.205
687	$y' = xy^3$	[_separable]	✓	2.148
688	$yy' = x(1 + y^2)$	[_separable]	✓	1.727
689	$y' = \frac{1 + \sqrt{x}}{1 + \sqrt{y}}$	[_separable]	✓	1.588
690	$y' = \frac{(x - 1)y^5}{x^2(2y^3 - y)}$	[_separable]	✓	1.747
691	$(x^2 + 1) \tan(y)y' = x$	[_separable]	✓	1.625
692	$y' = 1 + x + y + xy$	[_separable]	✓	1.174
693	$x^2y' = 1 - x^2 + y^2 - y^2x^2$	[_separable]	✓	2.109

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
694	<i>i.c.</i> $y' = y e^x$	[_separable]	✓	1.380
695	<i>i.c.</i> $y' = 3x^2(1 + y^2)$	[_separable]	✓	3.555
696	<i>i.c.</i> $2yy' = \frac{x}{\sqrt{x^2 - 16}}$	[_separable]	✓	2.666
697	<i>i.c.</i> $y' = -y + 4x^3y$	[_separable]	✓	1.550
698	<i>i.c.</i> $1 + y' = 2y$	[_quadrature]	✓	1.226
699	<i>i.c.</i> $\tan(x) y' = y$	[_separable]	✓	1.921
700	<i>i.c.</i> $-y + xy' = 2x^2y$	[_separable]	✓	1.699
701	<i>i.c.</i> $y' = 2xy^2 + 3y^2x^2$	[_separable]	✓	1.794
702	<i>i.c.</i> $y' = 6e^{2x-y}$	[_separable]	✓	3.030
703	<i>i.c.</i> $2\sqrt{x} y' = \cos(y)^2$	[_separable]	✓	2.099
704	<i>i.c.</i> $y' + y = 2$	[_quadrature]	✓	1.215
705	<i>i.c.</i> $-2y + y' = 3e^{2x}$	[[_linear, 'class A']]	✓	1.291
706	$3y + y' = 2xe^{-3x}$	[[_linear, 'class A']]	✓	1.528
707	$-2xy + y' = e^{x^2}$	[_linear]	✓	1.371
708	<i>i.c.</i> $xy' + 2y = 3x$	[_linear]	✓	2.624
709	<i>i.c.</i> $y + 2xy' = 10\sqrt{x}$	[_linear]	✓	4.753
710	$y + 2xy' = 10\sqrt{x}$	[_linear]	✓	3.926
711	$3xy' + y = 12x$	[_linear]	✓	1.973

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
712	<i>i.c.</i> $-y + xy' = x$	[_linear]	✓	1.543
713	$-3y + 2xy' = 9x^3$	[_linear]	✓	1.357
714	<i>i.c.</i> $y + xy' = 3xy$	[_separable]	✓	1.634
715	<i>i.c.</i> $xy' + 3y = 2x^5$	[_linear]	✓	1.760
716	<i>i.c.</i> $y' + y = e^x$	[[_linear, 'class A']]	✓	1.354
717	<i>i.c.</i> $-3y + xy' = x^3$	[_linear]	✓	1.392
718	<i>i.c.</i> $y' + 2xy = x$	[_separable]	✓	1.649
719	<i>i.c.</i> $y' = (1 - y) \cos(x)$	[_separable]	✓	1.862
720	<i>i.c.</i> $y + (x + 1)y' = \cos(x)$	[_linear]	✓	1.769
721	$xy' = x^3 \cos(x) + 2y$	[_linear]	✓	1.806
722	$\cot(x)y + y' = \cos(x)$	[_linear]	✓	1.827
723	<i>i.c.</i> $y' = 1 + x + y + xy$	[_separable]	✓	1.628
724	<i>i.c.</i> $xy' = x^4 \cos(x) + 3y$	[_linear]	✓	2.741
725	<i>i.c.</i> $y' = 2xy + 3x^2 e^{x^2}$	[_linear]	✓	2.835
726	$(2x - 3)y + xy' = 4x^4$	[_linear]	✓	2.324
727	<i>i.c.</i> $3xy + (x^2 + 4)y' = x$	[_separable]	✓	2.076
728	<i>i.c.</i> $3x^3y + (x^2 + 1)y' = 6x e^{-\frac{3x^2}{2}}$	[_linear]	✓	2.513

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
729	$(x + y)y' = x - y$	[[_homogeneous, 'class A'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓	3.938
730	$2xyy' = y^2 + x^2$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓	8.286
731	$xy' = y + 2\sqrt{xy}$	[[_homogeneous, 'class A'], _dAlembert]	✓	6.793
732	$(x - y)y' = x + y$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓	2.859
733	$x(x + y)y' = y(x - y)$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓	3.215
734	$(x + 2y)y' = y$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓	3.548
735	$xy^2y' = x^3 + y^3$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓	8.069
736	$x^2y' = e^{\frac{y}{x}}x^2 + xy$	[[_homogeneous, 'class A'], _dAlembert]	✓	9.598
737	$x^2y' = xy + y^2$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓	1.950
738	$xyy' = x^2 + 3y^2$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓	4.905
739	$(x^2 - y^2)y' = 2xy$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	4.537
740	$xyy' = y^2 + x\sqrt{4x^2 + y^2}$	[[_homogeneous, 'class A'], _dAlembert]	✓	26.792
741	$xy' = y + \sqrt{y^2 + x^2}$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	6.972

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
742	$x + yy' = \sqrt{y^2 + x^2}$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	5.843
743	$y(3x + y) + x(x + y)y' = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓	4.857
744	$y' = \sqrt{x + y + 1}$	[[_homogeneous, 'class C'], _dAlembert]	✓	2.542
745	$y' = (4x + y)^2$	[[_homogeneous, 'class C'], _Riccati]	✓	1.666
746	$(x + y)y' = 0$	[_quadrature]	✓	0.408
747	$x^2y' + 2xy = 5y^3$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓	2.813
748	$2xy^3 + y^2y' = 6x$	[_separable]	✓	1.889
749	$y' = y + y^3$	[_quadrature]	✓	4.030
750	$x^2y' + 2xy = 5y^4$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓	2.931
751	$6y + xy' = 3xy^{4/3}$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓	54.468
752	$y^3e^{-2x} + 2xy' = 2xy$	[_Bernoulli]	✓	2.507
753	$\sqrt{x^4 + 1}y^2(y + xy') = x$	[_Bernoulli]	✓	6.079
754	$y^3 + 3y^2y' = e^{-x}$	[[_1st_order, _with_linear_symmetries], _Bernoulli]	✓	1.859
755	$3xy^2y' = 3x^4 + y^3$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓	3.023
756	$e^yxy' = 2e^y + 2e^{2x}x^3$	[[_1st_order, '_with_symmetry_[F(x),G(x)]']]	✓	1.533
757	$2x \cos(y) \sin(y)y' = 4x^2 + \sin(y)^2$	['y=_G(x,y)']	✓	3.122

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
758	$(e^y + x) y' = -1 + x e^{-y}$	[[_1st_order, _with_linear_symmetries]]	✓	1.691
759	$2x + 3y + (3x + 2y) y' = 0$	[[_homogeneous, 'class A'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓	3.886
760	$4x - y + (6y - x) y' = 0$	[[_homogeneous, 'class A'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓	3.398
761	$3x^2 + 2y^2 + (4xy + 6y^2) y' = 0$	[[_homogeneous, 'class A'], _exact, _rational, _dAlembert]	✓	10.691
762	$2xy^2 + 3x^2 + (2x^2y + 4y^3) y' = 0$	[_exact, _rational]	✓	1.888
763	$x^3 + \frac{y}{x} + (y^2 + \ln(x)) y' = 0$	[_exact]	✓	1.509
764	$1 + e^{xy}y + (x e^{xy} + 2y) y' = 0$	[_exact]	✓	1.973
765	$\cos(x) + \ln(y) + \left(e^y + \frac{x}{y}\right) y' = 0$	[_exact]	✓	2.755
766	$x + \arctan(y) + \frac{(x+y)y'}{1+y^2} = 0$	[_exact]	✓	1.703
767	$3x^2y^3 + y^4 + (3x^3y^2 + y^4 + 4xy^3) y' = 0$	[_exact, _rational]	✓	1.492
768	$e^x \sin(y) + \tan(y) + (e^x \cos(y) + x \sec(y)^2) y' = 0$	[_exact]	✓	16.472
769	$\frac{2x}{y} - \frac{3y^2}{x^4} + \left(\frac{2y}{x^3} - \frac{x^2}{y^2} + \frac{1}{\sqrt{y}}\right) y' = 0$	[_exact, _rational]	✓	10.704
770	$\frac{2x^{5/2} - 3y^{5/3}}{2x^{5/2}y^{2/3}} + \frac{(-2x^{5/2} + 3y^{5/3}) y'}{3x^{3/2}y^{5/3}} = 0$	[[_1st_order, _with_linear_symmetries], _exact, _rational]	✓	2.070
771	$x^3 + 3y - xy' = 0$	[_linear]	✓	1.030
772	$xy^2 + 3y^2 - x^2y' = 0$	[_separable]	✓	1.519

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
773	$xy + y^2 - x^2y' = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓	1.846
774	$e^x + 2xy^3 + (\sin(y) + 3y^2x^2)y' = 0$	[_exact]	✓	2.039
775	$3y + x^4y' = 2xy$	[_separable]	✓	1.553
776	$2xy^2 + x^2y' = y^2$	[_separable]	✓	1.508
777	$2x^2y + x^3y' = 1$	[_linear]	✓	1.032
778	$x^2y' + 2xy = y^2$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓	2.454
779	$xy' + 2y = 6x^2\sqrt{y}$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓	3.400
780	$y' = 1 + x^2 + y^2 + y^2x^2$	[_separable]	✓	2.134
781	$x^2y' = xy + 3y^2$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓	1.869
782	$6xy^3 + 2y^4 + (9y^2x^2 + 8xy^3)y' = 0$	[[_homogeneous, 'class A'], _exact, _rational, [_Abel, '2nd type', 'class B']]	✓	6.551
783	$y' = 1 + x^2 + y^2 + x^2y^4$	['y=_G(x,y)']	✗	1.096
784	$x^3y' = x^2y - y^3$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓	81.421
785	$3y + y' = 3x^2e^{-3x}$	[[_linear, 'class A']]	✓	1.620
786	$y' = x^2 - 2xy + y^2$	[[_homogeneous, 'class C'], _Riccati]	✓	1.824
787	$e^x + e^{xy}y + (e^y + xe^{xy})y' = 0$	[_exact]	✓	2.280
788	$2x^2y - x^3y' = y^3$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓	124.797
789	$3x^5y^2 + x^3y' = 2y^2$	[_separable]	✓	1.448

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
790	$xy' + 3y = \frac{3}{x^{3/2}}$	[_linear]	✓	1.674
791	$(x - 1)y + (x^2 - 1)y' = 1$	[_linear]	✓	1.246
792	$xy' = 12x^4y^{2/3} + 6y$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓	4.788
793	$e^y + y \cos(x) + (x e^y + \sin(x))y' = 0$	[_exact]	✓	36.792
794	$9y^2x^2 + x^{3/2}y' = y^2$	[_separable]	✓	1.668
795	$2y + (x + 1)y' = 3 + 3x$	[_linear]	✓	1.509
796	$9\sqrt{x}y^{4/3} - 12x^{1/5}y^{3/2} + (8x^{3/2}y^{1/3} - 15x^{6/5}\sqrt{y})y' = 0$	[[_homogeneous, 'class G'], _exact, _rational]	✓	0.275
797	$3y + x^3y^4 + 3xy' = 0$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓	2.323
798	$y + xy' = 2e^{2x}$	[_linear]	✓	1.104
799	$y + (2x + 1)y' = (2x + 1)^{3/2}$	[_linear]	✓	3.659
800	$y' = 3x^2(7 + y)$	[_separable]	✓	1.244
801	$y' = 3x^2(7 + y)$	[_separable]	✓	1.198
802	$y' = -xy + xy^3$	[_separable]	✓	3.538
803	$y' = \frac{-3x^2 - 2y^2}{4xy}$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓	61.815
804	$y' = \frac{3y + x}{y - 3x}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓	3.688
805	$y' = \frac{2xy + 2x}{x^2 + 1}$	[_separable]	✓	1.278
806	$y' = \cot(x)(\sqrt{y} - y)$	[_separable]	✓	8.147
807	$y'' - y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	2.512

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
808	$y'' - 9y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	2.596
809	$y'' + 4y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	3.128
810	$y'' + 25y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	3.053
811	$y'' - 3y' + 2y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	1.072
812	$y'' + y' - 6y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	1.492
813	$y'' + y' = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	1.928
814	$y'' - 3y' = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	1.873
815	$y'' + 2y' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	1.172
816	$y'' - 10y' + 25y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	1.150
817	$y'' - 2y' + 2y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	1.459
818	$y'' + 6y' + 13y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	2.533
819	$x^2y'' - 2xy' + 2y = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)']]]	✓	2.104
820	$x^2y'' + 2xy' - 6y = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)']]]	✓	1.423
821	$x^2y'' - xy' + y = 0$ i.c.	[[_Emden, _Fowler]]	✓	2.091
822	$x^2y'' + xy' + y = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)']]]	✓	1.803

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
823	$y'' - 3y' + 2y = 0$	[[_2nd_order, _missing_x]]	✓	0.819
824	$y'' + 2y' - 15y = 0$	[[_2nd_order, _missing_x]]	✓	0.889
825	$y'' + 5y' = 0$	[[_2nd_order, _missing_x]]	✓	1.380
826	$2y'' + 3y' = 0$	[[_2nd_order, _missing_x]]	✓	1.418
827	$2y'' - y' - y = 0$	[[_2nd_order, _missing_x]]	✓	0.846
828	$4y'' + 8y' + 3y = 0$	[[_2nd_order, _missing_x]]	✓	0.846
829	$4y'' + 4y' + y = 0$	[[_2nd_order, _missing_x]]	✓	0.845
830	$9y'' - 12y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓	0.875
831	$6y'' - 7y' - 20y = 0$	[[_2nd_order, _missing_x]]	✓	0.858
832	$35y'' - y' - 12y = 0$	[[_2nd_order, _missing_x]]	✓	0.813
833	$x^2y'' + xy' - y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	1.261
834	$x^2y'' + 2xy' - 12y = 0$	[[_Emden, _Fowler]]	✓	1.046
835	$4x^2y'' + 8xy' - 3y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)']]]	✓	1.056
836	$x^2y'' + xy' = 0$	[[_2nd_order, _missing_y]]	✓	0.755
837	$x^2y'' - 3xy' + 4y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)']]]	✓	1.158
838	<i>i.c.</i> $y'' + y = 3x$	[[_2nd_order, _with_linear_symmetries]]	✓	2.098
839	<i>i.c.</i> $y'' - 4y = 12$	[[_2nd_order, _missing_x]]	✓	2.894

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
840	<i>i.c.</i> $y'' - 2y' - 3y = 6$	[[_2nd_order, _missing_x]]	✓	1.554
841	<i>i.c.</i> $y'' - 2y' + 2y = 2x$	[[_2nd_order, _with_linear_symmetries]]	✓	8.601
842	$y'' + 2y = 4$	[[_2nd_order, _missing_x]]	✓	2.323
843	$y'' + 2y = 6x$	[[_2nd_order, _with_linear_symmetries]]	✓	3.243
844	$y'' + 2y = 4 + 6x$	[[_2nd_order, _with_linear_symmetries]]	✓	3.030
845	$y'' - 4y = 0$	[[_2nd_order, _missing_x]]	✓	2.094
846	$2y'' - 3y' = 0$	[[_2nd_order, _missing_x]]	✓	1.362
847	$y'' + 3y' - 10y = 0$	[[_2nd_order, _missing_x]]	✓	0.832
848	$2y'' - 7y' + 3y = 0$	[[_2nd_order, _missing_x]]	✓	0.832
849	$y'' + 6y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓	0.849
850	$y'' + 5y' + 5y = 0$	[[_2nd_order, _missing_x]]	✓	1.099
851	$4y'' - 12y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓	0.865
852	$y'' - 6y' + 13y = 0$	[[_2nd_order, _missing_x]]	✓	1.811
853	$y'' + 8y' + 25y = 0$	[[_2nd_order, _missing_x]]	✓	1.895
854	<i>i.c.</i> $y'' - 4y' + 3y = 0$	[[_2nd_order, _missing_x]]	✓	1.471
855	<i>i.c.</i> $9y'' + 6y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓	2.824
856	<i>i.c.</i> $y'' - 6y' + 25y = 0$	[[_2nd_order, _missing_x]]	✓	2.775
857	$y'' - 2iy' + 3y = 0$	[[_2nd_order, _missing_x]]	✓	0.801

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
858	$y'' - iy' + 6y = 0$	[[_2nd_order, _missing_x]]	✓	0.829
859	$y'' = (-2 + 2i\sqrt{3})y$	[[_2nd_order, _missing_x]]	✓	3.649
860	$x^2y'' + xy' + 9y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)']]]	✓	1.573
861	$x^2y'' + 7xy' + 25y = 0$	[[_Emden, _Fowler]]	✓	2.447
862	$\frac{x''}{2} + 3x' + 4x = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	1.134
863	$3x'' + 30x' + 63x = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	1.417
864	$x'' + 8x' + 16x = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	1.206
865	$2x'' + 12x' + 50x = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	2.059
866	$4x'' + 20x' + 169x = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	2.700
867	$2x'' + 16x' + 40x = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	2.549
868	$x'' + 10x' + 125x = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	2.786
869	$y'' + 16y = e^{3x}$	[[_2nd_order, _with_linear_symmetries]]	✓	2.473
870	$y'' - y' - 2y = 3x + 4$	[[_2nd_order, _with_linear_symmetries]]	✓	1.081
871	$y'' - y' - 6y = 2\sin(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.464
872	$4y'' + 4y' + y = 3xe^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.091
873	$y'' + y' + y = \sin(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	75.376
874	$2y'' + 4y' + 7y = x^2$	[[_2nd_order, _with_linear_symmetries]]	✓	22.687

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
875	$y'' - 4y = \sinh(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.830
876	$y'' - 4y = \cosh(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	2.951
877	$y'' + 2y' - 3y = 1 + x e^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.320
878	$y'' + 9y = 2 \cos(3x) + 3 \sin(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.823
879	$y'' + 9y = 2x^2 e^{3x} + 5$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.483
880	$y'' - 2y' + 2y = e^x \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	5.414
881	$y'' + 4y = 3x \cos(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	4.874
882	$y'' + 3y' + 2y = x(e^{-x} - e^{-2x})$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.308
883	$y'' - 6y' + 13y = x e^{3x} \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	15.096
884	<i>i.c.</i> $y'' + 4y = 2x$	[[_2nd_order, _with_linear_symmetries]]	✓	3.187
885	<i>i.c.</i> $y'' + 3y' + 2y = e^x$	[[_2nd_order, _with_linear_symmetries]]	✓	1.359
886	<i>i.c.</i> $y'' + 9y = \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.606
887	<i>i.c.</i> $y'' + y = \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.329
888	<i>i.c.</i> $y'' - 2y' + 2y = x + 1$	[[_2nd_order, _with_linear_symmetries]]	✓	8.960
889	$y'' + y' + y = \sin(x) \sin(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	75.948
890	$y'' + 9y = \sin(x)^4$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.772
891	$y'' + y = x \cos(x)^3$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	6.200
892	$y'' + 3y' + 2y = 4 e^x$	[[_2nd_order, _with_linear_symmetries]]	✓	1.034

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
893	$y'' - 2y' - 8y = 3e^{-2x}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.110
894	$y'' - 4y' + 4y = 2e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.072
895	$y'' - 4y = \sinh(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.156
896	$y'' + 4y = \cos(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	2.890
897	$y'' + 9y = \sin(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.541
898	$y'' + 9y = 2\sec(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.368
899	$y'' + y = \csc(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	2.168
900	$y'' + 4y = \sin(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.608
901	$y'' - 4y = xe^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.116
902	$x^2y'' + xy' - y = 72x^5$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓	1.891
903	$x^2y'' - 4xy' + 6y = x^3$	[[_2nd_order, _with_linear_symmetries]]	✓	2.012
904	$x^2y'' - 3xy' + 4y = x^4$	[[_2nd_order, _with_linear_symmetries]]	✓	1.682
905	$4x^2y'' - 4xy' + 3y = 8x^{4/3}$	[[_2nd_order, _with_linear_symmetries]]	✓	2.052
906	$x^2y'' + xy' + y = \ln(x)$	[[_2nd_order, _with_linear_symmetries]]	✓	3.221
907	$(x^2 - 1)y'' - 2xy' + 2y = x^2 - 1$	[[_2nd_order, _with_linear_symmetries]]	✓	1.625
908	$x'' + 9x = 10\cos(2t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.907
909	$x'' + 4x = 5\sin(3t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.320

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
910	$x'' + 100x = 225 \cos(5t) + 300 \sin(5t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	4.894
911	$x'' + 25x = 90 \cos(4t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	7.146
912	$mx'' + kx = F_0 \cos(\omega t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.449
913	$x'' + 4x' + 4x = 10 \cos(3t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.460
914	$x'' + 3x' + 5x = -4 \cos(5t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	74.765
915	$2x'' + 2x' + x = 3 \sin(10t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	18.273
916	$x'' + 3x' + 3x = 8 \cos(10t) + 6 \sin(10t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	34.327
917	$x'' + 4x' + 5x = 10 \cos(3t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	9.671
918	$x'' + 6x' + 13x = 10 \sin(5t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	27.817
919	$x'' + 6x' + 13x = 10 \sin(5t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	27.493
920	$x'' + 2x' + 26x = 600 \cos(10t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	17.628
921	$x'' + 8x' + 25x = 200 \cos(t) + 520 \sin(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	16.262
922	$\begin{bmatrix} x' = -3y \\ y' = 3x \end{bmatrix}$	system_of_ODEs	✓	0.354
923	$\begin{bmatrix} x' = 3x - 2y \\ y' = 2x + y \end{bmatrix}$	system_of_ODEs	✓	0.612
924	$\begin{bmatrix} x' = 2x + 4y + 3e^t \\ y' = 5x - y - t^2 \end{bmatrix}$	system_of_ODEs	✓	0.931
925	$\begin{bmatrix} x' = y + z \\ y' = x + z \\ z' = x + y \end{bmatrix}$	system_of_ODEs	✓	0.344

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
926	$\begin{bmatrix} x'_1 = x_2 \\ x'_2 = 2x_3 \\ x'_3 = 3x_4 \\ x'_4 = 4x_1 \end{bmatrix}$	system_of_ODEs	✓	1.904
927	$\begin{bmatrix} x'_1 = x_2 + x_3 + 1 \\ x'_2 = x_3 + x_4 + t \\ x'_3 = x_1 + x_4 + t^2 \\ x'_4 = x_1 + x_2 + t^3 \end{bmatrix}$	system_of_ODEs	✓	1.929
928	$x^2 y'' + xy' - 9y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)']]]	✓	0.322
929	$4y'' - 4y' + y = 0$	[[_2nd_order, _missing_x]]	✓	0.398
930	$x^2 y'' - x(x+2)y' + (x+2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.342
931	$(x+1)y'' - (x+2)y' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.341
932	$(-x^2 + 1)y'' + 2xy' - 2y = 0$	[_Gegenbauer]	✓	0.339
933	$(-x^2 + 1)y'' - 2xy' + 2y = 0$	[_Gegenbauer]	✓	0.342
934	$x^2 y'' + xy' + \left(x^2 - \frac{1}{4}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.392
935	$5y'''' + 3y''' = 0$	[[_high_order, _missing_x]]	✓	0.070
936	$y'''' - 8y''' + 16y'' = 0$	[[_high_order, _missing_x]]	✓	0.072
937	$y'''' - 3y''' + 3y'' - y' = 0$	[[_high_order, _missing_x]]	✓	0.074
938	$9y''' + 12y'' + 4y' = 0$	[[_3rd_order, _missing_x]]	✓	0.072
939	$y'''' + 3y'' - 4y = 0$	[[_high_order, _missing_x]]	✓	0.078
940	$y'''' - 16y'' + 16y = 0$	[[_high_order, _missing_x]]	✓	0.114

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
941	$y'''' + 18y'' + 81y = 0$	[[_high_order, _missing_x]]	✓	0.087
942	$6y'''' + 11y'' + 4y = 0$	[[_high_order, _missing_x]]	✓	0.087
943	$y'''' = 16y$	[[_high_order, _missing_x]]	✓	0.078
944	$y''' + y'' - y' - y = 0$	[[_3rd_order, _missing_x]]	✓	0.070
945	$y'''' + 2y''' + 3y'' + 2y' + y = 0$	[[_high_order, _missing_x]]	✓	0.099
946	i.c. $2y''' - 3y'' - 2y' = 0$	[[_3rd_order, _missing_x]]	✓	0.143
947	i.c. $3y''' + 2y'' = 0$	[[_3rd_order, _missing_x]]	✓	0.134
948	i.c. $y''' + 10y'' + 25y' = 0$	[[_3rd_order, _missing_x]]	✓	0.140
949	$y''' + 3y'' - 4y = 0$	[[_3rd_order, _missing_x]]	✓	0.069
950	$2y''' - y'' - 5y' - 2y = 0$	[[_3rd_order, _missing_x]]	✓	0.070
951	$y''' + 27y = 0$	[[_3rd_order, _missing_x]]	✓	0.079
952	$y'''' - y''' + y'' - 3y' - 6y = 0$	[[_high_order, _missing_x]]	✓	0.079
953	$y''' + 3y'' + 4y' - 8y = 0$	[[_3rd_order, _missing_x]]	✓	0.078
954	$y'''' + y''' - 3y'' - 5y' - 2y = 0$	[[_high_order, _missing_x]]	✓	0.074
955	i.c. $y''' - 5y'' + 100y' - 500y = 0$	[[_3rd_order, _missing_x]]	✓	0.087
956	i.c. $y''' = y$	[[_3rd_order, _missing_x]]	✓	0.132
957	i.c. $y'''' = y''' + y'' + y' + 2y$	[[_high_order, _missing_x]]	✓	0.091
958	$x^3y''' + 6x^2y'' + 4xy' = 0$	[[_3rd_order, _missing_y]]	✓	0.125

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
959	$x^3y''' - x^2y'' + xy' = 0$	[[_3rd_order, _missing_y]]	✓	0.120
960	$x^3y''' + 3x^2y'' + xy' = 0$	[[_3rd_order, _missing_y]]	✓	0.120
961	$x^3y''' - 3x^2y'' + xy' = 0$	[[_3rd_order, _missing_y]]	✓	0.128
962	$x^3y''' + 6x^2y'' + 7xy' + y = 0$	[[_3rd_order, _exact, _linear, _homogeneous]]	✓	0.126
963	$\begin{bmatrix} x'_1 = 6x_1 \\ x'_2 = -3x_1 - x_2 \end{bmatrix}$	system_of_ODEs	✓	0.321
964	$\begin{bmatrix} x'_1 = -3x_1 + 2x_2 \\ x'_2 = -3x_1 + 4x_2 \end{bmatrix}$	system_of_ODEs	✓	0.359
965	$\begin{bmatrix} x'_1 = x_1 + 2x_2 \\ x'_2 = 2x_1 + x_2 \end{bmatrix}$	system_of_ODEs	✓	0.312
966	$\begin{bmatrix} x'_1 = 2x_1 + 3x_2 \\ x'_2 = 2x_1 + x_2 \end{bmatrix}$	system_of_ODEs	✓	0.347
967	$\begin{bmatrix} x'_1 = 3x_1 + 4x_2 \\ x'_2 = 3x_1 + 2x_2 \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.465
968	$\begin{bmatrix} x'_1 = 4x_1 + x_2 \\ x'_2 = 6x_1 - x_2 \end{bmatrix}$	system_of_ODEs	✓	0.342
969	$\begin{bmatrix} x'_1 = 6x_1 - 7x_2 \\ x'_2 = x_1 - 2x_2 \end{bmatrix}$	system_of_ODEs	✓	0.328
970	$\begin{bmatrix} x'_1 = 9x_1 + 5x_2 \\ x'_2 = -6x_1 - 2x_2 \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.462
971	$\begin{bmatrix} x'_1 = -3x_1 + 4x_2 \\ x'_2 = 6x_1 - 5x_2 \end{bmatrix}$	system_of_ODEs	✓	0.362
972	$\begin{bmatrix} x'_1 = x_1 - 5x_2 \\ x'_2 = x_1 - x_2 \end{bmatrix}$	system_of_ODEs	✓	0.413

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
973	$\begin{bmatrix} x'_1 = 2x_1 - 5x_2 \\ x'_2 = 4x_1 - 2x_2 \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.495
974	$\begin{bmatrix} x'_1 = -3x_1 - 2x_2 \\ x'_2 = 9x_1 + 3x_2 \end{bmatrix}$	system_of_ODEs	✓	0.407
975	$\begin{bmatrix} x'_1 = x_1 - 2x_2 \\ x'_2 = 2x_1 + x_2 \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.426
976	$\begin{bmatrix} x'_1 = x_1 - 5x_2 \\ x'_2 = x_1 + 3x_2 \end{bmatrix}$	system_of_ODEs	✓	0.429
977	$\begin{bmatrix} x'_1 = 5x_1 - 9x_2 \\ x'_2 = 2x_1 - x_2 \end{bmatrix}$	system_of_ODEs	✓	0.446
978	$\begin{bmatrix} x'_1 = 3x_1 - 4x_2 \\ x'_2 = 4x_1 + 3x_2 \end{bmatrix}$	system_of_ODEs	✓	0.377
979	$\begin{bmatrix} x'_1 = 7x_1 - 5x_2 \\ x'_2 = 4x_1 + 3x_2 \end{bmatrix}$	system_of_ODEs	✓	0.477
980	$\begin{bmatrix} x'_1 = -50x_1 + 20x_2 \\ x'_2 = 100x_1 - 60x_2 \end{bmatrix}$	system_of_ODEs	✓	0.352
981	$\begin{bmatrix} x'_1 = 4x_1 + x_2 + 4x_3 \\ x'_2 = x_1 + 7x_2 + x_3 \\ x'_3 = 4x_1 + x_2 + 4x_3 \end{bmatrix}$	system_of_ODEs	✓	0.475
982	$\begin{bmatrix} x'_1 = x_1 + 2x_2 + 2x_3 \\ x'_2 = 2x_1 + 7x_2 + x_3 \\ x'_3 = 2x_1 + x_2 + 7x_3 \end{bmatrix}$	system_of_ODEs	✓	0.467
983	$\begin{bmatrix} x'_1 = 4x_1 + x_2 + x_3 \\ x'_2 = x_1 + 4x_2 + x_3 \\ x'_3 = x_1 + x_2 + 4x_3 \end{bmatrix}$	system_of_ODEs	✓	0.370
984	$\begin{bmatrix} x'_1 = 5x_1 + x_2 + 3x_3 \\ x'_2 = x_1 + 7x_2 + x_3 \\ x'_3 = 3x_1 + x_2 + 5x_3 \end{bmatrix}$	system_of_ODEs	✓	0.488

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
985	$\begin{bmatrix} x'_1 = 5x_1 - 6x_3 \\ x'_2 = 2x_1 - x_2 - 2x_3 \\ x'_3 = 4x_1 - 2x_2 - 4x_3 \end{bmatrix}$	system_of_ODEs	✓	0.503
986	$\begin{bmatrix} x'_1 = 3x_1 + 2x_2 + 2x_3 \\ x'_2 = -5x_1 - 4x_2 - 2x_3 \\ x'_3 = 5x_1 + 5x_2 + 3x_3 \end{bmatrix}$	system_of_ODEs	✓	0.497
987	$\begin{bmatrix} x'_1 = 3x_1 + x_2 + x_3 \\ x'_2 = -5x_1 - 3x_2 - x_3 \\ x'_3 = 5x_1 + 5x_2 + 3x_3 \end{bmatrix}$	system_of_ODEs	✓	0.521
988	$\begin{bmatrix} x'_1 = 2x_1 + x_2 - x_3 \\ x'_2 = -4x_1 - 3x_2 - x_3 \\ x'_3 = 4x_1 + 4x_2 + 2x_3 \end{bmatrix}$	system_of_ODEs	✓	0.621
989	$\begin{bmatrix} x'_1 = 5x_1 + 5x_2 + 2x_3 \\ x'_2 = -6x_1 - 6x_2 - 5x_3 \\ x'_3 = 6x_1 + 6x_2 + 5x_3 \end{bmatrix}$	system_of_ODEs	✓	0.665
990	$\begin{bmatrix} x'_1 = 3x_1 + x_3 \\ x'_2 = 9x_1 - x_2 + 2x_3 \\ x'_3 = -9x_1 + 4x_2 - x_3 \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.757
991	$\begin{bmatrix} x'_1 = x_1 \\ x'_2 = 2x_1 + 2x_2 \\ x'_3 = 3x_2 + 3x_3 \\ x'_4 = 4x_3 + 4x_4 \end{bmatrix}$	system_of_ODEs	✓	0.640
992	$\begin{bmatrix} x'_1 = -2x_1 + 9x_4 \\ x'_2 = 4x_1 + 2x_2 - 10x_4 \\ x'_3 = -x_3 + 8x_4 \\ x'_4 = x_4 \end{bmatrix}$	system_of_ODEs	✓	0.625
993	$\begin{bmatrix} x'_1 = 2x_1 \\ x'_2 = -21x_1 - 5x_2 - 27x_3 - 9x_4 \\ x'_3 = 5x_3 \\ x'_4 = -21x_3 - 2x_4 \end{bmatrix}$	system_of_ODEs	✓	0.714

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
994	$\begin{bmatrix} x'_1 = 4x_1 + x_2 + x_3 + 7x_4 \\ x'_2 = x_1 + 4x_2 + 10x_3 + x_4 \\ x'_3 = x_1 + 10x_2 + 4x_3 + x_4 \\ x'_4 = 7x_1 + x_2 + x_3 + 4x_4 \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.858
995	$\begin{bmatrix} x'_1 = -40x_1 - 12x_2 + 54x_3 \\ x'_2 = 35x_1 + 13x_2 - 46x_3 \\ x'_3 = -25x_1 - 7x_2 + 34x_3 \end{bmatrix}$	system_of_ODEs	✓	0.528
996	$\begin{bmatrix} x'_1 = -20x_1 + 11x_2 + 13x_3 \\ x'_2 = 12x_1 - x_2 - 7x_3 \\ x'_3 = -48x_1 + 21x_2 + 31x_3 \end{bmatrix}$	system_of_ODEs	✓	0.556
997	$\begin{bmatrix} x'_1 = 147x_1 + 23x_2 - 202x_3 \\ x'_2 = -90x_1 - 9x_2 + 129x_3 \\ x'_3 = 90x_1 + 15x_2 - 123x_3 \end{bmatrix}$	system_of_ODEs	✓	0.554
998	$\begin{bmatrix} x'_1 = 9x_1 - 7x_2 - 5x_3 \\ x'_2 = -12x_1 + 7x_2 + 11x_3 + 9x_4 \\ x'_3 = 24x_1 - 17x_2 - 19x_3 - 9x_4 \\ x'_4 = -18x_1 + 13x_2 + 17x_3 + 9x_4 \end{bmatrix}$	system_of_ODEs	✓	0.876
999	$\begin{bmatrix} x'_1 = 13x_1 - 42x_2 + 106x_3 + 139x_4 \\ x'_2 = 2x_1 - 16x_2 + 52x_3 + 70x_4 \\ x'_3 = x_1 + 6x_2 - 20x_3 - 31x_4 \\ x'_4 = -x_1 - 6x_2 + 22x_3 + 33x_4 \end{bmatrix}$	system_of_ODEs	✓	1.068
1000	$\begin{bmatrix} x'_1 = 23x_1 - 18x_2 - 16x_3 \\ x'_2 = -8x_1 + 6x_2 + 7x_3 + 9x_4 \\ x'_3 = 34x_1 - 27x_2 - 26x_3 - 9x_4 \\ x'_4 = -26x_1 + 21x_2 + 25x_3 + 12x_4 \end{bmatrix}$	system_of_ODEs	✓	0.902
1001	$\begin{bmatrix} x'_1 = 47x_1 - 8x_2 + 5x_3 - 5x_4 \\ x'_2 = -10x_1 + 32x_2 + 18x_3 - 2x_4 \\ x'_3 = 139x_1 - 40x_2 - 167x_3 - 121x_4 \\ x'_4 = -232x_1 + 64x_2 + 360x_3 + 248x_4 \end{bmatrix}$	system_of_ODEs	✓	0.972

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
1002	$\begin{bmatrix} x'_1 = 139x_1 - 14x_2 - 52x_3 - 14x_4 + 28x_5 \\ x'_2 = -22x_1 + 5x_2 + 7x_3 + 8x_4 - 7x_5 \\ x'_3 = 370x_1 - 38x_2 - 139x_3 - 38x_4 + 76x_5 \\ x'_4 = 152x_1 - 16x_2 - 59x_3 - 13x_4 + 35x_5 \\ x'_5 = 95x_1 - 10x_2 - 38x_3 - 7x_4 + 23x_5 \end{bmatrix}$	system_of_ODEs	✓	1.490
1003	$\begin{bmatrix} x'_1 = 9x_1 + 13x_2 - 13x_6 \\ x'_2 = -14x_1 + 19x_2 - 10x_3 - 20x_4 + 10x_5 + 4x_6 \\ x'_3 = -30x_1 + 12x_2 - 7x_3 - 30x_4 + 12x_5 + 18x_6 \\ x'_4 = -12x_1 + 10x_2 - 10x_3 - 9x_4 + 10x_5 + 2x_6 \\ x'_5 = 6x_1 + 9x_2 + 6x_4 + 5x_5 - 15x_6 \\ x'_6 = -14x_1 + 23x_2 - 10x_3 - 20x_4 + 10x_5 \end{bmatrix}$	system_of_ODEs	✓	2.929
1004	$\begin{bmatrix} x'_1 = 9x_1 + 4x_2 \\ x'_2 = -6x_1 - x_2 \\ x'_3 = 6x_1 + 4x_2 + 3x_3 \end{bmatrix}$	system_of_ODEs	✓	0.386
1005	$\begin{bmatrix} x'_1 = x_1 - 3x_2 \\ x'_2 = 3x_1 + 7x_2 \end{bmatrix}$	system_of_ODEs	✓	0.320
1006	$\begin{bmatrix} x'_1 = x_2 + 2x_3 \\ x'_2 = -5x_1 - 3x_2 - 7x_3 \\ x'_3 = x_1 \end{bmatrix}$	system_of_ODEs	✓	0.468
1007	$\begin{bmatrix} x'_1 = x_3 \\ x'_2 = x_4 \\ x'_3 = -2x_1 + 2x_2 - 3x_3 + x_4 \\ x'_4 = 2x_1 - 2x_2 + x_3 - 3x_4 \end{bmatrix}$	system_of_ODEs	✓	0.600
1008	$\begin{bmatrix} x'_1 = -2x_1 + x_2 \\ x'_2 = -x_1 - 4x_2 \end{bmatrix}$	system_of_ODEs	✓	0.307
1009	$\begin{bmatrix} x'_1 = 3x_1 - x_2 \\ x'_2 = x_1 + x_2 \end{bmatrix}$	system_of_ODEs	✓	0.290
1010	$\begin{bmatrix} x'_1 = x_1 - 2x_2 \\ x'_2 = 2x_1 + 5x_2 \end{bmatrix}$	system_of_ODEs	✓	0.305
1011	$\begin{bmatrix} x'_1 = 3x_1 - x_2 \\ x'_2 = x_1 + 5x_2 \end{bmatrix}$	system_of_ODEs	✓	0.304

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
1012	$\begin{bmatrix} x'_1 = 7x_1 + x_2 \\ x'_2 = -4x_1 + 3x_2 \end{bmatrix}$	system_of_ODEs	✓	0.324
1013	$\begin{bmatrix} x'_1 = x_1 - 4x_2 \\ x'_2 = 4x_1 + 9x_2 \end{bmatrix}$	system_of_ODEs	✓	0.319
1014	$\begin{bmatrix} x'_1 = 2x_1 \\ x'_2 = -7x_1 + 9x_2 + 7x_3 \\ x'_3 = 2x_3 \end{bmatrix}$	system_of_ODEs	✓	0.331
1015	$\begin{bmatrix} x'_1 = 25x_1 + 12x_2 \\ x'_2 = -18x_1 - 5x_2 \\ x'_3 = 6x_1 + 6x_2 + 13x_3 \end{bmatrix}$	system_of_ODEs	✓	0.397
1016	$\begin{bmatrix} x'_1 = -19x_1 + 12x_2 + 84x_3 \\ x'_2 = 5x_2 \\ x'_3 = -8x_1 + 4x_2 + 33x_3 \end{bmatrix}$	system_of_ODEs	✓	0.450
1017	$\begin{bmatrix} x'_1 = -13x_1 + 40x_2 - 48x_3 \\ x'_2 = -8x_1 + 23x_2 - 24x_3 \\ x'_3 = 3x_3 \end{bmatrix}$	system_of_ODEs	✓	0.473
1018	$\begin{bmatrix} x'_1 = -3x_1 - 4x_3 \\ x'_2 = -x_1 - x_2 - x_3 \\ x'_3 = x_1 + x_3 \end{bmatrix}$	system_of_ODEs	✓	0.359
1019	$\begin{bmatrix} x'_1 = -x_1 + x_3 \\ x'_2 = -x_2 + x_3 \\ x'_3 = x_1 - x_2 - x_3 \end{bmatrix}$	system_of_ODEs	✓	0.340
1020	$\begin{bmatrix} x'_1 = -x_1 + x_3 \\ x'_2 = x_2 - 4x_3 \\ x'_3 = x_2 - 3x_3 \end{bmatrix}$	system_of_ODEs	✓	0.348
1021	$\begin{bmatrix} x'_1 = x_3 \\ x'_2 = -5x_1 - x_2 - 5x_3 \\ x'_3 = 4x_1 + x_2 - 2x_3 \end{bmatrix}$	system_of_ODEs	✓	0.455
1022	$\begin{bmatrix} x'_1 = -2x_1 - 9x_2 \\ x'_2 = x_1 + 4x_2 \\ x'_3 = x_1 + 3x_2 + x_3 \end{bmatrix}$	system_of_ODEs	✓	0.389

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
1023	$\begin{bmatrix} x'_1 = x_1 \\ x'_2 = -2x_1 - 2x_2 - 3x_3 \\ x'_3 = 2x_1 + 3x_2 + 4x_3 \end{bmatrix}$	system_of_ODEs	✓	0.385
1024	$\begin{bmatrix} x'_1 = x_1 \\ x'_2 = 18x_1 + 7x_2 + 4x_3 \\ x'_3 = -27x_1 - 9x_2 - 5x_3 \end{bmatrix}$	system_of_ODEs	✓	0.441
1025	$\begin{bmatrix} x'_1 = x_1 \\ x'_2 = x_1 + 3x_2 + x_3 \\ x'_3 = -2x_1 - 4x_2 - x_3 \end{bmatrix}$	system_of_ODEs	✓	0.362
1026	$\begin{bmatrix} x'_1 = x_1 - 4x_2 - 2x_4 \\ x'_2 = x_2 \\ x'_3 = 6x_1 - 12x_2 - x_3 - 6x_4 \\ x'_4 = -4x_2 - x_4 \end{bmatrix}$	system_of_ODEs	✓	0.503
1027	$\begin{bmatrix} x'_1 = 2x_1 + x_2 + x_4 \\ x'_2 = 2x_2 + x_3 \\ x'_3 = 2x_3 + x_4 \\ x'_4 = 2x_4 \end{bmatrix}$	system_of_ODEs	✓	0.466
1028	$\begin{bmatrix} x'_1 = -x_1 - 4x_2 \\ x'_2 = x_1 + 3x_2 \\ x'_3 = x_1 + 2x_2 + x_3 \\ x'_4 = x_2 + x_4 \end{bmatrix}$	system_of_ODEs	✓	0.443
1029	$\begin{bmatrix} x'_1 = x_1 + 3x_2 + 7x_3 \\ x'_2 = -x_2 - 4x_3 \\ x'_3 = x_2 + 3x_3 \\ x'_4 = -6x_2 - 14x_3 + x_4 \end{bmatrix}$	system_of_ODEs	✓	0.487
1030	$\begin{bmatrix} x'_1 = 39x_1 + 8x_2 - 16x_3 \\ x'_2 = -36x_1 - 5x_2 + 16x_3 \\ x'_3 = 72x_1 + 16x_2 - 29x_3 \end{bmatrix}$	system_of_ODEs	✓	0.496
1031	$\begin{bmatrix} x'_1 = 28x_1 + 50x_2 + 100x_3 \\ x'_2 = 15x_1 + 33x_2 + 60x_3 \\ x'_3 = -15x_1 - 30x_2 - 57x_3 \end{bmatrix}$	system_of_ODEs	✓	0.510

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
1032	$\begin{bmatrix} x'_1 = -2x_1 + 17x_2 + 4x_3 \\ x'_2 = -x_1 + 6x_2 + x_3 \\ x'_3 = x_2 + 2x_3 \end{bmatrix}$	system_of_ODEs	✓	0.440
1033	$\begin{bmatrix} x'_1 = 5x_1 - x_2 + x_3 \\ x'_2 = x_1 + 3x_2 \\ x'_3 = -3x_1 + 2x_2 + x_3 \end{bmatrix}$	system_of_ODEs	✓	0.435
1034	$\begin{bmatrix} x'_1 = -3x_1 + 5x_2 - 5x_3 \\ x'_2 = 3x_1 - x_2 + 3x_3 \\ x'_3 = 8x_1 - 8x_2 + 10x_3 \end{bmatrix}$	system_of_ODEs	✓	0.401
1035	$\begin{bmatrix} x'_1 = -15x_1 - 7x_2 + 4x_3 \\ x'_2 = 34x_1 + 16x_2 - 11x_3 \\ x'_3 = 17x_1 + 7x_2 + 5x_3 \end{bmatrix}$	system_of_ODEs	✓	0.492
1036	$\begin{bmatrix} x'_1 = -x_1 + x_2 + x_3 - 2x_4 \\ x'_2 = 7x_1 - 4x_2 - 6x_3 + 11x_4 \\ x'_3 = 5x_1 - x_2 + x_3 + 3x_4 \\ x'_4 = 6x_1 - 2x_2 - 2x_3 + 6x_4 \end{bmatrix}$	system_of_ODEs	✓	0.759
1037	$\begin{bmatrix} x'_1 = 2x_1 + x_2 - 2x_3 + x_4 \\ x'_2 = 3x_2 - 5x_3 + 3x_4 \\ x'_3 = -13x_2 + 22x_3 - 12x_4 \\ x'_4 = -27x_2 + 45x_3 - 25x_4 \end{bmatrix}$	system_of_ODEs	✓	0.725
1038	$\begin{bmatrix} x'_1 = 35x_1 - 12x_2 + 4x_3 + 30x_4 \\ x'_2 = 22x_1 - 8x_2 + 3x_3 + 19x_4 \\ x'_3 = -10x_1 + 3x_2 - 9x_4 \\ x'_4 = -27x_1 + 9x_2 - 3x_3 - 23x_4 \end{bmatrix}$	system_of_ODEs	✓	0.661
1039	$\begin{bmatrix} x'_1 = 11x_1 - x_2 + 26x_3 + 6x_4 - 3x_5 \\ x'_2 = 3x_2 \\ x'_3 = -9x_1 - 24x_3 - 6x_4 + 3x_5 \\ x'_4 = 3x_1 + 9x_3 + 5x_4 - x_5 \\ x'_5 = -48x_1 - 3x_2 - 138x_3 - 30x_4 + 18x_5 \end{bmatrix}$	system_of_ODEs	✓	0.969
1040	$\begin{bmatrix} x'_1 = 3x_1 - 4x_2 + x_3 \\ x'_2 = 4x_1 + 3x_2 + x_4 \\ x'_3 = 3x_3 - 4x_4 \\ x'_4 = 4x_3 + 3x_4 \end{bmatrix}$	system_of_ODEs	✓	0.577

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
1041	$\begin{bmatrix} x'_1 = 2x_1 - 8x_3 - 3x_4 \\ x'_2 = -18x_1 - x_2 \\ x'_3 = -9x_1 - 3x_2 - 25x_3 - 9x_4 \\ x'_4 = 33x_1 + 10x_2 + 90x_3 + 32x_4 \end{bmatrix}$	system_of_ODEs	✓	1.062
1042	$y' = y$	[_quadrature]	✓	0.280
1043	$y' = 4y$	[_quadrature]	✓	0.533
1044	$2y' + 3y = 0$	[_quadrature]	✓	0.530
1045	$y' + 2xy = 0$	[_separable]	✓	0.552
1046	$y' = x^2y$	[_separable]	✓	0.537
1047	$(-2 + x)y' + y = 0$	[_separable]	✓	0.563
1048	$(2x - 1)y' + 2y = 0$	[_separable]	✓	0.610
1049	$2(x + 1)y' = y$	[_separable]	✓	0.559
1050	$(x - 1)y' + 2y = 0$	[_separable]	✓	0.558
1051	$2(x - 1)y' = 3y$	[_separable]	✓	0.557
1052	$y'' = y$	[[_2nd_order, _missing_x]]	✓	0.526
1053	$y'' = 4y$	[[_2nd_order, _missing_x]]	✓	0.539
1054	$y'' + 9y = 0$	[[_2nd_order, _missing_x]]	✓	0.549
1055	$y'' + y = x$	[[_2nd_order, _with_linear_symmetries]]	✓	0.335
1056	$y + xy' = 0$	[_separable]	✓	0.457
1057	$2xy' = y$	[_separable]	✓	0.465
1058	$x^2y' + y = 0$	[_separable]	✗	0.096
1059	$x^3y' = 2y$	[_separable]	✗	0.105
1060	<i>i.c.</i> $y'' + 4y = 0$	[[_2nd_order, _missing_x]]	✓	0.582
1061	<i>i.c.</i> $y'' - 4y = 0$	[[_2nd_order, _missing_x]]	✓	0.572

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
1062	<i>i.c.</i> $y'' - 2y' + y = 0$	[[_2nd_order, _missing_x]]	✓	0.615
1063	<i>i.c.</i> $y'' + y' - 2y = 0$	[[_2nd_order, _missing_x]]	✓	0.615
1064	$x^2y'' + x^2y' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.943
1065	<i>i.c.</i> $y' = 1 + y^2$	[_quadrature]	✓	1.303
1066	$(x^2 - 1)y'' + 4xy' + 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.614
1067	$(x^2 + 2)y'' + 4xy' + 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.614
1068	$y'' + xy' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.512
1069	$(x^2 + 1)y'' + 6xy' + 4y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.625
1070	$(x^2 + 1)y'' + 2xy' = 0$	[[_2nd_order, _missing_y]]	✓	0.571
1071	$(x^2 - 1)y'' - 6xy' + 12y = 0$	[_Gegenbauer]	✓	0.593
1072	$(x^2 + 3)y'' - 7xy' + 16y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.629
1073	$(-x^2 + 2)y'' - xy' + 16y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]]	✓	0.640
1074	$(x^2 - 1)y'' + 8xy' + 12y = 0$	[_Gegenbauer]	✓	0.625
1075	$3y'' + xy' - 4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.566
1076	$5y'' - 2xy' + 10y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.535
1077	$y'' - x^2y' - 3xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.594
1078	$y'' + x^2y' + 2xy = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.564

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
1079	$y'' + xy = 0$	[[_Emden, _Fowler]]	✓	0.497
1080	$y'' + x^2y = 0$	[[_Emden, _Fowler]]	✓	0.516
1081	$(x^2 + 1)y'' + 2xy' - 2y = 0$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	0.585
1082	$y'' + xy' - 2y = 0$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	0.506
1083	$y'' + (x - 1)y' + y = 0$ i.c.	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.541
1084	$(-x^2 + 2x)y'' - 6(x - 1)y' - 4y = 0$ i.c.	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.682
1085	$(x^2 - 6x + 10)y'' - 4(x - 3)y' + 6y = 0$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	0.559
1086	$(4x^2 + 16x + 17)y'' = 8y$ i.c.	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.628
1087	$(x^2 + 6x)y'' + (3x + 9)y' - 3y = 0$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	0.663
1088	$y'' + (x + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.556
1089	$(x^2 - 1)y'' + 2xy' + 2xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.695
1090	$y'' + x^2y' + x^2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.632
1091	$(x^3 + 1)y'' + x^4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.622
1092	$y'' + xy' + (2x^2 + 1)y = 0$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	0.651
1093	$y'' + e^{-x}y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.782
1094	$\cos(x)y'' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.875
1095	$xy'' + \sin(x)y' + xy = 0$	[_Lienard]	✓	1.595
1096	$y'' - 2xy' + 2\alpha y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.659

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
1097	$y'' = xy$	[[_Emden, _Fowler]]	✓	0.489
1098	$3y + y' = e^{-2t} + t$	[[_linear, 'class A']]	✓	1.218
1099	$-2y + y' = e^{2t}t^2$	[[_linear, 'class A']]	✓	1.593
1100	$y + y' = 1 + te^{-t}$	[[_linear, 'class A']]	✓	1.635
1101	$\frac{y}{t} + y' = 3 \cos(2t)$	[_linear]	✓	1.464
1102	$-2y + y' = 3e^t$	[[_linear, 'class A']]	✓	1.155
1103	$2y + ty' = \sin(t)$	[_linear]	✓	1.542
1104	$2ty + y' = 2te^{-t^2}$	[_linear]	✓	2.844
1105	$4ty + (t^2 + 1)y' = \frac{1}{(t^2 + 1)^2}$	[_linear]	✓	2.527
1106	$y + 2y' = 3t$	[[_linear, 'class A']]	✓	1.175
1107	$-y + ty' = t^2e^{-t}$	[_linear]	✓	1.270
1108	$y + y' = 5 \sin(2t)$	[[_linear, 'class A']]	✓	1.319
1109	$y + 2y' = 3t^2$	[[_linear, 'class A']]	✓	1.063
1110	$-y + y' = 2e^{2t}t$	[[_linear, 'class A']]	✓	1.417
1111	$2y + y' = te^{-2t}$	[[_linear, 'class A']]	✓	1.861
1112	$2y + ty' = t^2 - t + 1$	[_linear]	✓	1.503
1113	$\frac{2y}{t} + y' = \frac{\cos(t)}{t^2}$	[_linear]	✓	1.575
1114	$-2y + y' = e^{2t}$	[[_linear, 'class A']]	✓	1.269
1115	$2y + ty' = \sin(t)$	[_linear]	✓	1.613
1116	$4t^2y + t^3y' = e^{-t}$	[_linear]	✓	1.541

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
1117	$(t+1)y + ty' = t$ i.c.	[_linear]	✓	1.326
1118	$-\frac{y}{2} + y' = 2\cos(t)$ i.c.	[[_linear, 'class A']]	✓	1.397
1119	$-y + 2y' = e^{\frac{t}{3}}$ i.c.	[[_linear, 'class A']]	✓	1.283
1120	$-2y + 3y' = e^{-\frac{\pi t}{2}}$ i.c.	[[_linear, 'class A']]	✓	1.437
1121	$(t+1)y + ty' = 2te^{-t}$ i.c.	[_linear]	✓	1.954
1122	$2y + ty' = \frac{\sin(t)}{t}$ i.c.	[_linear]	✓	1.471
1123	$\cos(t)y + \sin(t)y' = e^t$ i.c.	[_linear]	✓	38.830
1124	$\frac{y}{2} + y' = 2\cos(t)$ i.c.	[[_linear, 'class A']]	✓	1.608
1125	$\frac{2y}{3} + y' = 1 - \frac{t}{2}$	[[_linear, 'class A']]	✓	1.093
1126	$\frac{y}{4} + y' = 3 + 2\cos(2t)$ i.c.	[[_linear, 'class A']]	✓	2.145
1127	$-y + y' = 1 + 3\sin(t)$	[[_linear, 'class A']]	✓	1.520
1128	$-\frac{3y}{2} + y' = 2e^t + 3t$	[[_linear, 'class A']]	✓	1.415
1129	$y' = \frac{x^2}{y}$	[_separable]	✓	1.893
1130	$y' = \frac{x^2}{(x^3+1)y}$	[_separable]	✓	1.357
1131	$\sin(x)y^2 + y' = 0$	[_separable]	✓	1.657
1132	$y' = \frac{3x^2-1}{3+2y}$	[_separable]	✓	1.361
1133	$y' = \cos(x)^2 \cos(2y)^2$	[_separable]	✓	2.384

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
1134	$xy' = \sqrt{1 - y^2}$	[_separable]	✓	2.188
1135	$y' = \frac{-e^{-x} + x}{e^y + x}$	['y=_G(x,y)']	✗	1.853
1136	$y' = \frac{x^2}{1 + y^2}$	[_separable]	✓	1.118
1137	$y' = (-2x + 1)y^2$ i.c.	[_separable]	✓	1.880
1138	$y' = \frac{-2x + 1}{y}$ i.c.	[_separable]	✓	4.207
1139	$x + yy'e^{-x} = 0$ i.c.	[_separable]	✓	3.680
1140	$r' = \frac{r^2}{x}$ i.c.	[_separable]	✓	1.726
1141	$y' = \frac{2x}{y + x^2y}$ i.c.	[_separable]	✓	2.218
1142	$y' = \frac{xy^2}{\sqrt{x^2 + 1}}$ i.c.	[_separable]	✓	2.589
1143	$y' = \frac{2x}{1 + 2y}$ i.c.	[_separable]	✓	3.347
1144	$y' = \frac{x(x^2 + 1)}{4y^3}$ i.c.	[_separable]	✓	2.632
1145	$y' = \frac{-e^x + 3x^2}{-5 + 2y}$ i.c.	[_separable]	✓	3.079
1146	$y' = \frac{e^{-x} - e^x}{3 + 4y}$ i.c.	[_separable]	✓	3.569
1147	$\sin(2x) + \cos(3y)y' = 0$ i.c.	[_separable]	✓	38.169
1148	$\sqrt{-x^2 + 1}y^2y' = \arcsin(x)$ i.c.	[_separable]	✓	5.727

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
1149	$y' = \frac{3x^2 + 1}{-6y + 3y^2}$ i.c.	[_separable]	✓	3.887
1150	$y' = \frac{3x^2}{-4 + 3y^2}$ i.c.	[_separable]	✓	2.534
1151	$y' = 2y^2 + xy^2$ i.c.	[_separable]	✓	1.890
1152	$y' = \frac{2 - e^x}{3 + 2y}$ i.c.	[_separable]	✓	3.220
1153	$y' = \frac{2 \cos(2x)}{3 + 2y}$ i.c.	[_separable]	✓	12.114
1154	$y' = 2(x + 1)(1 + y^2)$ i.c.	[_separable]	✓	2.771
1155	$y' = \frac{t(4 - y)y}{3}$	[_separable]	✓	2.056
1156	$y' = \frac{ty(4 - y)}{t + 1}$	[_separable]	✓	2.656
1157	$y' = \frac{ay + b}{d + cy}$	[_quadrature]	✓	1.556
1158	$y' = \frac{y^2 + xy + x^2}{x^2}$	[[_homogeneous, 'class A'], _rational, _Riccati]	✓	2.203
1159	$y' = \frac{x^2 + 3y^2}{2xy}$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓	4.014
1160	$y' = \frac{4y - 3x}{2x - y}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓	3.661
1161	$y' = -\frac{4x + 3y}{2x + y}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓	5.853
1162	$y' = \frac{3y + x}{x - y}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓	2.351

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
1163	$x^2 + 3xy + y^2 - x^2y' = 0$	[[_homogeneous, 'class A'], _rational, _Riccati]	✓	1.796
1164	$y' = \frac{x^2 - 3y^2}{2xy}$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓	4.101
1165	$y' = \frac{3y^2 - x^2}{2xy}$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓	75.099
1166	$\ln(t)y + (t - 3)y' = 2t$	[_linear]	✓	2.754
1167	$y + (-4 + t)ty' = 0$ i.c.	[_separable]	✓	1.734
1168	$\tan(t)y + y' = \sin(t)$ i.c.	[_linear]	✓	1.881
1169	$2ty + (-t^2 + 4)y' = 3t^2$ i.c.	[_linear]	✓	2.087
1170	$2ty + (-t^2 + 4)y' = 3t^2$ i.c.	[_linear]	✓	1.805
1171	$y + \ln(t)y' = \cot(t)$	[_linear]	✓	2.155
1172	$y' = \frac{t^2 + 1}{3y - y^2}$	[_separable]	✓	1.335
1173	$y' = \frac{\cot(t)y}{1 + y}$	[_separable]	✓	1.566
1174	$y' = -\frac{4t}{y}$	[_separable]	✓	2.987
1175	$y' = 2ty^2$	[_separable]	✓	1.582
1176	$y^3 + y' = 0$	[_quadrature]	✓	1.177
1177	$y' = \frac{t^2}{(t^3 + 1)y}$	[_separable]	✓	1.355
1178	$y' = t(3 - y)y$	[_separable]	✓	1.994
1179	$y' = y(3 - ty)$	[_Bernoulli]	✓	1.575
1180	$y' = -y(3 - ty)$	[_Bernoulli]	✓	1.549

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
1181	$y' = t - 1 - y^2$	[_Riccati]	✓	1.115
1182	$y' = ay + by^2$	[_quadrature]	✓	1.453
1183	$y' = y(-2 + y)(-1 + y)$	[_quadrature]	✓	218.093
1184	$y' = -1 + e^y$	[_quadrature]	✓	1.512
1185	$y' = -1 + e^{-y}$	[_quadrature]	✓	1.377
1186	$y' = -\frac{2 \arctan(y)}{1 + y^2}$	[_quadrature]	✓	1.686
1187	$y' = -k(-1 + y)^2$	[_quadrature]	✓	0.712
1188	$y' = y^2(y^2 - 1)$	[_quadrature]	✓	1.418
1189	$y' = y(1 - y^2)$	[_quadrature]	✓	3.674
1190	$y' = -b\sqrt{y} + ay$	[_quadrature]	✓	2.531
1191	$y' = y^2(4 - y^2)$	[_quadrature]	✓	1.492
1192	$y' = (1 - y)^2 y^2$	[_quadrature]	✓	1.427
1193	$3 + 2x + (2y - 2)y' = 0$	[_separable]	✓	2.644
1194	$2x + 4y + (2x - 2y)y' = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓	5.451
1195	$2 + 3x^2 - 2xy + (3 - x^2 + 6y^2)y' = 0$	[_exact, _rational]	✓	1.353
1196	$2y + 2xy^2 + (2x + 2x^2y)y' = 0$	[_separable]	✓	1.652
1197	$y' = \frac{-ax - by}{bx + cy}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓	3.503
1198	$y' = \frac{-ax + by}{bx - cy}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓	3.079
1199	$e^x \sin(y) - 2y \sin(x) + (2 \cos(x) + e^x \cos(y))y' = 0$	[_exact]	✓	6.914
1200	$e^x \sin(y) + 3y - (3x - e^x \sin(y))y' = 0$	['x=_G(y,y)']	✗	7.996

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
1201	$2x - 2e^{xy} \sin(2x) + e^{xy} \cos(2x) y + (-3 + e^{xy} x \cos(2x)) y' = 0$	[_exact]	✓	10.243
1202	$\frac{y}{x} + 6x + (\ln(x) - 2) y' = 0$	[_linear]	✓	1.414
1203	$x \ln(x) + xy + (y \ln(x) + xy) y' = 0$	[[_Abel, '2nd type', 'class B']]	✗	1.270
1204	$\frac{x}{(y^2 + x^2)^{3/2}} + \frac{yy'}{(y^2 + x^2)^{3/2}} = 0$	[_separable]	✓	4.452
1205	<i>i.c.</i> $2x - y + (2y - x) y' = 0$	[[_homogeneous, 'class A'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓	6.705
1206	<i>i.c.</i> $-1 + 9x^2 + y + (x - 4y) y' = 0$	[_exact, _rational, [_1st_order, '_with_symmetry_[F(x),G(x)]'], [_Abel, '2nd type', 'class A']]	✓	1.928
1207	$x^2 y^3 + x(1 + y^2) y' = 0$	[_separable]	✓	1.609
1208	$y + (2x - e^y y) y' = 0$	[[_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓	1.310
1209	$(x + 2) \sin(y) + x \cos(y) y' = 0$	[_separable]	✓	2.232
1210	$2xy + 3x^2 y + y^3 + (y^2 + x^2) y' = 0$	[[_homogeneous, 'class D'], _rational]	✓	2.178
1211	$y' = -1 + e^{2x} + y$	[[_linear, 'class A']]	✓	1.101
1212	$1 + \left(-\sin(y) + \frac{x}{y}\right) y' = 0$	[[_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓	1.446
1213	$y + (-e^{-2y} + 2xy) y' = 0$	[[_1st_order, _with_exponential_symmetries]]	✓	1.694
1214	$e^x + (e^x \cot(y) + 2 \csc(y) y) y' = 0$	[[_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓	3.616
1215	$\frac{4x^3}{y^2} + \frac{3}{y} + \left(\frac{3x}{y^2} + 4y\right) y' = 0$	[_rational]	✓	1.450

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
1216	$3x + \frac{6}{y} + \left(\frac{x^2}{y} + \frac{3y}{x}\right) y' = 0$	[_rational]	✓	1.446
1217	$3xy + y^2 + (xy + x^2) y' = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓	4.760
1218	$y' = \frac{x^3 - 2y}{x}$	[_linear]	✓	1.435
1219	$y' = \frac{\cos(x) + 1}{2 - \sin(y)}$	[_separable]	✓	3.071
1220	$y' = \frac{2x + y}{3 - x + 3y^2}$ i.c.	[_rational]	✓	3.920
1221	$y' = 3 - 6x + y - 2xy$	[_separable]	✓	1.325
1222	$y' = \frac{-1 - 2xy - y^2}{x^2 + 2xy}$	[_rational, [_Abel, '2nd type', 'class B']]	✓	1.362
1223	$xy + xy' = 1 - y$ i.c.	[_linear]	✓	1.305
1224	$y' = \frac{4x^3 + 1}{y(2 + 3y)}$	[_separable]	✓	1.398
1225	$xy' + 2y = \frac{\sin(x)}{x}$ i.c.	[_linear]	✓	1.632
1226	$y' = \frac{-1 - 2xy}{x^2 + 2y}$	[_rational, [_1st_order, '_with_symmetry_[F(x),G(x)]'], [_Abel, '2nd type', 'class A']]	✓	1.179
1227	$\frac{-x^2 + x + 1}{x^2} + \frac{yy'}{-2 + y} = 0$	[_separable]	✓	1.661
1228	$x^2 + y + (e^y + x) y' = 0$	[_exact]	✓	1.548
1229	$y' + y = \frac{1}{1 + e^x}$	[_linear]	✓	1.546
1230	$y' = 1 + 2x + y^2 + 2xy^2$	[_separable]	✓	2.187

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
Continued from previous page

#	ODE	CAS classification	Solved?	time (sec)
1231	<i>i.c.</i> $x + y + (x + 2y)y' = 0$	[[_homogeneous, 'class A'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓	5.547
1232	$(1 + e^x)y' = y - ye^x$	[_separable]	✓	1.897
1233	$y' = \frac{-e^{2y} \cos(x) + \cos(y) e^{-x}}{2e^{2y} \sin(x) - \sin(y) e^{-x}}$	[NONE]	✓	41.447
1234	$y' = e^{2x} + 3y$	[[_linear, 'class A']]	✓	1.133
1235	$2y + y' = e^{-x^2-2x}$	[[_linear, 'class A']]	✓	1.267
1236	$y' = \frac{3x^2 - 2y - y^3}{2x + 3xy^2}$	[_rational]	✓	1.519
1237	$y' = e^{x+y}$	[_separable]	✓	2.055
1238	$\frac{-4 + 6xy + 2y^2}{3x^2 + 4xy + 3y^2} + y' = 0$	[_rational]	✓	1.540
1239	<i>i.c.</i> $y' = \frac{x^2 - 1}{1 + y^2}$	[_separable]	✓	3.473
1240	$(t + 1)y + ty' = e^{2t}$	[_linear]	✓	1.338
1241	$2 \cos(x) \sin(x) \sin(y) + \cos(y) \sin(x)^2 y' = 0$	[_separable]	✓	2.853
1242	$\frac{2x}{y} - \frac{y}{y^2 + x^2} + \left(-\frac{x^2}{y^2} + \frac{x}{y^2 + x^2}\right) y' = 0$	[_exact, _rational]	✓	2.056
1243	$xy' = e^{\frac{y}{x}}x + y$	[[_homogeneous, 'class A'], _dAlembert]	✓	10.021
1244	$y' = \frac{x}{x^2 + y + y^3}$	[_rational, [_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓	1.331
1245	$3t + 2y = -ty'$	[_linear]	✓	2.082
1246	$y' = \frac{x + y}{x - y}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓	2.862

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
1247	$2xy + 3y^2 - (x^2 + 2xy)y' = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓	4.096
1248	$y' = \frac{-3x^2y - y^2}{2x^3 + 3xy}$ i.c.	[[_homogeneous, 'class G'], _rational, [_Abel, '2nd type', 'class B']]	✓	3.742
1249	$y'' + 2y' - 3y = 0$	[[_2nd_order, _missing_x]]	✓	0.851
1250	$y'' + 3y' + 2y = 0$	[[_2nd_order, _missing_x]]	✓	0.797
1251	$6y'' - y' - y = 0$	[[_2nd_order, _missing_x]]	✓	0.849
1252	$2y'' - 3y' + y = 0$	[[_2nd_order, _missing_x]]	✓	0.829
1253	$y'' + 5y' = 0$	[[_2nd_order, _missing_x]]	✓	1.421
1254	$4y'' - 9y = 0$	[[_2nd_order, _missing_x]]	✓	2.191
1255	$y'' - 9y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓	1.075
1256	$y'' - 2y' - 2y = 0$	[[_2nd_order, _missing_x]]	✓	1.024
1257	$y'' + y' - 2y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	1.421
1258	$y'' + 4y' + 3y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	1.449
1259	$6y'' - 5y' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	1.185
1260	$y'' + 3y' = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	1.883
1261	$y'' + 5y' + 3y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	1.573
1262	$2y'' + y' - 4y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	1.518
1263	$y'' + 8y' - 9y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	1.479

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
1264	<i>i.c.</i> $4y'' - y = 0$	[[_2nd_order, _missing_x]]	✓	2.523
1265	<i>i.c.</i> $y'' - y = 0$	[[_2nd_order, _missing_x]]	✓	2.509
1266	<i>i.c.</i> $2y'' - 3y' + y = 0$	[[_2nd_order, _missing_x]]	✓	1.091
1267	<i>i.c.</i> $y'' - y' - 2y = 0$	[[_2nd_order, _missing_x]]	✓	0.918
1268	<i>i.c.</i> $4y'' - y = 0$	[[_2nd_order, _missing_x]]	✓	1.971
1269	$y'' - (2\alpha - 1)y' + \alpha(\alpha - 1)y = 0$	[[_2nd_order, _missing_x]]	✓	0.724
1270	$y'' + (3 - \alpha)y' - 2(\alpha - 1)y = 0$	[[_2nd_order, _missing_x]]	✓	0.973
1271	<i>i.c.</i> $2y'' + 3y' - 2y = 0$	[[_2nd_order, _missing_x]]	✓	0.934
1272	<i>i.c.</i> $y'' + 5y' + 6y = 0$	[[_2nd_order, _missing_x]]	✓	0.931
1273	$y'' - 2y' + 2y = 0$	[[_2nd_order, _missing_x]]	✓	1.337
1274	$y'' - 2y' + 6y = 0$	[[_2nd_order, _missing_x]]	✓	2.063
1275	$y'' + 2y' - 8y = 0$	[[_2nd_order, _missing_x]]	✓	0.834
1276	$y'' + 2y' + 2y = 0$	[[_2nd_order, _missing_x]]	✓	1.262
1277	$y'' + 6y' + 13y = 0$	[[_2nd_order, _missing_x]]	✓	1.791
1278	$4y'' + 9y = 0$	[[_2nd_order, _missing_x]]	✓	2.007
1279	$y'' + 2y' + \frac{5y}{4} = 0$	[[_2nd_order, _missing_x]]	✓	1.525
1280	$9y'' + 9y' - 4y = 0$	[[_2nd_order, _missing_x]]	✓	0.842

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
1281	$y'' + y' + \frac{5y}{4} = 0$	[[_2nd_order, _missing_x]]	✓	1.313
1282	$y'' + 4y' + \frac{25y}{4} = 0$	[[_2nd_order, _missing_x]]	✓	1.646
1283	<i>i.c.</i> $y'' + 4y = 0$	[[_2nd_order, _missing_x]]	✓	2.637
1284	<i>i.c.</i> $y'' + 4y' + 5y = 0$	[[_2nd_order, _missing_x]]	✓	2.215
1285	<i>i.c.</i> $y'' - 2y' + 5y = 0$	[[_2nd_order, _missing_x]]	✓	2.014
1286	<i>i.c.</i> $y'' + y = 0$	[[_2nd_order, _missing_x]]	✓	3.041
1287	<i>i.c.</i> $y'' + y' + \frac{5y}{4} = 0$	[[_2nd_order, _missing_x]]	✓	2.221
1288	<i>i.c.</i> $y'' + 2y' + 2y = 0$	[[_2nd_order, _missing_x]]	✓	2.236
1289	<i>i.c.</i> $u'' - u' + 2u = 0$	[[_2nd_order, _missing_x]]	✓	3.184
1290	<i>i.c.</i> $5u'' + 2u' + 7u = 0$	[[_2nd_order, _missing_x]]	✓	2.845
1291	<i>i.c.</i> $y'' + 2y' + 6y = 0$	[[_2nd_order, _missing_x]]	✓	2.151
1292	<i>i.c.</i> $y'' + 2ay' + (a^2 + 1)y = 0$	[[_2nd_order, _missing_x]]	✓	1.297
1293	$t^2y'' + ty' + y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓	1.312
1294	$t^2y'' + 4ty' + 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	1.368
1295	$t^2y'' + 3ty' + \frac{5y}{4} = 0$	[[_Emden, _Fowler]]	✓	2.086
1296	$t^2y'' - 4ty' - 6y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	1.244

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
1297	$t^2y'' - 4ty' + 6y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓	1.231
1298	$t^2y'' - ty' + 5y = 0$	[[_Emden, _Fowler]]	✓	2.529
1299	$t^2y'' + 3ty' - 3y = 0$	[[_Emden, _Fowler]]	✓	1.171
1300	$t^2y'' + 7ty' + 10y = 0$	[[_Emden, _Fowler]]	✓	2.025
1301	$y'' + ty' + e^{-t^2}y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓	0.863
1302	$ty'' + (t^2 - 1)y' + t^3y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	2.284
1303	$y'' - 2y' + y = 0$	[[_2nd_order, _missing_x]]	✓	0.843
1304	$9y'' + 6y' + y = 0$	[[_2nd_order, _missing_x]]	✓	0.895
1305	$4y'' - 4y' - 3y = 0$	[[_2nd_order, _missing_x]]	✓	0.832
1306	$4y'' + 12y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓	0.878
1307	$y'' - 2y' + 10y = 0$	[[_2nd_order, _missing_x]]	✓	1.874
1308	$y'' - 6y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓	0.855
1309	$4y'' + 17y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓	0.880
1310	$16y'' + 24y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓	0.945
1311	$25y'' - 20y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓	0.914
1312	$2y'' + 2y' + y = 0$	[[_2nd_order, _missing_x]]	✓	1.558
1313	<i>i.c.</i> $9y'' - 12y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓	1.228

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
1314	<i>i.c.</i> $y'' - 6y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓	1.149
1315	<i>i.c.</i> $9y'' + 6y' + 82y = 0$	[[_2nd_order, _missing_x]]	✓	2.730
1316	<i>i.c.</i> $y'' + 4y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓	1.240
1317	<i>i.c.</i> $4y'' + 12y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓	1.229
1318	<i>i.c.</i> $y'' - y' + \frac{y}{4} = 0$	[[_2nd_order, _missing_x]]	✓	0.946
1319	$t^2y'' - 4ty' + 6y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓	0.323
1320	$t^2y'' + 2ty' - 2y = 0$	[[_Emden, _Fowler]]	✓	0.392
1321	$t^2y'' + 3ty' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.320
1322	$t^2y'' - t(t+2)y' + (t+2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.340
1323	$xy'' - y' + 4x^3y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓	0.396
1324	$(x-1)y'' - xy' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.356
1325	$x^2y'' - \left(x - \frac{3}{16}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.345
1326	$x^2y'' + xy' + \left(x^2 - \frac{1}{4}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.399
1327	$t^2y'' - 3ty' + 4y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓	1.215
1328	$t^2y'' + 2ty' + \frac{y}{4} = 0$	[[_Emden, _Fowler]]	✓	1.174

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
1329	$2t^2y'' - 5ty' + 5y = 0$	[[_Emden, _Fowler]]	✓	1.309
1330	$t^2y'' + 3ty' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	1.412
1331	$4t^2y'' - 8ty' + 9y = 0$	[[_Emden, _Fowler]]	✓	1.168
1332	$t^2y'' + 5ty' + 13y = 0$	[[_Emden, _Fowler]]	✓	2.720
1333	$y'' - 5y' + 6y = 2e^t$	[[_2nd_order, _with_linear_symmetries]]	✓	1.141
1334	$y'' - y' - 2y = 2e^{-t}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.118
1335	$y'' + 2y' + y = 3e^{-t}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.051
1336	$4y'' - 4y' + y = 16e^{\frac{t}{2}}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.060
1337	$y'' + y = \tan(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.069
1338	$y'' + 9y = 9 \sec(3t)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	7.081
1339	$y'' + 4y' + 4y = \frac{e^{-2t}}{t^2}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.164
1340	$y'' + 4y = 3 \csc(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.433
1341	$y'' + y = 2 \sec\left(\frac{t}{2}\right)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	5.154
1342	$y'' - 2y' + y = \frac{e^t}{t^2 + 1}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.744
1343	$y'' - 5y' + 6y = g(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.764
1344	$y'' + 4y = g(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.986
1345	$t^2y'' - 2y = 3t^2 - 1$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓	1.128
1346	$t^2y'' - t(t+2)y' + (t+2)y = 2t^3$	[[_2nd_order, _with_linear_symmetries]]	✓	1.636

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
1347	$ty'' - (t + 1)y' + y = t^2 e^{2t}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.300
1348	$(-t + 1)y'' + ty' - y = 2(t - 1)^2 e^{-t}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.691
1349	$x^2 y'' - 3xy' + 4y = x^2 \ln(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.821
1350	$x^2 y'' + xy' + \left(x^2 - \frac{1}{4}\right)y = g(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	8.733
1351	$t^2 y'' - 2ty' + 2y = 4t^2$	[[_2nd_order, _with_linear_symmetries]]	✓	2.107
1352	$t^2 y'' + 7ty' + 5y = t$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓	1.785
1353	$ty'' - (t + 1)y' + y = t^2 e^{2t}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.315
1354	$(-t + 1)y'' + ty' - y = 2(t - 1)e^{-t}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.816
1355	$u'' + 2u = 0$	[[_2nd_order, _missing_x]]	✓	2.002
1356	$u'' + \frac{u'}{4} + 2u = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	2.738
1357	$u'' + \frac{u'}{8} + 4u = 3 \cos\left(\frac{t}{4}\right)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	74.598
1358	$u'' + \frac{u'}{8} + 4u = 3 \cos(2t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	74.547
1359	$u'' + \frac{u'}{8} + 4u = 3 \cos(6t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	75.958
1360	$u'' + u' + \frac{u^3}{5} = \cos(t)$ i.c.	[NONE]	✗	0.099
1361	$y'' - y = 0$	[[_2nd_order, _missing_x]]	✓	0.543

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
1362	$y'' - xy' - y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.519
1363	$y'' + k^2x^2y = 0$	[[_Emden, _Fowler]]	✓	0.490
1364	$(1 - x)y'' + y = 0$	[[_Emden, _Fowler]]	✓	0.586
1365	$(x^2 + 2)y'' - xy' + 4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.627
1366	$y'' + xy' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.558
1367	$(x^2 + 1)y'' - 4xy' + 6y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.500
1368	$(-x^2 + 4)y'' + 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.586
1369	$(-x^2 + 3)y'' - 3xy' - y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.608
1370	$(1 - x)y'' + xy' - y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.507
1371	$2y'' + xy' + 3y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.538
1372	<i>i.c.</i> $y'' - xy' - y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.516
1373	<i>i.c.</i> $(x^2 + 2)y'' - xy' + 4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.629
1374	<i>i.c.</i> $y'' + xy' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.518
1375	<i>i.c.</i> $(1 - x)y'' + xy' - y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.523
1376	$y'' - 2xy' + \lambda y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.633
1377	<i>i.c.</i> $y'' - xy' - y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.514
1378	<i>i.c.</i> $(x^2 + 2)y'' - xy' + 4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.623
1379	<i>i.c.</i> $y'' + xy' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.514

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
Continued from previous page

#	ODE	CAS classification	Solved?	time (sec)
1380	$(-x^2 + 4)y'' + xy' + 2y = 0$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	0.615
1381	$y'' + x^2y = 0$ i.c.	[[_Emden, _Fowler]]	✓	0.474
1382	$(1 - x)y'' + xy' - 2y = 0$ i.c.	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]]	✓	0.547
1383	$y'' + xy' + y = 0$ i.c.	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.515
1384	$y'' + \sin(x)y' + \cos(x)y = 0$ i.c.	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.857
1385	$x^2y'' + (x + 1)y' + 3y \ln(x) = 0$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	1.003
1386	$y'' + x^2y' + y \sin(x) = 0$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	1.000
1387	$y'' + 4y' + 6xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.556
1388	$y'' + 4y' + 6xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.673
1389	$(x^2 - 2x - 3)y'' + xy' + 4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.669
1390	$(x^2 - 2x - 3)y'' + xy' + 4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.774
1391	$(x^2 - 2x - 3)y'' + xy' + 4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.732
1392	$(x^3 + 1)y'' + 4xy' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.667
1393	$(x^3 + 1)y'' + 4xy' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.799
1394	$xy'' + y = 0$	[[_Emden, _Fowler]]	✓	0.633
1395	$(-x^2 + 1)y'' - xy' + \alpha^2y = 0$	[_Gegenbauer, _2nd_order, _linear, '_with_symmetry_[0,F(x)]']]]	✓	0.678

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
1396	$y' - y = 0$	[_quadrature]	✓	0.504
1397	$y' - xy = 0$	[_separable]	✓	0.558
1398	$(1 - x)y' = y$	[_separable]	✓	0.569
1399	$(-x^2 + 1)y'' - 2xy' + \alpha(1 + \alpha)y = 0$	[_Gegenbauer]	✓	0.735
1400	$\begin{bmatrix} x'_1 = -\frac{x_1}{10} + \frac{3x_2}{40} \\ x'_2 = \frac{x_1}{10} - \frac{x_2}{5} \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.550
1401	$\begin{bmatrix} x'_1 = 3x_1 - 2x_2 \\ x'_2 = 4x_1 - x_2 \end{bmatrix}$	system_of_ODEs	✓	0.429
1402	$\begin{bmatrix} x'_1 = -x_1 - 4x_2 \\ x'_2 = x_1 - x_2 \end{bmatrix}$	system_of_ODEs	✓	0.393
1403	$\begin{bmatrix} x'_1 = 2x_1 - 5x_2 \\ x'_2 = x_1 - 2x_2 \end{bmatrix}$	system_of_ODEs	✓	0.385
1404	$\begin{bmatrix} x'_1 = 2x_1 - \frac{5x_2}{2} \\ x'_2 = \frac{9x_1}{5} - x_2 \end{bmatrix}$	system_of_ODEs	✓	0.510
1405	$\begin{bmatrix} x'_1 = x_1 - x_2 \\ x'_2 = 5x_1 - 3x_2 \end{bmatrix}$	system_of_ODEs	✓	0.483
1406	$\begin{bmatrix} x'_1 = x_1 + 2x_2 \\ x'_2 = -5x_1 - x_2 \end{bmatrix}$	system_of_ODEs	✓	0.415
1407	$\begin{bmatrix} x'_1 = x_1 \\ x'_2 = 2x_1 + x_2 - 2x_3 \\ x'_3 = 3x_1 + 2x_2 + x_3 \end{bmatrix}$	system_of_ODEs	✓	0.563
1408	$\begin{bmatrix} x'_1 = -3x_1 + 2x_3 \\ x'_2 = x_1 - x_2 \\ x'_3 = -2x_1 - x_2 \end{bmatrix}$	system_of_ODEs	✓	1.189
1409	$\begin{bmatrix} x'_1 = x_1 - 5x_2 \\ x'_2 = x_1 - 3x_2 \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.533

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
1410	$\begin{bmatrix} x_1' = -3x_1 + 2x_2 \\ x_2' = -x_1 - x_2 \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.547
1411	$\begin{bmatrix} x_1' = \frac{3x_1}{4} - 2x_2 \\ x_2' = x_1 - \frac{5x_2}{4} \end{bmatrix}$	system_of_ODEs	✓	0.414
1412	$\begin{bmatrix} x_1' = -\frac{4x_1}{5} + 2x_2 \\ x_2' = -x_1 + \frac{6x_2}{5} \end{bmatrix}$	system_of_ODEs	✓	0.411
1413	$\begin{bmatrix} x_1' = -\frac{x_1}{4} + x_2 \\ x_2' = -x_1 - \frac{x_2}{4} \\ x_3' = -\frac{x_3}{4} \end{bmatrix}$	system_of_ODEs	✓	0.487
1414	$\begin{bmatrix} x_1' = -\frac{x_1}{4} + x_2 \\ x_2' = -x_1 - \frac{x_2}{4} \\ x_3' = \frac{x_3}{10} \end{bmatrix}$	system_of_ODEs	✓	0.513
1415	$\begin{bmatrix} x_1' = -\frac{x_1}{2} - \frac{x_2}{8} \\ x_2' = 2x_1 - \frac{x_2}{2} \end{bmatrix}$	system_of_ODEs	✓	0.408
1416	$\begin{bmatrix} x_1' = 3x_1 - 4x_2 \\ x_2' = x_1 - x_2 \end{bmatrix}$	system_of_ODEs	✓	0.314
1417	$\begin{bmatrix} x_1' = 4x_1 - 2x_2 \\ x_2' = 8x_1 - 4x_2 \end{bmatrix}$	system_of_ODEs	✓	0.295
1418	$\begin{bmatrix} x_1' = -\frac{3x_1}{2} + x_2 \\ x_2' = -\frac{x_1}{4} - \frac{x_2}{2} \end{bmatrix}$	system_of_ODEs	✓	0.346
1419	$\begin{bmatrix} x_1' = -3x_1 + \frac{5x_2}{2} \\ x_2' = -\frac{5x_1}{2} + 2x_2 \end{bmatrix}$	system_of_ODEs	✓	0.319
1420	$\begin{bmatrix} x_1' = x_1 + x_2 + x_3 \\ x_2' = 2x_1 + x_2 - x_3 \\ x_3' = -x_2 + x_3 \end{bmatrix}$	system_of_ODEs	✓	0.529
1421	$\begin{bmatrix} x_1' = x_2 + x_3 \\ x_2' = x_1 + x_3 \\ x_3' = x_1 + x_2 \end{bmatrix}$	system_of_ODEs	✓	0.369

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
1422	$\begin{bmatrix} x'_1 = x_1 - 4x_2 \\ x'_2 = 4x_1 - 7x_2 \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.463
1423	$\begin{bmatrix} x'_1 = -\frac{5x_1}{2} + \frac{3x_2}{2} \\ x'_2 = -\frac{3x_1}{2} + \frac{x_2}{2} \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.505
1424	$\begin{bmatrix} x'_1 = 2x_1 + \frac{3x_2}{2} \\ x'_2 = -\frac{3x_1}{2} - x_2 \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.491
1425	$\begin{bmatrix} x'_1 = 3x_1 + 9x_2 \\ x'_2 = -x_1 - 3x_2 \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.388
1426	$\begin{bmatrix} x'_1 = x_1 \\ x'_2 = -4x_1 + x_2 \\ x'_3 = 3x_1 + 6x_2 + 2x_3 \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.480
1427	$\begin{bmatrix} x'_1 = -\frac{5x_1}{2} + x_2 + x_3 \\ x'_2 = x_1 - \frac{5x_2}{2} + x_3 \\ x'_3 = x_1 + x_2 - \frac{5x_3}{2} \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.383
1428	$\begin{bmatrix} x'_1 = 2x_1 - x_2 + e^t \\ x'_2 = 3x_1 - 2x_2 + t \end{bmatrix}$	system_of_ODEs	✓	0.522
1429	$\begin{bmatrix} x'_1 = x_1 + \sqrt{3}x_2 + e^t \\ x'_2 = \sqrt{3}x_1 - x_2 + \sqrt{3}e^{-t} \end{bmatrix}$	system_of_ODEs	✓	0.648
1430	$\begin{bmatrix} x'_1 = 2x_1 - 5x_2 - \cos(t) \\ x'_2 = x_1 - 2x_2 + \sin(t) \end{bmatrix}$	system_of_ODEs	✓	0.842
1431	$\begin{bmatrix} x'_1 = x_1 + x_2 + e^{-2t} \\ x'_2 = 4x_1 - 2x_2 - 2e^t \end{bmatrix}$	system_of_ODEs	✓	0.570
1432	$\begin{bmatrix} x'_1 = 4x_1 - 2x_2 + \frac{1}{t^3} \\ x'_2 = 8x_1 - 4x_2 - \frac{1}{t^2} \end{bmatrix}$	system_of_ODEs	✓	0.477

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
1433	$\begin{bmatrix} x'_1 = -4x_1 + 2x_2 + \frac{1}{t} \\ x'_2 = 2x_1 - x_2 + \frac{2}{t} + 4 \end{bmatrix}$	system_of_ODEs	✓	0.535
1434	$\begin{bmatrix} x'_1 = x_1 + x_2 + 2e^t \\ x'_2 = 4x_1 + x_2 - e^t \end{bmatrix}$	system_of_ODEs	✓	0.523
1435	$\begin{bmatrix} x'_1 = 2x_1 - x_2 + e^t \\ x'_2 = 3x_1 - 2x_2 - e^t \end{bmatrix}$	system_of_ODEs	✓	0.502
1436	$\begin{bmatrix} x'_1 = -\frac{5x_1}{4} + \frac{3x_2}{4} + 2t \\ x'_2 = \frac{3x_1}{4} - \frac{5x_2}{4} + e^t \end{bmatrix}$	system_of_ODEs	✓	0.563
1437	$\begin{bmatrix} x'_1 = -3x_1 + \sqrt{2}x_2 + e^{-t} \\ x'_2 = \sqrt{2}x_1 - 2x_2 - e^{-t} \end{bmatrix}$	system_of_ODEs	✓	0.625
1438	$\begin{bmatrix} x'_1 = 2x_1 - 5x_2 \\ x'_2 = x_1 - 2x_2 + \cos(t) \end{bmatrix}$	system_of_ODEs	✓	0.950
1439	$\begin{bmatrix} x'_1 = 2x_1 - 5x_2 + \csc(t) \\ x'_2 = x_1 - 2x_2 + \sec(t) \end{bmatrix}$	system_of_ODEs	✓	1.086
1440	$\begin{bmatrix} x'_1 = -\frac{x_1}{2} - \frac{x_2}{8} + \frac{e^{-\frac{t}{2}}}{2} \\ x'_2 = 2x_1 - \frac{x_2}{2} \end{bmatrix}$	system_of_ODEs	✓	0.632
1441	$\begin{bmatrix} x'_1 = -2x_1 + x_2 + 2e^{-t} \\ x'_2 = x_1 - 2x_2 + 3t \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.530
1442	$\begin{bmatrix} x'_1 = 3x_1 - 2x_2 \\ x'_2 = 2x_1 - 2x_2 \end{bmatrix}$	system_of_ODEs	✓	0.342
1443	$\begin{bmatrix} x'_1 = 5x_1 - x_2 \\ x'_2 = 3x_1 + x_2 \end{bmatrix}$	system_of_ODEs	✓	0.339
1444	$\begin{bmatrix} x'_1 = 2x_1 - x_2 \\ x'_2 = 3x_1 - 2x_2 \end{bmatrix}$	system_of_ODEs	✓	0.322
1445	$\begin{bmatrix} x'_1 = x_1 - 4x_2 \\ x'_2 = 4x_1 - 7x_2 \end{bmatrix}$	system_of_ODEs	✓	0.309

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
1446	$\begin{bmatrix} x'_1 = x_1 - 5x_2 \\ x'_2 = x_1 - 3x_2 \end{bmatrix}$	system_of_ODEs	✓	0.419
1447	$\begin{bmatrix} x'_1 = 2x_1 - 5x_2 \\ x'_2 = x_1 - 2x_2 \end{bmatrix}$	system_of_ODEs	✓	0.399
1448	$\begin{bmatrix} x'_1 = 3x_1 - 2x_2 \\ x'_2 = 4x_1 - x_2 \end{bmatrix}$	system_of_ODEs	✓	0.441
1449	$\begin{bmatrix} x'_1 = -x_1 - x_2 \\ x'_2 = -\frac{5x_2}{2} \end{bmatrix}$	system_of_ODEs	✓	0.321
1450	$\begin{bmatrix} x'_1 = 3x_1 - 4x_2 \\ x'_2 = x_1 - x_2 \end{bmatrix}$	system_of_ODEs	✓	0.302
1451	$\begin{bmatrix} x'_1 = x_1 + 2x_2 \\ x'_2 = -5x_1 \end{bmatrix}$	system_of_ODEs	✓	0.655
1452	$\begin{bmatrix} x'_1 = -x_1 \\ x'_2 = -x_2 \end{bmatrix}$	system_of_ODEs	✓	0.242
1453	$\begin{bmatrix} x'_1 = 2x_1 - \frac{5x_2}{2} \\ x'_2 = \frac{9x_1}{5} - x_2 \end{bmatrix}$	system_of_ODEs	✓	0.462
1454	$\begin{bmatrix} x'_1 = x_1 + x_2 - 2 \\ x'_2 = x_1 - x_2 \end{bmatrix}$	system_of_ODEs	✓	0.684
1455	$\begin{bmatrix} x'_1 = -2x_1 + x_2 - 2 \\ x'_2 = x_1 - 2x_2 + 1 \end{bmatrix}$	system_of_ODEs	✓	0.519
1456	$\begin{bmatrix} x'_1 = -x_1 - x_2 - 1 \\ x'_2 = 2x_1 - x_2 + 5 \end{bmatrix}$	system_of_ODEs	✓	0.812
1457	$\begin{bmatrix} x' = -x \\ y' = -2y \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.411
1458	$\begin{bmatrix} x' = -x \\ y' = 2y \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.413

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
1459	$\begin{cases} x' = -x \\ y' = 2y \end{cases}$ i.c.	system_of_ODEs	✓	0.412
1460	$\begin{cases} x' = -y \\ y' = x \end{cases}$ i.c.	system_of_ODEs	✓	0.412
1461	$\begin{cases} x' = -y \\ y' = x \end{cases}$ i.c.	system_of_ODEs	✓	0.409
1462	$y'''' + 4y''' + 3y = t$	[[_high_order, _with_linear_symmetries]]	✓	0.172
1463	$t(t-1)y'''' + e^t y'' + 4t^2 y = 0$	[[_high_order, _with_linear_symmetries]]	✗	0.094
1464	$y'''' + y'' = 0$	[[_high_order, _missing_x]]	✓	0.070
1465	$y''' + 2y'' - y' - 2y = 0$	[[_3rd_order, _missing_x]]	✓	0.071
1466	$xy''' - y'' = 0$	[[_3rd_order, _missing_y]]	✓	0.180
1467	$x^3 y''' + x^2 y'' - 2xy' + 2y = 0$	[[_3rd_order, _exact, _linear, _homogeneous]]	✓	0.127
1468	$y''' + 2y'' - y' - 3y = 0$	[[_3rd_order, _missing_x]]	✓	0.128
1469	$ty''' + 2y'' - y' + ty = 0$	[[_3rd_order, _with_linear_symmetries]]	✗	0.047
1470	$(2-t)y''' + (2t-3)y'' - ty' + y = 0$	[[_3rd_order, _with_linear_symmetries]]	✗	0.057
1471	$t^2(3+t)y''' - 3t(t+2)y'' + 6(t+1)y' - 6y = 0$	[[_3rd_order, _with_linear_symmetries]]	✗	0.058
1472	$y''' - y'' - y' + y = 0$	[[_3rd_order, _missing_x]]	✓	0.069
1473	$y''' - 3y'' + 3y' + y = 0$	[[_3rd_order, _missing_x]]	✓	0.093

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
1474	$y'''' - 4y''' + 4y'' = 0$	[[_high_order, _missing_x]]	✓	0.070
1475	$y^{(6)} + y = 0$	[[_high_order, _missing_x]]	✓	0.116
1476	$y^{(6)} - 3y'''' + 3y'' - y = 0$	[[_high_order, _missing_x]]	✓	0.082
1477	$y^{(6)} - y'' = 0$	[[_high_order, _missing_x]]	✓	0.083
1478	$y^{(5)} - 3y'''' + 3y''' - 3y'' + 2y' = 0$	[[_high_order, _missing_x]]	✓	0.083
1479	$y^{(8)} + 8y'''' + 16y = 0$	[[_high_order, _missing_x]]	✓	0.115
1480	$y'''' + 2y'' + y = 0$	[[_high_order, _missing_x]]	✓	0.096
1481	$y''' + 5y'' + 6y' + 2y = 0$	[[_3rd_order, _missing_x]]	✓	0.081
1482	$y'''' - 7y''' + 6y'' + 30y' - 36y = 0$	[[_high_order, _missing_x]]	✓	0.078
1483	i.c. $y'' - y' - 6y = 0$	[[_2nd_order, _missing_x]]	✓	0.269
1484	i.c. $y'' + 3y' + 2y = 0$	[[_2nd_order, _missing_x]]	✓	0.251
1485	i.c. $y'' - 2y' + 2y = 0$	[[_2nd_order, _missing_x]]	✓	0.293
1486	i.c. $y'' - 2y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓	0.483
1487	i.c. $y'' + 2y' + 5y = 0$	[[_2nd_order, _missing_x]]	✓	0.333
1488	i.c. $y'''' - 4y''' + 6y'' - 4y' + y = 0$	[[_high_order, _missing_x]]	✓	0.336
1489	i.c. $y'''' - 4y = 0$	[[_high_order, _missing_x]]	✓	0.532
1490	i.c. $y'' + \omega^2 y = \cos(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.296
1491	i.c. $y'' - 2y' + 2y = e^{-t}$	[[_2nd_order, _with_linear_symmetries]]	✓	0.349

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
1492	$y'' + 4y = \begin{cases} 1 & 0 \leq t < \pi \\ 0 & \pi \leq t < \infty \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.416
1493	$y'' + 4y = \begin{cases} 1 & 0 \leq t < 1 \\ 0 & 1 \leq t < \infty \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.671
1494	$y'' + y = \begin{cases} t & 0 \leq t < 1 \\ 2-t & 1 \leq t < 2 \\ 0 & 2 \leq t < \infty \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.839
1495	$y'' + y = \begin{cases} 1 & 0 \leq t < 3\pi \\ 0 & 3\pi \leq t < \infty \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.461
1496	$y'' + 2y' + 2y = \begin{cases} 1 & \pi \leq t < 2\pi \\ 0 & \text{otherwise} \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.393
1497	$y'' + 4y = \sin(t) - \text{Heaviside}(t - 2\pi) \sin(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.546
1498	$y'' + 3y' + 2y = \begin{cases} 1 & 0 \leq t < 10 \\ 0 & \text{otherwise} \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.759
1499	$y'' + y' + \frac{5y}{4} = t - \text{Heaviside}\left(t - \frac{\pi}{2}\right) \left(t - \frac{\pi}{2}\right)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.613
1500	$y'' + y' + \frac{5y}{4} = \begin{cases} \sin(t) & 0 \leq t < \pi \\ 0 & \text{otherwise} \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.716
1501	$y'' + 4y = \text{Heaviside}(t - \pi) - \text{Heaviside}(t - 3\pi)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.560
1502	$y'''' + 5y'' + 4y = 1 - \text{Heaviside}(t - \pi)$ i.c.	[[_high_order, _linear, _nonhomogeneous]]	✓	2.171

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
1503	$u'' + \frac{u'}{4} + u = k \left( \text{Heaviside} \left( t - \frac{3}{2} \right) - \text{Heaviside} \left( t - \frac{5}{2} \right) \right)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.049
1504	$u'' + \frac{u'}{4} + u = \frac{\text{Heaviside} \left( t - \frac{3}{2} \right)}{2} - \frac{\text{Heaviside} \left( t - \frac{5}{2} \right)}{2}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.233
1505	$u'' + \frac{u'}{4} + u = \frac{\text{Heaviside} \left( t - 5 \right) \left( t - 5 \right) - \text{Heaviside} \left( t - 5 \right) \left( t - 5 \right) k}{k}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	4.733
1506	$y'' + 2y' + 2y = \delta(t - \pi)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.744
1507	$y'' + 4y = \delta(t - \pi) - \delta(t - 2\pi)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.497
1508	$y'' + 3y' + 2y = \delta(t - 5) + \text{Heaviside} \left( t - 10 \right)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.656
1509	$y'' + 2y' + 3y = \sin(t) + \delta(t - 3\pi)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.673
1510	$y'' + y = \delta(t - 2\pi) \cos(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.511
1511	$y'' + 4y = 2\delta \left( t - \frac{\pi}{4} \right)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.456
1512	$y'' + 2y' + 2y = \cos(t) + \delta \left( t - \frac{\pi}{2} \right)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.144
1513	$y'''' - y = \delta(t - 1)$ i.c.	[[_high_order, _linear, _nonhomogeneous]]	✓	2.056
1514	$y'' + \frac{y'}{2} + y = \delta(t - 1)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.864
1515	$y'' + \frac{y'}{4} + y = \delta(t - 1)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.816

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
1516	$y'' + y = \frac{\text{Heaviside}(t - 4 + k) - \text{Heaviside}(t - 4 - k)}{2k}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	2.536
1517	$y'' + 2y' + 2y = f(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.086
1518	$y'' + 2y' + 2y = \delta(t - \pi)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.531
1519	$y' = 2y$	[_quadrature]	✓	1.137
1520	$xy' + y = x^2$	[_linear]	✓	1.270
1521	$y' + 2xy = x$	[_separable]	✓	1.191
1522	$2y' + x(y^2 - 1) = 0$	[_separable]	✓	2.045
1523	$y' = x^2(1 + y^2)$	[_separable]	✓	3.339
1524	$y' = -x$	[_quadrature]	✓	0.266
1525	$y' = -x \sin(x)$	[_quadrature]	✓	0.370
1526	$y' = x \ln(x)$	[_quadrature]	✓	0.330
1527	$y' = -x e^x$ i.c.	[_quadrature]	✓	0.515
1528	$y' = x \sin(x^2)$ i.c.	[_quadrature]	✓	0.725
1529	$y' = \tan(x)$ i.c.	[_quadrature]	✓	0.966
1530	$y' = \cos(x) - y \tan(x)$ i.c.	[_linear]	✓	1.970
1531	$y' = \frac{x^2 - 2x^2y + 2}{x^3}$ i.c.	[_linear]	✓	1.424
1532	$y' = x(1 + y^2)$ i.c.	[_separable]	✓	2.507
1533	$y' = -\frac{y(1 + y)}{x}$ i.c.	[_separable]	✓	2.246

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
1534	$y' = ay^{\frac{a-1}{a}}$	[_quadrature]	✓	1.069
1535	$y' =  y  + 1$ i.c.	[_quadrature]	✓	1.289
1536	$y' = -\frac{x}{2} - 1 + \frac{\sqrt{x^2 + 4x + 4y}}{2}$	[[_1st_order, _with_linear_symmetries], _Clairaut]	✓	1.849
1537	$y' + ay = 0$	[_quadrature]	✓	0.773
1538	$y' + 3x^2y = 0$	[_separable]	✓	1.237
1539	$xy' + y \ln(x) = 0$	[_separable]	✓	1.468
1540	$xy' + 3y = 0$	[_separable]	✓	1.789
1541	$x^2y' + y = 0$	[_separable]	✓	1.428
1542	$y' + \frac{(x+1)y}{x} = 0$ i.c.	[_separable]	✓	1.815
1543	$xy' + \left(1 + \frac{1}{\ln(x)}\right)y = 0$ i.c.	[_separable]	✓	2.060
1544	$xy' + (1 + x \cot(x))y = 0$ i.c.	[_separable]	✓	2.464
1545	$y' - \frac{2xy}{x^2 + 1} = 0$ i.c.	[_separable]	✓	1.683
1546	$y' + \frac{ky}{x} = 0$ i.c.	[_separable]	✓	1.641
1547	$y' + \tan(kx)y = 0$ i.c.	[_separable]	✓	2.072
1548	$y' + 3y = 1$	[_quadrature]	✓	1.107
1549	$y' + \left(\frac{1}{x} - 1\right)y = -\frac{2}{x}$	[_linear]	✓	1.153
1550	$y' + 2xy = xe^{-x^2}$	[_linear]	✓	2.426
1551	$y' + \frac{2xy}{x^2 + 1} = \frac{e^{-x^2}}{x^2 + 1}$	[_linear]	✓	1.542

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
1552	$y' + \frac{y}{x} = \frac{7}{x^2} + 3$	[_linear]	✓	1.056
1553	$y' + \frac{4y}{x-1} = \frac{1}{(x-1)^5} + \frac{\sin(x)}{(x-1)^4}$	[_linear]	✓	4.945
1554	$xy' + (2x^2 + 1)y = x^3e^{-x^2}$	[_linear]	✓	2.756
1555	$xy' + 2y = \frac{2}{x^2} + 1$	[_linear]	✓	1.088
1556	$y' + y \tan(x) = \cos(x)$	[_linear]	✓	1.713
1557	$(x+1)y' + 2y = \frac{\sin(x)}{x+1}$	[_linear]	✓	2.760
1558	$(-2+x)(x-1)y' - (4x-3)y = (-2+x)^3$	[_linear]	✓	3.063
1559	$y' + 2 \sin(x) \cos(x) y = e^{-\sin(x)^2}$	[_linear]	✓	2.071
1560	$x^2y' + 3xy = e^x$	[_linear]	✓	1.241
1561	$y' + 7y = e^{3x}$ i.c.	[[_linear, 'class A']]	✓	1.419
1562	$(x^2+1)y' + 4xy = \frac{2}{x^2+1}$ i.c.	[_linear]	✓	3.094
1563	$xy' + 3y = \frac{2}{x(x^2+1)}$ i.c.	[_linear]	✓	1.895
1564	$y' + \cot(x)y = \cos(x)$ i.c.	[_linear]	✓	2.054
1565	$y' + \frac{y}{x} = \frac{2}{x^2} + 1$ i.c.	[_linear]	✓	1.235
1566	$(x-1)y' + 3y = \frac{1}{(x-1)^3} + \frac{\sin(x)}{(x-1)^2}$ i.c.	[_linear]	✓	4.263
1567	$xy' + 2y = 8x^2$ i.c.	[_linear]	✓	1.902
1568	$xy' - 2y = -x^2$ i.c.	[_linear]	✓	1.368

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
1569	<i>i.c.</i> $y' + 2xy = x$	[_separable]	✓	1.562
1570	<i>i.c.</i> $(x - 1)y' + 3y = \frac{1 + (x - 1)\sec(x)^2}{(x - 1)^3}$	[_linear]	✓	10.115
1571	<i>i.c.</i> $(x + 2)y' + 4y = \frac{2x^2 + 1}{x(x + 2)^3}$	[_linear]	✓	1.595
1572	<i>i.c.</i> $(x^2 - 1)y' - 2xy = x(x^2 - 1)$	[_linear]	✓	1.742
1573	<i>i.c.</i> $xy' - 2y = -1$	[_separable]	✓	2.291
1574	$\sec(y)^2 y' - 3 \tan(y) = -1$	[_quadrature]	✓	476.183
1575	$e^{y^2} \left( 2yy' + \frac{2}{x} \right) = \frac{1}{x^2}$	[[_1st_order, '_with_symmetry_[F(x),G(y)]']]	✓	1.826
1576	$\frac{xy'}{y} + 2 \ln(y) = 4x^2$	[[_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]']]	✓	2.549
1577	$\frac{y'}{(1 + y)^2} - \frac{1}{x(1 + y)} = -\frac{3}{x^2}$	[[_homogeneous, 'class C'], _rational, _Riccati]	✓	1.824
1578	$y' = \frac{3x^2 + 2x + 1}{-2 + y}$	[_separable]	✓	1.538
1579	$\sin(x) \sin(y) + \cos(y) y' = 0$	[_separable]	✓	2.960
1580	$xy' + y^2 + y = 0$	[_separable]	✓	1.685
1581	$(3y^3 + 3y \cos(y) + 1) y' + \frac{(2x + 1)y}{x^2 + 1} = 0$	[_separable]	✓	2.820
1582	$x^2 y y' = (y^2 - 1)^{3/2}$	[_separable]	✓	7.102
1583	$y' = x^2(1 + y^2)$	[_separable]	✓	3.140
1584	$(x^2 + 1) y' + xy = 0$	[_separable]	✓	1.316

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
1585	$y' = (x - 1)(y - 1)(-2 + y)$	[_separable]	✓	2.701
1586	$(y - 1)^2 y' = 2x + 3$	[_separable]	✓	1.841
1587	$y' = \frac{x^2 + 3x + 2}{-2 + y}$ i.c.	[_separable]	✓	2.192
1588	$y' + x(y^2 + y) = 0$ i.c.	[_separable]	✓	2.207
1589	$(3y^2 + 4y)y' + 2x + \cos(x) = 0$ i.c.	[_separable]	✓	181.736
1590	$y' + \frac{(1 + y)(y - 1)(-2 + y)}{x + 1} = 0$ i.c.	[_separable]	✓	9.549
1591	$y' + 2x(1 + y) = 0$ i.c.	[_separable]	✓	1.446
1592	$y' = 2xy(1 + y^2)$ i.c.	[_separable]	✓	8.292
1593	$y'(x^2 + 2) = 4x(y^2 + 2y + 1)$	[_separable]	✓	2.515
1594	$y' = -2x(y^3 - 3y + 2)$ i.c.	[_separable]	✓	4.161
1595	$y' = \frac{2x}{1 + 2y}$ i.c.	[_separable]	✓	3.226
1596	$y' = 2y - y^2$ i.c.	[_quadrature]	✓	2.263
1597	$x + yy' = 0$ i.c.	[_separable]	✓	4.347
1598	$y' + x^2(1 + y)(-2 + y)^2 = 0$	[_separable]	✓	2.960
1599	$(x + 1)(-2 + x)y' + y = 0$ i.c.	[_separable]	✓	1.829
1600	$y' = \frac{1 + y^2}{x^2 + 1}$	[_separable]	✓	1.801
1601	$y'\sqrt{-x^2 + 1} + \sqrt{1 - y^2} = 0$	[_separable]	✓	18.164

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
1602	$y' = \frac{\cos(x)}{\sin(y)}$ i.c.	[_separable]	✓	2.437
1603	$y' = ay - by^2$ i.c.	[_quadrature]	✓	1.940
1604	$y' + y = \frac{2x e^{-x}}{1 + y e^x}$	[[_Abel, '2nd type', 'class B']]	✓	1.970
1605	$xy' - 2y = \frac{x^6}{y + x^2}$	[_rational, [_Abel, '2nd type', 'class B']]	✓	4.363
1606	$y' - y = \frac{(x+1)e^{4x}}{(y+e^x)^2}$	[[_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)']]]	✓	2.623
1607	$y' - 2y = \frac{x e^{2x}}{1 - y e^{-2x}}$	[[_Abel, '2nd type', 'class A']]	✓	1.963
1608	$y' = \frac{y^2 + x^2}{\sin(x)}$	[_Riccati]	✗	8.820
1609	$y' = \frac{y + e^x}{y^2 + x^2}$	['y=_G(x,y)']	✗	1.860
1610	$y' = \tan(xy)$	['y=_G(x,y)']	✗	1.372
1611	$y' = \frac{y^2 + x^2}{\ln(xy)}$	['y=_G(x,y)']	✗	1.748
1612	$y' = (y^2 + x^2) y^{1/3}$	['y=_G(x,y)']	✗	1.173
1613	$y' = 2xy$	[_separable]	✓	1.170
1614	$y' = \ln(1 + x^2 + y^2)$	['y=_G(x,y)']	✗	1.041
1615	$y' = \frac{2x + 3y}{x - 4y}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓	4.017
1616	$y' = \sqrt{y^2 + x^2}$	['y=_G(x,y)']	✗	1.139
1617	$y' = x(y^2 - 1)^{2/3}$	[_separable]	✓	1.503
1618	$y' = (y^2 + x^2)^2$	['y=_G(x,y)']	✗	0.898

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
1619	$y' = \sqrt{x+y}$	[[_homogeneous, 'class C'], _dAlembert]	✓	2.419
1620	$y' = \frac{\tan(y)}{x-1}$	[_separable]	✓	1.936
1621	$y' = y^{2/5}$ i.c.	[_quadrature]	✓	2.315
1622	$y' = 3x(y-1)^{1/3}$ i.c.	[_separable]	✓	6.898
1623	$y' = 3x(y-1)^{1/3}$ i.c.	[_separable]	✓	22.707
1624	$y' = 3x(y-1)^{1/3}$ i.c.	[_separable]	✓	7.513
1625	$y' - y = xy^2$	[_Bernoulli]	✓	1.500
1626	$y' = \frac{y + x e^{-\frac{y}{x}}}{x}$	[[_homogeneous, 'class A'], _dAlembert]	✓	10.658
1627	$x^2 y' = y^2 + xy - x^2$	[[_homogeneous, 'class A'], _rational, _Riccati]	✓	0.201
1628	$x^2 y' = y^2 + xy - x^2$ i.c.	[[_homogeneous, 'class A'], _rational, _Riccati]	✓	3.193
1629	$y' + y = y^2$	[_quadrature]	✓	0.206
1630	$7xy' - 2y = -\frac{x^2}{y^6}$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓	0.303
1631	$x^2 y' + 2y = 2e^{\frac{1}{x}} \sqrt{y}$	[_Bernoulli]	✓	0.488
1632	$(x^2 + 1) y' + 2xy = \frac{1}{(x^2 + 1)y}$	[_rational, _Bernoulli]	✓	0.465
1633	$y' - xy = x^3 y^3$	[_Bernoulli]	✓	0.443
1634	$y' - \frac{(x+1)y}{3x} = y^4$	[_rational, _Bernoulli]	✓	0.679
1635	$y' - 2y = xy^3$ i.c.	[_Bernoulli]	✓	0.654

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
1636	<i>i.c.</i> $y' - xy = xy^{3/2}$	[_separable]	✓	8.280
1637	<i>i.c.</i> $xy' + y = x^4y^4$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓	0.734
1638	<i>i.c.</i> $y' - 2y = 2\sqrt{y}$	[_quadrature]	✓	2.732
1639	<i>i.c.</i> $y' - 4y = \frac{48x}{y^2}$	[_rational, _Bernoulli]	✓	0.990
1640	<i>i.c.</i> $x^2y' + 2xy = y^3$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓	0.918
1641	<i>i.c.</i> $y' - y = x\sqrt{y}$	[_Bernoulli]	✓	0.761
1642	$y' = \frac{x+y}{x}$	[_linear]	✓	1.148
1643	$y' = \frac{y^2 + 2xy}{x^2}$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓	2.240
1644	$xy^3y' = y^4 + x^4$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓	5.530
1645	$y' = \frac{y}{x} + \sec\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A', _dAlembert]	✓	4.757
1646	$x^2y' = y^2 + xy + x^2$	[[_homogeneous, 'class A', _rational, _Riccati]	✓	2.129
1647	$xyy' = x^2 + 2y^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓	4.322
1648	$y' = \frac{2y^2 + x^2e^{-\frac{y^2}{x^2}}}{2xy}$	[[_homogeneous, 'class A']]	✓	2.888
1649	<i>i.c.</i> $y' = \frac{xy + y^2}{x^2}$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓	2.191

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
1650	$y' = \frac{x^3 + y^3}{xy^2}$ i.c.	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓	95.176
1651	$xyy' + x^2 + y^2 = 0$ i.c.	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓	6.204
1652	$y' = \frac{y^2 - 3xy - 5x^2}{x^2}$ i.c.	[[_homogeneous, 'class A'], _rational, _Riccati]	✓	3.440
1653	$x^2y' = 2x^2 + y^2 + 4xy$ i.c.	[[_homogeneous, 'class A'], _rational, _Riccati]	✓	3.023
1654	$xyy' = 3x^2 + 4y^2$ i.c.	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓	7.737
1655	$y' = \frac{x + y}{x - y}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓	2.727
1656	$(-y + xy')(\ln(y) - \ln(x)) = x$	[[_homogeneous, 'class A']]	✓	10.687
1657	$y' = \frac{y^3 + 2xy^2 + x^2y + x^3}{x(x + y)^2}$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	45.013
1658	$y' = \frac{x + 2y}{2x + y}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓	5.496
1659	$y' = \frac{y}{y - 2x}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓	5.666
1660	$y' = \frac{xy^2 + 2y^3}{x^3 + x^2y + xy^2}$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	416.310
1661	$y' = \frac{x^3 + x^2y + 3y^3}{x^3 + 3xy^2}$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	38.042
1662	$x^2y' = y^2 + xy - 4x^2$ i.c.	[[_homogeneous, 'class A'], _rational, _Riccati]	✓	3.286

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
1663	$xyy' = x^2 - xy + y^2$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓	4.563
1664	$y' = \frac{2y^2 - xy + 2x^2}{xy + 2x^2}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓	49.509
1665	$y' = \frac{y^2 + xy + x^2}{xy}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓	37.189
1666	$y' = \frac{-6x + y - 3}{2x - y - 1}$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	3.397
1667	$y' = \frac{2x + y + 1}{x + 2y - 4}$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	12.144
1668	$y' = \frac{-x + 3y - 14}{x + y - 2}$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	1.993
1669	$3xy^2y' = y^3 + x$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓	2.148
1670	$xyy' = 3x^6 + 6y^2$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓	2.169
1671	$x^3y' = 2y^2 + 2x^2y - 2x^4$	[[_homogeneous, 'class G'], _rational, _Riccati]	✓	1.840
1672	$y' = y^2e^{-x} + 4y + 2e^x$	[[_1st_order, _with_linear_symmetries], _Riccati]	✓	1.404
1673	$y' = \frac{y^2 + y \tan(x) + \tan(x)^2}{\sin(x)^2}$	[_Riccati]	✓	44.389
1674	$x \ln(x)^2 y' = -4 \ln(x)^2 + y \ln(x) + y^2$	[[_1st_order, '_with_symmetry_[F(x),G(y)]'], _Riccati]	✓	2.082

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
1675	$2x(y + 2\sqrt{x})y' = (y + \sqrt{x})^2$	[[_homogeneous, 'class G'], _rational, [_Abel, '2nd type', 'class B']]	✓	2.264
1676	$(y + e^{x^2})y' = 2x(y^2 + ye^{x^2} + e^{2x^2})$	[[_1st_order, '_with_symmetry_[F(x),G(y)]'], [_Abel, '2nd type', 'class A']]	✓	2.506
1677	$y' + \frac{2y}{x} = \frac{3y^2x^2 + 6xy + 2}{x^2(2xy + 3)}$ i.c.	[[_homogeneous, 'class G'], _rational, [_Abel, '2nd type', 'class B']]	✓	7.950
1678	$y' + \frac{3y}{x} = \frac{3x^4y^2 + 10x^2y + 6}{x^3(2x^2y + 5)}$ i.c.	[[_homogeneous, 'class G'], _rational, [_Abel, '2nd type', 'class B']]	✓	6.789
1679	$y' = 1 + x - (2x + 1)y + xy^2$	[_Riccati]	✓	1.969
1680	$6y^2x^2 + 4x^3yy' = 0$	[_separable]	✓	1.768
1681	$3\cos(x)y + 4xe^x + 2x^3y + (3\sin(x) + 3)y' = 0$	[_linear]	✓	102.764
1682	$14x^2y^3 + 21x^2y^2y' = 0$	[_quadrature]	✓	1.069
1683	$2x - 2y^2 + (12y^2 - 4xy)y' = 0$	[_exact, _rational]	✓	1.183
1684	$(x + y)^2 + (x + y)^2y' = 0$	[_quadrature]	✓	0.532
1685	$4x + 7y + (3x + 4y)y' = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓	5.591
1686	$-2y^2\sin(x) + 3y^3 - 2x + (4\cos(x)y + 9xy^2)y' = 0$	[_exact]	✓	33.710
1687	$2x + y + (2x + 2y)y' = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓	4.250
1688	$3x^2 + 2xy + 4y^2 + (x^2 + 8xy + 18y)y' = 0$	[_exact, _rational, [_Abel, '2nd type', 'class B']]	✓	1.446
1689	$2x^2 + 8xy + y^2 + \left(2x^2 + \frac{xy^3}{3}\right)y' = 0$	[_rational]	✗	1.640

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
1690	$\frac{1}{x} + 2x + \left(\frac{1}{y} + 2y\right) y' = 0$	[_separable]	✓	1.875
1691	$y \sin(xy) + xy^2 \cos(xy) + (x \sin(xy) + xy^2 \cos(xy)) y' = 0$	['y=_G(x,y)']	✗	87.903
1692	$\frac{x}{(y^2 + x^2)^{3/2}} + \frac{yy'}{(y^2 + x^2)^{3/2}} = 0$	[_separable]	✓	4.681
1693	$e^x (y^2 x^2 + 2xy^2) + 6x + (2x^2 y e^x + 2) y' = 0$	[_exact, [_Abel, '2nd type', 'class B']]	✓	1.966
1694	$x^2 e^{y+x^2} (2x^2 + 3) + 4x + (x^3 e^{y+x^2} - 12y^2) y' = 0$	[_exact]	✓	2.761
1695	$e^{xy} (x^4 y + 4x^3) + 3y + (x^5 e^{xy} + 3x) y' = 0$	[_exact, [_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)']]	✓	6.742
1696	$3x^2 \cos(x) y - x^3 y \sin(x) + 4x + (8y - x^4 \sin(x) y) y' = 0$	[[_Abel, '2nd type', 'class B']]	✗	53.563
1697	$4x^3 y^2 - 6x^2 y - 2x - 3 + (2x^4 y - 2x^3) y' = 0$ i.c.	[_exact, _rational, [_Abel, '2nd type', 'class B']]	✓	2.221
1698	$-4 \cos(x) y + 4 \sin(x) \cos(x) + \sec(x)^2 + (4y - 4 \sin(x)) y' = 0$ i.c.	[_exact, [_1st_order, '_with_symmetry_[F(x),G(x)']], [_Abel, '2nd type', 'class A']]	✓	6.694
1699	$(y^3 - 1) e^x + 3y^2 (1 + e^x) y' = 0$ i.c.	[_separable]	✓	2.977
1700	$\sin(x) - y \sin(x) - 2 \cos(x) + \cos(x) y' = 0$ i.c.	[_linear]	✓	2.395
1701	$(2x - 1)(y - 1) + (x + 2)(x - 3) y' = 0$ i.c.	[_separable]	✓	1.799

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
1702	$7x + 4y + (4x + 3y) y' = 0$	[[_homogeneous, 'class A'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓	3.816
1703	$e^x(x^4y^2 + 4x^3y^2 + 1) + (2x^4ye^x + 2y) y' = 0$	[_exact, _Bernoulli]	✓	2.324
1704	$x^3y^4 + x + (x^4y^3 + y) y' = 0$	[_exact, _rational]	✓	2.398
1705	$3x^2 + 2y + (2x + 2y) y' = 0$	[_exact, _rational, [_1st_order, '_with_symmetry_[F(x),G(x)]'], [_Abel, '2nd type', 'class A']]	✓	1.152
1706	$x^3y^4 + 2x + (x^4y^3 + 3y) y' = 0$	[_exact, _rational]	✓	2.449
1707	$x^2 + y^2 + 2xyy' = 0$	[[_homogeneous, 'class A'], _exact, _rational, _Bernoulli]	✓	3.990
1708	$y' + \frac{2y}{x} = -\frac{2xy}{x^2 + 2x^2y + 1}$ i.c.	[_rational, [_Abel, '2nd type', 'class B']]	✓	3.780
1709	$y' - \frac{3y}{x} = \frac{2x^4(4x^3 - 3y)}{3x^5 + 3x^3 + 2y}$ i.c.	[_rational, [_Abel, '2nd type', 'class B']]	✓	2.104
1710	$y' + 2xy = -\frac{e^{-x^2}(3x + 2ye^{x^2})}{2x + 3ye^{x^2}}$ i.c.	[[_Abel, '2nd type', 'class B']]	✓	41.483
1711	$y + \left(2x + \frac{1}{y}\right) y' = 0$	[[_homogeneous, 'class G'], _rational, [_Abel, '2nd type', 'class B']]	✓	1.831
1712	$-y^2 + x^2y' = 0$	[_separable]	✓	2.223
1713	$y - xy' = 0$	[_separable]	✓	1.273
1714	$3x^2y + 2x^3y' = 0$	[_separable]	✓	1.774
1715	$2y^3 + 3y^2y' = 0$	[_quadrature]	✓	1.053
1716	$5xy + 2y + 5 + 2xy' = 0$	[_linear]	✓	1.167

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
1717	$xy + x + 2y + 1 + (x + 1)y' = 0$	[_linear]	✓	1.295
1718	$27xy^2 + 8y^3 + (18x^2y + 12xy^2)y' = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓	6.950
1719	$6xy^2 + 2y + (12x^2y + 6x + 3)y' = 0$	[_rational, [_Abel, '2nd type', 'class B']]	✓	1.408
1720	$y^2 + \left(xy^2 + 6xy + \frac{1}{y}\right)y' = 0$	[_rational, [_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓	1.471
1721	$12x^3y + 24y^2x^2 + (9x^4 + 32x^3y + 4y)y' = 0$	[_rational, [_Abel, '2nd type', 'class B']]	✓	1.467
1722	$x^2y + 4xy + 2y + (x^2 + x)y' = 0$	[_separable]	✓	1.655
1723	$-y + (x^4 - x)y' = 0$	[_separable]	✓	1.625
1724	$\cos(x)\cos(y) + (\sin(x)\cos(y) - \sin(x)\sin(y) + y)y' = 0$	[[_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓	36.802
1725	$2xy + y^2 + (2xy + x^2 - 2y^2x^2 - 2xy^3)y' = 0$	[_rational]	✓	1.600
1726	$y\sin(y) + x(\sin(y) - y\cos(y))y' = 0$	[_separable]	✓	2.615
1727	$ay + bxy + (cx + dxy)y' = 0$	[_separable]	✓	1.789
1728	$3x^2y^3 - y^2 + y + (-xy + 2x)y' = 0$	[_rational, [_Abel, '2nd type', 'class C']]	✗	2.371
1729	$2y + 3(x^2 + x^2y^3)y' = 0$	[_separable]	✓	2.150
1730	$a\cos(x)y - y^2\sin(x) + (b\cos(x)y - x\sin(x)y)y' = 0$	[_linear]	✓	9.610
1731	$x^4y^4 + x^5y^3y' = 0$	[_separable]	✓	1.639
1732	$y(x\cos(x) + 2\sin(x)) + x(1+y)y' = 0$	[_separable]	✓	2.897
1733	$x^4y^3 + y + (x^5y^2 - x)y' = 0$	[[_homogeneous, 'class G'], _rational]	✓	2.070

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
1734	$3xy + 2y^2 + y + (x^2 + 2xy + x + 2y)y' = 0$	[[_homogeneous, 'class D'], _rational, [_Abel, '2nd type', 'class B']]	✓	1.986
1735	$12xy + 6y^3 + (9x^2 + 10xy^2)y' = 0$	[[_homogeneous, 'class G'], _rational]	✓	2.340
1736	$3y^2x^2 + 2y + 2xy' = 0$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓	1.796
1737	<i>i.c.</i> $y'' - 7y' + 10y = 0$	[[_2nd_order, _missing_x]]	✓	1.448
1738	<i>i.c.</i> $y'' - 2y' + 2y = 0$	[[_2nd_order, _missing_x]]	✓	2.104
1739	<i>i.c.</i> $y'' - 2y' + 2y = 0$	[[_2nd_order, _missing_x]]	✓	1.399
1740	<i>i.c.</i> $y'' - 2y' + y = 0$	[[_2nd_order, _missing_x]]	✓	1.160
1741	<i>i.c.</i> $y'' - 2y' + y = 0$	[[_2nd_order, _missing_x]]	✓	0.918
1742	<i>i.c.</i> $(x^2 - 1)y'' + 4xy' + 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	1.558
1743	$y'' - 2y' - 3y = 0$	[[_2nd_order, _missing_x]]	✓	0.848
1744	$y'' - 6y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓	0.848
1745	$y'' - 2ay' + a^2y = 0$	[[_2nd_order, _missing_x]]	✓	0.662
1746	$x^2y'' + xy' - y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	1.268
1747	$x^2y'' - xy' + y = 0$	[[_Emden, _Fowler]]	✓	1.236
1748	$x^2y'' - (2a - 1)xy' + a^2y = 0$	[[_Emden, _Fowler]]	✓	1.210
1749	$4x^2y'' - 4xy' + (-16x^2 + 3)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	2.497
1750	$(x - 1)y'' - xy' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.284

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
1751	$x^2 y'' - 2xy' + (x^2 + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	2.582
1752	$4x^2 \sin(x) y'' - 4x(x \cos(x) + \sin(x)) y' + (2x \cos(x) + 3 \sin(x)) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.484
1753	$(3x - 1) y'' - (2 + 3x) y' + (6x - 8) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.787
1754	$(x^2 - 4) y'' + 4xy' + 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	1.082
1755	$(2x + 1) y'' - 2(2x^2 - 1) y' - 4(x + 1) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.744
1756	$(x^2 - 2x) y'' + (-x^2 + 2) y' + (2x - 2) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.474
1757	$(2x + 1) y'' - 2y' - (2x + 3) y = (2x + 1)^2$	[[_2nd_order, _with_linear_symmetries]]	✓	0.447
1758	$x^2 y'' + xy' - y = \frac{4}{x^2}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓	0.387
1759	$x^2 y'' - xy' + y = x$	[[_2nd_order, _with_linear_symmetries]]	✓	0.392
1760	$y'' - 3y' + 2y = \frac{1}{1 + e^{-x}}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.484
1761	$y'' - 2y' + y = 7x^{3/2} e^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.517
1762	$4x^2 y'' + (-8x^2 + 4x) y' + (4x^2 - 4x - 1) y = 4\sqrt{x} e^x (1 + 4x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.483
1763	$y'' - 2y' + 2y = e^x \sec(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.613
1764	$y'' + 4xy' + (4x^2 + 2) y = 8 e^{-x(x+2)}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.454
1765	$x^2 y'' + xy' - 4y = -6x - 4$	[[_2nd_order, _with_linear_symmetries]]	✓	0.412
1766	$x^2 y'' + 2x(x - 1) y' + (x^2 - 2x + 2) y = x^3 e^{2x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.463

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
1767	$x^2 y'' - x(2x - 1) y' + (x^2 - x - 1) y = e^x x^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.445
1768	$(-2x + 1) y'' + 2y' + (2x - 3) y = (4x^2 - 4x + 1) e^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.453
1769	$x^2 y'' - 3xy' + 4y = 4x^4$	[[_2nd_order, _with_linear_symmetries]]	✓	0.414
1770	$2xy'' + (1 + 4x) y' + (2x + 1) y = 3\sqrt{x} e^{-x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.468
1771	$xy'' - (2x + 1) y' + (x + 1) y = -e^{-x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.470
1772	$4x^2 y'' - 4x(x + 1) y' + (2x + 3) y = 4x^{5/2} e^{2x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.456
1773	$x^2 y'' - 5xy' + 8y = 4x^2$	[[_2nd_order, _with_linear_symmetries]]	✓	0.447
1774	$xy'' + (2 - 2x) y' + (-2 + x) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.329
1775	$x^2 y'' - 4xy' + 6y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]]']	✓	0.317
1776	$x^2 \ln(x)^2 y'' - 2x \ln(x) y' + (2 + \ln(x)) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.327
1777	$4xy'' + 2y' + y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]]']	✓	0.394
1778	$xy'' - (2x + 2) y' + (x + 2) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.334
1779	$x^2 y'' - (2a - 1) xy' + a^2 y = 0$	[[_Emden, _Fowler]]	✓	0.349
1780	$x^2 y'' - 2xy' + (x^2 + 2) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.386
1781	$xy'' - (1 + 4x) y' + (4x + 2) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.337

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
1782	$4x^2 \sin(x) y'' - 4x(x \cos(x) + \sin(x)) y' + (2x \cos(x) + 3 \sin(x)) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.395
1783	$4x^2 y'' - 4xy' + (-16x^2 + 3) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.335
1784	$(2x + 1) xy'' - 2(2x^2 - 1) y' - 4(x + 1) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.342
1785	$(x^2 - 2x) y'' + (-x^2 + 2) y' + (2x - 2) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.347
1786	$xy'' - (1 + 4x) y' + (4x + 2) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.338
1787	<i>i.c.</i> $x^2 y'' - 3xy' + 4y = 4x^4$	[[_2nd_order, _with_linear_symmetries]]	✓	0.425
1788	<i>i.c.</i> $(3x - 1) y'' - (2 + 3x) y' - (6x - 8) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.410
1789	<i>i.c.</i> $(x + 1)^2 y'' - 2(x + 1) y' - (x^2 + 2x - 1) y = (x + 1)^3 e^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.544
1790	<i>i.c.</i> $x^2 y'' + 2xy' - 2y = x^2$	[[_2nd_order, _with_linear_symmetries]]	✓	0.443
1791	<i>i.c.</i> $(x^2 - 4) y'' + 4xy' + 2y = x + 2$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓	0.516
1792	$y' + y^2 + k^2 = 0$	[_quadrature]	✓	0.764
1793	$y' + y^2 - 3y + 2 = 0$	[_quadrature]	✓	1.510
1794	$y' + y^2 + 5y - 6 = 0$	[_quadrature]	✓	1.438
1795	$y' + y^2 + 8y + 7 = 0$	[_quadrature]	✓	1.398
1796	$y' + y^2 + 14y + 50 = 0$	[_quadrature]	✓	1.034
1797	$6y' + 6y^2 - y - 1 = 0$	[_quadrature]	✓	1.454
1798	$36y' + 36y^2 - 12y + 1 = 0$	[_quadrature]	✓	0.934

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
1799	$x^2(y' + y^2) - x(x + 2)y + x + 2 = 0$	[_rational, [_1st_order, '_with_symmetry_[F(x),G(x)]'], _Riccati]	✓	1.740
1800	$y' + y^2 + 4xy + 4x^2 + 2 = 0$	[[_homogeneous, 'class C'], _Riccati]	✓	2.612
1801	$(2x + 1)(y' + y^2) - 2y - 2x - 3 = 0$	[_rational, _Riccati]	✓	2.687
1802	$(3x - 1)(y' + y^2) - (2 + 3x)y - 6x + 8 = 0$	[_rational, _Riccati]	✓	2.960
1803	$x^2(y' + y^2) + xy + x^2 - \frac{1}{4} = 0$	[_rational, [_1st_order, '_with_symmetry_[F(x),G(x)]'], _Riccati]	✓	1.642
1804	$x^2(y' + y^2) - 7xy + 7 = 0$	[[_homogeneous, 'class G'], _rational, _Riccati]	✓	2.400
1805	$y'' + 9y = \tan(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	5.464
1806	$y'' + 4y = \sin(2x) \sec(2x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	4.422
1807	$y'' - 3y' + 2y = \frac{4}{1 + e^{-x}}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.132
1808	$y'' - 2y' + 2y = 3e^x \sec(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	4.655
1809	$y'' - 2y' + y = 14x^{3/2}e^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.168
1810	$y'' - y = \frac{4e^{-x}}{1 - e^{-2x}}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.384
1811	$x^2y'' + xy' - y = 2x^2 + 2$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓	1.829
1812	$xy'' + (2 - 2x)y' + (-2 + x)y = e^{2x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.012
1813	$4x^2y'' + (-8x^2 + 4x)y' + (4x^2 - 4x - 1)y = 4\sqrt{x}e^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.205

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
Continued from previous page

#	ODE	CAS classification	Solved?	time (sec)
1814	$y'' + 4xy' + (4x^2 + 2)y = 4e^{-x(x+2)}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.869
1815	$x^2y'' - 4xy' + 6y = x^{5/2}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.866
1816	$x^2y'' - 3xy' + 3y = 2x^4 \sin(x)$	[[_2nd_order, _with_linear_symmetries]]	✓	6.965
1817	$(2x + 1)y'' - 2y' - (2x + 3)y = (2x + 1)^2 e^{-x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.293
1818	$2xy'' + 2y' + 2y = \sin(\sqrt{x})$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.983
1819	$xy'' - (2x + 2)y' + (x + 2)y = 6x^3 e^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.012
1820	$x^2y'' - (2a - 1)xy' + a^2y = x^{a+1}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.873
1821	$x^2y'' - 2xy' + (x^2 + 2)y = x^3 \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	12.740
1822	$xy'' - y' - 4x^3y = 8x^5$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	7.701
1823	$\sin(x)y'' + (2\sin(x) - \cos(x))y' + (\sin(x) - \cos(x))y = e^{-x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✗	2.507
1824	$4x^2y'' - 4xy' + (-16x^2 + 3)y = 8x^{5/2}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	8.060
1825	$4x^2y'' - 4xy' + (4x^2 + 3)y = x^{7/2}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	11.469
1826	$x^2y'' - 2xy' - (x^2 - 2)y = 3x^4$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	8.891
1827	$x^2y'' - 2x(x + 1)y' + (x^2 + 2x + 2)y = x^3 e^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.032
1828	$x^2y'' - xy' - 3y = x^{3/2}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓	1.718
1829	$x^2y'' - x(4 + x)y' + 2(x + 3)y = x^4 e^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.638

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
1830	$x^2 y'' - 2x(x+2)y' + (x^2 + 4x + 6)y = 2x e^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.846
1831	$x^2 y'' - 4xy' + (x^2 + 6)y = x^4$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	10.920
1832	$(x-1)y'' - xy' + y = 2(x-1)^2 e^x$	[[_2nd_order, _with_linear_symmetries]]	✓	1.604
1833	$4x^2 y'' - 4x(x+1)y' + (2x+3)y = x^{5/2} e^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.643
1834	$(3x-1)y'' - (2+3x)y' - (6x-8)y = (3x-1)^2 e^{2x}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.682
1835	$(x-1)^2 y'' - 2(x-1)y' + 2y = (x-1)^2$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	1.891
1836	$(x-1)^2 y'' - (x^2-1)y' + (x+1)y = (x-1)^3 e^x$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	1.633
1837	$(x-1)^2 y'' + 4xy' + 2y = 2x$ i.c.	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓	2.782
1838	$x^2 y'' + 2xy' - 2y = -2x^2$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	2.049
1839	$(x+1)(2x+3)y'' + 2(x+2)y' - 2y = (2x+3)^2$ i.c.	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓	2.159
1840	$(x+2)y'' + xy' + 3y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.632
1841	$(3x^2+1)y'' + 3x^2 y' - 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.679
1842	$(2x^2+1)y'' + (2-3x)y' + 4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.669
1843	$(x^2+1)y'' + (2-x)y' + 3y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.671
1844	$(3x^2+1)y'' - 2xy' + 4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.628

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
1845	$xy'' + (4 + 2x)y' + (x + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.699
1846	$x^2y'' + 2xy' - 3xy = 0$	[[_Emden, _Fowler]]	✓	0.707
1847	$(2 - x)y'' + 2y = 0$ i.c.	[[_Emden, _Fowler]]	✓	0.524
1848	$(x + 1)y'' + 2(x - 1)^2y' + 3y = 0$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	0.682
1849	$x^2(1 - x)y'' + x(4 + x)y' + (2 - x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.422
1850	$x^2(x + 1)y'' + x(2x + 1)y' - (4 + 6x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.351
1851	$x^2(x + 1)y'' - x(-x^2 - 6x + 1)y' + (x^2 + 6x + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.995
1852	$x^2(3x + 1)y'' + x(x^2 + 12x + 2)y' + 2x(x + 3)y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)']]]	✓	0.896
1853	$x^2(2x^2 + 1)y'' + x(2x^2 + 4)y' + 2(-x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.985
1854	$x^2(x^2 + 2)y'' + 2x(x^2 + 5)y' + 2(-x^2 + 3)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.431
1855	$(x^2 + 1)y'' + 6xy' + 6y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.611
1856	$(x^2 + 1)y'' + 2xy' - 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.580
1857	$(x^2 + 1)y'' - 8xy' + 20y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.599
1858	$(-x^2 + 1)y'' - 8xy' - 12y = 0$	[_Gegenbauer]	✓	0.618
1859	$(2x^2 + 1)y'' + 7xy' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.616
1860	$(x^2 + 1)y'' + 2xy' + \frac{y}{4} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.617

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
1861	$(-x^2 + 1)y'' - 5xy' - 4y = 0$	[_Gegenbauer]	✓	0.614
1862	$(x^2 + 1)y'' - 10xy' + 28y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.611
1863	$y'' + xy' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.556
1864	$y'' + 2xy' + 3y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.556
1865	<i>i.c.</i> $(x^2 + 1)y'' + xy' + y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, 'with_symmetry_[0,F(x)']]]	✓	0.605
1866	<i>i.c.</i> $(2x^2 + 1)y'' - 9xy' - 6y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.616
1867	<i>i.c.</i> $(8x^2 + 1)y'' + 2y = 0$	[[_Emden, _Fowler]]	✓	0.602
1868	$y'' - y = 0$	[[_2nd_order, _missing_x]]	✓	0.554
1869	$y'' - (x - 3)y' - y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.545
1870	$(2x^2 - 4x + 1)y'' + 10(x - 1)y' + 6y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.693
1871	$(2x^2 - 8x + 11)y'' - 16(-2 + x)y' + 36y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.678
1872	$(3x^2 + 6x + 5)y'' + 9(x + 1)y' + 3y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.664
1873	<i>i.c.</i> $(x^2 - 4)y'' - xy' - 3y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.611
1874	<i>i.c.</i> $y'' + (x - 3)y' + 3y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.543
1875	<i>i.c.</i> $(3x^2 - 6x + 5)y'' + (x - 1)y' + 12y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.659
1876	<i>i.c.</i> $(4x^2 - 24x + 37)y'' + y = 0$	[[_Emden, _Fowler]]	✓	0.636

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
Continued from previous page

#	ODE	CAS classification	Solved?	time (sec)
1877	$(x^2 - 8x + 14)y'' - 8(x - 4)y' + 20y = 0$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	0.635
1878	$(2x^2 + 4x + 5)y'' - 20(x + 1)y' + 60y = 0$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	0.655
1879	$(x^2 + 1)y'' + 4xy' + 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.605
1880	$y'' - 2xy' + 2\alpha y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.560
1881	$y'' - xy = 0$	[[_Emden, _Fowler]]	✓	0.472
1882	$(-2x^3 + 1)y'' - 10x^2y' - 8xy = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.631
1883	$(x^3 + 1)y'' + 7x^2y' + 9xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.630
1884	$(-2x^3 + 1)y'' + 6x^2y' + 24xy = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.608
1885	$(-x^3 + 1)y'' + 15x^2y' - 36xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.623
1886	$(2x^5 + 1)y'' + 14x^4y' + 10x^3y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.630
1887	$y'' + x^2y = 0$	[[_Emden, _Fowler]]	✓	0.468
1888	$y'' + x^6y' + 7x^5y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.539
1889	$(x^8 + 1)y'' - 16x^7y' + 72x^6y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.573
1890	$(-x^6 + 1)y'' - 12x^5y' - 30x^4y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.616
1891	$y'' + x^5y' + 6x^4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.568
1892	$(3x + 1)y'' + xy' + 2y = 0$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	0.630
1893	$(2x^2 + x + 1)y'' + (2 + 8x)y' + 4y = 0$ i.c.	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.659

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
1894	$(-2x^2 + 1)y'' + (2 - 6x)y' - 2y = 0$ i.c.	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.662
1895	$(3x^2 + x + 1)y'' + (2 + 15x)y' + 12y = 0$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	0.673
1896	$(x + 2)y'' + (x + 1)y' + 3y = 0$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	0.574
1897	$(x^2 + 3x + 3)y'' + (6 + 4x)y' + 2y = 0$ i.c.	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.661
1898	$(4 + x)y'' + (x + 2)y' + 2y = 0$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	0.566
1899	$(2x^2 - 3x + 2)y'' - (4 - 6x)y' + 2y = 0$ i.c.	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.703
1900	$(2x^2 + 3x)y'' + 10(x + 1)y' + 8y = 0$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	0.701
1901	$(x^2 - x + 1)y'' - (1 - 4x)y' + 2y = 0$ i.c.	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.696
1902	$(x + 2)y'' + (x + 2)y' + y = 0$ i.c.	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.637
1903	$x^2y'' - (6 - 7x)y' + 8y = 0$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	0.675
1904	$(2x^2 + x + 1)y'' + (1 + 7x)y' + 2y = 0$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	0.707
1905	$(x + 3)y'' + (2x + 1)y' - (2 - x)y = 0$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	0.668
1906	$y'' + 3xy' + (2x^2 + 4)y = 0$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	0.539
1907	$(4x + 2)y'' - 4y' - (6 + 4x)y = 0$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	0.564
1908	$(2x + 1)y'' - (-2x + 1)y' - (3 - 2x)y = 0$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	0.621
1909	$(5 + 2x)y'' - y' + (x + 5)y = 0$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	0.662

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
1910	$(4+x)y'' - (4+2x)y' + (6+x)y = 0$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	0.678
1911	$(2+3x)y'' - xy' + 2xy = 0$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	0.630
1912	$(2x+3)y'' + 3y' - xy = 0$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	0.672
1913	$(2x+3)y'' - 3y' - (x+2)y = 0$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	0.662
1914	$(10-2x)y'' + (x+1)y = 0$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	0.635
1915	$(7+x)y'' + (8+2x)y' + (x+5)y = 0$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	0.678
1916	$(6+4x)y'' + (2x+1)y = 0$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	0.652
1917	$(\beta x^2 + \alpha x + 1)y'' + (\delta x + \gamma)y' + \epsilon y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.545
1918	$(2x^2 + 3x + 1)y'' + (6 + 8x)y' + 4y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.697
1919	$(6x^2 - 5x + 1)y'' - (10 - 24x)y' + 12y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.701
1920	$(4x^2 - 4x + 1)y'' - (8 - 16x)y' + 8y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.677
1921	$(x^2 + 4x + 4)y'' + (8 + 4x)y' + 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.668
1922	$(3x^2 + 8x + 4)y'' + (16 + 12x)y' + 6y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.698
1923	$y'' + 2xy' + (2x^2 + 3)y = 0$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	0.550
1924	$y'' - 3xy' + (2x^2 + 5)y = 0$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	0.540
1925	$y'' + 5xy' - (-x^2 + 3)y = 0$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	0.543

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
1926	$y'' - 2xy' - (3x^2 + 2)y = 0$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	0.556
1927	$y'' + 3xy' + (4x^2 + 2)y = 0$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	0.545
1928	$2y'' + 5xy' + (2x^2 + 4)y = 0$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	0.599
1929	$3y'' + 2xy' + (-x^2 + 4)y = 0$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	0.549
1930	$y'' + 4xy' + (4x^2 + 2)y = 0$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	0.541
1931	$y'' + 4xy' + (4x^2 + 2)y = 0$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	0.526
1932	$(x + 1)y'' + x^2y' + (2x + 1)y = 0$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	0.657
1933	$y'' + (x^2 + 2x + 1)y' + 2y = 0$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	0.623
1934	$(x^2 + 1)y'' + (x^2 + 2)y' + xy = 0$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	0.674
1935	$(x + 1)y'' + (2x^2 - 3x + 1)y' - (x - 4)y = 0$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	0.717
1936	$y'' + (3x^2 + 12x + 13)y' + (5 + 2x)y = 0$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	0.658
1937	$(3x^2 + 2x + 1)y'' + (-x^2 + 2)y' + (x + 1)y = 0$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	0.698
1938	$(x^2 + 4x + 3)y'' - (-x^2 + 4x + 5)y' - (x + 2)y = 0$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	0.761
1939	$(x^2 + 2x + 1)y'' + (1 - x)y = 0$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	0.606
1940	$(-2x^2 + x)y'' + (-x^2 + 3x + 1)y' + (x + 2)y = 0$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	0.772

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
1941	$(2x^2 - 11x + 16) y'' + (x^2 - 6x + 10) y' - (2 - x) y = 0$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	0.741
1942	$2x^2(x^2 + x + 1) y'' + x(11x^2 + 11x + 9) y' + (7x^2 + 10x + 6) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.046
1943	$x^2(x + 3) y'' + 5x(x + 1) y' - (1 - 4x) y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	1.026
1944	$x^2(-x^2 + 2) y'' - x(4x^2 + 3) y' + (2x + 2) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.072
1945	$2x^2(x^2 + x + 1) y'' + x(5x^2 + 3x + 3) y' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.228
1946	$3x^2 y'' + 2x(-2x^2 + x + 1) y' + (-8x^2 + 2x) y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, 'with_symmetry_[0,F(x)]']]	✓	0.951
1947	$x^2(x^2 + 3x + 3) y'' + x(7x^2 + 8x + 5) y' - (-9x^2 - 2x + 1) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.139
1948	$4x^2 y'' + x(4x^2 + 2x + 7) y' - (-7x^2 - 4x + 1) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.053
1949	$12x^2(x + 1) y'' + x(3x^2 + 35x + 11) y' - (-5x^2 - 10x + 1) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.023
1950	$x^2(10x^2 + x + 5) y'' + x(48x^2 + 3x + 4) y' + (36x^2 + x) y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, 'with_symmetry_[0,F(x)]']]	✓	1.029
1951	$8x^2 y'' - 2x(-x^2 - 4x + 3) y' + (x^2 + 6x + 3) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.986

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
1952	$18x^2(x+1)y'' + 3x(x^2+11x+5)y' - (-5x^2-2x+1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.985
1953	$x(x^2+x+3)y'' + (-x^2+x+4)y' + xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.027
1954	$10x^2(2x^2+x+1)y'' + x(66x^2+13x+13)y' - (10x^2+4x+1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.133
1955	$2x^2y'' + x(2x+3)y' - (1-x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.876
1956	$x^2(x+3)y'' + x(5+4x)y' - (-2x+1)y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.983
1957	$2x^2y'' + x(x+5)y' - (2-3x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.880
1958	$3x^2y'' + x(x+1)y' - y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.872
1959	$2x^2y'' - xy' + (-2x+1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.961
1960	$9x^2y'' + 9xy' - (3x+1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.906
1961	$3x^2y'' + x(x+1)y' - (3x+1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.916
1962	$2x^2(x+3)y'' + x(1+5x)y' + (x+1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.997
1963	$x^2(4+x)y'' - x(1-3x)y' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.947
1964	$2x^2y'' + 5xy' + (x+1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.967
1965	$x^2(3+4x)y'' + x(5+18x)y' - (1-12x)y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.956
1966	$6x^2y'' + x(10-x)y' - (x+2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.924
1967	$x^2(8+x)y'' + x(2+3x)y' + (x+1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.120

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
1968	$x^2(3 + 4x)y'' + x(11 + 4x)y' - (3 + 4x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.091
1969	$2x^2(2 + 3x)y'' + x(4 + 11x)y' - (1 - x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.133
1970	$x^2(x + 2)y'' + 5x(1 - x)y' - (2 - 8x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.056
1971	$x^2(6 + x)y'' + x(11 + 4x)y' + (2x + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.108
1972	$8x^2y'' + x(x^2 + 2)y' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.927
1973	$8x^2(-x^2 + 1)y'' + 2x(-13x^2 + 1)y' + (-9x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.963
1974	$x^2(x^2 + 1)y'' - 2x(-x^2 + 2)y' + 4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.907
1975	$x(x^2 + 3)y'' + (-x^2 + 2)y' - 8xy = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.836
1976	$4x^2(-x^2 + 1)y'' + x(-19x^2 + 7)y' - (14x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.957
1977	$3x^2(-x^2 + 2)y'' + x(-11x^2 + 1)y' + (-5x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.920
1978	$2x^2(x^2 + 2)y'' - x(-7x^2 + 12)y' + (3x^2 + 7)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.995
1979	$2x^2(x^2 + 2)y'' + x(7x^2 + 4)y' - (-3x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.016
1980	$2x^2(2x^2 + 1)y'' + 5x(6x^2 + 1)y' - (-40x^2 + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.003
1981	$3x^2(x^2 + 1)y'' + 5x(x^2 + 1)y' - (-5x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.944

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
1982	$x(x^2 + 1)y'' + (7x^2 + 4)y' + 8xy = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.878
1983	$x^2(x^2 + 2)y'' + x(x^2 + 3)y' - y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.910
1984	$2x^2(x^2 + 1)y'' + x(8x^2 + 3)y' - (-4x^2 + 3)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.994
1985	$9x^2y'' + 3x(x^2 + 3)y' - (-5x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.970
1986	$6x^2y'' + x(6x^2 + 1)y' + (9x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.982
1987	$x^2(x^2 + 8)y'' + 7x(x^2 + 2)y' - (-9x^2 + 2)y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.970
1988	$9x^2(x^2 + 1)y'' + 3x(13x^2 + 3)y' - (-25x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.968
1989	$4x^2(x^2 + 1)y'' + 4x(6x^2 + 1)y' - (-25x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.059
1990	$8x^2(2x^2 + 1)y'' + 2x(34x^2 + 5)y' - (-30x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.960
1991	$2x^2(x + 1)y'' - x(1 - 3x)y' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.872
1992	$6x^2(2x^2 + 1)y'' + x(50x^2 + 1)y' + (30x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.966
1993	$28x^2(1 - 3x)y'' - 7x(5 + 9x)y' + 7(2 + 9x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.985
1994	$9x^2(x + 5)y'' + 9x(5 + 9x)y' - (5 - 8x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.155
1995	$8x^2(-x^2 + 2)y'' + 2x(-21x^2 + 10)y' - (35x^2 + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.967
1996	$4x^2(x^2 + 3x + 1)y'' - 4x(-3x^2 - 3x + 1)y' + 3(x^2 - x + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.116

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
1997	$3x^2(x+1)^2 y'' - x(-11x^2 - 10x + 1) y' + (5x^2 + 1) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.945
1998	$4x^2(x^2 + 2x + 3) y'' - x(-15x^2 - 14x + 3) y' + (7x^2 + 3) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.024
1999	$x^2(x^2 - 2x + 1) y'' - x(x + 3) y' + (4 + x) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.984
2000	$2x^2(x + 2) y'' + 5x^2 y' + (x + 1) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.072
2001	$x^2(-x^2 + 2) y'' - 2x(2x^2 + 1) y' + (-2x^2 + 2) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.966
2002	$x^2 y'' - x(5 - x) y' + (9 - 4x) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.928
2003	$x^2 y'' - x(1 - x) y' + (-x^2 + 1) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.113
2004	$x^2(2x^2 + x + 1) y'' + x(7x^2 + 6x + 3) y' + (-3x^2 + 6x + 1) y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	1.281
2005	$x^2(x^2 + 2x + 1) y'' + x(4x^2 + 3x + 1) y' - x(-2x + 1) y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, ' _with_symmetry_[0,F(x)]']]	✓	1.097
2006	$4x^2(x^2 + x + 1) y'' + 12x^2(x + 1) y' + (3x^2 + 3x + 1) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.286
2007	$x^2(x^2 + x + 1) y'' - x(-2x^2 - 4x + 1) y' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.192
2008	$9x^2 y'' + 3x(-2x^2 + 3x + 5) y' + (-14x^2 + 12x + 1) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.198
2009	$x^2 y'' + x(x^2 + x + 1) y' + x(2 - x) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.155

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
2010	$x^2(2x + 1)y'' + x(3x^2 + 14x + 5)y' + (12x^2 + 18x + 4)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.166
2011	$4x^2y'' + 2x(x^2 + x + 4)y' + (3x^2 + 5x + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.262
2012	$16x^2y'' + 4x(2x^2 + x + 6)y' + (18x^2 + 5x + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.188
2013	$9x^2(x + 1)y'' + 3x(-x^2 + 11x + 5)y' + (-7x^2 + 16x + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.179
2014	$4x^2y'' + (1 + 4x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.962
2015	$36x^2(-2x + 1)y'' + 24x(1 - 9x)y' + (1 - 70x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.001
2016	$x^2(x + 1)y'' - x(3 - x)y' + 4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.905
2017	$x^2(-2x + 1)y'' - x(5 - 4x)y' + (9 - 4x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.964
2018	$25x^2y'' + x(15 + x)y' + (x + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.961
2019	$2x^2(x + 2)y'' + x^2y' + (1 - x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.001
2020	$x^2(9 + 4x)y'' + 3xy' + (x + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.007
2021	$x^2y'' - x(3 - 2x)y' + (3x + 4)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.045
2022	$x^2(1 - 4x)y'' + 3x(1 - 6x)y' + (1 - 12x)y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	1.032
2023	$x^2(2x + 1)y'' + x(3 + 5x)y' + (-2x + 1)y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	1.033
2024	$2x^2(x + 1)y'' - x(6 - x)y' + (8 - x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.989

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
2025	$x^2(2x+1)y'' + x(5+9x)y' + (3x+4)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.177
2026	$x^2(-2x+1)y'' - x(5+4x)y' + (9+4x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.159
2027	$x^2(1+4x)y'' - x(1-4x)y' + (x+1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.225
2028	$x^2(x+1)y'' + x(2x+1)y' + xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.141
2029	$x^2(1-x)y'' + x(7+x)y' + (9-x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.099
2030	$x^2y'' - x(-x^2+1)y' + (x^2+1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.905
2031	$x^2(x^2+1)y'' - 3x(-x^2+1)y' + 4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.916
2032	$4x^2y'' + 2x^3y' + (3x^2+1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.902
2033	$x^2(x^2+1)y'' - x(-2x^2+1)y' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.947
2034	$2x^2(x^2+2)y'' + 7x^3y' + (3x^2+1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.908
2035	$x^2(x^2+1)y'' - x(-4x^2+1)y' + (2x^2+1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.019
2036	$4x^2(x^2+4)y'' + 3x(3x^2+8)y' + (-9x^2+1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.964
2037	$3x^2(x^2+3)y'' + x(11x^2+3)y' + (5x^2+1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.941
2038	$4x^2(4x^2+1)y'' + 32x^3y' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.889
2039	$9x^2y'' - 3x(-2x^2+7)y' + (2x^2+25)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.912
2040	$x^2(2x^2+1)y'' + x(7x^2+3)y' + (-3x^2+1)y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.963

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
2041	$x^2(x^2 + 1)y'' + x(8x^2 + 3)y' + (12x^2 + 1)y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.974
2042	$x^2y'' - x(-x^2 + 1)y' + (x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.924
2043	$x^2(-2x^2 + 1)y'' + x(-9x^2 + 5)y' + (-3x^2 + 4)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.982
2044	$x^2(x^2 + 2)y'' + x(-x^2 + 14)y' + 2(x^2 + 9)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.916
2045	$x^2(x^2 + 1)y'' + x(7x^2 + 3)y' + (8x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.954
2046	$x^2(-2x + 1)y'' + 3xy' + (1 + 4x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.013
2047	$x(x + 1)y'' + (1 - x)y' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.846
2048	$x^2(1 - x)y'' + x(3 - 2x)y' + (2x + 1)y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.981
2049	$4x^2(x + 1)y'' + 4x^2y' + (1 - 5x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.032
2050	$x^2(1 - x)y'' - x(3 - 5x)y' + (4 - 5x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.025
2051	$x^2(x^2 + 1)y'' - x(9x^2 + 1)y' + (25x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.880
2052	$9x^2y'' + 3x(-x^2 + 1)y' + (7x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.921
2053	$x(x^2 + 1)y'' + (-x^2 + 1)y' - 8xy = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.795
2054	$4x^2y'' + 2x(-x^2 + 4)y' + (7x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.889
2055	$4x^2(x + 1)y'' + 8x^2y' + (x + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.848
2056	$9x^2(x + 3)y'' + 3x(3 + 7x)y' + (3 + 4x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.862

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
2057	$x^2(-x^2 + 2)y'' - x(3x^2 + 2)y' + (-x^2 + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.891
2058	$16x^2(x^2 + 1)y'' + 8x(9x^2 + 1)y' + (49x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.849
2059	$x^2(3x + 4)y'' - x(4 - 3x)y' + 4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.849
2060	$4x^2(x^2 + 3x + 1)y'' + 8x^2(2x + 3)y' + (9x^2 + 3x + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.937
2061	$x^2(1 - x)^2y'' - x(-3x^2 + 2x + 1)y' + (x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.851
2062	$9x^2(x^2 + x + 1)y'' + 3x(13x^2 + 7x + 1)y' + (25x^2 + 4x + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.948
2063	$2x^2(x + 2)y'' - x(4 - 7x)y' - (5 - 3x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.654
2064	$x^2(-2x + 1)y'' + x(8 - 9x)y' + (6 - 3x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.122
2065	$x^2(x^2 + 1)y'' + x(10x^2 + 3)y' - (-14x^2 + 15)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.622
2066	$x^2(-2x^2 + 1)y'' + x(-13x^2 + 7)y' - 14x^2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.947
2067	$x^2y'' - 3xy' + (3 + 4x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.429
2068	$xy'' + y = 0$	[[_Emden, _Fowler]]	✓	1.201
2069	$4x^2(x + 1)y'' + 4x(2x + 1)y' - (3x + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.545
2070	$x(x + 1)y'' + xy' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.342
2071	$2x^2(2 + 3x)y'' + x(4 + 21x)y' - (1 - 9x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.544

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
Continued from previous page

#	ODE	CAS classification	Solved?	time (sec)
2072	$x^2y'' + x(x+2)y' - (2-3x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.358
2073	$4x^2y'' + 4xy' - (9-x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.428
2074	$x^2y'' + 10xy' + (14+x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.361
2075	$4x^2(x+1)y'' + 4x(3+8x)y' - (5-49x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.625
2076	$x^2(x+1)y'' - x(3+10x)y' + 30xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.448
2077	$x^2y'' + x(x+1)y' - 3(x+3)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.453
2078	$x^2y'' + x(-2x+1)y' - (4+x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.431
2079	$x(x+1)y'' - 4y' - 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.936
2080	$x^2(2x+1)y'' + x(9+13x)y' + (7+5x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.386
2081	$4x^2(2x+1)y'' - 2x(4-x)y' - (7+5x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.164
2082	$3x^2(x+3)y'' - x(15+x)y' - 20y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.139
2083	$x^2(x+1)y'' + x(1-10x)y' - (9-10x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.253
2084	$x^2(x+1)y'' + 3x^2y' - (6-x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.116
2085	$x^2(2x+1)y'' - 2x(3+14x)y' + (6+100x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.122
2086	$x^2(x+1)y'' - x(6+11x)y' + (6+32x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.118
2087	$4x^2(x+1)y'' + 4x(1+4x)y' - (49+27x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.204

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
2088	$x^2(2x+1)y'' - x(9+8x)y' - 12xy = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]]	✓	1.602
2089	$x^2(x^2+1)y'' - x(-2x^2+7)y' + 12y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.491
2090	$x^2y'' - x(-x^2+7)y' + 12y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.375
2091	$xy'' - 5y' + xy = 0$	[_Lienard]	✓	1.271
2092	$x^2y'' + x(2x^2+1)y' - (-10x^2+1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.361
2093	$x^2y'' - xy' - (-x^2+3)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.326
2094	$4x^2y'' + 2x(x^2+8)y' + (3x^2+5)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.477
2095	$x^2y'' + x(x^2+1)y' - (-3x^2+1)y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	1.344
2096	$x^2y'' + x(-2x^2+1)y' - 4(2x^2+1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.404
2097	$4x^2y'' + 8xy' - (-x^2+35)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.424
2098	$9x^2y'' - 3x(2x^2+11)y' + (10x^2+13)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.549
2099	$x^2y'' + x(-2x^2+1)y' - 4(-x^2+1)y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]]	✓	1.447
2100	$x^2y'' + x(-3x^2+1)y' - 4(-3x^2+1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.464
2101	$x^2(x^2+1)y'' + x(11x^2+5)y' + 24x^2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.875

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
2102	$4x^2(x^2 + 1)y'' + 8xy' - (-x^2 + 35)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.069
2103	$x^2(x^2 + 1)y'' - x(-x^2 + 5)y' - (25x^2 + 7)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.153
2104	$x^2(x^2 + 1)y'' + x(2x^2 + 5)y' - 21y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.366
2105	$x^2(2x^2 + 1)y'' - x(x^2 + 3)y' - 2xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.453
2106	$4x^2(x^2 + 1)y'' + 4x(x^2 + 2)y' - (x^2 + 15)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.067
2107	$x^3y''' - x^2y'' - 2xy' + 6y = 0$ i.c.	[[_3rd_order, _exact, _linear, _homogeneous]]	✓	0.249
2108	$y'''' + y''' - 7y'' - y' + 6y = 0$ i.c.	[[_high_order, _missing_x]]	✓	0.165
2109	$x^3y''' - x^2y'' - 2xy' + 6y = 0$ i.c.	[[_3rd_order, _exact, _linear, _homogeneous]]	✓	0.260
2110	$x^3y''' - x^2y'' - 2xy' + 6y = 0$ i.c.	[[_3rd_order, _exact, _linear, _homogeneous]]	✓	0.230
2111	$x^3y''' - x^2y'' - 2xy' + 6y = 0$ i.c.	[[_3rd_order, _exact, _linear, _homogeneous]]	✓	0.228
2112	$x^3y''' - x^2y'' - 2xy' + 6y = 0$ i.c.	[[_3rd_order, _exact, _linear, _homogeneous]]	✓	0.154
2113	$y''' + y'' - y' - y = 0$	[[_3rd_order, _missing_x]]	✓	0.071
2114	$y''' - 3y'' + 7y' - 5y = 0$	[[_3rd_order, _missing_x]]	✓	0.077
2115	$y''' - 3y'' + 3y' - y = 0$	[[_3rd_order, _missing_x]]	✓	0.071
2116	$y'''' + 8y'' - 9y = 0$	[[_high_order, _missing_x]]	✓	0.080
2117	$y''' - y'' + 16y' - 16y = 0$	[[_3rd_order, _missing_x]]	✓	0.077
2118	$2y''' + 3y'' - 2y' - 3y = 0$	[[_3rd_order, _missing_x]]	✓	0.073

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
2119	$y''' + 5y'' + 9y' + 5y = 0$	[[_3rd_order, _missing_x]]	✓	0.079
2120	$4y''' - 8y'' + 5y' - y = 0$	[[_3rd_order, _missing_x]]	✓	0.076
2121	$27y''' + 27y'' + 9y' + y = 0$	[[_3rd_order, _missing_x]]	✓	0.072
2122	$y'''' + y'' = 0$	[[_high_order, _missing_x]]	✓	0.072
2123	$y'''' - 16y = 0$	[[_high_order, _missing_x]]	✓	0.092
2124	$y'''' + 12y'' + 36y = 0$	[[_high_order, _missing_x]]	✓	0.093
2125	$16y'''' - 72y'' + 81y = 0$	[[_high_order, _missing_x]]	✓	0.081
2126	$6y'''' + 5y''' + 7y'' + 5y' + y = 0$	[[_high_order, _missing_x]]	✓	0.083
2127	$4y'''' + 12y''' + 3y'' - 13y' - 6y = 0$	[[_high_order, _missing_x]]	✓	0.080
2128	$y'''' - 4y''' + 7y'' - 6y' + 2y = 0$	[[_high_order, _missing_x]]	✓	0.085
2129	<i>i.c.</i> $y''' - 2y'' + 4y' - 8y = 0$	[[_3rd_order, _missing_x]]	✓	0.095
2130	<i>i.c.</i> $y''' + 3y'' - y' - 3y = 0$	[[_3rd_order, _missing_x]]	✓	0.148
2131	<i>i.c.</i> $y''' - y'' - y' + y = 0$	[[_3rd_order, _missing_x]]	✓	0.154
2132	<i>i.c.</i> $y''' - 2y' - 4y = 0$	[[_3rd_order, _missing_x]]	✓	0.092
2133	<i>i.c.</i> $3y''' - y'' - 7y' + 5y = 0$	[[_3rd_order, _missing_x]]	✓	0.155
2134	<i>i.c.</i> $y''' - 6y'' + 12y' - 8y = 0$	[[_3rd_order, _missing_x]]	✓	0.145
2135	<i>i.c.</i> $2y''' - 11y'' + 12y' + 9y = 0$	[[_3rd_order, _missing_x]]	✓	0.152
2136	<i>i.c.</i> $8y''' - 4y'' - 2y' + y = 0$	[[_3rd_order, _missing_x]]	✓	0.147

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
2137	$y'''' - 16y = 0$ i.c.	[[_high_order, _missing_x]]	✓	0.098
2138	$y'''' - 6y''' + 7y'' + 6y' - 8y = 0$ i.c.	[[_high_order, _missing_x]]	✓	0.170
2139	$4y'''' - 13y'' + 9y = 0$ i.c.	[[_high_order, _missing_x]]	✓	0.153
2140	$y'''' + 2y''' - 2y'' - 8y' - 8y = 0$ i.c.	[[_high_order, _missing_x]]	✓	0.101
2141	$4y'''' + 8y''' + 19y'' + 32y' + 12y = 0$ i.c.	[[_high_order, _missing_x]]	✓	0.103
2142	$y'''' - y = 0$	[[_high_order, _missing_x]]	✓	0.078
2143	$y'''' + y = 0$	[[_high_order, _missing_x]]	✓	0.089
2144	$y'''' + 64y = 0$	[[_high_order, _missing_x]]	✓	0.090
2145	$y^{(6)} - y = 0$	[[_high_order, _missing_x]]	✓	0.121
2146	$y'''' + 64y = 0$	[[_high_order, _missing_x]]	✓	0.087
2147	$y^{(5)} + y'''' + y''' + y'' + y' + y = 0$	[[_high_order, _missing_x]]	✓	0.097
2148	$y''' - 6y'' + 11y' - 6y$ $= -e^x(-24x^2 + 76x + 4)$	[[_3rd_order, _linear, _nonhomogeneous]]	✓	0.168
2149	$y''' - 2y'' - 5y' + 6y$ $= e^{-3x}(6x^2 - 23x + 32)$	[[_3rd_order, _linear, _nonhomogeneous]]	✓	0.161
2150	$4y''' + 8y'' - y' - 2y$ $= -e^x(6x^2 + 45x + 4)$	[[_3rd_order, _linear, _nonhomogeneous]]	✓	0.205
2151	$y''' + 3y'' - y' - 3y$ $= e^{-2x}(3x^2 - 17x + 2)$	[[_3rd_order, _linear, _nonhomogeneous]]	✓	0.159
2152	$y''' + 3y'' - y' - 3y$ $= e^x(16x^3 + 24x^2 + 2x - 1)$	[[_3rd_order, _linear, _nonhomogeneous]]	✓	0.172
2153	$y''' + y'' - 2y = e^x(15x^2 + 34x + 14)$	[[_3rd_order, _linear, _nonhomogeneous]]	✓	0.166

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
2154	$4y''' + 8y'' - y' - 2y = -e^{-2x}(1 - 15x)$	[[_3rd_order, _linear, _nonhomogeneous]]	✓	0.158
2155	$y''' - y'' - y' + y = -e^x(7 + 6x)$	[[_3rd_order, _linear, _nonhomogeneous]]	✓	0.150
2156	$2y''' - 7y'' + 4y' + 4y = e^{2x}(17 + 30x)$	[[_3rd_order, _linear, _nonhomogeneous]]	✓	0.159
2157	$y''' - 5y'' + 3y' + 9y = 2e^{3x}(11 - 24x)$	[[_3rd_order, _linear, _nonhomogeneous]]	✓	0.162
2158	$y''' - 7y'' + 8y' + 16y = 2e^{4x}(13 + 15x)$	[[_3rd_order, _linear, _nonhomogeneous]]	✓	0.156
2159	$8y''' - 12y'' + 6y' - y = e^{\frac{x}{2}}(1 + 4x)$	[[_3rd_order, _linear, _nonhomogeneous]]	✓	0.164
2160	$y'''' + 3y''' - 3y'' - 7y' + 6y = -3e^{-x}(-8x^2 + 8x + 12)$	[[_high_order, _linear, _nonhomogeneous]]	✓	0.175
2161	$y'''' + 3y''' + y'' - 3y' - 2y = -3e^{2x}(11 + 12x)$	[[_high_order, _linear, _nonhomogeneous]]	✓	0.154
2162	$y'''' + 8y''' + 24y'' + 32y' = -16e^{-2x}(-x^3 + x^2 + x + 1)$	[[_high_order, _missing_y]]	✓	0.185
2163	$4y'''' - 11y''' - 9y' - 2y = -e^x(1 - 6x)$	[[_high_order, _linear, _nonhomogeneous]]	✓	0.161
2164	$y'''' - 2y''' + 3y' - y = e^x(x^2 + 4x + 3)$	[[_high_order, _linear, _nonhomogeneous]]	✓	0.197
2165	$y'''' - 4y''' + 6y'' - 4y' + 2y = e^{2x}(x^4 + x + 24)$	[[_high_order, _linear, _nonhomogeneous]]	✓	0.207
2166	$2y'''' + 5y''' - 5y' - 2y = 18e^x(5 + 2x)$	[[_high_order, _linear, _nonhomogeneous]]	✓	0.159
2167	$y'''' + y''' - 2y'' - 6y' - 4y = -e^{2x}(15x^2 + 28x + 4)$	[[_high_order, _linear, _nonhomogeneous]]	✓	0.175
2168	$2y'''' + y''' - 2y' - y = 3e^{-\frac{x}{2}}(1 - 6x)$	[[_high_order, _linear, _nonhomogeneous]]	✓	0.176
2169	$y'''' - 5y'' + 4y = e^x(-3x^2 + x + 3)$	[[_high_order, _linear, _nonhomogeneous]]	✓	0.165
2170	$y'''' - 2y''' - 3y'' + 4y' + 4y = e^{2x}(18x^2 + 33x + 13)$	[[_high_order, _linear, _nonhomogeneous]]	✓	0.179

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
2171	$y'''' - 3y''' + 4y' = e^{2x}(12x^2 + 26x + 15)$	[[_high_order, _missing_y]]	✓	0.171
2172	$y'''' - 2y''' + 2y' - y = e^x(x + 1)$	[[_high_order, _linear, _nonhomogeneous]]	✓	0.164
2173	$2y'''' - 5y''' + 3y'' + y' - y = e^x(11 + 12x)$	[[_high_order, _linear, _nonhomogeneous]]	✓	0.172
2174	$y'''' + 3y''' + 3y'' + y' = e^{-x}(10x^2 - 24x + 5)$	[[_high_order, _missing_y]]	✓	0.175
2175	$y'''' - 7y''' + 18y'' - 20y' + 8y = e^{2x}(-5x^2 - 8x + 3)$	[[_high_order, _linear, _nonhomogeneous]]	✓	0.191
2176	$y''' - y'' - 4y' + 4y = e^{-x}((16 + 10x) \cos(x) + (30 - 10x) \sin(x))$	[[_3rd_order, _linear, _nonhomogeneous]]	✓	0.227
2177	$y''' + y'' - 4y' - 4y = e^{-x}((1 - 22x) \cos(2x) - (1 + 6x) \sin(2x))$	[[_3rd_order, _linear, _nonhomogeneous]]	✓	0.325
2178	$y''' - y'' + 2y' - 2y = e^{2x}((-x^2 + 5x + 27) \cos(x) + (9x^2 + 13x + 2) \sin(x))$	[[_3rd_order, _linear, _nonhomogeneous]]	✓	0.318
2179	$y''' - 2y'' + y' - 2y = -e^x((4x^2 + 5x + 9) \cos(2x) - (-3x^2 - 5x + 6) \sin(2x))$	[[_3rd_order, _linear, _nonhomogeneous]]	✓	0.590
2180	$y''' + 3y'' + 4y' + 12y = 8 \cos(2x) - 16 \sin(2x)$	[[_3rd_order, _linear, _nonhomogeneous]]	✓	0.622
2181	$y''' - y'' + 2y = e^x((20 + 4x) \cos(x) - (12 + 12x) \sin(x))$	[[_3rd_order, _linear, _nonhomogeneous]]	✓	1.338
2182	$y''' - 7y'' + 20y' - 24y = -e^{2x}((13 - 8x) \cos(2x) - (8 - 4x) \sin(2x))$	[[_3rd_order, _linear, _nonhomogeneous]]	✓	0.832
2183	$y''' - 6y'' + 18y' = -e^{3x}((2 - 3x) \cos(3x) - (3 + 3x) \sin(3x))$	[[_3rd_order, _missing_y]]	✓	0.745
2184	$y'''' + 2y''' - 2y'' - 8y' - 8y = e^x(8 \cos(x) + 16 \sin(x))$	[[_high_order, _linear, _nonhomogeneous]]	✓	0.189

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
2185	$y'''' - 3y''' + 2y'' + 2y' - 4y = e^x(2 \cos(2x) - \sin(2x))$	[[_high_order, _linear, _nonhomogeneous]]	✓	0.210
2186	$y'''' - 8y''' + 24y'' - 32y' + 15y = e^{2x}(15x \cos(2x) + 32 \sin(2x))$	[[_high_order, _linear, _nonhomogeneous]]	✓	0.228
2187	$y'''' + 6y''' + 13y'' + 12y' + 4y = e^{-x}((4-x) \cos(x) - (x+5) \sin(x))$	[[_high_order, _linear, _nonhomogeneous]]	✓	0.225
2188	$y'''' + 3y''' + 2y'' - 2y' - 4y = -e^{-x}(\cos(x) - \sin(x))$	[[_high_order, _linear, _nonhomogeneous]]	✓	1.189
2189	$y'''' - 5y''' + 13y'' - 19y' + 10y = e^x(\cos(2x) + \sin(2x))$	[[_high_order, _linear, _nonhomogeneous]]	✓	0.710
2190	$y'''' + 8y''' + 32y'' + 64y' + 39y = e^{-2x}((4-15x) \cos(3x) - (4+15x) \sin(3x))$	[[_high_order, _linear, _nonhomogeneous]]	✓	1.063
2191	$y'''' - 5y''' + 13y'' - 19y' + 10y = e^x((7+8x) \cos(2x) + (8-4x) \sin(2x))$	[[_high_order, _linear, _nonhomogeneous]]	✓	1.092
2192	$y'''' + 4y''' + 8y'' + 8y' + 4y = -2e^x(\cos(x) - \sin(x))$	[[_high_order, _linear, _nonhomogeneous]]	✓	0.196
2193	$y'''' - 8y''' + 32y'' - 64y' + 64y = e^{2x}(\cos(2x) - \sin(2x))$	[[_high_order, _linear, _nonhomogeneous]]	✓	1.404
2194	$y'''' - 8y''' + 26y'' - 40y' + 25y = e^{2x}(3 \cos(x) - (3x+1) \sin(x))$	[[_high_order, _linear, _nonhomogeneous]]	✓	1.908
2195	$y''' - 4y'' + 5y' - 2y = e^{2x} - 4e^x - 2 \cos(x) + 4 \sin(x)$	[[_3rd_order, _linear, _nonhomogeneous]]	✓	0.244
2196	$y''' - y'' + y' - y = 5e^{2x} + 2e^x - 4 \cos(x) + 4 \sin(x)$	[[_3rd_order, _linear, _nonhomogeneous]]	✓	1.490
2197	$y''' - y' = -2x - 2 + 4e^x - 6e^{-x} + 96e^{3x}$	[[_3rd_order, _missing_y]]	✓	0.200
2198	$y''' - 4y'' + 9y' - 10y = 10e^{2x} + 20e^x \sin(2x) - 10$	[[_3rd_order, _linear, _nonhomogeneous]]	✓	0.772

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
2199	$y''' + 3y'' + 3y' + y = 12e^{-x} + 9\cos(2x) - 13\sin(2x)$	[[_3rd_order, _linear, _nonhomogeneous]]	✓	0.243
2200	$y''' + y'' - y' - y = 4e^{-x}(1 - 6x) - 2x\cos(x) + 2(x + 1)\sin(x)$	[[_3rd_order, _linear, _nonhomogeneous]]	✓	0.689
2201	$y'''' - 5y'' + 4y = -12e^x + 6e^{-x} + 10\cos(x)$	[[_high_order, _linear, _nonhomogeneous]]	✓	0.231
2202	$y'''' - 4y''' + 11y'' - 14y' + 10y = -e^x(\sin(x) + 2\cos(2x))$	[[_high_order, _linear, _nonhomogeneous]]	✓	1.405
2203	$y'''' + 2y''' - 3y'' - 4y' + 4y = 2e^x(x + 1) + e^{-2x}$	[[_high_order, _linear, _nonhomogeneous]]	✓	0.202
2204	$y'''' + 4y = \sinh(x)\cos(x) - \cosh(x)\sin(x)$	[[_high_order, _linear, _nonhomogeneous]]	✓	1.192
2205	$y'''' + 5y''' + 9y'' + 7y' + 2y = e^{-x}(30 + 24x) - e^{-2x}$	[[_high_order, _linear, _nonhomogeneous]]	✓	0.207
2206	$y'''' - 4y''' + 7y'' - 6y' + 2y = e^x(12x - 2\cos(x) + 2\sin(x))$	[[_high_order, _linear, _nonhomogeneous]]	✓	0.902
2207	$y''' - y'' - y' + y = e^{2x}(10 + 3x)$	[[_3rd_order, _linear, _nonhomogeneous]]	✓	0.129
2208	$y''' + y'' - 2y = -e^{3x}(17x^2 + 67x + 9)$	[[_3rd_order, _linear, _nonhomogeneous]]	✓	0.148
2209	$y''' - 6y'' + 11y' - 6y = e^{2x}(-3x^2 - 4x + 5)$	[[_3rd_order, _linear, _nonhomogeneous]]	✓	0.153
2210	$y''' + 2y'' + y' = -2e^{-x}(6x^2 - 18x + 7)$	[[_3rd_order, _missing_y]]	✓	0.152
2211	$y''' - 3y'' + 3y' - y = e^x(x + 1)$	[[_3rd_order, _linear, _nonhomogeneous]]	✓	0.144
2212	$y'''' - 2y'' + y = -e^{-x}(3x^2 - 9x + 4)$	[[_high_order, _linear, _nonhomogeneous]]	✓	0.163
2213	$y''' + 2y'' - y' - 2y = e^{-2x}((23 - 2x)\cos(x) + (8 - 9x)\sin(x))$	[[_3rd_order, _linear, _nonhomogeneous]]	✓	0.228

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
2214	$y'''' - 3y''' + 4y'' - 2y' = e^x((28 + 6x) \cos(2x) + (11 - 12x) \sin(2x))$	[[_high_order, _missing_y]]	✓	0.328
2215	$y'''' - 4y''' + 14y'' - 20y' + 25y = e^x((2 + 6x) \cos(2x) + 3 \sin(2x))$	[[_high_order, _linear, _nonhomogeneous]]	✓	1.730
2216	$y''' - 2y'' - 5y' + 6y = 2e^x(1 - 6x)$ i.c.	[[_3rd_order, _linear, _nonhomogeneous]]	✓	0.210
2217	$y''' - y'' - y' + y = -e^{-x}(-8x + 4)$ i.c.	[[_3rd_order, _linear, _nonhomogeneous]]	✓	0.227
2218	$4y''' - 3y' - y = e^{-\frac{x}{2}}(2 - 3x)$ i.c.	[[_3rd_order, _linear, _nonhomogeneous]]	✓	0.258
2219	$y'''' + 2y''' + 2y'' + 2y' + y = e^{-x}(20 - 12x)$ i.c.	[[_high_order, _linear, _nonhomogeneous]]	✓	0.176
2220	$y''' + 2y'' + y' + 2y = 30 \cos(x) - 10 \sin(x)$ i.c.	[[_3rd_order, _linear, _nonhomogeneous]]	✓	0.609
2221	$y'''' - 3y''' + 5y'' - 2y' = -2e^x(\cos(x) - \sin(x))$ i.c.	[[_high_order, _missing_y]]	✓	1.814
2222	$x^3y''' - 3x^2y'' + 6xy' - 6y = 2x$	[[_3rd_order, _with_linear_symmetries]]	✓	0.257
2223	$4x^3y''' + 4x^2y'' - 5xy' + 2y = 30x^2$	[[_3rd_order, _with_linear_symmetries]]	✓	0.310
2224	$x^3y''' + x^2y'' - 2xy' + 2y = x^2$	[[_3rd_order, _exact, _linear, _nonhomogeneous]]	✓	0.264
2225	$16x^4y'''' + 96x^3y''' + 72x^2y'' - 24xy' + 9y = 96x^{5/2}$	[[_high_order, _with_linear_symmetries]]	✓	0.360
2226	$x^4y'''' - 4x^3y''' + 12x^2y'' - 24xy' + 24y = x^4$	[[_high_order, _with_linear_symmetries]]	✓	0.320
2227	$x^4y'''' + 6x^3y''' + 2x^2y'' - 4xy' + 4y = 12x^2$	[[_high_order, _exact, _linear, _nonhomogeneous]]	✓	0.334

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
2228	$x^3y''' - 2x^2y'' + 3xy' - 3y = 4x$ i.c.	[[_3rd_order, _with_linear_symmetries]]	✓	0.385
2229	$x^3y''' - 5x^2y'' + 14xy' - 18y = x^3$ i.c.	[[_3rd_order, _with_linear_symmetries]]	✓	0.385
2230	$x^3y''' - 6x^2y'' + 16xy' - 16y = 9x^4$ i.c.	[[_3rd_order, _with_linear_symmetries]]	✓	0.399
2231	$x^3y''' + x^2y'' - 2xy' + 2y = x(x + 1)$ i.c.	[[_3rd_order, _exact, _linear, _nonhomogeneous]]	✓	0.290
2232	$x^4y'''' + 3x^3y''' - x^2y'' + 2xy' - 2y = 9x^2$ i.c.	[[_high_order, _exact, _linear, _nonhomogeneous]]	✓	0.437
2233	$4x^4y'''' + 24x^3y''' + 23x^2y'' - xy' + y = 6x$ i.c.	[[_high_order, _exact, _linear, _nonhomogeneous]]	✓	0.467
2234	$x^4y'''' + 5x^3y''' - 3x^2y'' - 6xy' + 6y = 40x^3$ i.c.	[[_high_order, _exact, _linear, _nonhomogeneous]]	✓	0.336
2235	$y''' + 2y'' - y' - 2y = F(x)$	[[_3rd_order, _linear, _nonhomogeneous]]	✓	0.549
2236	$x^3y''' + x^2y'' - 2xy' + 2y = F(x)$	[[_3rd_order, _exact, _linear, _nonhomogeneous]]	✓	0.545
2237	$y'''' - 5y'' + 4y = F(x)$	[[_high_order, _linear, _nonhomogeneous]]	✓	0.546
2238	$x^4y'''' + 6x^3y''' + 2x^2y'' - 4xy' + 4y = F(x)$	[[_high_order, _exact, _linear, _nonhomogeneous]]	✓	0.625
2239	$\begin{bmatrix} y_1' = y_1 + 2y_2 \\ y_2' = 2y_1 + y_2 \end{bmatrix}$	system_of_ODEs	✓	0.325
2240	$\begin{bmatrix} y_1' = -\frac{5y_1}{4} + \frac{3y_2}{4} \\ y_2' = \frac{3y_1}{4} - \frac{5y_2}{4} \end{bmatrix}$	system_of_ODEs	✓	0.331
2241	$\begin{bmatrix} y_1' = -\frac{4y_1}{5} + \frac{3y_2}{5} \\ y_2' = -\frac{2y_1}{5} - \frac{11y_2}{5} \end{bmatrix}$	system_of_ODEs	✓	0.352

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
2242	$\begin{bmatrix} y_1' = -y_1 - 4y_2 \\ y_2' = -y_1 - y_2 \end{bmatrix}$	system_of_ODEs	✓	0.349
2243	$\begin{bmatrix} y_1' = 2y_1 - 4y_2 \\ y_2' = -y_1 - y_2 \end{bmatrix}$	system_of_ODEs	✓	0.339
2244	$\begin{bmatrix} y_1' = 4y_1 - 3y_2 \\ y_2' = 2y_1 - y_2 \end{bmatrix}$	system_of_ODEs	✓	0.341
2245	$\begin{bmatrix} y_1' = -6y_1 - 3y_2 \\ y_2' = y_1 - 2y_2 \end{bmatrix}$	system_of_ODEs	✓	0.340
2246	$\begin{bmatrix} y_1' = y_1 - y_2 - 2y_3 \\ y_2' = y_1 - 2y_2 - 3y_3 \\ y_3' = -4y_1 + y_2 - y_3 \end{bmatrix}$	system_of_ODEs	✓	0.551
2247	$\begin{bmatrix} y_1' = -6y_1 - 4y_2 - 8y_3 \\ y_2' = -4y_1 - 4y_3 \\ y_3' = -8y_1 - 4y_2 - 6y_3 \end{bmatrix}$	system_of_ODEs	✓	0.485
2248	$\begin{bmatrix} y_1' = 3y_1 + 5y_2 + 8y_3 \\ y_2' = y_1 - y_2 - 2y_3 \\ y_3' = -y_1 - y_2 - y_3 \end{bmatrix}$	system_of_ODEs	✓	0.549
2249	$\begin{bmatrix} y_1' = y_1 - y_2 + 2y_3 \\ y_2' = 12y_1 - 4y_2 + 10y_3 \\ y_3' = -6y_1 + y_2 - 7y_3 \end{bmatrix}$	system_of_ODEs	✓	0.516
2250	$\begin{bmatrix} y_1' = 4y_1 - y_2 - 4y_3 \\ y_2' = 4y_1 - 3y_2 - 2y_3 \\ y_3' = y_1 - y_2 - y_3 \end{bmatrix}$	system_of_ODEs	✓	0.546
2251	$\begin{bmatrix} y_1' = -2y_1 + 2y_2 - 6y_3 \\ y_2' = 2y_1 + 6y_2 + 2y_3 \\ y_3' = -2y_1 - 2y_2 + 2y_3 \end{bmatrix}$	system_of_ODEs	✓	0.518
2252	$\begin{bmatrix} y_1' = 3y_1 + 2y_2 - 2y_3 \\ y_2' = -2y_1 + 7y_2 - 2y_3 \\ y_3' = -10y_1 + 10y_2 - 5y_3 \end{bmatrix}$	system_of_ODEs	✓	0.460

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
2253	$\begin{bmatrix} y_1' = 3y_1 + y_2 - y_3 \\ y_2' = 3y_1 + 5y_2 + y_3 \\ y_3' = -6y_1 + 2y_2 + 4y_3 \end{bmatrix}$	system_of_ODEs	✓	0.404
2254	$\begin{bmatrix} y_1' = 3y_1 + 4y_2 \\ y_2' = -y_1 + 7y_2 \end{bmatrix}$	system_of_ODEs	✓	0.319
2255	$\begin{bmatrix} y_1' = -y_2 \\ y_2' = y_1 - 2y_2 \end{bmatrix}$	system_of_ODEs	✓	0.303
2256	$\begin{bmatrix} y_1' = -7y_1 + 4y_2 \\ y_2' = -y_1 - 11y_2 \end{bmatrix}$	system_of_ODEs	✓	0.315
2257	$\begin{bmatrix} y_1' = 3y_1 + y_2 \\ y_2' = -y_1 + y_2 \end{bmatrix}$	system_of_ODEs	✓	0.297
2258	$\begin{bmatrix} y_1' = 4y_1 + 12y_2 \\ y_2' = -3y_1 - 8y_2 \end{bmatrix}$	system_of_ODEs	✓	0.336
2259	$\begin{bmatrix} y_1' = -10y_1 + 9y_2 \\ y_2' = -4y_1 + 2y_2 \end{bmatrix}$	system_of_ODEs	✓	0.332
2260	$\begin{bmatrix} y_1' = -13y_1 + 16y_2 \\ y_2' = -9y_1 + 11y_2 \end{bmatrix}$	system_of_ODEs	✓	0.322
2261	$\begin{bmatrix} y_1' = 2y_2 + y_3 \\ y_2' = -4y_1 + 6y_2 + y_3 \\ y_3' = 4y_2 + 2y_3 \end{bmatrix}$	system_of_ODEs	✓	0.507
2262	$\begin{bmatrix} y_1' = \frac{y_1}{3} + \frac{y_2}{3} - y_3 \\ y_2' = -\frac{4y_1}{3} - \frac{4y_2}{3} + y_3 \\ y_3' = -\frac{2y_1}{3} + \frac{y_2}{3} \end{bmatrix}$	system_of_ODEs	✓	0.472
2263	$\begin{bmatrix} y_1' = -y_1 + y_2 - y_3 \\ y_2' = -2y_1 + 2y_3 \\ y_3' = -y_1 + 3y_2 - y_3 \end{bmatrix}$	system_of_ODEs	✓	0.470
2264	$\begin{bmatrix} y_1' = 4y_1 - 2y_2 - 2y_3 \\ y_2' = -2y_1 + 3y_2 - y_3 \\ y_3' = 2y_1 - y_2 + 3y_3 \end{bmatrix}$	system_of_ODEs	✓	0.477

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
2265	$\begin{bmatrix} y'_1 = 6y_1 - 5y_2 + 3y_3 \\ y'_2 = 2y_1 - y_2 + 3y_3 \\ y'_3 = 2y_1 + y_2 + y_3 \end{bmatrix}$	system_of_ODEs	✓	0.478
2266	$\begin{bmatrix} y'_1 = -11y_1 + 8y_2 \\ y'_2 = -2y_1 - 3y_2 \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.445
2267	$\begin{bmatrix} y'_1 = 15y_1 - 9y_2 \\ y'_2 = 16y_1 - 9y_2 \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.522
2268	$\begin{bmatrix} y'_1 = -3y_1 - 4y_2 \\ y'_2 = y_1 - 7y_2 \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.455
2269	$\begin{bmatrix} y'_1 = -7y_1 + 24y_2 \\ y'_2 = -6y_1 + 17y_2 \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.468
2270	$\begin{bmatrix} y'_1 = -7y_1 + 3y_2 \\ y'_2 = -3y_1 - y_2 \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.489
2271	$\begin{bmatrix} y'_1 = -y_1 + y_2 \\ y'_2 = y_1 - y_2 - 2y_3 \\ y'_3 = -y_1 - y_2 - y_3 \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.543
2272	$\begin{bmatrix} y'_1 = -2y_1 + 2y_2 + y_3 \\ y'_2 = -2y_1 + 2y_2 + y_3 \\ y'_3 = -3y_1 + 3y_2 + 2y_3 \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.404
2273	$\begin{bmatrix} y'_1 = -7y_1 - 4y_2 + 4y_3 \\ y'_2 = y_1 + y_3 \\ y'_3 = -9y_1 - 5y_2 + 6y_3 \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.800
2274	$\begin{bmatrix} y'_1 = -y_1 - 4y_2 - y_3 \\ y'_2 = 3y_1 + 6y_2 + y_3 \\ y'_3 = -3y_1 - 2y_2 + 3y_3 \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.523

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
2275	$\begin{bmatrix} y_1' = 4y_1 - 8y_2 - 4y_3 \\ y_2' = -3y_1 - y_2 - 4y_3 \\ y_3' = y_1 - y_2 + 9y_3 \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.575
2276	$\begin{bmatrix} y_1' = -5y_1 - y_2 + 11y_3 \\ y_2' = -7y_1 + y_2 + 13y_3 \\ y_3' = -4y_1 + 8y_3 \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.457
2277	$\begin{bmatrix} y_1' = 5y_1 - y_2 + y_3 \\ y_2' = -y_1 + 9y_2 - 3y_3 \\ y_3' = -2y_1 + 2y_2 + 4y_3 \end{bmatrix}$	system_of_ODEs	✓	0.470
2278	$\begin{bmatrix} y_1' = y_1 + 10y_2 - 12y_3 \\ y_2' = 2y_1 + 2y_2 + 3y_3 \\ y_3' = 2y_1 - y_2 + 6y_3 \end{bmatrix}$	system_of_ODEs	✓	0.461
2279	$\begin{bmatrix} y_1' = -6y_1 - 4y_2 - 4y_3 \\ y_2' = 2y_1 - y_2 + y_3 \\ y_3' = 2y_1 + 3y_2 + y_3 \end{bmatrix}$	system_of_ODEs	✓	0.446
2280	$\begin{bmatrix} y_1' = 2y_2 - 2y_3 \\ y_2' = -y_1 + 5y_2 - 3y_3 \\ y_3' = y_1 + y_2 + y_3 \end{bmatrix}$	system_of_ODEs	✓	0.467
2281	$\begin{bmatrix} y_1' = -2y_1 - 12y_2 + 10y_3 \\ y_2' = 2y_1 - 24y_2 + 11y_3 \\ y_3' = 2y_1 - 24y_2 + 8y_3 \end{bmatrix}$	system_of_ODEs	✓	0.502
2282	$\begin{bmatrix} y_1' = -y_1 - 12y_2 + 8y_3 \\ y_2' = y_1 - 9y_2 + 4y_3 \\ y_3' = y_1 - 6y_2 + y_3 \end{bmatrix}$	system_of_ODEs	✓	0.460
2283	$\begin{bmatrix} y_1' = -4y_1 - y_3 \\ y_2' = -y_1 - 3y_2 - y_3 \\ y_3' = y_1 - 2y_3 \end{bmatrix}$	system_of_ODEs	✓	0.391
2284	$\begin{bmatrix} y_1' = -3y_1 - 3y_2 + 4y_3 \\ y_2' = 4y_1 + 5y_2 - 8y_3 \\ y_3' = 2y_1 + 3y_2 - 5y_3 \end{bmatrix}$	system_of_ODEs	✓	0.480

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
2285	$\begin{bmatrix} y_1' = -3y_1 - y_2 \\ y_2' = y_1 - y_2 \\ y_3' = -y_1 - y_2 - 2y_3 \end{bmatrix}$	system_of_ODEs	✓	0.364
2286	$\begin{bmatrix} y_1' = -y_1 + 2y_2 \\ y_2' = -5y_1 + 5y_2 \end{bmatrix}$	system_of_ODEs	✓	0.458
2287	$\begin{bmatrix} y_1' = -11y_1 + 4y_2 \\ y_2' = -26y_1 + 9y_2 \end{bmatrix}$	system_of_ODEs	✓	0.447
2288	$\begin{bmatrix} y_1' = y_1 + 2y_2 \\ y_2' = -4y_1 + 5y_2 \end{bmatrix}$	system_of_ODEs	✓	0.500
2289	$\begin{bmatrix} y_1' = 5y_1 - 6y_2 \\ y_2' = 3y_1 - y_2 \end{bmatrix}$	system_of_ODEs	✓	0.425
2290	$\begin{bmatrix} y_1' = -3y_1 - 3y_2 + y_3 \\ y_2' = 2y_2 + 2y_3 \\ y_3' = 5y_1 + y_2 + y_3 \end{bmatrix}$	system_of_ODEs	✓	8.519
2291	$\begin{bmatrix} y_1' = -3y_1 + 3y_2 + y_3 \\ y_2' = y_1 - 5y_2 - 3y_3 \\ y_3' = -3y_1 + 7y_2 + 3y_3 \end{bmatrix}$	system_of_ODEs	✓	0.723
2292	$\begin{bmatrix} y_1' = 2y_1 + y_2 - y_3 \\ y_2' = y_2 + y_3 \\ y_3' = y_1 + y_3 \end{bmatrix}$	system_of_ODEs	✓	0.602
2293	$\begin{bmatrix} y_1' = -3y_1 + y_2 - 3y_3 \\ y_2' = 4y_1 - y_2 + 2y_3 \\ y_3' = 4y_1 - 2y_2 + 3y_3 \end{bmatrix}$	system_of_ODEs	✓	0.773
2294	<i>i.c.</i> $y' + \sin(t)y = 0$	[_separable]	✓	0.345
2295	<i>i.c.</i> $y' + e^{t^2}y = 0$	[_separable]	✓	0.370
2296	$y' - 2ty = t$	[_separable]	✓	0.189
2297	<i>i.c.</i> $y' + 2ty = t$	[_separable]	✓	0.322

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
2298	$y' + y = \frac{1}{t^2 + 1}$ i.c.	[_linear]	✓	0.455
2299	$\cos(t)y + y' = 0$	[_separable]	✓	1.425
2300	$\sqrt{t} \sin(t)y + y' = 0$	[_separable]	✓	2.339
2301	$\frac{2ty}{t^2 + 1} + y' = \frac{1}{t^2 + 1}$	[_linear]	✓	1.028
2302	$y' + y = e^{tt}$	[[_linear, 'class A']]	✓	1.077
2303	$t^2y + y' = 1$	[_linear]	✓	1.114
2304	$t^2y + y' = t^2$	[_separable]	✓	1.133
2305	$\frac{ty}{t^2 + 1} + y' = 1 - \frac{t^3y}{t^4 + 1}$	[_linear]	✓	2.098
2306	$\sqrt{t^2 + 1}y + y' = 0$ i.c.	[_separable]	✓	2.389
2307	$\sqrt{t^2 + 1}ye^{-t} + y' = 0$	[_separable]	✓	1.946
2308	$y' - 2ty = t$ i.c.	[_separable]	✓	1.471
2309	$ty + y' = t + 1$ i.c.	[_linear]	✓	1.591
2310	$y' + y = \frac{1}{t^2 + 1}$ i.c.	[_linear]	✓	1.596
2311	$y' - 2ty = 1$ i.c.	[_linear]	✓	1.135
2312	$ty + (t^2 + 1)y' = (t^2 + 1)^{5/2}$	[_linear]	✓	1.796
2313	$4ty + (t^2 + 1)y' = t$ i.c.	[_separable]	✓	1.681
2314	$y' + \frac{y}{t} = \frac{1}{t^2}$	[_linear]	✓	0.156
2315	$y' + \frac{y}{\sqrt{t}} = e^{\frac{\sqrt{t}}{2}}$	[_linear]	✓	0.232

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
2316	$y' + \frac{y}{t} = \cos(t) + \frac{\sin(t)}{t}$	[_linear]	✓	0.210
2317	$y' + \tan(t)y = \cos(t)\sin(t)$	[_linear]	✓	0.236
2318	$(t^2 + 1)y' = 1 + y^2$	[_separable]	✓	1.858
2319	$y' = (t + 1)(1 + y)$	[_separable]	✓	1.194
2320	$y' = 1 - t + y^2 - ty^2$	[_separable]	✓	2.165
2321	$y' = e^{3+t+y}$	[_separable]	✓	1.953
2322	$\cos(y)\sin(t)y' = \cos(t)\sin(y)$	[_separable]	✓	2.624
2323	$t^2(1 + y^2) + 2yy' = 0$ i.c.	[_separable]	✓	2.914
2324	$y' = \frac{2t}{y + t^2y}$ i.c.	[_separable]	✓	2.080
2325	$\sqrt{t^2 + 1}y' = \frac{ty^3}{\sqrt{t^2 + 1}}$ i.c.	[_separable]	✓	3.724
2326	$y' = \frac{3t^2 + 4t + 2}{-2 + 2y}$ i.c.	[_separable]	✓	2.169
2327	$\cos(y)y' = -\frac{t\sin(y)}{t^2 + 1}$ i.c.	[_separable]	✓	2.748
2328	$y' = k(a - y)(b - y)$ i.c.	[_quadrature]	✓	1.665
2329	$3ty' = \cos(t)y$ i.c.	[_separable]	✓	2.329
2330	$ty' = y + \sqrt{t^2 + y^2}$ i.c.	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	4.182
2331	$2tyy' = 3y^2 - t^2$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓	74.947

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
2332	$(t - \sqrt{ty}) y' = y$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	12.628
2333	$y' = \frac{y+t}{t-y}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓	2.757
2334	$e^{\frac{t}{y}}(-t+y)y' + y(1+e^{\frac{t}{y}}) = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓	4.382
2335	$y' = \frac{t+y+1}{t-y+3}$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	1.862
2336	$1+t-2y+(4t-3y-6)y' = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	3.030
2337	$t+2y+3+(2t+4y-1)y' = 0$	[[_homogeneous, 'class C'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓	1.688
2338	$2t \sin(y) + e^t y^3 + (t^2 \cos(y) + 3e^t y^2) y' = 0$	[_exact]	✓	3.331
2339	$1 + e^{ty}(1 + ty) + (1 + e^{ty}t^2) y' = 0$	[_exact]	✓	1.810
2340	$\sec(t) \tan(t) + \sec(t)^2 y + (\tan(t) + 2y) y' = 0$	[_exact, [_Abel, '2nd type', 'class A']]	✓	11.407
2341	$\frac{y^2}{2} - 2e^t y + (-e^t + y) y' = 0$	[[_1st_order, _with_linear_symmetries], [_Abel, '2nd type', 'class A']]	✓	2.039
2342	$2ty^3 + 3t^2 y^2 y' = 0$ i.c.	[_separable]	✓	2.300
2343	$2t \cos(y) + 3t^2 y + (t^3 - t^2 \sin(y) - y) y' = 0$ i.c.	[_exact]	✓	2.594

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
Continued from previous page

#	ODE	CAS classification	Solved?	time (sec)
2344	$3t^2 + 4ty + (2t^2 + 2y)y' = 0$ i.c.	[_exact, _rational, [_1st_order, '_with_symmetry_[F(x),G(x)]'], [_Abel, '2nd type', 'class A']]	✓	1.698
2345	$2t - 2e^{ty} \sin(2t) + e^{ty} \cos(2t)y + (-3 + e^{ty}t \cos(2t))y' = 0$ i.c.	[_exact]	✓	36.825
2346	$3ty + y^2 + (t^2 + ty)y' = 0$ i.c.	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓	5.984
2347	$y' = y^2 + \cos(t^2)$ i.c.	[_Riccati]	✗	3.267
2348	$y' = 1 + y + y^2 \cos(t)$ i.c.	[_Riccati]	✗	13.268
2349	$y' = t + y^2$ i.c.	[[_Riccati, _special]]	✓	15.148
2350	$y' = e^{-t^2} + y^2$ i.c.	[_Riccati]	✗	1.575
2351	$y' = e^{-t^2} + y^2$ i.c.	[_Riccati]	✗	1.634
2352	$y' = e^{-t^2} + y^2$ i.c.	[_Riccati]	✗	1.558
2353	$y' = y + e^{-y} + e^{-t}$ i.c.	['y=_G(x,y)']	✗	1.461
2354	$y' = y^3 + e^{-5t}$ i.c.	[_Abel]	✗	1.028
2355	$y' = e^{(-t+y)^2}$ i.c.	[[_homogeneous, 'class C'], _dAlembert]	✓	2.733
2356	$y' = (4y + e^{-t^2})e^{2y}$ i.c.	['y=_G(x,y)']	✗	1.555
2357	$y' = e^{-t} + \ln(1 + y^2)$ i.c.	['y=_G(x,y)']	✗	1.867

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
2358	$y' = \frac{(1 + \cos(4t))y}{4} - \frac{(1 - \cos(4t))y^2}{800}$ i.c.	[_Bernoulli]	✓	5.570
2359	$y' = t^2 + y^2$ i.c.	[[_Riccati, _special]]	✓	1.810
2360	$y' = t(1 + y)$ i.c.	[_separable]	✓	1.334
2361	$y' = t\sqrt{1 - y^2}$ i.c.	[_separable]	✓	4.455
2362	$2t^2y'' + 3ty' - y = 0$ i.c.	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	1.773
2363	$y'' + ty' + y = 0$ i.c.	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	1.168
2364	$y'' - y = 0$	[[_2nd_order, _missing_x]]	✓	1.964
2365	$6y'' - 7y' + y = 0$	[[_2nd_order, _missing_x]]	✓	0.830
2366	$y'' - 3y' + y = 0$	[[_2nd_order, _missing_x]]	✓	1.034
2367	$3y'' + 6y' + 3y = 0$	[[_2nd_order, _missing_x]]	✓	0.842
2368	$y'' - 3y' - 4y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	1.437
2369	$2y'' + y' - 10y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	1.494
2370	$5y'' + 5y' - y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	1.506
2371	$y'' - 6y' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	1.509
2372	$y'' + 5y' + 6y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	0.886
2373	$t^2y'' + \alpha ty' + \beta y = 0$	[[_Emden, _Fowler]]	✓	1.945
2374	$t^2y'' + 5ty' - 5y = 0$	[[_Emden, _Fowler]]	✓	1.170

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
2375	<i>i.c.</i> $t^2y'' - ty' - 2y = 0$	[[_Emden, _Fowler]]	✓	2.543
2376	<i>i.c.</i> $y'' + 2y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓	2.859
2377	$y'' + y' + y = 0$	[[_2nd_order, _missing_x]]	✓	2.085
2378	$2y'' + 3y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓	2.016
2379	$y'' + 2y' + 3y = 0$	[[_2nd_order, _missing_x]]	✓	1.925
2380	$4y'' - y' + y = 0$	[[_2nd_order, _missing_x]]	✓	2.057
2381	<i>i.c.</i> $y'' + y' + 2y = 0$	[[_2nd_order, _missing_x]]	✓	3.018
2382	<i>i.c.</i> $y'' + 2y' + 5y = 0$	[[_2nd_order, _missing_x]]	✓	1.824
2383	<i>i.c.</i> $2y'' - y' + 3y = 0$	[[_2nd_order, _missing_x]]	✓	4.142
2384	<i>i.c.</i> $3y'' - 2y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓	4.698
2385	$t^2y'' + ty' + y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)']]]	✓	1.446
2386	$t^2y'' + 2ty' + 2y = 0$	[[_Emden, _Fowler]]	✓	3.080
2387	$y'' - 6y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓	0.915
2388	$4y'' - 12y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓	0.953
2389	<i>i.c.</i> $9y'' + 6y' + y = 0$	[[_2nd_order, _missing_x]]	✓	1.279
2390	<i>i.c.</i> $4y'' - 4y' + y = 0$	[[_2nd_order, _missing_x]]	✓	1.236
2391	<i>i.c.</i> $y'' + 2y' + y = 0$	[[_2nd_order, _missing_x]]	✓	1.270

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
2392	<i>i.c.</i> $9y'' - 12y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓	1.359
2393	$y'' - \frac{2(t+1)y'}{t^2+2t-1} + \frac{2y}{t^2+2t-1} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.443
2394	$y'' - 4ty' + (4t^2 - 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.859
2395	$(-t^2 + 1)y'' - 2ty' + 2y = 0$	[_Gegenbauer]	✓	1.599
2396	$(t^2 + 1)y'' - 2ty' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.276
2397	$(-t^2 + 1)y'' - 2ty' + 6y = 0$	[_Gegenbauer]	✓	1.308
2398	$(2t + 1)y'' - 4(t + 1)y' + 4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.299
2399	$t^2y'' + ty' + \left(t^2 - \frac{1}{4}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	2.939
2400	$t^2y'' + 3ty' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	1.404
2401	$t^2y'' - ty' + y = 0$	[[_Emden, _Fowler]]	✓	1.280
2402	$y'' + y = \sec(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	2.784
2403	$y'' - 4y' + 4y = te^{2t}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.113
2404	$2y'' - 3y' + y = (t^2 + 1)e^t$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.221
2405	$y'' - 3y' + 2y = te^{3t} + 1$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.211
2406	<i>i.c.</i> $3y'' + 4y' + y = \sin(t)e^{-t}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.906
2407	<i>i.c.</i> $y'' + 4y' + 4y = t^{5/2}e^{-2t}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.605
2408	<i>i.c.</i> $y'' - 3y' + 2y = \sqrt{t+1}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	2.458
2409	<i>i.c.</i> $y'' - y = f(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.826

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
2410	$y'' + \frac{t^2 y}{4} = f \cos(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.372
2411	$y'' - \frac{2ty'}{t^2 + 1} + \frac{2y}{t^2 + 1} = t^2 + 1$	[[_2nd_order, _with_linear_symmetries]]	✓	1.913
2412	$my'' + cy' + ky = F_0 \cos(\omega t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	8.392
2413	$y'' + ty' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.556
2414	$y'' - ty = 0$	[[_Emden, _Fowler]]	✓	0.507
2415	$(t^2 + 2)y'' - ty' - 3y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.652
2416	$y'' - t^3 y = 0$	[[_Emden, _Fowler]]	✓	0.507
2417	$t(2 - t)y'' - 6(t - 1)y' - 4y = 0$ i.c.	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.669
2418	$y'' + t^2 y = 0$ i.c.	[[_Emden, _Fowler]]	✓	0.493
2419	$y'' - t^3 y = 0$ i.c.	[[_Emden, _Fowler]]	✓	0.497
2420	$y'' + (t^2 + 2t + 1)y' - (4 + 4t)y = 0$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	0.635
2421	$y'' - 2ty' + \lambda y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.645
2422	$(-t^2 + 1)y'' - 2ty' + \alpha(1 + \alpha)y = 0$	[_Gegenbauer]	✓	0.800
2423	$(-t^2 + 1)y'' - ty' + \alpha^2 y = 0$	[_Gegenbauer, _2nd_order, _linear, ' _with_symmetry_[0,F(x)]']	✓	0.717
2424	$y'' + t^3 y' + 3t^2 y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.542
2425	$y'' + t^3 y' + 3t^2 y = 0$ i.c.	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.557
2426	$(-t + 1)y'' + ty' + y = 0$ i.c.	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.534

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
2427	<i>i.c.</i> $y'' + y' + ty = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.513
2428	<i>i.c.</i> $y'' + ty' + e^t y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.738
2429	<i>i.c.</i> $y'' + y' + e^t y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.639
2430	<i>i.c.</i> $y'' + y' + e^{-t} y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.934
2431	$t^2 y'' - 5ty' + 9y = 0$	[[_Emden, _Fowler]]	✓	1.138
2432	$t^2 y'' + 5ty' - 5y = 0$	[[_Emden, _Fowler]]	✓	1.131
2433	$2t^2 y'' + 3ty' - y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	1.252
2434	$(t - 1)^2 y'' - 2(t - 1) y' + 2y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]]	✓	1.204
2435	$t^2 y'' + 3ty' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	1.333
2436	$t^2 y'' - ty' + y = 0$	[[_Emden, _Fowler]]	✓	1.250
2437	$(t - 2)^2 y'' + 5(t - 2) y' + 4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.129
2438	$t^2 y'' + ty' + y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]]	✓	1.386
2439	<i>i.c.</i> $t^2 y'' - ty' + 2y = 0$	[[_Emden, _Fowler]]	✓	2.538
2440	<i>i.c.</i> $t^2 y'' - 3ty' + 4y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]]	✓	1.977
2441	$t(t - 2)^2 y'' + ty' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.427
2442	$t(t - 2)^2 y'' + ty' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.195

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
2443	$\sin(t)y'' + \cos(t)y' + \frac{y}{t} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.957
2444	$(e^t - 1)y'' + e^ty' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.023
2445	$(-t^2 + 1)y'' + \frac{y'}{\sin(t+1)} + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.336
2446	$t^3y'' + \sin(t^3)y' + ty = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.034
2447	$2t^2y'' + 3ty' - (t+1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.925
2448	$2ty'' + (1-2t)y' - y = 0$	[_Laguerre]	✓	0.892
2449	$2ty'' + (t+1)y' - 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.925
2450	$2t^2y'' - ty' + (t+1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.936
2451	$4ty'' + 3y' - 3y = 0$	[[_Emden, _Fowler]]	✓	0.876
2452	$2t^2y'' + (t^2 - t)y' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.919
2453	$t^3y'' - ty' - \left(t^2 + \frac{5}{4}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.130
2454	$t^2y'' + (-t^2 + t)y' - y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.938
2455	$ty'' - (t^2 + 2)y' + ty = 0$	[_Lienard]	✓	0.819
2456	$t^2y'' + (-t^2 + 3t)y' - ty = 0$	[_Laguerre, [_2nd_order, _linear, '_with_symmetry_[0,F(x)']]]	✓	0.877
2457	$t^2y'' + t(t+1)y' - y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.981
2458	$ty'' - (t+4)y' + 2y = 0$	[_Laguerre]	✓	0.977
2459	$t^2y'' + (t^2 - 3t)y' + 3y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.327
2460	$t^2y'' + ty' - (t+1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.378

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
2461	$ty'' + ty' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.243
2462	$ty'' + (-t^2 + 1)y' + 4ty = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.792
2463	$t^2y'' + ty' + t^2y = 0$	[_Lienard]	✓	0.645
2464	$t^2y'' + ty' + (t^2 - v^2)y = 0$	[_Bessel]	✓	0.841
2465	$ty'' + (-t + 1)y' + \lambda y = 0$	[_Laguerre]	✓	0.972
2466	$2 \sin(t)y'' + (-t + 1)y' - 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.140
2467	$t^2y'' + ty' + (t + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.888
2468	$ty'' + y' - 4y = 0$	[[_Emden, _Fowler]]	✓	0.828
2469	$t^2y'' - t(t + 1)y' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.838
2470	$t^2y'' + ty' + (t^2 - 1)y = 0$	[_Bessel]	✓	1.243
2471	$ty'' + 3y' - 3y = 0$	[[_Emden, _Fowler]]	✓	1.262
2472	$\cos(t)y + y' = 0$	[_separable]	✓	1.411
2473	$\sqrt{t} \sin(t)y + y' = 0$	[_separable]	✓	2.241
2474	$\frac{2ty}{t^2 + 1} + y' = \frac{1}{t^2 + 1}$	[_linear]	✓	1.062
2475	$y' + y = e^{tt}$	[[_linear, 'class A']]	✓	1.070
2476	$t^2y + y' = 1$	[_linear]	✓	1.085
2477	$t^2y + y' = t^2$	[_separable]	✓	1.127
2478	$\frac{ty}{t^2 + 1} + y' = 1 - \frac{t^3y}{t^4 + 1}$	[_linear]	✓	2.046
2479	$\sqrt{t^2 + 1}y + y' = 0$ i.c.	[_separable]	✓	2.447
2480	$\sqrt{t^2 + 1}ye^{-t} + y' = 0$ i.c.	[_separable]	✓	2.217

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
2481	$\sqrt{t^2 + 1} y e^{-t} + y' = 0$ i.c.	[_separable]	✓	2.384
2482	$y' - 2ty = t$ i.c.	[_separable]	✓	1.509
2483	$ty + y' = t + 1$ i.c.	[_linear]	✓	1.563
2484	$y' + y = \frac{1}{t^2 + 1}$ i.c.	[_linear]	✓	1.539
2485	$y' - 2ty = 1$ i.c.	[_linear]	✓	1.146
2486	$ty + (t^2 + 1) y' = (t^2 + 1)^{5/2}$	[_linear]	✓	1.692
2487	$4ty + (t^2 + 1) y' = t$ i.c.	[_separable]	✓	1.531
2488	$y' + y = \begin{cases} 2 & 0 \leq t \leq 1 \\ 0 & 1 < t \end{cases}$ i.c.	[[_linear, 'class A']]	✓	0.598
2489	$(t^2 + 1) y' = 1 + y^2$	[_separable]	✓	1.802
2490	$y' = (t + 1)(1 + y)$	[_separable]	✓	1.161
2491	$y' = 1 - t + y^2 - ty^2$	[_separable]	✓	2.112
2492	$y' = e^{3+t+y}$	[_separable]	✓	1.934
2493	$\cos(y) \sin(t) y' = \cos(t) \sin(y)$	[_separable]	✓	2.634
2494	$t^2(1 + y^2) + 2yy' = 0$ i.c.	[_separable]	✓	2.828
2495	$y' = \frac{2t}{y + t^2y}$ i.c.	[_separable]	✓	1.905
2496	$\sqrt{1 + y^2} y' = \frac{ty^3}{\sqrt{t^2 + 1}}$ i.c.	[_separable]	✓	2.540
2497	$y' = \frac{3t^2 + 4t + 2}{-2 + 2y}$ i.c.	[_separable]	✓	2.273

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
2498	$\cos(y) y' = -\frac{t \sin(y)}{t^2 + 1}$ i.c.	[_separable]	✓	2.755
2499	$y' = k(a - y)(b - y)$ i.c.	[_quadrature]	✓	1.807
2500	$3ty' = \cos(t) y$ i.c.	[_separable]	✓	2.366
2501	$y' = \frac{2y}{t} + \frac{y^2}{t^2}$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓	2.309
2502	$ty' = y + \sqrt{t^2 + y^2}$ i.c.	[[_homogeneous, 'class A', _rational, _dAlembert]	✓	4.321
2503	$2tyy' = 3y^2 - t^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓	74.814
2504	$(t - \sqrt{ty}) y' = y$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓	8.065
2505	$y' = \frac{y + t}{t - y}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓	2.717
2506	$e^{\frac{t}{y}}(-t + y) y' + y(1 + e^{\frac{t}{y}}) = 0$	[[_homogeneous, 'class A', _dAlembert]	✓	4.376
2507	$y' = \frac{t + y + 1}{t - y + 3}$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓	1.927
2508	$1 + t - 2y + (4t - 3y - 6) y' = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓	2.990
2509	$t + 2y + 3 + (2t + 4y - 1) y' = 0$	[[_homogeneous, 'class C', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓	1.623
2510	$2t \sin(y) + e^t y^3 + (t^2 \cos(y) + 3e^t y^2) y' = 0$	[_exact]	✓	3.170

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
2511	$1 + e^{ty}(1 + ty) + (1 + e^{ty}t^2) y' = 0$	[_exact]	✓	1.762
2512	$\sec(t) \tan(t) + \sec(t)^2 y + (\tan(t) + 2y) y' = 0$	[_exact, [_Abel, '2nd type', 'class A']]	✓	11.677
2513	$\frac{y^2}{2} - 2e^t y + (-e^t + y) y' = 0$	[[_1st_order, _with_linear_symmetries], [_Abel, '2nd type', 'class A']]	✓	2.004
2514	<i>i.c.</i> $2ty^3 + 3t^2 y^2 y' = 0$	[_separable]	✓	2.391
2515	<i>i.c.</i> $2t \cos(y) + 3t^2 y + (2t^2 + 2y) y' = 0$	['x=_G(y,y)']	✗	38.941
2516	<i>i.c.</i> $3t^2 + 4ty + (2t^2 + 2y) y' = 0$	[_exact, _rational, [_1st_order, '_with_symmetry_[F(x),G(x)]'], [_Abel, '2nd type', 'class A']]	✓	1.684
2517	<i>i.c.</i> $2t - 2e^{ty} \sin(2t) + e^{ty} \cos(2t) y + (-3 + e^{ty} t \cos(2t)) y' = 0$	[_exact]	✓	36.767
2518	<i>i.c.</i> $3ty + y^2 + (t^2 + ty) y' = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓	5.970
2519	<i>i.c.</i> $y' = 2t(1 + y)$	[_separable]	✓	1.426
2520	<i>i.c.</i> $y' = t^2 + y^2$	[[_Riccati, _special]]	✗	1.526
2521	<i>i.c.</i> $y' = e^t + y^2$	[_Riccati]	✓	1.982
2522	<i>i.c.</i> $y' = y^2 + \cos(t)^2$	[_Riccati]	✓	4.375
2523	<i>i.c.</i> $y' = 1 + y + y^2 \cos(t)$	[_Riccati]	✗	13.315
2524	<i>i.c.</i> $y' = t + y^2$	[[_Riccati, _special]]	✓	15.127

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
2525	<i>i.c.</i> $y' = e^{-t^2} + y^2$	[_Riccati]	✗	1.553
2526	<i>i.c.</i> $y' = e^{-t^2} + y^2$	[_Riccati]	✗	1.541
2527	<i>i.c.</i> $y' = e^{-t^2} + y^2$	[_Riccati]	✗	1.536
2528	<i>i.c.</i> $y' = y + e^{-y} + e^{-t}$	['y=_G(x,y)']	✗	1.427
2529	<i>i.c.</i> $y' = y^3 + e^{-5t}$	[_Abel]	✗	1.064
2530	<i>i.c.</i> $y' = e^{(-t+y)^2}$	[[_homogeneous, 'class C'], _dAlembert]	✓	2.606
2531	<i>i.c.</i> $y' = (4y + e^{-t^2}) e^{2y}$	['y=_G(x,y)']	✗	1.566
2532	<i>i.c.</i> $y' = e^{-t} + \ln(1 + y^2)$	['y=_G(x,y)']	✗	1.815
2533	<i>i.c.</i> $y' = \frac{(1 + \cos(4t))y}{4} - \frac{(1 - \cos(4t))y^2}{800}$	[_Bernoulli]	✓	5.354
2534	<i>i.c.</i> $y' = t^2 + y^2$	[[_Riccati, _special]]	✓	1.827
2535	<i>i.c.</i> $y' = t(1 + y)$	[_separable]	✓	1.299
2536	<i>i.c.</i> $y' = ty^a$	[_separable]	✓	6.418
2537	<i>i.c.</i> $y' = t\sqrt{1 - y^2}$	[_separable]	✓	4.419
2538	<i>i.c.</i> $y' = y + e^{-y} + 2t$	['y=_G(x,y)']	✗	1.316
2539	<i>i.c.</i> $y' = 1 - t + y^2$	[_Riccati]	✓	1.594

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
2540	$y' = \frac{t^2 + y^2}{1 + t + y^2}$ i.c.	[_rational]	<b>X</b>	1.155
2541	$y' = e^t y^2 - 2y$ i.c.	[[_1st_order, _with_linear_symmetries], _Bernoulli]	<b>✓</b>	1.558
2542	$y' = ty^3 - y$ i.c.	[_Bernoulli]	<b>✓</b>	4.021
2543	$2t^2 y'' + 3ty' - y = 0$ i.c.	[[_2nd_order, _exact, _linear, _homogeneous]]	<b>✓</b>	1.940
2544	$y'' + ty' + y = 0$ i.c.	[[_2nd_order, _exact, _linear, _homogeneous]]	<b>✓</b>	1.260
2545	$y'' - y = 0$	[[_2nd_order, _missing_x]]	<b>✓</b>	2.057
2546	$6y'' - 7y' + y = 0$	[[_2nd_order, _missing_x]]	<b>✓</b>	0.881
2547	$y'' - 3y' + y = 0$	[[_2nd_order, _missing_x]]	<b>✓</b>	1.173
2548	$3y'' + 6y' + 2y = 0$	[[_2nd_order, _missing_x]]	<b>✓</b>	1.181
2549	$y'' - 3y' - 4y = 0$ i.c.	[[_2nd_order, _missing_x]]	<b>✓</b>	1.492
2550	$2y'' + y' - 10y = 0$ i.c.	[[_2nd_order, _missing_x]]	<b>✓</b>	1.543
2551	$5y'' + 5y' - y = 0$ i.c.	[[_2nd_order, _missing_x]]	<b>✓</b>	1.584
2552	$y'' - 6y' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	<b>✓</b>	1.574
2553	$y'' + 5y' + 6y = 0$ i.c.	[[_2nd_order, _missing_x]]	<b>✓</b>	0.932
2554	$t^2 y'' + \alpha ty' + \beta y = 0$	[[_Emden, _Fowler]]	<b>✓</b>	2.030
2555	$t^2 y'' + 5ty' - 2y = 0$ i.c.	[[_Emden, _Fowler]]	<b>✓</b>	3.046
2556	$y'' + y' + y = 0$	[[_2nd_order, _missing_x]]	<b>✓</b>	2.244

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
2557	$2y'' + 3y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓	2.122
2558	$y'' + 2y' + 3y = 0$	[[_2nd_order, _missing_x]]	✓	2.136
2559	$4y'' - y' + y = 0$	[[_2nd_order, _missing_x]]	✓	2.220
2560	$y'' + y' + 2y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	3.337
2561	$y'' + 2y' + 5y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	2.069
2562	$2y'' - y' + 3y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	4.282
2563	$3y'' - 2y' + 4y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	4.826
2564	$y'' + w^2y = 0$	[[_2nd_order, _missing_x]]	✓	1.832
2565	$t^2y'' + ty' + y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓	1.455
2566	$t^2y'' + 2ty' + 2y = 0$	[[_Emden, _Fowler]]	✓	3.132
2567	$y'' - 6y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓	0.885
2568	$4y'' - 12y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓	0.893
2569	$9y'' + 6y' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	1.232
2570	$4y'' - 4y' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	1.194
2571	$6y'' + 2y' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	3.633
2572	$9y'' - 12y' + 4y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	1.351
2573	$y'' - \frac{2(t+1)y'}{t^2+2t-1} + \frac{2y}{t^2+2t-1} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.345

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
2574	$y'' - 4ty' + (4t^2 - 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.336
2575	$(-t^2 + 1)y'' - 2ty' + 2y = 0$	[_Gegenbauer]	✓	0.359
2576	$(t^2 + 1)y'' - 2ty' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.332
2577	$(-t^2 + 1)y'' - 2ty' + 6y = 0$	[_Gegenbauer]	✓	0.365
2578	$(2t + 1)y'' - 4(t + 1)y' + 4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.356
2579	$t^2y'' + ty' + \left(t^2 - \frac{1}{4}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.386
2580	$ty'' - (1 + 3t)y' + 3y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.372
2581	$t^2y'' + 3ty' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	1.383
2582	$t^2y'' - ty' + y = 0$	[[_Emden, _Fowler]]	✓	1.363
2583	$y'' + y = \sec(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	2.782
2584	$y'' - 4y' + 4y = te^{2t}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.082
2585	$2y'' - 3y' + y = (t^2 + 1)e^t$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.187
2586	$y'' - 3y' + 2y = te^{3t} + 1$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.120
2587	$3y'' + 4y' + y = \sin(t)e^{-t}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.886
2588	$y'' + 4y' + 4y = t^{5/2}e^{-2t}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.572
2589	$y'' - 3y' + 2y = \sqrt{t+1}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	2.386
2590	$y'' - y = f(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.818
2591	$t^2y'' - 2y = t^2$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓	1.056

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
2592	$y'' + p(t)y' + q(t)y = t + 1$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.627
2593	$y'' - \frac{2ty'}{t^2 + 1} + \frac{2y}{t^2 + 1} = t^2 + 1$	[[_2nd_order, _with_linear_symmetries]]	✓	1.826
2594	$y'' + 3y = t^3 - 1$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	4.256
2595	$y'' + 4y' + 4y = t e^{\alpha t}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.144
2596	$y'' - y = t^2 e^t$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.234
2597	$y'' + y' + y = t^2 + t + 1$	[[_2nd_order, _with_linear_symmetries]]	✓	33.507
2598	$y'' + 2y' + y = e^{-t}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.050
2599	$y'' + 5y' + 4y = t^2 e^{7t}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.154
2600	$y'' + 4y = t \sin(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	4.998
2601	$y'' - 6y' + 9y = (3t^7 - 5t^4) e^{3t}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.240
2602	$y'' - 2y' + 5y = 2 \cos(t)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	15.276
2603	$y'' - 2y' + 5y = 2 \cos(t)^2 e^t$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	13.401
2604	$y'' + y' - 6y = \sin(t) + t e^{2t}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	2.132
2605	$y'' + y' + 4y = t^2 + (2t + 3)(1 + \cos(t))$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	79.655
2606	$y'' - 3y' + 2y = e^t + e^{2t}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.069
2607	$y'' + 2y' = 1 + t^2 + e^{-2t}$	[[_2nd_order, _missing_y]]	✓	1.827
2608	$y'' + y = \cos(t) \cos(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.872
2609	$y'' + y = \cos(t) \cos(2t) \cos(3t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	2.485

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
2610	$y'' - 6y' + 9y = t^{3/2}e^{3t}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.191
2611	$y'' + ty' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.520
2612	$y'' - ty = 0$	[[_Emden, _Fowler]]	✓	0.514
2613	$(t^2 + 2)y'' - ty' - 3y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.599
2614	$y'' - t^3y = 0$	[[_Emden, _Fowler]]	✓	0.474
2615	$t(2 - t)y'' - 6(t - 1)y' - 4y = 0$ i.c.	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.658
2616	$y'' + t^2y = 0$ i.c.	[[_Emden, _Fowler]]	✓	0.480
2617	$y'' - t^3y = 0$ i.c.	[[_Emden, _Fowler]]	✓	0.471
2618	$y'' + (t^2 + 2t + 1)y' - (4 + 4t)y = 0$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	0.555
2619	$y'' - 2ty' + \lambda y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.612
2620	$(-t^2 + 1)y'' - 2ty' + \alpha(1 + \alpha)y = 0$	[_Gegenbauer]	✓	0.740
2621	$(-t^2 + 1)y'' - ty' + \alpha^2y = 0$	[_Gegenbauer, _2nd_order, _linear, ' _with_symmetry_[0,F(x)]']	✓	0.680
2622	$y'' + t^3y' + 3t^2y = e^t$ i.c.	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓	0.656
2623	$(-t + 1)y'' + ty' + y = 0$ i.c.	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.560
2624	$y'' + y' + ty = 0$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	0.519
2625	$y'' + ty' + e^ty = 0$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	0.737
2626	$y'' + y' + e^ty = 0$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	0.642

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
2627	<i>i.c.</i> $y'' + y' + e^{-t}y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.890
2628	$t^2y'' + 5ty' - 5y = 0$	[[_Emden, _Fowler]]	✓	1.129
2629	$2t^2y'' + 3ty' - y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	1.261
2630	$(t - 1)^2 y'' - 2(t - 1) y' + 2y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]]	✓	1.184
2631	$t^2y'' + 3ty' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	1.307
2632	$t^2y'' - ty' + y = 0$	[[_Emden, _Fowler]]	✓	1.217
2633	$(t - 2)^2 y'' + 5(t - 2) y' + 4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.107
2634	$t^2y'' + ty' + y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]]	✓	1.303
2635	$t^2y'' + 3ty' + 2y = 0$	[[_Emden, _Fowler]]	✓	2.025
2636	<i>i.c.</i> $t^2y'' - ty' - 2y = 0$	[[_Emden, _Fowler]]	✓	2.501
2637	<i>i.c.</i> $t^2y'' - 3ty' + 4y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]]	✓	1.968
2638	$t(t - 2)^2 y'' + ty' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.417
2639	$t(t - 2)^2 y'' + ty' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.197
2640	$\sin(t) y'' + \cos(t) y' + \frac{y}{t} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.974
2641	$(e^t - 1) y'' + e^t y' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.030
2642	$(-t^2 + 1) y'' + \frac{y'}{\sin(t + 1)} + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.282

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
2643	$t^3 y'' + \sin(t^2) y' + ty = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.756
2644	$2t^2 y'' + 3ty' - (t + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.908
2645	$2ty'' + (1 - 2t)y' - y = 0$	[_Laguerre]	✓	0.824
2646	$2ty'' + (t + 1)y' - 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.878
2647	$2t^2 y'' - ty' + (t + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.899
2648	$4ty'' + 3y' - 3y = 0$	[[_Emden, _Fowler]]	✓	0.822
2649	$2t^2 y'' + (t^2 - t)y' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.886
2650	$t^2 y'' - ty' - \left(t^2 + \frac{5}{4}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.858
2651	$t^2 y'' + (-t^2 + t)y' - y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.949
2652	$ty'' - (t^2 + 2)y' + ty = 0$	[_Lienard]	✓	0.779
2653	$t^2 y'' + (-t^2 + 3t)y' - ty = 0$	[_Laguerre, [_2nd_order, _linear, '_with_symmetry_[0,F(x)']]]	✓	0.885
2654	$t^2 y'' + t(t + 1)y' - y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.886
2655	$ty'' - (t + 4)y' + 2y = 0$	[_Laguerre]	✓	0.947
2656	$t^2 y'' + (t^2 - 3t)y' + 3y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.281
2657	$t^2 y'' + ty' - (t + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.241
2658	$ty'' + ty' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.226
2659	$t^2 y'' + (-t^2 + 1)y' + 4ty = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.168
2660	$t^2 y'' + ty' + t^2 y = 0$	[_Lienard]	✓	0.620
2661	$t^2 y'' + ty' + (t^2 - v^2)y = 0$	[_Bessel]	✓	0.829

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
2662	$ty'' + (-t + 1)y' + \lambda y = 0$	[_Laguerre]	✓	0.951
2663	$t(-t + 1)y'' + (\gamma - (\alpha + \beta + 1)t)y' - \alpha\beta y = 0$	[_Jacobi]	✓	1.229
2664	$2 \sin(t)y'' + (-t + 1)y' - 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.088
2665	$t^2y'' + ty' + (t + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.817
2666	$ty'' + y' - 4y = 0$	[[_Emden, _Fowler]]	✓	0.777
2667	$t^2y'' - t(t + 1)y' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.797
2668	$t^2y'' + ty' + (t^2 - 1)y = 0$	[_Bessel]	✓	1.188
2669	$ty'' + 3y' - 3y = 0$	[[_Emden, _Fowler]]	✓	1.215
2670	$t^2y'' + tp(t)y' + q(t)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	25.613
2671	$y'' - 5y' + 4y = e^{2t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	0.282
2672	$2y'' + y' - y = e^{3t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	0.294
2673	$y'' + 2y' + y = e^{-t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	0.276
2674	$y'' + y = t^2 \sin(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.384
2675	$y'' + 3y' + 7y = \cos(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.594
2676	$y'' + y' + y = t^3$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.512
2677	$y''' - 6y'' + 11y' - 6y = e^{4t}$ i.c.	[[_3rd_order, _with_linear_symmetries]]	✓	0.321
2678	$y'' - 3y' + 2y = e^{-t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	0.268
2679	$y'' + y = \sin(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.331

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
2680	$y'' + y = t \sin(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.359
2681	$y'' - 2y' + y = t e^t$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.243
2682	$y'' - 2y' + 7y = \sin(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.563
2683	$y'' + y' + y = 1 + e^{-t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	0.501
2684	$y'' + y = \begin{cases} 2 & 0 \leq t \leq 3 \\ 3t - 7 & 3 < t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.687
2685	$y'' + 2y' + y = 2(t-3) \text{Heaviside}(t-3)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.669
2686	$y'' + y' + y = \text{Heaviside}(t - \pi) - \text{Heaviside}(t - 2\pi)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	8.111
2687	$y'' + 4y = \begin{cases} 1 & 0 \leq t < 4 \\ 0 & 4 < t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.922
2688	$y'' + y = \begin{cases} \sin(t) & 0 \leq t < \pi \\ \cos(t) & \pi \leq t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.090
2689	$y'' + y = \begin{cases} \cos(t) & 0 \leq t < \frac{\pi}{2} \\ 0 & \frac{\pi}{2} \leq t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.837
2690	$y'' + 2y' + y = \begin{cases} \sin(2t) & 0 \leq t < \frac{\pi}{2} \\ 0 & \frac{\pi}{2} \leq t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.523
2691	$y'' + y' + 7y = \begin{cases} t & 0 \leq t < 2 \\ 0 & 2 \leq t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	145.421
2692	$y'' + y = \begin{cases} t^2 & 0 \leq t < 1 \\ 0 & 1 \leq t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.892

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
2693	$y'' - 2y' + y = \begin{cases} 0 & 0 \leq t < 1 \\ t & 1 \leq t < 2 \\ 0 & 2 \leq t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.991
2694	$y'' + 4y' + 5y = \delta(t - 1)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.861
2695	$y'' + 4y = \sin(t) + \delta(t - \pi)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.641
2696	$y'' + y' + y = 2\delta(t - 1) - \delta(t - 2)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	143.837
2697	$y'' + 2y' + y = e^{-t} + 3\delta(t - 3)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.552
2698	$\begin{bmatrix} x' = 6x - 3y \\ y' = 2x + y \end{bmatrix}$	system_of_ODEs	✓	0.332
2699	$\begin{bmatrix} x' = -2x + y + t \\ y' = -4x + 3y - 1 \end{bmatrix}$	system_of_ODEs	✓	0.510
2700	$\begin{bmatrix} x' = 6x - 3y \\ y' = 2x + y \end{bmatrix}$	system_of_ODEs	✓	0.327
2701	$\begin{bmatrix} x' = x + y + e^t \\ y' = x - y - e^t \end{bmatrix}$	system_of_ODEs	✓	0.656
2702	$\begin{bmatrix} x' = x + y \\ y' = 4x + y \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.509
2703	$\begin{bmatrix} x' = x - 3y \\ y' = -2x + 2y \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.510
2704	$\begin{bmatrix} x' = x - y \\ y' = 5x - 3y \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.520
2705	$\begin{bmatrix} x' = 3x - 2y \\ y' = 4x - y \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.517

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
2706	$\begin{bmatrix} x' = 4x + 5y + 4e^t \cos(t) \\ y' = -2x - 2y \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.958
2707	$\begin{bmatrix} x' = 3x - 4y + e^t \\ y' = x - y + e^t \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.572
2708	$\begin{bmatrix} x' = 2x - 5y + \sin(t) \\ y' = x - 2y + \tan(t) \end{bmatrix}$ i.c.	system_of_ODEs	✓	1.706
2709	$\begin{bmatrix} x' = y + f_1(t) \\ y' = -x + f_2(t) \end{bmatrix}$ i.c.	system_of_ODEs	✓	1.059
2710	$y''' - 2y'' - y' + 2y = 0$	[[_3rd_order, _missing_x]]	✓	0.069
2711	$y''' - 6y'' + 5y' + 12y = 0$	[[_3rd_order, _missing_x]]	✓	0.069
2712	$y'''' - 5y''' + 6y'' + 4y' - 8y = 0$	[[_high_order, _missing_x]]	✓	0.077
2713	$y''' - y'' + y' - y = 0$	[[_3rd_order, _missing_x]]	✓	0.072
2714	$y'''' + 4y''' + 14y'' - 20y' + 25y = 0$ i.c.	[[_high_order, _missing_x]]	✓	0.724
2715	$y'''' - y = 0$ i.c.	[[_high_order, _missing_x]]	✓	0.089
2716	$y^{(5)} - 2y'''' + y''' = 0$ i.c.	[[_high_order, _missing_x]]	✓	0.141
2717	$y'''' - 2y''' + y'' + 2y' - 2y = 0$	[[_high_order, _missing_x]]	✓	0.086
2718	$y''' + y' = \tan(t)$	[[_3rd_order, _missing_y]]	✓	0.531
2719	$y'''' - y = g(t)$	[[_high_order, _linear, _nonhomogeneous]]	✓	0.661
2720	$y'''' + y = g(t)$	[[_high_order, _linear, _nonhomogeneous]]	✓	1.017

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
2721	$y''' + y' = 2t^2 + 4 \sin(t)$	[[_3rd_order, _missing_y]]	✓	0.917
2722	$y''' - 4y' = t + \cos(t) + 2e^{-2t}$	[[_3rd_order, _missing_y]]	✓	0.211
2723	$y'''' - y = t + \sin(t)$	[[_high_order, _linear, _nonhomogeneous]]	✓	0.894
2724	$y'''' + 2y'' + y = t^2 \sin(t)$	[[_high_order, _linear, _nonhomogeneous]]	✓	1.194
2725	$y'''' + y'' = t^2$	[[_high_order, _missing_y]]	✓	0.157
2726	$y''' + y'' + y' + y = t + e^{-t}$	[[_3rd_order, _with_linear_symmetries]]	✓	0.139
2727	$y'''' + 4y''' + 6y'' + 4y' + y = t^3 e^{-t}$	[[_high_order, _linear, _nonhomogeneous]]	✓	0.165
2728	$\begin{bmatrix} x'_1 = 6x_1 - 3x_2 \\ x'_2 = 2x_1 + x_2 \end{bmatrix}$	system_of_ODEs	✓	0.349
2729	$\begin{bmatrix} x'_1 = -2x_1 + x_2 \\ x'_2 = -4x_1 + 3x_2 \end{bmatrix}$	system_of_ODEs	✓	0.343
2730	$\begin{bmatrix} x'_1 = 3x_1 + 2x_2 + 4x_3 \\ x'_2 = 2x_1 + 2x_3 \\ x'_3 = 4x_1 + 2x_2 + 3x_3 \end{bmatrix}$	system_of_ODEs	✓	0.453
2731	$\begin{bmatrix} x'_1 = 7x_1 - x_2 + 6x_3 \\ x'_2 = -10x_1 + 4x_2 - 12x_3 \\ x'_3 = -2x_1 + x_2 - x_3 \end{bmatrix}$	system_of_ODEs	✓	0.504
2732	$\begin{bmatrix} x'_1 = -7x_1 + 6x_3 \\ x'_2 = 5x_2 \\ x'_3 = 6x_1 + 2x_3 \end{bmatrix}$	system_of_ODEs	✓	0.368
2733	$\begin{bmatrix} x'_1 = x_1 + 2x_2 + 3x_3 + 6x_4 \\ x'_2 = 3x_1 + 6x_2 + 9x_3 + 18x_4 \\ x'_3 = 5x_1 + 10x_2 + 15x_3 + 30x_4 \\ x'_4 = 7x_1 + 14x_2 + 21x_3 + 42x_4 \end{bmatrix}$	system_of_ODEs	✓	0.560

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
2734	$\begin{bmatrix} x'_1 = x_1 + x_2 \\ x'_2 = 4x_1 + x_2 \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.458
2735	$\begin{bmatrix} x'_1 = x_1 - 3x_2 \\ x'_2 = -2x_1 + 2x_2 \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.461
2736	$\begin{bmatrix} x'_1 = 3x_1 + x_2 - x_3 \\ x'_2 = x_1 + 3x_2 - x_3 \\ x'_3 = 3x_1 + 3x_2 - x_3 \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.387
2737	$\begin{bmatrix} x'_1 = x_1 - x_2 \\ x'_2 = x_1 + 2x_2 + x_3 \\ x'_3 = x_1 + 10x_2 + 2x_3 \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.519
2738	$\begin{bmatrix} x'_1 = x_1 - 3x_2 + 2x_3 \\ x'_2 = -x_2 \\ x'_3 = -x_2 - 2x_3 \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.508
2739	$\begin{bmatrix} x'_1 = 3x_1 + x_2 - 2x_3 \\ x'_2 = -x_1 + 2x_2 + x_3 \\ x'_3 = 4x_1 + x_2 - 3x_3 \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.495
2740	$\begin{bmatrix} x'_1 = -3x_1 + 2x_2 \\ x'_2 = -x_1 - x_2 \end{bmatrix}$	system_of_ODEs	✓	0.404
2741	$\begin{bmatrix} x'_1 = x_1 - 5x_2 \\ x'_2 = x_1 - 3x_2 \\ x'_3 = x_3 \end{bmatrix}$	system_of_ODEs	✓	0.521
2742	$\begin{bmatrix} x'_1 = x_1 \\ x'_2 = 3x_1 + x_2 - 2x_3 \\ x'_3 = 2x_1 + 2x_2 + x_3 \end{bmatrix}$	system_of_ODEs	✓	0.583
2743	$\begin{bmatrix} x'_1 = x_1 + x_3 \\ x'_2 = x_2 - x_3 \\ x'_3 = -2x_1 - x_3 \end{bmatrix}$	system_of_ODEs	✓	0.553

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
2744	$\begin{bmatrix} x'_1 = x_1 - x_2 \\ x'_2 = 5x_1 - 3x_2 \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.564
2745	$\begin{bmatrix} x'_1 = 3x_1 - 2x_2 \\ x'_2 = 4x_1 - x_2 \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.539
2746	$\begin{bmatrix} x'_1 = -3x_1 + 2x_3 \\ x'_2 = x_1 - x_2 \\ x'_3 = -2x_1 - x_2 \end{bmatrix}$ i.c.	system_of_ODEs	✓	1.209
2747	$\begin{bmatrix} x'_1 = 2x_2 \\ x'_2 = -2x_1 \\ x'_3 = -3x_4 \\ x'_4 = 3x_3 \end{bmatrix}$ i.c.	system_of_ODEs	✓	1.128
2748	$\begin{bmatrix} x'_1 = x_1 + x_2 \\ x'_2 = x_2 \\ x'_3 = 2x_3 \end{bmatrix}$	system_of_ODEs	✓	0.320
2749	$\begin{bmatrix} x'_1 = 2x_1 + x_2 + 3x_3 \\ x'_2 = 2x_2 - x_3 \\ x'_3 = 2x_3 \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.334
2750	$\begin{bmatrix} x'_1 = -x_2 + x_3 \\ x'_2 = 2x_1 - 3x_2 + x_3 \\ x'_3 = x_1 - x_2 - x_3 \end{bmatrix}$	system_of_ODEs	✓	0.392
2751	$\begin{bmatrix} x'_1 = x_1 + x_2 + x_3 \\ x'_2 = 2x_1 + x_2 - x_3 \\ x'_3 = -3x_1 + 2x_2 + 4x_3 \end{bmatrix}$	system_of_ODEs	✓	0.441
2752	$\begin{bmatrix} x'_1 = -x_1 - x_2 \\ x'_2 = -x_2 \\ x'_3 = -2x_3 \end{bmatrix}$	system_of_ODEs	✓	0.315

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
2753	$\begin{bmatrix} x'_1 = 2x_1 - x_3 \\ x'_2 = 2x_2 + x_3 \\ x'_3 = 2x_3 \\ x'_4 = -x_3 + 2x_4 \end{bmatrix}$	system_of_ODEs	✓	0.383
2754	$\begin{bmatrix} x'_1 = -x_1 + x_2 + 2x_3 \\ x'_2 = -x_1 + x_2 + x_3 \\ x'_3 = -2x_1 + x_2 + 3x_3 \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.374
2755	$\begin{bmatrix} x'_1 = -4x_1 - 4x_2 \\ x'_2 = 10x_1 + 9x_2 + x_3 \\ x'_3 = -4x_1 - 3x_2 + x_3 \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.491
2756	$\begin{bmatrix} x'_1 = x_1 + 2x_2 - 3x_3 \\ x'_2 = x_1 + x_2 + 2x_3 \\ x'_3 = x_1 - x_2 + 4x_3 \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.400
2757	$\begin{bmatrix} x'_1 = 3x_1 \\ x'_2 = x_1 + 3x_2 \\ x'_3 = 3x_3 \\ x'_4 = 2x_3 + 3x_4 \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.357
2758	$\begin{bmatrix} x'_1 = x_1 \\ x'_2 = 2x_1 + x_2 - 2x_3 \\ x'_3 = 3x_1 + 2x_2 + x_3 + e^t \cos(2t) \end{bmatrix}$	system_of_ODEs	✓	1.261
2759	$\begin{bmatrix} x'_1 = x_1 + e^{ct} \\ x'_2 = 2x_1 + x_2 - 2x_3 \\ x'_3 = 3x_1 + 2x_2 + x_3 \end{bmatrix}$	system_of_ODEs	✓	1.317
2760	$\begin{bmatrix} x'_1 = 4x_1 + 5x_2 + 4e^t \cos(t) \\ x'_2 = -2x_1 - 2x_2 \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.948
2761	$\begin{bmatrix} x'_1 = 3x_1 - 4x_2 + e^t \\ x'_2 = x_1 - x_2 + e^t \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.584

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
2762	$\begin{bmatrix} x'_1 = 2x_1 - 5x_2 + \sin(t) \\ x'_2 = x_1 - 2x_2 + \tan(t) \end{bmatrix}$ i.c.	system_of_ODEs	✓	1.774
2763	$\begin{bmatrix} x'_1 = x_2 + f_1(t) \\ x'_2 = -x_1 + f_2(t) \end{bmatrix}$ i.c.	system_of_ODEs	✓	1.067
2764	$\begin{bmatrix} x'_1 = 2x_1 + x_3 + e^{2t} \\ x'_2 = 2x_2 \\ x'_3 = x_2 + 3x_3 + e^{2t} \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.564
2765	$\begin{bmatrix} x'_1 = -x_1 - x_2 - 2x_3 + e^t \\ x'_2 = x_1 + x_2 + x_3 \\ x'_3 = 2x_1 + x_2 + 3x_3 \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.704
2766	$\begin{bmatrix} x'_1 = 2x_1 + x_2 + e^{3t} \\ x'_2 = 3x_1 - 2x_2 + e^{3t} \end{bmatrix}$	system_of_ODEs	✓	0.746
2767	$\begin{bmatrix} x'_1 = x_1 - x_2 - t^2 \\ x'_2 = x_1 + 3x_2 + 2t \end{bmatrix}$	system_of_ODEs	✓	0.508
2768	$\begin{bmatrix} x'_1 = x_1 + 3x_2 + 2x_3 + \sin(t) \\ x'_2 = -x_1 + 2x_2 + x_3 \\ x'_3 = 4x_1 - x_2 - x_3 \end{bmatrix}$	system_of_ODEs	✓	1.110
2769	$\begin{bmatrix} x'_1 = x_1 + 2x_2 - 3x_3 + e^t \\ x'_2 = x_1 + x_2 + 2x_3 \\ x'_3 = x_1 - x_2 + 4x_3 - e^t \end{bmatrix}$	system_of_ODEs	✓	0.700
2770	$\begin{bmatrix} x'_1 = -x_1 - x_2 + 1 \\ x'_2 = -4x_2 - x_3 + t \\ x'_3 = 5x_2 + e^t \end{bmatrix}$	system_of_ODEs	✓	1.273
2771	$\begin{bmatrix} x'_1 = x_1 + x_2 - x_3 + e^{2t} \\ x'_2 = 2x_1 + 3x_2 - 4x_3 + 2e^{2t} \\ x'_3 = 4x_1 + x_2 - 4x_3 + e^{2t} \end{bmatrix}$	system_of_ODEs	✓	0.961

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
2772	$\begin{bmatrix} x'_1 = x_1 - x_2 - x_3 + e^{3t} \\ x'_2 = x_1 + 3x_2 + x_3 - e^{3t} \\ x'_3 = -3x_1 + x_2 - x_3 - e^{3t} \end{bmatrix}$	system_of_ODEs	✓	0.805
2773	$\begin{bmatrix} x'_1 = 3x_1 + 2x_2 + 4x_3 + 2e^{8t} \\ x'_2 = 2x_1 + 2x_3 + e^{8t} \\ x'_3 = 4x_1 + 2x_2 + 3x_3 + 2e^{8t} \end{bmatrix}$	system_of_ODEs	✓	0.727
2774	$\begin{bmatrix} x'_1 = x_1 - 3x_2 \\ x'_2 = -2x_1 + 2x_2 \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.373
2775	$\begin{bmatrix} x'_1 = x_1 - x_2 \\ x'_2 = 5x_1 - 3x_2 \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.441
2776	$\begin{bmatrix} x'_1 = 3x_1 - 2x_2 + t \\ x'_2 = 2x_1 - 2x_2 + 3e^t \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.317
2777	$\begin{bmatrix} x'_1 = x_1 + x_2 + 2e^t \\ x'_2 = 4x_1 + x_2 - e^t \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.311
2778	$\begin{bmatrix} x'_1 = 3x_1 - 4x_2 + e^t \\ x'_2 = x_1 - x_2 + e^t \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.289
2779	$\begin{bmatrix} x'_1 = 2x_1 - 5x_2 + \sin(t) \\ x'_2 = x_1 - 2x_2 + \tan(t) \end{bmatrix}$ i.c.	system_of_ODEs	✓	32.380
2780	$\begin{bmatrix} x'_1 = 4x_1 + 5x_2 + 4e^t \cos(t) \\ x'_2 = -2x_1 - 2x_2 \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.377
2781	$\begin{bmatrix} x'_1 = x_2 + f_1(t) \\ x'_2 = -x_1 + f_2(t) \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.852
2782	$\begin{bmatrix} x'_1 = 2x_1 - 2x_2 \\ x'_2 = 4x_1 - 2x_2 + \delta(t - \pi) \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.504

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
2783	$\begin{bmatrix} x'_1 = 3x_1 - 2x_2 + 1 - \text{Heaviside}(t - \pi) \\ x'_2 = 2x_1 - 2x_2 \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.463
2784	$\begin{bmatrix} x'_1 = x_1 + 2x_2 - 3x_3 \\ x'_2 = x_1 + x_2 + 2x_3 \\ x'_3 = x_1 - x_2 + 4x_3 \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.234
2785	$\begin{bmatrix} x'_1 = 2x_1 + x_3 + e^{2t} \\ x'_2 = 2x_2 \\ x'_3 = 3x_3 + e^{2t} \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.215
2786	$\begin{bmatrix} x'_1 = -x_1 - x_2 + 2x_3 + e^t \\ x'_2 = x_1 + x_2 + x_3 \\ x'_3 = 2x_1 + x_2 + 3x_3 \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.561
2787	$\begin{bmatrix} x'_1 = x_1 \\ x'_2 = 2x_1 + x_2 - 2x_3 \\ x'_3 = 3x_1 + 2x_2 + x_3 + e^t \cos(2t) \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.267
2788	$\begin{bmatrix} x'_1 = 3x_1 \\ x'_2 = x_1 + 3x_2 \\ x'_3 = 3x_3 \\ x'_4 = 2x_3 + 3x_4 \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.239
2789	$\begin{bmatrix} x' = x - x^2 - 2xy \\ y' = 2y - 2y^2 - 3xy \end{bmatrix}$	system_of_ODEs	✗	0.052
2790	$\begin{bmatrix} x' = -bxy + m \\ y' = bxy - gy \end{bmatrix}$	system_of_ODEs	✗	0.052
2791	$\begin{bmatrix} x' = ax - bxy \\ y' = -cy + dxy \\ z' = z + x^2 + y^2 \end{bmatrix}$	system_of_ODEs	✗	0.058
2792	$\begin{bmatrix} x' = -x - xy^2 \\ y' = -y - yx^2 \\ z' = 1 - z + x^2 \end{bmatrix}$	system_of_ODEs	✗	0.057

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
2793	$\begin{bmatrix} x' = x y^2 - x \\ y' = x \sin(\pi y) \end{bmatrix}$	system_of_ODEs	<del>X</del>	0.053
2794	$\begin{bmatrix} x' = \cos(y) \\ y' = \sin(x) - 1 \end{bmatrix}$	system_of_ODEs	<del>X</del>	0.025
2795	$\begin{bmatrix} x' = -1 - y - e^x \\ y' = x^2 + y(e^x - 1) \\ z' = x + \sin(z) \end{bmatrix}$	system_of_ODEs	<del>X</del>	0.059
2796	$\begin{bmatrix} x' = x - y^2 \\ y' = x^2 - y \\ z' = e^z - x \end{bmatrix}$	system_of_ODEs	<del>X</del>	0.056
2797	$\begin{bmatrix} x' = x - y \\ y' = 2x - y \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.505
2798	$\begin{bmatrix} x' = x + y + z - 2e^{-t} \\ y' = 2x + y - z - 2e^{-t} \\ z' = -3x + 2y + 4z + 3e^{-t} \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.700
2799	$\begin{bmatrix} x' = x + y \\ y' = -2x - 2y \end{bmatrix}$	system_of_ODEs	✓	0.315
2800	$\begin{bmatrix} x' = -3x - 4y \\ y' = 2x + y \end{bmatrix}$	system_of_ODEs	✓	0.431
2801	$\begin{bmatrix} x' = -5x + 3y \\ y' = y - x \end{bmatrix}$	system_of_ODEs	✓	0.537
2802	$\begin{bmatrix} x' = x - 4y \\ y' = 4x - 7y \end{bmatrix}$	system_of_ODEs	✓	0.297
2803	$\begin{bmatrix} x' = -7x + y - 6z \\ y' = 10x - 4y + 12z \\ z' = 2x - y + z \end{bmatrix}$	system_of_ODEs	✓	0.528
2804	$\begin{bmatrix} x' = 3x + 2y + 4z \\ y' = 2x + 2z \\ z' = 4x + 2y + 3z \end{bmatrix}$	system_of_ODEs	✓	0.457

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
2805	$\begin{bmatrix} x' = 2y + z \\ y' = -x - 3y - z \\ z' = x + y - z \end{bmatrix}$	system_of_ODEs	✓	0.464
2806	$\begin{bmatrix} x' = -2x + y + z \\ y' = -3x + 2y + 3z \\ z' = x - y - 2z \end{bmatrix}$	system_of_ODEs	✓	0.347
2807	$\begin{bmatrix} x' = 2y \\ y' = -2x \\ z' = 2h \\ h' = -2z \end{bmatrix}$	system_of_ODEs	✓	0.572
2808	$\begin{bmatrix} x' = 2y + z \\ y' = -2x + h \\ z' = 2h \\ h' = -2z \end{bmatrix}$	system_of_ODEs	✓	0.587
2809	$x' = x(1 - x)$	[_quadrature]	✓	1.608
2810	$x' = -x(1 - x)$	[_quadrature]	✓	1.388
2811	$x' = x^2$	[_quadrature]	✓	0.947
2812	$\begin{bmatrix} x'_1 = x_2 \\ x'_2 = -\frac{(x_1^2 + \sqrt{x_1^2 + 4x_2^2})x_1}{2} \end{bmatrix}$	system_of_ODEs	✗	0.054
2813	$\begin{bmatrix} x'_1 = -x_1 - x_2 + 1 \\ x'_2 = 2x_1 - x_2 + 5 \end{bmatrix}$	system_of_ODEs	✓	0.909
2814	$\begin{bmatrix} x' = x - x^3 - xy \\ y' = 2y - y^5 - yx^4 \end{bmatrix}$	system_of_ODEs	✗	0.052
2815	$\begin{bmatrix} x' = x^2 + y^2 + 1 \\ y' = x^2 - y^2 \end{bmatrix}$	system_of_ODEs	✗	0.051
2816	$\begin{bmatrix} x' = x^2 + y^2 - 1 \\ y' = 2xy \end{bmatrix}$	system_of_ODEs	✗	0.051
2817	$\begin{bmatrix} x' = 6x - 6x^2 - 2xy \\ y' = 4y - 4y^2 - 2xy \end{bmatrix}$	system_of_ODEs	✗	0.053

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
2818	$\begin{bmatrix} x' = \tan(x + y) \\ y' = x + x^3 \end{bmatrix}$	system_of_ODEs	✗	0.029
2819	$\begin{bmatrix} x' = e^y - x \\ y' = e^x + y \end{bmatrix}$	system_of_ODEs	✗	0.050
2820	$z'' + z^3 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓	1.659
2821	$z'' + z + z^5 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓	278.389
2822	$z'' + e^{z^2} = 1$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓	0.936
2823	$z'' + \frac{z}{1 + z^2} = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓	1.189
2824	$z'' + z - 2z^3 = 0$	[[_2nd_order, _missing_x], _Duffing, [_2nd_order, _reducible, _mu_x_y1]]	✓	2.128
2825	$\begin{bmatrix} x'_1 = -5x_1 + x_2 \\ x'_2 = x_1 - 5x_2 \end{bmatrix}$	system_of_ODEs	✓	0.321
2826	$\begin{bmatrix} x'_1 = -x_2 \\ x'_2 = 8x_1 - 6x_2 \end{bmatrix}$	system_of_ODEs	✓	0.349
2827	$\begin{bmatrix} x'_1 = 4x_1 - x_2 \\ x'_2 = -2x_1 + 5x_2 \end{bmatrix}$	system_of_ODEs	✓	0.333
2828	$\begin{bmatrix} x'_1 = -4x_1 - x_2 \\ x'_2 = x_1 - 6x_2 \end{bmatrix}$	system_of_ODEs	✓	0.300
2829	$\begin{bmatrix} x'_1 = x_1 - 4x_2 \\ x'_2 = -8x_1 + 4x_2 \end{bmatrix}$	system_of_ODEs	✓	0.550
2830	$\begin{bmatrix} x'_1 = 3x_1 - x_2 \\ x'_2 = 5x_1 - 3x_2 \end{bmatrix}$	system_of_ODEs	✓	0.338

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
2831	$\begin{bmatrix} x_1' = 2x_2 \\ x_2' = -2x_1 - x_2 \end{bmatrix}$	system_of_ODEs	✓	0.630
2832	$\begin{bmatrix} x_1' = x_1 - x_2 \\ x_2' = 5x_1 - 3x_2 \end{bmatrix}$	system_of_ODEs	✓	0.422
2833	$\begin{bmatrix} x_1' = 2x_1 + x_2 \\ x_2' = -5x_1 - 2x_2 \end{bmatrix}$	system_of_ODEs	✓	0.397
2834	$\begin{bmatrix} x_1' = 4x_2 \\ x_2' = -9x_1 \end{bmatrix}$	system_of_ODEs	✓	0.381
2835	i.c. $y'' + \lambda y = 0$	[[_2nd_order, _missing_x]]	✓	1.592
2836	i.c. $y'' + \lambda y = 0$	[[_2nd_order, _missing_x]]	✓	1.749
2837	i.c. $y'' - \lambda y = 0$	[[_2nd_order, _missing_x]]	✓	2.417
2838	i.c. $y'' + \lambda y = 0$	[[_2nd_order, _missing_x]]	✓	1.581
2839	i.c. $y'' - 2y' + (1 + \lambda)y = 0$	[[_2nd_order, _missing_x]]	✓	1.089
2840	i.c. $y'' + \lambda y = 0$	[[_2nd_order, _missing_x]]	✓	1.567
2841	$xy + (x^2 + 1)y' = 0$	[_separable]	✓	1.341
2842	$xy^2 + x + (y - x^2y)y' = 0$	[_separable]	✓	3.286
2843	$1 + y^2 + (x^2 + 1)y' = 0$	[_separable]	✓	1.833
2844	$y + xy' = 0$	[_separable]	✓	1.581
2845	$y' = 2xy$	[_separable]	✓	1.155
2846	$xy^2 + x + (x^2y - y)y' = 0$	[_separable]	✓	1.863
2847	$\sqrt{-x^2 + 1} + \sqrt{1 - y^2}y' = 0$	[_separable]	✓	2.132
2848	$(x + 1)y' - 1 + y = 0$	[_separable]	✓	1.488
2849	$y' \tan(x) - y = 1$	[_separable]	✓	1.542

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
2850	$y + 3 + \cot(x) y' = 0$	[_separable]	✓	1.677
2851	$y' = \frac{x}{y}$	[_separable]	✓	3.015
2852	$x' = 1 - \sin(2t)$	[_quadrature]	✓	0.376
2853	$y + xy' = y^2$	[_separable]	✓	1.714
2854	$\sin(x) \cos(y)^2 + \cos(x)^2 y' = 0$	[_separable]	✓	3.450
2855	$\sec(x) \cos(y)^2 = \cos(x) \sin(y) y'$	[_separable]	✓	6.852
2856	$y + xy' = xy(y' - 1)$	[_separable]	✓	1.329
2857	$xy + \sqrt{x^2 + 1} y' = 0$	[_separable]	✓	1.651
2858	$y = xy + x^2 y'$	[_separable]	✓	1.506
2859	$\tan(x) \sin(x)^2 + \cos(x)^2 \cot(y) y' = 0$	[_separable]	✓	5.431
2860	$y^2 + yy' + x^2 yy' - 1 = 0$	[_separable]	✓	3.776
2861	$y' = \frac{y}{x}$	[_separable]	✓	1.490
	i.c.			
2862	$xy' + 2y = 0$	[_separable]	✓	2.253
	i.c.			
2863	$\sin(x) \cos(y) + \cos(x) \sin(y) y' = 0$	[_separable]	✓	3.033
	i.c.			
2864	$x^2 y' + y^2 = 0$	[_separable]	✓	3.017
	i.c.			
2865	$y' = e^y$	[_quadrature]	✓	1.293
	i.c.			
2866	$e^y(y' + 1) = 1$	[_quadrature]	✓	1.763
	i.c.			
2867	$1 + y^2 = \frac{y'}{x^3(x-1)}$	[_separable]	✓	2.981
	i.c.			
2868	$x^2 + 3xy' = y^3 + 2y$	[_rational, _Abel]	✓	53.058
	i.c.			

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
2869	$(x^2 + x + 1)y' = y^2 + 2y + 5$ i.c.	[_separable]	✓	4.724
2870	$(x^2 - 2x - 8)y' = y^2 + y - 2$ i.c.	[_separable]	✓	4.487
2871	$x + y = xy'$	[_linear]	✓	1.238
2872	$(x + y)y' + x = y$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓	2.697
2873	$-y + xy' = \sqrt{xy}$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	7.744
2874	$y' = \frac{2x - y}{4y + x}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓	3.553
2875	$-y + xy' = \sqrt{x^2 - y^2}$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	82.714
2876	$x + yy' = 2y$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓	1.980
2877	$xy' - y + \sqrt{y^2 - x^2} = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓	3.795
2878	$y^2 + x^2 = xyy'$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓	4.560
2879	$(xy - x^2)y' - y^2 = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓	37.230
2880	$y + xy' = 2\sqrt{xy}$	[[_homogeneous, 'class A'], _dAlembert]	✓	9.214
2881	$x + y + (x - y)y' = 0$	[[_homogeneous, 'class A'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓	3.692
2882	$y(x^2 - xy + y^2) + xy'(y^2 + xy + x^2) = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	55.240

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
2883	$xy' - y - x \sin\left(\frac{y}{x}\right) = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓	3.360
2884	$y' = \frac{y}{x} + \cosh\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A'], _dAlembert]	✓	4.630
2885	<i>i.c.</i> $y^2 + x^2 = 2xyy'$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓	9.368
2886	$\left(\frac{x}{y} + \frac{y}{x}\right)y' + 1 = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	5.177
2887	<i>i.c.</i> $x e^{\frac{y}{x}} + y = xy'$	[[_homogeneous, 'class A'], _dAlembert]	✓	4.629
2888	<i>i.c.</i> $y' = \frac{x+y}{x-y}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓	4.711
2889	<i>i.c.</i> $y' = \frac{y}{x} + \tan\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A'], _dAlembert]	✓	5.273
2890	<i>i.c.</i> $(3xy - 2x^2)y' = 2y^2 - xy$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓	12.991
2891	$y' = \frac{y}{x - k\sqrt{y^2 + x^2}}$	[[_homogeneous, 'class A'], _dAlembert]	✓	79.210
2892	$y^2(yy' - x) + x^3 = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	53.224
2893	$y' = \frac{y}{x} + \tanh\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A'], _dAlembert]	✓	6.566
2894	$x + y - (x - y + 2)y' = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	1.800
2895	$x + (x - 2y + 2)y' = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class C'], _dAlembert]	✓	4.038

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
2896	$2x - y + 1 + (x + y)y' = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	3.747
2897	$x - y + 2 + (y - 1 + x)y' = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	1.874
2898	$x - y + (y - x + 1)y' = 0$	[[_homogeneous, 'class C'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓	1.407
2899	$y' = \frac{y - 1 + x}{x - y - 1}$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	1.793
2900	$x + y + (2x + 2y - 1)y' = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	1.262
2901	$x - y + 1 + (x - y - 1)y' = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	1.266
2902	$x + 2y + (3x + 6y + 3)y' = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	1.303
2903	$x + 2y + 2 = (2x + y - 1)y'$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	3.673
2904	$3x - y + 1 + (x - 3y - 5)y' = 0$ i.c.	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	10.863
2905	$6x - 3y + 6 + (2x - y + 5)y' = 0$ i.c.	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	1.780
2906	$2x + 3y + 2 + (y - x)y' = 0$ i.c.	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✗	1152.597
2907	$x + y + 4 = (2x + 2y - 1)y'$ i.c.	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	1.835

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
2908	$2x + 3y - 1 + (2x + 3y + 2)y' = 0$ i.c.	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓	1.747
2909	$3x - y + 2 + (x + 2y + 1)y' = 0$ i.c.	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓	4.374
2910	$3x + 2y + 3 - (x + 2y - 1)y' = 0$ i.c.	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓	27.605
2911	$x - 2y + 3 + (1 - x + 2y)y' = 0$ i.c.	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓	1.696
2912	$2x + y + (4x + 2y + 1)y' = 0$ i.c.	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓	1.763
2913	$2x + y + (4x - 2y + 1)y' = 0$ i.c.	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓	45.492
2914	$x + y + (x - 2y)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓	3.933
2915	$3x + y + (3y + x)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓	3.740
2916	$a_1x + b_1y + c_1 + (b_1x + b_2y + c_2)y' = 0$	[[_homogeneous, 'class C', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓	2.909
2917	$x(6xy + 5) + (2x^3 + 3y)y' = 0$	[_exact, _rational, [_1st_order, 'with_symmetry_[F(x),G(x)]', [_Abel, '2nd type', 'class A']]]	✓	1.347
2918	$3x^2y + xy^2 + e^x + (x^3 + x^2y + \sin(y))y' = 0$	[_exact]	✓	1.981

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
2919	$2xy - (y^2 + x^2)y' = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	4.728
2920	$\cos(x)y - 2\sin(y) = (2x\cos(y) - \sin(x))y'$	[_exact]	✓	9.870
2921	$\frac{2xy - 1}{y} + \frac{(3y + x)y'}{y^2} = 0$	[[_homogeneous, 'class D'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓	1.893
2922	$ye^x - 2x + e^xy' = 0$	[[_linear, 'class A']]	✓	1.527
2923	$3y\sin(x) - \cos(y) + (x\sin(y) - 3\cos(x))y' = 0$	[_exact]	✓	38.967
2924	$xy^2 + 2y + (2y^3 - x^2y + 2x)y' = 0$	[_rational]	✗	1.429
2925	$\frac{2}{y} - \frac{y}{x^2} + \left(\frac{1}{x} - \frac{2x}{y^2}\right)y' = 0$	[_separable]	✓	1.492
2926	$\frac{xy + 1}{y} + \frac{(2y - x)y'}{y^2} = 0$	[[_homogeneous, 'class D'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓	1.556
2927	$\frac{y(2 + x^3y)}{x^3} = \frac{(1 - 2x^3y)y'}{x^2}$	[[_homogeneous, 'class G'], _exact, _rational, [_Abel, '2nd type', 'class B']]	✓	2.510
2928	$y^2 \csc(x)^2 + 6xy - 2 = (2y \cot(x) - 3x^2)y'$	[_exact, [_Abel, '2nd type', 'class B']]	✓	48.605
2929	$\frac{2y}{x^3} + \frac{2x}{y^2} = \left(\frac{1}{x^2} + \frac{2x^2}{y^3}\right)y'$	[[_homogeneous, 'class G'], _exact, _rational]	✓	3.005
2930	$\cos(y) - (x\sin(y) - y^2)y' = 0$	[_exact, [_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓	4.481
2931	$2y\sin(xy) + (2x\sin(xy) + y^3)y' = 0$	[_exact]	✓	42.336

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
2932	$\frac{x \cos\left(\frac{x}{y}\right)}{y} + \sin\left(\frac{x}{y}\right) + \cos(x) - \frac{x^2 \cos\left(\frac{x}{y}\right) y'}{y^2} = 0$	[_exact]	✓	5.490
2933	$y e^{xy} + 2xy + (x e^{xy} + x^2) y' = 0$	[_exact]	✓	2.050
2934	$\frac{x^2 + 3y^2}{x(3x^2 + 4y^2)} + \frac{(2x^2 + y^2) y'}{y(3x^2 + 4y^2)} = 0$	[[_homogeneous, 'class A'], _exact, _rational, _dAlembert]	✓	22.681
2935	$\frac{x^2 - y^2}{x(2x^2 + y^2)} + \frac{(x^2 + 2y^2) y'}{y(2x^2 + y^2)} = 0$	[[_homogeneous, 'class A'], _exact, _rational, _dAlembert]	✓	29.975
2936	$\frac{2x^2}{y^2 + x^2} + \ln(y^2 + x^2) + \frac{2xy y'}{y^2 + x^2} = 0$	[_exact]	✓	1.839
2937	$xy' + \ln(x) - y = 0$	[_linear]	✓	0.954
2938	$xy + (y + x^2) y' = 0$	[[_homogeneous, 'class G'], _rational, [_Abel, '2nd type', 'class A']]	✓	2.189
2939	$(x - 2xy) y' + 2y = 0$	[_separable]	✓	1.541
2940	$x^2 y + y^2 + x^3 y' = 0$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓	1.733
2941	$xy^3 - 1 + x^2 y^2 y' = 0$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓	2.610
2942	$(x^3 y^3 - 1) y' + x^2 y^4 = 0$	[[_homogeneous, 'class G'], _rational]	✓	2.023
2943	$y(y - x^2) + x^3 y' = 0$	[[_homogeneous, 'class D'], _rational, _Bernoulli]	✓	1.811
2944	$y + xy^2 + (x - x^2 y) y' = 0$	[[_homogeneous, 'class G'], _rational, [_Abel, '2nd type', 'class B']]	✓	1.574
2945	$(x - x\sqrt{x^2 - y^2}) y' - y = 0$	['y=_G(x,y)']	✗	4.218

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
2946	$2xy + (y - x^2) y' = 0$	[[_homogeneous, 'class G'], _rational, [_Abel, '2nd type', 'class A']]	✓	1.430
2947	$y = x(x^2y - 1) y'$	[[_homogeneous, 'class G'], _rational, [_Abel, '2nd type', 'class B']]	✓	6.895
2948	$e^x y' = 2xy^2 + y e^x$	[_Bernoulli]	✓	2.069
2949	$(x^2 + y^2 + x) y' = y$	[_rational]	✓	1.134
2950	$(2x + 3x^2y) y' + y + 2xy^2 = 0$	[[_homogeneous, 'class G'], _rational, [_Abel, '2nd type', 'class B']]	✓	1.800
2951	$2x^2yy' + x^4e^x - 2xy^2 = 0$	[[_homogeneous, 'class D'], _Bernoulli]	✓	1.763
2952	i.c. $y(1 - x^4y^2) + xy' = 0$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓	2.839
2953	i.c. $y(x^2 - 1) + x(x^2 + 1) y' = 0$	[_separable]	✓	1.774
2954	i.c. $y^2x^2 - y + (2x^3y + x) y' = 0$	[[_homogeneous, 'class G'], _rational, [_Abel, '2nd type', 'class B']]	✓	2.878
2955	i.c. $(x^2 + y^2 - 2y) y' = 2x$	[_rational, [_1st_order, '_with_symmetry_[F(x)*G(y),0']]]	✓	1.254
2956	i.c. $y - x^2\sqrt{x^2 - y^2} - xy' = 0$	[[_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)']]]	✗	36.855
2957	i.c. $y(x + y^2) + x(x - y^2) y' = 0$	[[_homogeneous, 'class G'], _rational]	✓	135.538
2958	$xy' + 2y = x^2$	[_linear]	✓	1.339
2959	$y' - xy = e^{\frac{x^2}{2}} \cos(x)$	[_linear]	✓	1.520
2960	$y' + 2xy = 2x e^{-x^2}$	[_linear]	✓	2.265
2961	$y' = y + 3e^x x^2$	[[_linear, 'class A']]	✓	1.450
2962	$x' + x = e^{-y}$	[[_linear, 'class A']]	✓	0.933

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
2963	$yx' + (1 + y)x = e^y$	[_linear]	✓	1.208
2964	$y + (2x - 3y)y' = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓	5.032
2965	$xy' - 2x^4 - 2y = 0$	[_linear]	✓	1.337
2966	$1 = (e^y + x)y'$	[[_1st_order, _with_exponential_symmetries]]	✓	1.114
2967	$y^2x' + (y^2 + 2y)x = 1$	[_linear]	✓	1.973
2968	$xy' = 5y + x + 1$	[_linear]	✓	1.427
2969	$x^2y' + y - 2xy - 2x^2 = 0$	[_linear]	✓	1.499
2970	$(x + 1)y' + 2y = \frac{e^x}{x + 1}$	[_linear]	✓	1.569
2971	$\cos(y)^2 + (x - \tan(y))y' = 0$	[[_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓	3.841
2972	$2y = (y^4 + x)y'$	[[_homogeneous, 'class G'], _rational]	✓	2.289
2973	$\cos(\theta)r' = 2 + 2r \sin(\theta)$	[_linear]	✓	1.784
2974	$\sin(\theta)r' + 1 + r \tan(\theta) = \cos(\theta)$	[_linear]	✓	4.957
2975	$yx' = 2ye^{3y} + x(3y + 2)$	[_linear]	✓	1.812
2976	<i>i.c.</i> $y^2 + 1 + (2xy - y^2)y' = 0$	[_exact, _rational, [_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓	3.133
2977	$y' + y \cot(x) - \sec(x) = 0$	[_linear]	✓	1.497
2978	<i>i.c.</i> $y + y^3 + 4(xy^2 - 1)y' = 0$	[_rational, [_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓	1.714
2979	<i>i.c.</i> $2y - xy - 3 + xy' = 0$	[_linear]	✓	1.389
2980	<i>i.c.</i> $y + 2(x - 2y^2)y' = 0$	[[_homogeneous, 'class G'], _rational]	✓	4.950

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
2981	$(x^2 - 1)y' + (x^2 - 1)^2 + 4y = 0$ i.c.	[_linear]	✓	1.500
2982	$3y^2y' - xy^3 = e^{\frac{x^2}{2}} \cos(x)$	[_Bernoulli]	✓	3.276
2983	$y^3y' + xy^4 = xe^{-x^2}$	[_Bernoulli]	✓	3.277
2984	$\cosh(y)y' + \sinh(y) - e^{-x} = 0$	['y=_G(x,y)']	✓	2.058
2985	$\sin(\theta)\theta' + \cos(\theta) - te^{-t} = 0$	['y=_G(x,y)']	✓	2.499
2986	$xyy' = x^2 - y^2$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓	4.385
2987	$y' - xy = \sqrt{y}xe^{x^2}$	[_Bernoulli]	✓	1.543
2988	$tx' + x(1 - x^2t^4) = 0$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓	2.324
2989	$x^2y' + y^2 = xy$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓	1.799
2990	$\csc(y)\cot(y)y' = \csc(y) + e^x$	['y=_G(x,y)']	✓	2.434
2991	$y' - xy = \frac{x}{y}$	[_separable]	✓	1.549
2992	$y + xy' = y^2x^2 \cos(x)$	[_Bernoulli]	✓	3.083
2993	$r' + \left(r - \frac{1}{r}\right)\theta = 0$	[_separable]	✓	1.562
2994	$xy' + 2y = 3x^3y^{4/3}$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓	7.084
2995	$3y' + \frac{2y}{x+1} = \frac{x}{y^2}$	[_rational, _Bernoulli]	✓	2.200
2996	$\cos(y)y' + (\sin(y) - 1)\cos(x) = 0$	[_separable]	✓	39.707
2997	$(x \tan(y)^2 + x)y' = 2x^2 + \tan(y)$	['y=_G(x,y)']	✓	1.595
2998	$y' + \cos(x)y = y^3 \sin(x)$	[_Bernoulli]	✓	3.138

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
2999	<i>i.c.</i> $y' + y = y^2 e^{-t}$	[[_1st_order, _with_linear_symmetries], _Bernoulli]	✓	1.602
3000	<i>i.c.</i> $y' = x(1 - e^{2y-x^2})$	[[_1st_order, '_with_symmetry_[F(x),G(y)]']]	✓	2.040
3001	<i>i.c.</i> $2y = (x^2 y^4 + x) y'$	[[_homogeneous, 'class G'], _rational]	✓	3.178
3002	<i>i.c.</i> $1 + xy(1 + xy^2) y' = 0$	[[_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓	10.843
3003	<i>i.c.</i> $(-x^2 + 1) y' + xy = x(-x^2 + 1) \sqrt{y}$	[_rational, _Bernoulli]	✗	15.823
3004	$(1 - x) y' - 1 - y = 0$	[_separable]	✓	1.527
3005	$y^2 + (xy + x^2) y' = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓	5.973
3006	$2x + y - (x - 2y) y' = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓	2.671
3007	$x \ln(x) y' + y - x = 0$	[_linear]	✓	1.136
3008	$x - 2y + 1 + (y - 2) y' = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	1.796
3009	$2xy - 2xy^3 + x^3 + (x^2 + y^2 - 3y^2 x^2) y' = 0$	[_exact, _rational]	✓	1.665
3010	$2e^x - t^2 + t e^x x' = 0$	[[_1st_order, _with_linear_symmetries]]	✓	1.312
3011	$2y + 6 = xyy'$	[_separable]	✓	1.843
3012	$x - 3y = (3y - x + 2) y'$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	1.336
3013	$y \sin(x) - 2 \cos(y) + \tan(x) - (\cos(x) - 2x \sin(y) + \sin(y)) y' = 0$	[_exact]	✓	42.111

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
3014	$x^2y - (x^3 + y^3)y' = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	8.874
3015	$y - xy' = 2y^2 + 2y'$	[_separable]	✓	1.740
3016	$\tan(y) = (3x + 4)y'$	[_separable]	✓	2.451
3017	$y' + y \ln(y) \tan(x) = 2y$	[[_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]]]	✓	1.325
3018	$2xy + y^4 + (xy^3 - 2x^2)y' = 0$	[[_homogeneous, 'class G'], _rational]	✓	2.408
3019	$y + (-2y + 3x)y' = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓	13.201
3020	$r' = r \cot(\theta)$	[_separable]	✓	1.378
3021	$(3x + 4y)y' + 2x + y = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓	2.543
3022	$2x^3 - y^3 - 3x + 3xy^2y' = 0$	[_rational, _Bernoulli]	✓	1.747
3023	$xy' - y - \sqrt{y^2 + x^2} = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	6.569
3024	$y' = \cos(y) \cos(x)^2$	[_separable]	✓	2.067
3025	$x + y + (2x + 3y - 1)y' = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	2.807
3026	$1 + e^{\frac{x}{y}} + e^{\frac{x}{y}} \left(1 - \frac{x}{y}\right) y' = 0$	[[_homogeneous, 'class A'], _exact, _dAlembert]	✓	4.184
3027	$y' + x + y \cot(x) = 0$	[_linear]	✓	1.188
3028	$-6 + 3x = xyy'$	[_separable]	✓	1.248
3029	$x - 2xy + e^y + (y - x^2 + xe^y)y' = 0$	[_exact]	✓	1.657
3030	$2xy' - y + \frac{x^2}{y^2} = 0$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓	2.589

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
3031	$xy' + y(1 + y^2) = 0$	[_separable]	✓	3.919
3032	$y\sqrt{y^2 + x^2} + xy = x^2y'$	[[_homogeneous, 'class A'], _dAlembert]	✓	18.022
3033	$3e^x \tan(y) = (1 - e^x) \sec(y)^2 y'$	[_separable]	✓	2.984
3034	$\sec(y)^2 y' = \tan(y) + 2xe^x$	['y=_G(x,y)']	✓	2.470
3035	$2x \tan(y) + 3y^2 + x^2 + (x^2 \sec(y)^2 + 6xy - y^2) y' = 0$	[_exact]	✓	50.432
3036	$y \cos\left(\frac{x}{y}\right) - \left(y + x \cos\left(\frac{x}{y}\right)\right) y' = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓	6.816
3037	$y(3x^2 + y) - x(x^2 - y) y' = 0$	[[_homogeneous, 'class G'], _rational, [_Abel, '2nd type', 'class B']]	✓	2.896
3038	$x + (2x + 3y + 2) y' = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class C'], _dAlembert]	✓	2.233
3039	$xy' - 5y - x\sqrt{y} = 0$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓	3.632
3040	$x\sqrt{1-y} - \sqrt{-x^2+1} y' = 0$ i.c.	[_separable]	✓	2.618
3041	$xy - y^2 - x^2 y' = 0$ i.c.	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓	2.773
3042	$xe^{-y^2} + yy' = 0$ i.c.	[_separable]	✓	1.837
3043	$\frac{2y^3 - 2x^2y^3 - x + xy^2 \ln(y)}{xy^2} + \frac{(2y^3 \ln(x) - x^2y^3 + 2x + xy^2) y'}{y^3} = 0$ i.c.	[_exact]	✓	4.841
3044	$xy' - 2y - 2x^4y^3 = 0$ i.c.	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓	3.511

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
3045	<i>i.c.</i> $(-2x^2 - 3xy)y' + y^2 = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓	7.050
3046	<i>i.c.</i> $xy' = x^4 + 4y$	[_linear]	✓	1.277
3047	<i>i.c.</i> $y + xy' = x^3y^6$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓	8.022
3048	<i>i.c.</i> $x' = x + x^2e^{\theta}$	[[_1st_order, _with_linear_symmetries], _Bernoulli]	✓	1.608
3049	<i>i.c.</i> $y^2 + x^2 = 2xyy'$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓	9.232
3050	<i>i.c.</i> $3xy + (3x^2 + y^2)y' = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	37.858
3051	<i>i.c.</i> $y' + 2y = 3e^{2x}$	[[_linear, 'class A']]	✓	1.346
3052	<i>i.c.</i> $4xy^2 + (x^2 + 1)y' = 0$	[_separable]	✓	2.291
3053	<i>i.c.</i> $x - 2y + 3 = (x - 2y + 1)y'$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	1.666
3054	<i>i.c.</i> $y^2 + (x^3 - 2xy)y' = 0$	[[_homogeneous, 'class G'], _rational, [_Abel, '2nd type', 'class B']]	✓	4.324
3055	<i>i.c.</i> $2xy - 2y + 1 + x(x - 1)y' = 0$	[_linear]	✓	1.465
3056	<i>i.c.</i> $y^3 + 2x^2y + (-3x^3 - 2xy^2)y' = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	348.429
3057	<i>i.c.</i> $2(x^2 + 1)y' = (2y^2 - 1)xy$	[_separable]	✓	13.618
3058	$y' - y = 0$	[_quadrature]	✓	0.963
3059	$y'' - 4y = 0$	[[_2nd_order, _missing_x]]	✓	2.317

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
3060	$y'' + 7y' + 12y = 0$	[[_2nd_order, _missing_x]]	✓	0.895
3061	$y'' - 3y' + 2y = 0$	[[_2nd_order, _missing_x]]	✓	0.898
3062	$y'' - 7y' + 6y = 0$	[[_2nd_order, _missing_x]]	✓	0.928
3063	$2y'' + 3y' - 2y = 0$	[[_2nd_order, _missing_x]]	✓	0.942
3064	$y'' - 2y' - y = 0$	[[_2nd_order, _missing_x]]	✓	1.136
3065	$y'' - 2y' - 2y = 0$	[[_2nd_order, _missing_x]]	✓	1.148
3066	$y'' - 3y' + y = 0$	[[_2nd_order, _missing_x]]	✓	1.250
3067	$2y'' + 2y' - y = 0$	[[_2nd_order, _missing_x]]	✓	1.245
3068	$2y''' - y'' - 2y' + y = 0$	[[_3rd_order, _missing_x]]	✓	0.078
3069	$y''' - 3y'' - 4y' + 12y = 0$	[[_3rd_order, _missing_x]]	✓	0.078
3070	$y''' - 4y'' + y' + 6y = 0$	[[_3rd_order, _missing_x]]	✓	0.076
3071	$y'''' - 6y'' + 8y = 0$	[[_high_order, _missing_x]]	✓	0.084
3072	$y''' - 7y' + 6y = 0$	[[_3rd_order, _missing_x]]	✓	0.077
3073	$y''' - 6y'' + 11y' - 6y = 0$	[[_3rd_order, _missing_x]]	✓	0.078
3074	$y''' - 4y'' - 17y' + 60y = 0$	[[_3rd_order, _missing_x]]	✓	0.078
3075	$y''' - 9y'' + 23y' - 15y = 0$	[[_3rd_order, _missing_x]]	✓	0.077
3076	$y'''' + y''' - 7y'' - y' + 6y = 0$	[[_high_order, _missing_x]]	✓	0.082
3077	$2y'''' - 3y''' - 20y'' + 27y' + 18y = 0$	[[_high_order, _missing_x]]	✓	0.086

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
3078	$12y'''' - 4y''' - 3y'' + y' = 0$	[[_high_order, _missing_x]]	✓	0.087
3079	$y''' - 4y'' + 3y' = 0$	[[_3rd_order, _missing_x]]	✓	0.072
3080	$4y''' + 2y'' - 4y' + y = 0$	[[_3rd_order, _missing_x]]	✓	0.082
3081	$y''' - 5y'' - 2y' + 24y = 0$	[[_3rd_order, _missing_x]]	✓	0.078
3082	$y'''' + 2y''' - 7y'' - 8y' + 12y = 0$	[[_high_order, _missing_x]]	✓	0.088
3083	$y^{(5)} - 3y'''' - 5y''' + 15y'' + 4y' - 12y = 0$	[[_high_order, _missing_x]]	✓	0.088
3084	$y^{(5)} + y'''' - 13y''' - 13y'' + 36y' + 36y = 0$	[[_high_order, _missing_x]]	✓	0.086
3085	$y^{(5)} + 3y'''' - 15y''' - 19y'' + 30y' = 0$	[[_high_order, _missing_x]]	✓	0.086
3086	$y'''' + 3y'' - 4y = 0$	[[_high_order, _missing_x]]	✓	0.084
3087	$y^{(5)} + 3y''' + 2y' = 0$	[[_high_order, _missing_x]]	✓	0.091
3088	$y'' - 2y' + y = 0$	[[_2nd_order, _missing_x]]	✓	0.965
3089	$y'' = 0$	[[_2nd_order, _quadrature]]	✓	1.426
3090	$2y''' + y'' - 4y' - 3y = 0$	[[_3rd_order, _missing_x]]	✓	0.080
3091	$y''' - 3y'' + 3y' - y = 0$	[[_3rd_order, _missing_x]]	✓	0.078
3092	$y'''' = 0$	[[_high_order, _quadrature]]	✓	0.042
3093	$y''' + y'' - y' - y = 0$	[[_3rd_order, _missing_x]]	✓	0.078
3094	$4y''' - 3y' + y = 0$	[[_3rd_order, _missing_x]]	✓	0.078
3095	$4y^{(5)} - 3y''' - y'' = 0$	[[_high_order, _missing_x]]	✓	0.083

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
3096	$y''' - 7y'' + 16y' - 12y = 0$	[[_3rd_order, _missing_x]]	✓	0.079
3097	$4y''' - 8y'' + 5y' - y = 0$	[[_3rd_order, _missing_x]]	✓	0.079
3098	$y'''' - y = 0$	[[_high_order, _missing_x]]	✓	0.082
3099	$y''' - 8y = 0$	[[_3rd_order, _missing_x]]	✓	0.085
3100	$y'' - 2y' + 3y = 0$	[[_2nd_order, _missing_x]]	✓	2.247
3101	$y'''' + y'' - 20y = 0$	[[_high_order, _missing_x]]	✓	0.087
3102	$y'''' + 5y'' + 6y = 0$	[[_high_order, _missing_x]]	✓	0.090
3103	$y'''' - 4y''' + 6y'' - 8y' + 8y = 0$	[[_high_order, _missing_x]]	✓	0.089
3104	$y'''' - 2y''' - 6y' + 2y = 0$	[[_high_order, _missing_x]]	✓	0.106
3105	$y'''' + y''' - 3y'' - 4y' - 4y = 0$	[[_high_order, _missing_x]]	✓	0.093
3106	$2y''' - 3y'' + 10y' - 15y = 0$	[[_3rd_order, _missing_x]]	✓	0.089
3107	$2y''' - 3y'' + 11y' - 40y = 0$	[[_3rd_order, _missing_x]]	✓	0.090
3108	$y'''' - 3y''' + 4y'' - 12y' + 16y = 0$	[[_high_order, _missing_x]]	✓	0.095
3109	$4y''' + 12y'' - 3y' + 14y = 0$	[[_3rd_order, _missing_x]]	✓	0.088
3110	$y^{(5)} - y'''' + 6y''' - 6y'' + 8y' - 8y = 0$	[[_high_order, _missing_x]]	✓	0.099
3111	$y'' - 4y = 3 \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.614
3112	$y'' + y = \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.906
3113	$y'' + y' - 2y = e^x$	[[_2nd_order, _with_linear_symmetries]]	✓	1.262

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
3114	$y'' + 3y' + 2y = e^{-2x}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.108
3115	$y'' + y' + y = \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	47.694
3116	$y'' + y' + y = x^2$	[[_2nd_order, _with_linear_symmetries]]	✓	32.129
3117	$y'' + 3y' + 2y = x e^{-x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.217
3118	$y'''' - y = e^x$	[[_high_order, _with_linear_symmetries]]	✓	0.134
3119	$y'' - 4y = x + e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.454
3120	$y'' - 9y = e^{3x} + \sin(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	2.178
3121	$y'' - y' - 6y = x^3$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.776
3122	$-2y'' + 3y = x e^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.510
3123	$y'' + 4y = x \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	4.141
3124	$y''' - 4y'' = x^2 + 8$	[[_3rd_order, _missing_y]]	✓	0.129
3125	$y'' + y' + y = e^x \sin(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	76.598
3126	$y''' - 3y'' + 4y' - 12y = x + e^{2x}$	[[_3rd_order, _with_linear_symmetries]]	✓	0.172
3127	$y''' - 4y'' + y' - 4y = e^{4x} \sin(x)$	[[_3rd_order, _linear, _nonhomogeneous]]	✓	0.187
3128	$y'' + 4y' + 4y = x^3 e^{2x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.306
3129	$y''' - 2y'' + y' - 2y = x e^{2x}$	[[_3rd_order, _linear, _nonhomogeneous]]	✓	0.154
3130	$y'''' + 2n^2 y'' + n^4 y = \sin(kx)$	[[_high_order, _linear, _nonhomogeneous]]	✓	0.193

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
3131	$y'' + 2ny' + n^2y = 5 \cos(6x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.700
3132	$y'' + 9y = (1 + \sin(3x)) \cos(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	9.712
3133	$y'' + 4y' + 5y = 2x - e^{-4x} + \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	20.902
3134	$y''' + 2y'' = (2x^2 + x) e^{-2x} + 5 \cos(3x)$	[[_3rd_order, _missing_y]]	✓	1.339
3135	$y'' + 4y = 8 \sin(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	4.583
3136	$y'''' + 4y = 5 e^{2x} \sin(3x)$	[[_high_order, _linear, _nonhomogeneous]]	✓	0.223
3137	<i>i.c.</i> $y'' - 5y' - 6y = e^{3x}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.895
3138	<i>i.c.</i> $y'' + 4y = 12 \cos(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	5.037
3139	<i>i.c.</i> $y'' - 3y' + 2y = x e^{-x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.577
3140	<i>i.c.</i> $y'' + y = e^x \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.444
3141	<i>i.c.</i> $2y'' + y' = 8 \sin(2x) + e^{-x}$	[[_2nd_order, _missing_y]]	✓	3.872
3142	<i>i.c.</i> $y'' + y = 3x \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	4.319
3143	<i>i.c.</i> $2y'' + 5y' - 3y = \sin(x) - 8x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	2.448
3144	<i>i.c.</i> $8y'' - y = x e^{-\frac{x}{2}}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	2.322
3145	$y'' + y = \sec(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.115
3146	$y'' + 4y' + 4y = e^x$	[[_2nd_order, _with_linear_symmetries]]	✓	1.144
3147	$y'' + 4y = x^2$	[[_2nd_order, _with_linear_symmetries]]	✓	3.234

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
3148	$y'' - 2y' + y = e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.158
3149	$y'' + y = 4 \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.973
3150	$y'' + 4y = 2x - 2 \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	4.227
3151	$y'' - y = 3x + 5e^x$	[[_2nd_order, _with_linear_symmetries]]	✓	1.438
3152	$y'' + 9y = e^x + \sin(4x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	7.516
3153	$y''' + 3y'' - 4y' = \cos(2x)$	[[_3rd_order, _missing_y]]	✓	0.168
3154	$y''' + 4y'' - 5y' = e^{3x}$	[[_3rd_order, _missing_y]]	✓	0.123
3155	$y'' + y = \tan(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.389
3156	$y'' + a^2y = \sec(ax)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.713
3157	$y''' - 2y'' + y' = e^{2x}$	[[_3rd_order, _missing_y]]	✓	0.125
3158	$y'''' - 2y''' + y'' = x^2$	[[_high_order, _missing_y]]	✓	0.138
3159	$y''' - 3y'' - 4y' = e^{2x} + \sin(x)$	[[_3rd_order, _missing_y]]	✓	0.198
3160	$y'' - 2y' + y = \frac{e^x}{(1-x)^2}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.042
3161	$y'' - 3y' + 2y = \sin(e^{-x})$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.664
3162	$y'' + 4y = \sec(x) \tan(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	6.168
3163	$y'' - 2y = e^{-x} \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	2.408
3164	$y'' + 9y = \sec(x) \csc(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	7.078
3165	$y'' + 9y = \csc(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	6.445

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
3166	$y'' + y = \tan\left(\frac{x}{3}\right)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	14.092
3167	$y''' + y' = \tan(x)$	[[_3rd_order, _missing_y]]	✓	0.602
3168	$4y'' - 4y' + y = e^{\frac{x}{2}} \ln(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.335
3169	$y' + P(x)y = Q(x)$	[_linear]	✓	1.460
3170	$y'' - 6y' + 9y = e^{3x}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.227
3171	$y''' - 3y'' + 3y' - y = e^x$	[[_3rd_order, _with_linear_symmetries]]	✓	0.154
3172	$y'' - 5y' + 6y = x^2$	[[_2nd_order, _with_linear_symmetries]]	✓	1.364
3173	$y'' + 4y = 2e^x$	[[_2nd_order, _with_linear_symmetries]]	✓	2.678
3174	$y'' + 3y = 3e^{-4x}$	[[_2nd_order, _with_linear_symmetries]]	✓	3.930
3175	$y'' + 4y' + 4y = \frac{e^x}{2} + \frac{e^{-x}}{2}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.280
3176	$y'' + y' - 2y = e^{-2x}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.217
3177	$y'' + 2y = \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	4.424
3178	$y'' + 4y' + 4y = \frac{e^{3x}}{2} - \frac{e^{-3x}}{2}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.302
3179	$y'' + 3y' - 2y = \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	2.503
3180	$y'' + 3y' + 2y = e^x \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.637
3181	$y''' - y = e^x$	[[_3rd_order, _with_linear_symmetries]]	✓	0.135
3182	$y''' - 4y'' + y' - 4y = \sin(x) - e^{4x}$	[[_3rd_order, _linear, _nonhomogeneous]]	✓	0.895
3183	$y'''' + 3y'' - 4y = 4e^x + 3\cos(2x)$	[[_high_order, _linear, _nonhomogeneous]]	✓	0.747

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
3184	$y'' + y = e^{3x}(1 + \sin(2x))$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.353
3185	$y'' + 2n^2y' + n^4y = \sin(kx)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.763
3186	$y'' + 4y' + 5y = \frac{e^x}{2} + \frac{e^{-x}}{2}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	13.977
3187	$y'' + y' - 2y = xe^{-x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.345
3188	$y'' + 4y = xe^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	2.747
3189	$y'' + 2y = x^2e^{-x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	4.494
3190	$y'' - y' - 2y = x^2 - 8$	[[_2nd_order, _with_linear_symmetries]]	✓	1.353
3191	$y''' - y = x^2$	[[_3rd_order, _with_linear_symmetries]]	✓	0.143
3192	$y''' + 4y'' - 5y' = x^2e^{-x}$	[[_3rd_order, _missing_y]]	✓	0.158
3193	$y'''' - 2y''' + y'' = x^2$	[[_high_order, _missing_y]]	✓	0.153
3194	$y''' - y' = e^x(\sin(x) - x^2)$	[[_3rd_order, _missing_y]]	✓	0.248
3195	$y''' - 4y'' = e^{2x}(x - 3)$	[[_3rd_order, _missing_y]]	✓	0.150
3196	$y'''' - 6y''' + 9y'' = \sin(3x) + xe^x$	[[_high_order, _missing_y]]	✓	0.484
3197	$y''' - 6y'' + 11y' - 6y = x^2e^{2x}$	[[_3rd_order, _linear, _nonhomogeneous]]	✓	0.166
3198	$y''' + 2y' = x^2 + \cos(x)$	[[_3rd_order, _missing_y]]	✓	0.214
3199	$y'''' + 3y'' - y' + 2y = \sin(2x)$	[[_high_order, _linear, _nonhomogeneous]]	✓	0.228
3200	$y'''' + 2y'' + y' = x^3 - \frac{\cos(2x)}{2}$	[[_high_order, _missing_y]]	✓	0.358

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
3201	$y''' + 4y'' + 5y' = e^{-2x} \cos(x)$	[[_3rd_order, _missing_y]]	✓	0.655
3202	$y''' + y'' - 2y' = e^{-2x} \cos(2x)$	[[_3rd_order, _missing_y]]	✓	0.197
3203	$y''' + 2y' = x^2 \sin(x)$	[[_3rd_order, _missing_y]]	✓	0.212
3204	$y'''' - y = x^2 \cos(x)$	[[_high_order, _linear, _nonhomogeneous]]	✓	1.103
3205	$y'' + 4y = x \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	4.286
3206	$y'' + y = x^2 \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	4.885
3207	$y'' - y = x^2 \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.752
3208	$y''' + 4y' = e^x + \sin(x)$	[[_3rd_order, _missing_y]]	✓	0.178
3209	$y^{(5)} + y'''' = x^2$	[[_high_order, _missing_y]]	✓	0.156
3210	$2y'' + 3y' - 2y = e^x x^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.311
3211	$y''' + y' = \sin(x)$	[[_3rd_order, _missing_y]]	✓	0.720
3212	$y''' - y' = x \sin(x)$	[[_3rd_order, _missing_y]]	✓	0.178
3213	$y''' + 2y'' = x \cos(2x)$	[[_3rd_order, _missing_y]]	✓	0.244
3214	$y'' + 3y' + 2y = x^2 \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.997
3215	$y'' - 4y' + 3y = x^2 \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.958
3216	$y'' - y = x \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.858
3217	$y'' + 2y' = x^3 \sin(2x)$	[[_2nd_order, _missing_y]]	✓	4.053
3218	$y'' - y' = x e^{2x} \sin(x)$	[[_2nd_order, _missing_y]]	✓	2.797

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
3219	$y'' - 4y = x e^{2x} \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.799
3220	$y'' + 2y' = x^2 e^{-x} \sin(x)$	[[_2nd_order, _missing_y]]	✓	3.038
3221	$x^2 y'' - 4xy' + y = 0$	[[_Emden, _Fowler]]	✓	1.770
3222	$x^2 y'' + xy' + 16y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)']]	✓	1.657
3223	$4x^2 y'' - 16xy' + 25y = 0$	[[_Emden, _Fowler]]	✓	1.510
3224	$x^2 y'' + 5xy' + 10y = 0$	[[_Emden, _Fowler]]	✓	2.991
3225	$2x^2 y'' - 3xy' - 18y = \ln(x)$	[[_2nd_order, _with_linear_symmetries]]	✓	2.963
3226	$2x^2 y'' - 3xy' + 2y = \ln(x^2)$	[[_2nd_order, _with_linear_symmetries]]	✓	2.898
3227	$x^2 y'' - 3xy' + 4y = x^3$	[[_2nd_order, _with_linear_symmetries]]	✓	1.937
3228	$x^2 y'' + 3xy' + y = 1 - x$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓	2.116
3229	$x^3 y''' + 2x^2 y'' - xy' + y = \frac{1}{x}$	[[_3rd_order, _exact, _linear, _nonhomogeneous]]	✓	0.300
3230	$x^2 y'' - 2xy' + 2y = 4x + \sin(\ln(x))$	[[_2nd_order, _with_linear_symmetries]]	✓	4.195
3231	$x^2 y'' - xy' + 2y = x^2 \ln(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	13.180
3232	$x^2 y'' + 4xy' + 3y = (x - 1) \ln(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.588
3233	$4x^3 y''' + 8x^2 y'' - xy' + y = x + \ln(x)$	[[_3rd_order, _with_linear_symmetries]]	✓	0.431
3234	$3x^3 y''' + 4x^2 y'' - 10xy' + 10y = \frac{4}{x^2}$	[[_3rd_order, _with_linear_symmetries]]	✓	0.560

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
3235	$x^4 y'''' + 7x^3 y''' + 9x^2 y'' - 6xy' - 6y = \cos(\ln(x))$	[[_high_order, _exact, _linear, _nonhomogeneous]]	✓	1.870
3236	$x^3 y''' - 2x^2 y'' - xy' + 4y = \sin(\ln(x))$	[[_3rd_order, _linear, _nonhomogeneous]]	✓	0.983
3237	$\begin{bmatrix} x' - x = \cos(t) \\ y' + y = 4t \end{bmatrix}$	system_of_ODEs	✓	0.463
3238	$\begin{bmatrix} x' + 5x = 3t^2 \\ y' + y = e^{3t} \end{bmatrix}$	system_of_ODEs	✓	0.425
3239	$\begin{bmatrix} x' + 2x = 3t \\ x' + 2y' + y = \cos(2t) \end{bmatrix}$	system_of_ODEs	✓	0.741
3240	$\begin{bmatrix} x' - x + y = 2 \sin(t) \\ x' + y' = 3y - 3x \end{bmatrix}$	system_of_ODEs	✓	0.634
3241	$\begin{bmatrix} 2x' + 3x - y = e^t \\ 5x - 3y' = y + 2t \end{bmatrix}$	system_of_ODEs	✓	0.678
3242	$\begin{bmatrix} 5y' - 3x' - 5y = 5t \\ 3x' - 5y' - 2x = 0 \end{bmatrix}$	system_of_ODEs	✓	0.226
3243	$\begin{bmatrix} x' = 3x \\ y' = 2x + 3y \\ z' = 3y - 2z \end{bmatrix}$	system_of_ODEs	✓	0.465
3244	$y'' = \cos(t)$	[[_2nd_order, _quadrature]]	✓	1.713
3245	$y'' = k^2 y$	[[_2nd_order, _missing_x]]	✓	3.977
3246	$x'' + k^2 x = 0$	[[_2nd_order, _missing_x]]	✓	2.023
3247	$y^3 y'' + 4 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓	1.394
3248	$x'' = \frac{k^2}{x^2}$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓	73.090

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
3249	$xy'' = x^2 + 1$	[[_2nd_order, _quadrature]]	✓	1.084
3250	$(1 - x)y'' = y'$	[[_2nd_order, _missing_y]]	✓	1.201
3251	$(x^2 + 1)y'' + 2x(y' + 1) = 0$	[[_2nd_order, _missing_y]]	✓	1.698
3252	$y'' = y'^3 + y'$	[[_2nd_order, _missing_x]]	✓	1.734
3253	$xy'' + x = y'$	[[_2nd_order, _missing_y]]	✓	1.398
3254	$x'' + tx' = t^3$	[[_2nd_order, _missing_y]]	✓	1.891
3255	$x^2y'' = xy' + 1$	[[_2nd_order, _missing_y]]	✓	1.084
3256	$y'' = 1 + y'^2$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_xy]]	✓	0.434
3257	$(-x^2 + 1)y'' + xy' = 1$	[[_2nd_order, _missing_y]]	✓	34.938
3258	$y'' = \sqrt{1 + y'^2}$	[[_2nd_order, _missing_x]]	✓	0.444
3259	$y'' = y'^2 + y'$	[[_2nd_order, _missing_x], _Liouville, [_2nd_order, _reducible, _mu_xy]]	✓	0.586
3260	$y'' = yy'$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _non-linear], _Lagerstrom, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓	0.731
3261	$(x^2 + 1)y'' + 1 + y'^2 = 0$	[[_2nd_order, _missing_y], [_2nd_order, _reducible, _mu_y_y1]]	✓	0.857

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
3262	$y'' + yy' = 0$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Lagerstrom, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓	0.633
3263	$y'' + 2y'^2 = 0$	[[_2nd_order, _missing_x], _Liouville, [_2nd_order, _reducible, _mu_xy]]	✓	0.218
3264	$yy'' + y'^2 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓	0.476
3265	$yy'' + 1 = y'^2$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓	2.403
3266	$y'' = y$	[[_2nd_order, _missing_x]]	✓	2.212
3267	$yy'' + y'^2 = yy'$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓	0.820
3268	$2yy'' - y'^2 = 0$	[[_2nd_order, _missing_x], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓	0.374
3269	$y'' + 2y'^2 = 2$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_xy]]	✓	0.337
3270	$y'' + y' = y'^3$	[[_2nd_order, _missing_x]]	✓	0.771

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
3271	$(1 + y)y'' = 3y'^2$	[[_2nd_order, _missing_x], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓	0.513
3272	<i>i.c.</i> $y'' = \sec(x) \tan(x)$	[[_2nd_order, _quadrature]]	✓	3.271
3273	<i>i.c.</i> $2y'' = e^y$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓	20.460
3274	<i>i.c.</i> $y'' = y^3$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓	0.816
3275	<i>i.c.</i> $y'' = y'^2 \cos(x)$	[[_2nd_order, _missing_y], [_2nd_order, _reducible, _mu_y_y1]]	✓	0.605
3276	<i>i.c.</i> $yy'' - y^2y' = y'^2$	[[_2nd_order, _missing_x], [_2nd_order, _with_potential_symmetries], [_2nd_order, _reducible, _mu_xy]]	✓	0.734
3277	<i>i.c.</i> $(x^2 + 1)y'' + 1 + y'^2 = 0$	[[_2nd_order, _missing_y], [_2nd_order, _reducible, _mu_y_y1]]	✓	0.685
3278	<i>i.c.</i> $yy'' = y^3 + y'^2$	[[_2nd_order, _missing_x]]	✓	1.776
3279	<i>i.c.</i> $(1 + y'^2)^2 = y^2y''$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓	15.543
3280	<i>i.c.</i> $y'' = y'^2 \sin(x)$	[[_2nd_order, _missing_y], [_2nd_order, _reducible, _mu_y_y1]]	✓	0.527
3281	<i>i.c.</i> $2yy'' = y^3 + 2y'^2$	[[_2nd_order, _missing_x]]	✓	1.925
3282	<i>i.c.</i> $x'' - k^2x = 0$	[[_2nd_order, _missing_x]]	✓	3.737

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
3283	<i>i.c.</i> $yy'' = 2y'^2 + y^2$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_xy]]	✓	4.572
3284	<i>i.c.</i> $(1 - e^x)y'' = e^xy'$	[[_2nd_order, _missing_y]]	✓	2.222
3285	$4y^2 = y'^2x^2$	[_separable]	✓	3.004
3286	$xyy'^2 + (x + y)y' + 1 = 0$	[_quadrature]	✓	1.489
3287	$1 + (2y - x^2)y'^2 - 2x^2yy'^2 = 0$	['y=_G(x,y)']	✓	3.102
3288	$x(-1 + y'^2) = 2yy'$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	1.386
3289	$(1 - y^2)y'^2 = 1$	[_quadrature]	✓	0.595
3290	$xyy'^2 + (xy - 1)y' = y$	[_rational]	✓	8.203
3291	$y^2y'^2 + xyy' - 2x^2 = 0$	[_separable]	✓	5.392
3292	$y^2y'^2 - 2xyy' + 2y^2 = x^2$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	2.800
3293	$y'^3 + (x + y - 2xy)y'^2 - 2y'xy(x + y) = 0$	[_quadrature]	✓	2.240
3294	$yy'^2 + (y^2 - x^3 - xy^2)y' - xy(y^2 + x^2) = 0$	[_quadrature]	✓	2.152
3295	$y = y'x(y' + 1)$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	1.803
3296	$y = x + 3 \ln(y')$	[_separable]	✓	2.042
3297	$y(1 + y'^2) = 2$	[_quadrature]	✓	0.484
3298	$yy'^2 - 2xy' + y = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	1.787
3299	$y'^2 + y^2 = 1$	[_quadrature]	✓	0.566

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
3300	$x(-1 + y'^2) = 2yy'$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓	1.360
3301	$4x - 2yy' + y'^2x = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓	1.540
3302	$2x^2y + y'^2 = x^3y'$	[[_1st_order, _with_linear_symmetries]]	✓	2.488
3303	$yy'^2 = 3xy' + y$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓	45.992
3304	$8x + 1 = yy'^2$	[[_homogeneous, 'class C', _rational, _dAlembert]	✓	2.811
3305	$yy'^2 + 2y' + 1 = 0$	[_quadrature]	✓	0.339
3306	$(1 + y'^2)x = (x + y)y'$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓	2.560
3307	$x^2 - 3yy' + y'^2x = 0$	[[_homogeneous, 'class G', _rational]	✓	6.937
3308	$y + 2xy' = y'^2x$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓	2.631
3309	$x = y'^2 + y'$	[_quadrature]	✓	0.186
3310	$x = y - y'^3$	[[_homogeneous, 'class C', _dAlembert]	✓	4.601
3311	$x + 2yy' = y'^2x$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓	1.400
3312	$4x - 2yy' + y'^2x = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓	1.540
3313	$xy'^3 = yy' + 1$	[_dAlembert]	✓	0.230
3314	$y(1 + y'^2) = 2xy'$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓	1.924

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
3315	$2x + y'^2 x = 2yy'$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	1.538
3316	$x = yy' + y'^2$	[_dAlembert]	✓	1.394
3317	$4y'^2 x + 2xy' = y$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	2.214
3318	$y = y'x(y' + 1)$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	1.764
3319	$2xy'^3 + 1 = yy'^2$	[[_1st_order, _with_linear_symmetries], _dAlembert]	✓	0.563
3320	$y'^3 + xyy' = 2y^2$	[[_1st_order, _with_linear_symmetries]]	✓	7.053
3321	$3y'^4 x = y'^3 y + 1$	[[_1st_order, _with_linear_symmetries], _dAlembert]	✓	3.154
3322	$2y'^5 + 2xy' = y$	[_dAlembert]	✓	0.750
3323	$\frac{1}{y^2} + xy' = 2y$	[[_1st_order, _with_linear_symmetries], _dAlembert]	✓	22.275
3324	$2y = 3xy' + 4 + 2 \ln(y')$	[[_1st_order, _with_linear_symmetries], _dAlembert]	✓	4.008
3325	$y = xy' + y'^2$	[[_1st_order, _with_linear_symmetries], _Clairaut]	✓	0.392
3326	$y = xy' + \frac{1}{y'}$	[[_homogeneous, 'class G'], _rational, _Clairaut]	✓	0.369
3327	$y = xy' - \sqrt{y'}$	[[_homogeneous, 'class G'], _Clairaut]	✓	0.924
3328	$y = xy' + \ln(y')$	[[_1st_order, _with_linear_symmetries], _Clairaut]	✓	1.690

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
3329	$y = xy' + \frac{3}{y'^2}$	[[_1st_order, _with_linear_symmetries], _Clairaut]	✓	0.612
3330	$y = xy' - y'^{2/3}$	[[_1st_order, _with_linear_symmetries], _Clairaut]	✓	1.553
3331	$y = xy' + e^{y'}$	[[_1st_order, _with_linear_symmetries], _Clairaut]	✓	1.309
3332	$(y - xy')^2 = 1 + y'^2$	[[_1st_order, _with_linear_symmetries], _rational, _Clairaut]	✓	0.572
3333	$y'^2 x - yy' - 2 = 0$	[[_homogeneous, 'class G'], _rational, _Clairaut]	✓	0.369
3334	$y^2 - 2xyy' + y'^2(x^2 - 1) = 0$	[_separable]	✓	2.554
3335	$y' = \sqrt{1 - y}$ i.c.	[_quadrature]	✓	0.217
3336	$y' = xy - x^2$ i.c.	[_linear]	✓	0.533
3337	$y' = y^2 x^2$ i.c.	[_separable]	✓	0.246
3338	$y' = 3x + \frac{y}{x}$ i.c.	[_linear]	✓	0.524
3339	$y' = \ln(xy)$ i.c.	['y=_G(x,y)']	✓	0.319
3340	$y' = 1 + y^2$ i.c.	[_quadrature]	✓	0.220
3341	$y' = y^2 + x^2$ i.c.	[[_Riccati, _special]]	✓	0.285
3342	$y' = \sqrt{xy + 1}$ i.c.	['y=_G(x,y)']	✓	0.250
3343	$y' = \cos(x) + \sin(y)$ i.c.	['y=_G(x,y)']	✓	0.278
3344	$y'' - y = \sin(x)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.753

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
3345	<i>i.c.</i> $y'' - 2y = e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓	0.793
3346	<i>i.c.</i> $y'' + 2yy' = 0$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _non-linear], _Lagerstrom, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓	0.228
3347	<i>i.c.</i> $y'' = \sin(y)$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓	0.507
3348	<i>i.c.</i> $y'' + \frac{y'^2}{2} - y = 0$	[[_2nd_order, _missing_x]]	✓	0.270
3349	<i>i.c.</i> $y'' = \sin(xy)$	[NONE]	✓	0.817
3350	<i>i.c.</i> $y'' = \cos(xy)$	[NONE]	✓	0.844
3351	$2xy'' + 5y' + xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.865
3352	$3x(2 + 3x)y'' - 4y' + 4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.095
3353	$x^2(4 + x)y'' + 7xy' - y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.069
3354	$2x^2y'' + (-x^2 + x)y' - y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.029
3355	$2x^2y'' + 5xy' + (x + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.033
3356	$9x^2y'' + (2 + 3x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.057
3357	$(x^3 + 2x^2)y'' - xy' + (1 - x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.131
3358	$2x^2y'' - 3(x^2 + x)y' + (2 + 3x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.033
3359	$3x^2y'' + (-x^2 + 5x)y' + (2x^2 - 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.063

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
3360	$4x^2y'' + x(x^2 - 4)y' + 3y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.979
3361	$4x^2y'' - 3(x^2 + x)y' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.375
3362	$9x^2y'' + 9(-x^2 + x)y' + (x - 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.092
3363	$4x^2(1 - x)y'' + 3x(2x + 1)y' - 3y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.049
3364	$2x^2(1 - 3x)y'' + 5xy' - 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.142
3365	$4x^2(x + 1)y'' - 5xy' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.053
3366	$x^2(4 + x)y'' + x(x - 1)y' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.074
3367	$(8 - x)x^2y'' + 6xy' - y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.119
3368	$2x^2y'' + x(x^2 + 1)y' - (x + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.063
3369	$2x^2y'' - xy' + (x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.911
3370	$3x^2y'' + 2xy' + (x^2 - 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.906
3371	$x^3(x^2 + 3)y'' + 5xy' - (x + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.164
3372	$2xy'' - (x^3 + 1)y' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.007
3373	$xy'' + y' + 2y = 0$	[[_Emden, _Fowler]]	✓	0.837
3374	$xy'' + y' + 2xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.762
3375	$x^2y'' - 3xy' + 4(x + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.927
3376	$x^2y'' - x(x + 1)y' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.974
3377	$x^2y'' - x(2x + 3)y' + 4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.944

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
3378	$x^2(-x^2 + 1)y'' - 5xy' + 9y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.875
3379	$x^2y'' + x(x^2 - 1)y' + (-x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.954
3380	$x^2y'' + x(2x - 1)y' + x(x - 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.043
3381	$x^2y'' - x^2y' + (x^2 - 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.043
3382	$x^2y'' + 2x^2y' - (3x^2 + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.121
3383	$x^2(1 - x)y'' + x(x + 1)y' - 9y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.190
3384	$(-x^2 + x)y'' - 3y' + 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.974
3385	$x^2y'' + x(x - 7)y' + (x + 12)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.504
3386	$x^2(x + 1)y'' + x(x - 4)y' + 4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.534
3387	$x^2y'' + x(-x^2 + 3)y' - 3y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.488
3388	$xy'' + 3y' - y = x$	[[_2nd_order, _with_linear_symmetries]]	✓	1.447
3389	$xy'' + 3y' - y = x$	[[_2nd_order, _with_linear_symmetries]]	✓	1.430
3390	$xy'' + y' - 2xy = x^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.838
3391	$xy'' - xy' + y = x^3$	[[_2nd_order, _with_linear_symmetries]]	✓	1.427
3392	$(-2x + 1)y'' + 4xy' - 4y = x^2 - x$	[[_2nd_order, _with_linear_symmetries]]	✓	0.688
3393	$x^2y'' + xy' + (x + 12)y = x^2 + x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.215
3394	$x^2(x + 1)y'' + x(x^2 + 3)y' + y = -2x^2 + x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.166

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
3395	$3x^2(x+1)y'' + x(5-x)y' + (2x^2-1)y = -x^3 + x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.501
3396	$9x^2y'' + (2+3x)y = x^4 + x^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.274
3397	$9x^2y'' + 10xy' + y = x - 1$	[[_2nd_order, _with_linear_symmetries]]	✓	0.994
3398	$2x^2y'' + (-x^2+x)y' - y = x^3 + 1$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.225
3399	$(-x^2+1)y'' + 2xy' - 2y = 6(-x^2+1)^2$	[[_2nd_order, _with_linear_symmetries]]	✓	0.564
3400	$(x^2+2x)y'' - (2x+2)y' + 2y = x^2(x+2)^2$	[[_2nd_order, _with_linear_symmetries]]	✓	1.266
3401	$2x^2y'' + 5xy' + (x+1)y = x(x^2+x+1)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.410
3402	$(x^3+2x^2)y'' - xy' + (1-x)y = x^2(x+1)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.491
3403	$y' = 2$	[_quadrature]	✓	0.465
3404	$y' = 2e^{3x}$	[_quadrature]	✓	0.316
3405	$y' = \frac{2}{\sqrt{-x^2+1}}$	[_quadrature]	✓	0.349
3406	$y' = e^{x^2}$	[_quadrature]	✓	0.329
3407	$y' = xe^{x^2}$	[_quadrature]	✓	0.305
3408	$y' = \arcsin(x)$	[_quadrature]	✓	0.290
3409	$y' = xy$	[_separable]	✓	1.146
3410	$y' = y^2x^2$	[_separable]	✓	1.602
3411	$y' = -xe^y$	[_separable]	✓	1.802
3412	$y' \sin(y) = x^2$	[_separable]	✓	1.341
3413	$xy' = \sqrt{1-y^2}$	[_separable]	✓	2.099
3414	$y'^2 - y^2 = 0$	[_quadrature]	✓	1.763

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
*Continued from previous page*

#	ODE	CAS classification	Solved?	time (sec)
3415	$y'^2 - 3y' + 2 = 0$	[_quadrature]	✓	0.816
3416	$(x^2 + 1)y' = 1$	[_quadrature]	✓	0.384
3417	$y' \sin(x) = 1$	[_quadrature]	✓	0.433
3418	$y' = t^2 + 3$	[_quadrature]	✓	0.270
3419	$y' = t e^{2t}$	[_quadrature]	✓	0.322
3420	$y' = \sin(3t)$	[_quadrature]	✓	0.355
3421	$y' = \sin(t)^2$	[_quadrature]	✓	0.363
3422	$y' = \frac{t}{t^2 + 4}$	[_quadrature]	✓	0.323
3423	$y' = \ln(t)$	[_quadrature]	✓	0.303
3424	$y' = \frac{t}{\sqrt{t} + 1}$	[_quadrature]	✓	0.350
3425	<i>i.c.</i> $y' = 2y - 4$	[_quadrature]	✓	1.266
3426	<i>i.c.</i> $y' = -y^3$	[_quadrature]	✓	1.766
3427	<i>i.c.</i> $y' = \frac{e^t}{y}$	[_separable]	✓	1.816
3428	<i>i.c.</i> $y' = t e^{2t}$	[_quadrature]	✓	0.522
3429	<i>i.c.</i> $y' = \sin(t)^2$	[_quadrature]	✓	0.681
3430	<i>i.c.</i> $y' = 8e^{4t} + t$	[_quadrature]	✓	0.559
3431	$y' = \frac{y}{t}$	[_separable]	✓	1.228
3432	$y' = -\frac{t}{y}$	[_separable]	✓	2.782
3433	$y' = y^2 - y$	[_quadrature]	✓	1.385
3434	$y' = -1 + y$	[_quadrature]	✓	0.915

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
3435	$y' = 1 - y$	[_quadrature]	✓	0.911
3436	$y' = y^3 - y^2$	[_quadrature]	✓	3.474
3437	$y' = 1 - y^2$	[_quadrature]	✓	0.930
3438	$y' = (t^2 + 1)y$	[_separable]	✓	1.231
3439	$y' = -y$	[_quadrature]	✓	0.988
3440	$y' = 2y + e^{-3t}$	[[_linear, 'class A']]	✓	1.066
3441	$y' = 2y + e^{2t}$	[[_linear, 'class A']]	✓	0.951
3442	$y' = t - y$	[[_linear, 'class A']]	✓	0.943
3443	$ty' + 2y = \sin(t)$	[_linear]	✓	1.231
3444	$y' = y \tan(t) + \sec(t)$	[_linear]	✓	1.375
3445	$y' = \frac{2ty}{t^2 + 1} + t + 1$	[_linear]	✓	1.708
3446	$y' = y \tan(t) + \sec(t)^3$	[_linear]	✓	1.486
3447	$y' = y$	[_quadrature]	✓	1.343
	i.c.			
3448	$y' = 2y$	[_quadrature]	✓	1.378
	i.c.			
3449	$ty' = y + t^3$	[_linear]	✓	1.580
	i.c.			
3450	$y' = -y \tan(t) + \sec(t)$	[_linear]	✓	1.651
	i.c.			
3451	$y' = \frac{2y}{t + 1}$	[_separable]	✓	1.975
	i.c.			
3452	$ty' = -y + t^3$	[_linear]	✓	1.665
	i.c.			
3453	$y' + 4 \tan(2t)y = \tan(2t)$	[_separable]	✓	2.270
	i.c.			
3454	$t \ln(t)y' = t \ln(t) - y$	[_linear]	✓	1.362
	i.c.			

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
3455	$y' = \frac{2y}{-t^2 + 1} + 3$ i.c.	[_linear]	✓	1.538
3456	$y' = -\cot(t)y + 6\cos(t)^2$ i.c.	[_linear]	✓	2.219
3457	$y' - xy^3 = 0$	[_separable]	✓	2.119
3458	$\frac{y'}{\tan(x)} - \frac{y}{x^2 + 1} = 0$	[_separable]	✓	2.868
3459	$x^2y' + xy^2 = 4y^2$	[_separable]	✓	1.463
3460	$y(2y^2x^2 + 1)y' + x(y^4 + 1) = 0$	[_exact, _rational, [_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓	2.332
3461	$2xy' + 3x + y = 0$	[_linear]	✓	4.342
3462	$(\cos(x)^2 + y\sin(2x))y' + y^2 = 0$	[[_1st_order, '_with_symmetry_[F(x)*G(y),0]'], [_Abel, '2nd type', 'class B']]	✓	3.433
3463	$(-x^2 + 1)y' + 4xy = (-x^2 + 1)^{3/2}$	[_linear]	✓	3.710
3464	$y' - y\cot(x) + \frac{1}{\sin(x)} = 0$	[_linear]	✓	2.649
3465	$(x + y^3)y' = y$	[[_homogeneous, 'class G'], _rational]	✓	5.255
3466	$y' = -\frac{2x^2 + y^2 + x}{xy}$	[_rational, _Bernoulli]	✓	1.277
3467	$(y - x)y' + 2x + 3y = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓	2.605
3468	$y' = \frac{1}{x + 2y + 1}$	[[_homogeneous, 'class C'], [_Abel, '2nd type', 'class C'], _dAlembert]	✓	1.408
3469	$y' = -\frac{x + y}{3x + 3y - 4}$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	1.260

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
3470	$y' = \tan(x) \cos(y) (\cos(y) + \sin(y))$	[_separable]	✓	3.763
3471	$x(1 - 2x^2y)y' + y = 3y^2x^2$ i.c.	[[_homogeneous, 'class G'], _exact, _rational, [_Abel, '2nd type', 'class B']]	✓	2.464
3472	$y' + \frac{xy}{a^2 + x^2} = x$	[_linear]	✓	3.123
3473	$y' = \frac{4y^2}{x^2} - y^2$	[_separable]	✓	1.418
3474	$y' - \frac{y}{x} = 1$ i.c.	[_linear]	✓	1.525
3475	$y' - y \tan(x) = 1$ i.c.	[_linear]	✓	1.424
3476	$y' - \frac{y^2}{x^2} = \frac{1}{4}$ i.c.	[[_homogeneous, 'class A'], _rational, _Riccati]	✓	2.464
3477	$y' - \frac{y^2}{x^2} = \frac{1}{4}$	[[_homogeneous, 'class A'], _rational, _Riccati]	✓	1.784
3478	$y' \sin(x) + 2 \cos(x)y = 1$ i.c.	[_linear]	✓	2.116
3479	$(5x + y - 7)y' = 3x + 3y + 3$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	3.626
3480	$xy' + y - \frac{y^2}{x^{3/2}} = 0$ i.c.	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓	4.044
3481	$(2 \sin(y) - x)y' = \tan(y)$ i.c.	[[_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓	5.490
3482	$(2 \sin(y) - x)y' = \tan(y)$ i.c.	[[_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓	23.607
3483	$y'' + y'^2 + y' = 0$ i.c.	[[_2nd_order, _missing_x], _Liouville, [_2nd_order, _reducible, _mu_xy]]	✓	0.712

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
3484	$x'' + \omega_0^2 x = a \cos(\omega t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.638
3485	$f'' + 2f' + 5f = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	2.796
3486	$f'' + 2f' + 5f = e^{-t} \cos(3t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	7.960
3487	$f'' + 6f' + 9f = e^{-t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	1.262
3488	$f'' + 8f' + 12f = 12e^{-4t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	1.380
3489	$f'' + 8f' + 12f = 12e^{-4t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	1.359
3490	$y'' + 2y' + y = 4e^{-x}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.155
3491	$y''' - 12y' + 16y = 32x - 8$	[[_3rd_order, _with_linear_symmetries]]	✓	0.130
3492	$-\frac{y'^2}{y^2} + \frac{y''}{y} + \frac{2a \coth(2ax) y'}{y} = 2a^2$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _reducible, _mu_xy]]	✗	1.444
3493	$x^2 y'' - xy' + y = x$	[[_2nd_order, _with_linear_symmetries]]	✓	2.083
3494	$(x+1)^2 y'' + 3(x+1)y' + y = x^2$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓	2.136
3495	$(-2+x)y'' + 3y' + \frac{4y}{x^2} = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, ' _with_symmetry_[0,F(x)]']]	✓	1.201
3496	$y'' - y = x^n$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.693
3497	$y'' - 2y' + y = 2xe^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.183
3498	$2yy''' + 2(y+3y')y'' + 2y'^2 = \sin(x)$	[[_3rd_order, _exact, _nonlinear]]	✗	0.059

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
3499	$xy''' + 2y'' = Ax$	[[_3rd_order, __missing_y]]	✓	0.339
3500	$y'' + 4xy' + (4x^2 + 6)y = e^{-x^2} \sin(2x)$	[[_2nd_order, __linear, __nonhomogeneous]]	✓	6.454
3501	$(-z^2 + 1)y'' - 3zy' + \lambda y = 0$	[_Gegenbauer]	✓	0.705
3502	$4zy'' + 2(1 - z)y' - y = 0$	[[_2nd_order, __with_linear_symmetries]]	✓	0.897
3503	$zy'' - 2y' + 9z^5y = 0$	[[_Emden, __Fowler], [_2nd_order, __linear, __with_symmetry_[0,F(x)]]]	✓	0.798
3504	$f'' + 2(z - 1)f' + 4f = 0$	[[_2nd_order, __with_linear_symmetries]]	✓	0.668
3505	$z^2y'' - \frac{3zy'}{2} + (1 + z)y = 0$	[[_2nd_order, __with_linear_symmetries]]	✓	1.000
3506	$zy'' - 2y' + yz = 0$	[_Lienard]	✓	0.846
3507	$y'' - 2zy' - 2y = 0$	[[_2nd_order, __exact, __linear, __homogeneous]]	✓	0.634
3508	$z(1 - z)y'' + (1 - z)y' + \lambda y = 0$	[_Jacobi]	✓	1.141
3509	$zy'' + (2z - 3)y' + \frac{4y}{z} = 0$	[[_2nd_order, __with_linear_symmetries]]	✓	0.940
3510	$(z^2 + 5z + 6)y'' + 2y = 0$	[[_2nd_order, __with_linear_symmetries]]	✓	0.725
3511	$(z^2 + 5z + 7)y'' + 2y = 0$	[[_Emden, __Fowler]]	✓	0.680
3512	$y'' + \frac{y}{z^3} = 0$	[[_Emden, __Fowler]]	✗	0.122
3513	$zy'' + (1 - z)y' + \lambda y = 0$	[_Laguerre]	✓	1.022
3514	$(-z^2 + 1)y'' - zy' + m^2y = 0$	[_Gegenbauer, [_2nd_order, __linear, __with_symmetry_[0,F(x)]]]	✓	0.738
3515	$y' = 2xy$	[_separable]	✓	1.153
3516	$y' = \frac{y^2}{x^2 + 1}$	[_separable]	✓	1.441

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
3517	$e^{x+y}y' - 1 = 0$	[_separable]	✓	1.781
3518	$y' = \frac{y}{x \ln(x)}$	[_separable]	✓	1.304
3519	$y - (-2 + x)y' = 0$	[_separable]	✓	1.381
3520	$y' = \frac{2x(y-1)}{x^2+3}$	[_separable]	✓	1.235
3521	$y - xy' = 3 - 2x^2y'$	[_separable]	✓	1.292
3522	$y' = \frac{\cos(x-y)}{\sin(x)\sin(y)} - 1$	[_separable]	✓	2.468
3523	$y' = \frac{x(y^2-1)}{2(-2+x)(x-1)}$	[_separable]	✓	2.538
3524	$y' = \frac{x^2y-32}{-x^2+16} + 32$	[_linear]	✓	1.432
3525	$(x-a)(x-b)y' - y + c = 0$	[_separable]	✓	1.755
3526	$(x^2+1)y' + y^2 = -1$ i.c.	[_separable]	✓	2.389
3527	$(-x^2+1)y' + xy = ax$ i.c.	[_separable]	✓	2.047
3528	$y' = 1 - \frac{\sin(x+y)}{\sin(y)\cos(x)}$ i.c.	[_separable]	✓	3.187
3529	$y' = y^3 \sin(x)$	[_separable]	✓	2.284
3530	$y' - y = e^{2x}$	[[_linear, 'class A']]	✓	1.026
3531	$x^2y' - 4xy = x^7 \sin(x)$	[_linear]	✓	1.352
3532	$y' + 2xy = 2x^3$	[_linear]	✓	1.314
3533	$y' + \frac{2xy}{x^2+1} = 4x$	[_linear]	✓	1.585
3534	$y' + \frac{2xy}{x^2+1} = \frac{4}{(x^2+1)^2}$	[_linear]	✓	1.715
3535	$2 \cos(x)^2 y' + y \sin(2x) = 4 \cos(x)^4$	[_linear]	✓	3.244

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
3536	$y' + \frac{y}{x \ln(x)} = 9x^2$	[_linear]	✓	1.219
3537	$y' - y \tan(x) = 8 \sin(x)^3$	[_linear]	✓	2.029
3538	$tx' + 2x = 4e^t$	[_linear]	✓	1.116
3539	$y' = \sin(x)(y \sec(x) - 2)$	[_linear]	✓	1.965
3540	$1 - y \sin(x) - \cos(x)y' = 0$	[_linear]	✓	1.713
3541	$y' - \frac{y}{x} = 2x^2 \ln(x)$	[_linear]	✓	0.997
3542	$y' + \alpha y = e^{\beta x}$	[[_linear, 'class A']]	✓	0.851
3543	$y' + \frac{m}{x} = \ln(x)$	[_quadrature]	✓	0.249
3544	$(3x - y)y' = 3y$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓	2.454
3545	$y' = \frac{(x + y)^2}{2x^2}$	[[_homogeneous, 'class A'], _rational, _Riccati]	✓	2.111
3546	$\sin\left(\frac{y}{x}\right)(-y + xy') = x \cos\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A'], _dAlembert]	✓	5.980
3547	$xy' = \sqrt{16x^2 - y^2} + y$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	68.485
3548	$-y + xy' = \sqrt{9x^2 + y^2}$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	6.758
3549	$x(x^2 - y^2) - x(y^2 + x^2)y' = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	6.868
3550	$xy' + y \ln(x) = y \ln(y)$	[[_homogeneous, 'class A'], _dAlembert]	✓	4.052
3551	$y' = \frac{y^2 + 2xy - 2x^2}{x^2 - xy + y^2}$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	16.205
3552	$2xyy' - x^2e^{-\frac{y^2}{x^2}} - 2y^2 = 0$	[[_homogeneous, 'class A']]	✓	2.775

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
3553	$x^2y' = y^2 + 3xy + x^2$	[[_homogeneous, 'class A'], _rational, _Riccati]	✓	1.752
3554	$yy' = \sqrt{y^2 + x^2} - x$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	5.580
3555	$2x(2x + y)y' = y(4x - y)$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓	3.380
3556	$xy' = x \tan\left(\frac{y}{x}\right) + y$	[[_homogeneous, 'class A'], _dAlembert]	✓	3.807
3557	$y' = \frac{x\sqrt{y^2 + x^2} + y^2}{xy}$	[[_homogeneous, 'class A'], _dAlembert]	✓	36.606
3558	$y'' - 25y = 0$	[[_2nd_order, _missing_x]]	✓	2.500
3559	$y'' + 4y = 0$	[[_2nd_order, _missing_x]]	✓	2.257
3560	$y'' + y' - 2y = 0$	[[_2nd_order, _missing_x]]	✓	0.952
3561	$y' = -y^2$	[_quadrature]	✓	0.948
3562	$y' = \frac{y}{2x}$	[_separable]	✓	1.655
3563	$y'' + 2y' + 5y = 0$	[[_2nd_order, _missing_x]]	✓	1.957
3564	$y'' - 9y = 0$	[[_2nd_order, _missing_x]]	✓	2.365
3565	$x^2y'' + 5xy' + 3y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	1.549
3566	$x^2y'' - 3xy' + 4y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓	1.354
3567	$x^2y'' - 3xy' + 13y = 0$	[[_Emden, _Fowler]]	✓	3.035
3568	$2x^2y'' - xy' + y = 9x^2$	[[_2nd_order, _with_linear_symmetries]]	✓	2.106
3569	$x^2y'' - 4xy' + 6y = x^4 \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	13.652

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
3570	$y'' - (a + b)y' + aby = 0$	[[_2nd_order, _missing_x]]	✓	1.234
3571	$y'' - 2ay' + a^2y = 0$	[[_2nd_order, _missing_x]]	✓	0.756
3572	$y'' - 2ay' + (a^2 + b^2)y = 0$	[[_2nd_order, _missing_x]]	✓	1.041
3573	$y'' - y' - 6y = 0$	[[_2nd_order, _missing_x]]	✓	0.895
3574	$y'' + 6y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓	0.949
3575	$x^2y'' + xy' - y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	1.491
3576	$x^2y'' + 5xy' + 4y = 0$	[[_Emden, _Fowler]]	✓	1.348
3577	$y' = \frac{e^x - \sin(y)}{x \cos(y)}$	['y=_G(x,y)']	✓	1.969
3578	$y' = \frac{1 - y^2}{2xy + 2}$	[_rational, [_1st_order, '_with_symmetry_[F(x)*G(y),0]'], [_Abel, '2nd type', 'class B']]	✓	1.249
3579	<i>i.c.</i> $y' = \frac{(1 - y e^{xy}) e^{-xy}}{x}$	[[_1st_order, '_with_symmetry_[F(x),G(y)]']]	✓	1.452
3580	$y' = \frac{x^2(1 - y^2) + y e^{\frac{y}{x}}}{x(e^{\frac{y}{x}} + 2x^2y)}$	['y=_G(x,y)']	✓	40.523
3581	<i>i.c.</i> $y' = \frac{\cos(x) - 2xy^2}{2x^2y}$	[_Bernoulli]	✓	30.730
3582	$y' = \sin(x)$	[_quadrature]	✓	0.317
3583	$y' = \frac{1}{x^{2/3}}$	[_quadrature]	✓	0.280
3584	$y'' = x e^x$	[[_2nd_order, _quadrature]]	✓	1.414
3585	$y'' = x^n$	[[_2nd_order, _quadrature]]	✓	1.472

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
3586	$y' = x^2 \ln(x)$ i.c.	[_quadrature]	✓	0.524
3587	$y'' = \cos(x)$ i.c.	[[_2nd_order, _quadrature]]	✓	5.914
3588	$y''' = 6x$ i.c.	[[_3rd_order, _quadrature]]	✓	0.210
3589	$y'' = x e^x$ i.c.	[[_2nd_order, _quadrature]]	✓	1.832
3590	$y'' + y' - 6y = 0$	[[_2nd_order, _missing_x]]	✓	0.950
3591	$x^2 y'' - x y' - 8y = 0$	[[_Emden, _Fowler]]	✓	1.130
3592	$x^2 y'' - 3x y' + 4y = x^2 \ln(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	2.029
3593	$y' = 2xy$	[_separable]	✓	1.199
3594	$y' = \frac{y^2}{x^2 + 1}$	[_separable]	✓	1.444
3595	$e^{x+y} y' - 1 = 0$	[_separable]	✓	1.768
3596	$y' = \frac{y}{x \ln(x)}$	[_separable]	✓	1.307
3597	$y - (x - 1) y' = 0$	[_separable]	✓	1.363
3598	$y' = \frac{2x(y - 1)}{x^2 + 3}$	[_separable]	✓	1.218
3599	$y - x y' = 3 - 2x^2 y'$	[_separable]	✓	1.319
3600	$y' = \frac{\cos(x - y)}{\sin(x) \sin(y)} - 1$	[_separable]	✓	2.580
3601	$y' = \frac{x(y^2 - 1)}{2(-2 + x)(x - 1)}$	[_separable]	✓	2.576
3602	$y' = \frac{x^2 y - 32}{-x^2 + 16} + 2$	[_separable]	✓	1.401
3603	$(x - a)(x - b) y' - y + c = 0$	[_separable]	✓	1.732
3604	$(x^2 + 1) y' + y^2 = -1$ i.c.	[_separable]	✓	2.399

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
3605	$(-x^2 + 1)y' + xy = ax$ i.c.	[_separable]	✓	2.130
3606	$y' = 1 - \frac{\sin(x+y)}{\sin(y)\cos(x)}$ i.c.	[_separable]	✓	3.208
3607	$y' = y^3 \sin(x)$ i.c.	[_separable]	✓	2.553
3608	$y' = \frac{2\sqrt{y-1}}{3}$ i.c.	[_quadrature]	✓	1.246
3609	$mv' = mg - kv^2$ i.c.	[_quadrature]	✓	0.960
3610	$y' + y = 4e^x$	[[_linear, 'class A']]	✓	0.174
3611	$y' + \frac{2y}{x} = 5x^2$	[_linear]	✓	0.155
3612	$x^2y' - 4xy = x^7 \sin(x)$	[_linear]	✓	0.197
3613	$y' + 2xy = 2x^3$	[_linear]	✓	0.185
3614	$y' + \frac{2xy}{-x^2 + 1} = 4x$	[_linear]	✓	0.189
3615	$y' + \frac{2xy}{x^2 + 1} = \frac{4}{(x^2 + 1)^2}$	[_linear]	✓	0.223
3616	$2 \cos(x)^2 y' + y \sin(2x) = 4 \cos(x)^4$	[_linear]	✓	0.225
3617	$y' + \frac{y}{x \ln(x)} = 9x^2$	[_linear]	✓	0.164
3618	$y' - y \tan(x) = 8 \sin(x)^3$	[_linear]	✓	0.214
3619	$tx' + 2x = 4e^t$	[_linear]	✓	0.174
3620	$y' = \sin(x)(y \sec(x) - 2)$	[_linear]	✓	1.978
3621	$1 - y \sin(x) - \cos(x)y' = 0$	[_linear]	✓	0.241
3622	$y' - \frac{y}{x} = 2x^2 \ln(x)$	[_linear]	✓	0.162
3623	$y' + \alpha y = e^{\beta x}$	[[_linear, 'class A']]	✓	0.126

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
3624	$y' + \frac{my}{x} = \ln(x)$	[_linear]	✓	0.160
3625	$y' + \frac{2y}{x} = 4x$ i.c.	[_linear]	✓	0.302
3626	$y' \sin(x) - \cos(x)y = \sin(2x)$ i.c.	[_linear]	✓	2.872
3627	$x' + \frac{2x}{4-t} = 5$ i.c.	[_linear]	✓	1.767
3628	$y - e^x + y' = 0$ i.c.	[[_linear, 'class A']]	✓	1.245
3629	$y' - 2y = \begin{cases} 1 & x \leq 1 \\ 0 & 1 < x \end{cases}$ i.c.	[[_linear, 'class A']]	✓	0.570
3630	$y' - 2y = \begin{cases} 1-x & x < 1 \\ 0 & 1 \leq x \end{cases}$ i.c.	[[_linear, 'class A']]	✓	0.549
3631	$y'' + \frac{y'}{x} = 9x$	[[_2nd_order, __missing_y]]	✓	1.251
3632	$y' + \frac{y}{x} = \cos(x)$	[_linear]	✓	1.180
3633	$y' + y = e^{-2x}$	[[_linear, 'class A']]	✓	1.023
3634	$y' + y \cot(x) = 2 \cos(x)$	[_linear]	✓	1.661
3635	$-y + xy' = x^2 \ln(x)$	[_linear]	✓	0.969
3636	$y' = \frac{y^2 + xy + x^2}{x^2}$	[[_homogeneous, 'class A'], _rational, _Riccati]	✓	2.103
3637	$(3x - y)y' = 3y$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓	2.464
3638	$y' = \frac{(x+y)^2}{2x^2}$	[[_homogeneous, 'class A'], _rational, _Riccati]	✓	2.133
3639	$\sin\left(\frac{y}{x}\right)(-y + xy') = x \cos\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A'], _dAlembert]	✓	6.121

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
3640	$xy' = \sqrt{16x^2 - y^2} + y$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	75.094
3641	$-y + xy' = \sqrt{9x^2 + y^2}$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	6.852
3642	$y(x^2 - y^2) - x(x^2 - y^2)y' = 0$	[_separable]	✓	1.276
3643	$xy' + y \ln(x) = y \ln(y)$	[[_homogeneous, 'class A'], _dAlembert]	✓	4.076
3644	$y' = \frac{y^2 + 2xy - 2x^2}{x^2 - xy + y^2}$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	9.478
3645	$2xyy' - x^2e^{-\frac{y^2}{x^2}} - 2y^2 = 0$	[[_homogeneous, 'class A']]	✓	2.797
3646	$x^2y' = y^2 + 3xy + x^2$	[[_homogeneous, 'class A'], _rational, _Riccati]	✓	1.709
3647	$yy' = \sqrt{y^2 + x^2} - x$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	5.378
3648	$2x(2x + y)y' = y(4x - y)$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓	3.288
3649	$xy' = x \tan\left(\frac{y}{x}\right) + y$	[[_homogeneous, 'class A'], _dAlembert]	✓	3.804
3650	$y' = \frac{x\sqrt{y^2 + x^2} + y^2}{xy}$	[[_homogeneous, 'class A'], _dAlembert]	✓	35.864
3651	$y' = \frac{4y - 2x}{x + y}$ i.c.	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓	13.458
3652	$y' = \frac{2x - y}{4y + x}$ i.c.	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓	4.830
3653	$y' = \frac{y - \sqrt{y^2 + x^2}}{x}$ i.c.	[[_homogeneous, 'class A'], _dAlembert]	✓	4.411

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
3654	$-y + xy' = \sqrt{4x^2 - y^2}$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	65.329
3655	$y' = \frac{x + ay}{ax - y}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓	3.346
3656	$y' = \frac{x + \frac{y}{2}}{\frac{x}{2} - y}$ i.c.	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓	8.678
3657	$y' - \frac{y}{x} = \frac{4x^2 \cos(x)}{y}$	[[_homogeneous, 'class D'], _Bernoulli]	✓	3.615
3658	$y' + \frac{y \tan(x)}{2} = 2y^3 \sin(x)$	[_Bernoulli]	✓	8.451
3659	$y' - \frac{3y}{2x} = 6y^{1/3}x^2 \ln(x)$	[_Bernoulli]	✓	2.043
3660	$y' + \frac{2y}{x} = 6\sqrt{x^2 + 1}\sqrt{y}$	[_Bernoulli]	✓	2.152
3661	$y' + \frac{2y}{x} = 6y^2x^4$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓	1.849
3662	$2x(y' + x^2y^3) + y = 0$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓	2.786
3663	$(x - a)(x - b)(y' - \sqrt{y}) = 2(b - a)y$	[_rational, _Bernoulli]	✓	5.333
3664	$y' + \frac{6y}{x} = \frac{3y^{2/3} \cos(x)}{x}$	[_Bernoulli]	✓	3.052
3665	$y' + 4xy = 4x^3\sqrt{y}$	[_Bernoulli]	✓	1.354
3666	$y' - \frac{y}{2x \ln(x)} = 2xy^3$	[_Bernoulli]	✓	1.721
3667	$y' - \frac{y}{(\pi - 1)x} = \frac{3xy^\pi}{1 - \pi}$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓	2.276
3668	$2y' + y \cot(x) = \frac{8 \cos(x)^3}{y}$	[_Bernoulli]	✓	36.732

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
3669	$(1 - \sqrt{3})y' + y \sec(x) = y^{\sqrt{3}} \sec(x)$	[_separable]	✓	4.823
3670	$y' + \frac{2xy}{x^2 + 1} = xy^2$ i.c.	[_rational, _Bernoulli]	✓	1.888
3671	$y' + y \cot(x) = y^3 \sin(x)^3$ i.c.	[_Bernoulli]	✓	3.849
3672	$y' = (-y + 9x)^2$ i.c.	[[_homogeneous, 'class C'], _Riccati]	✓	2.201
3673	$y' = (4x + y + 2)^2$	[[_homogeneous, 'class C'], _Riccati]	✓	6.814
3674	$y' = \sin(3x - 3y + 1)^2$	[[_homogeneous, 'class C'], _dAlembert]	✓	19.786
3675	$y' = \frac{y(\ln(xy) - 1)}{x}$	[[_homogeneous, 'class G']]	✓	1.658
3676	$y' = 2x(x + y)^2 - 1$ i.c.	[[_1st_order, _with_linear_symmetries], _Riccati]	✓	1.808
3677	$y' = \frac{x + 2y - 1}{2x - y + 3}$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	1.822
3678	$y' + p(x)y + q(x)y^2 = r(x)$	[_Riccati]	✗	2.407
3679	$y' + \frac{2y}{x} - y^2 = -\frac{2}{x^2}$	[[_homogeneous, 'class G'], _rational, _Riccati]	✓	1.873
3680	$y' + \frac{7y}{x} - 3y^2 = \frac{3}{x^2}$	[[_homogeneous, 'class G'], _rational, _Riccati]	✓	1.377
3681	$\frac{y'}{y} + p(x) \ln(y) = q(x)$	[[_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)']]]	✓	0.439
3682	$\frac{y'}{y} - \frac{2 \ln(y)}{x} = \frac{1 - 2 \ln(x)}{x}$ i.c.	[[_homogeneous, 'class A'], _dAlembert]	✓	4.009
3683	$\sec(y)^2 y' + \frac{\tan(y)}{2\sqrt{x+1}} = \frac{1}{2\sqrt{x+1}}$	[_separable]	✓	30.760

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
3684	$y e^{xy} + (2y - x e^{xy}) y' = 0$	['x=_G(y,y)']	<span style="color: red;">✗</span>	1.340
3685	$\cos(xy) - xy \sin(xy) - x^2 \sin(xy) y' = 0$	[[_homogeneous, 'class G'], _exact]	<span style="color: blue;">✓</span>	0.315
3686	$y + 3x^2 + xy' = 0$	[_linear]	<span style="color: blue;">✓</span>	0.185
3687	$2x e^y + (3y^2 + x^2 e^y) y' = 0$	[_exact, [_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	<span style="color: blue;">✓</span>	0.255
3688	$2xy + (x^2 + 1) y' = 0$	[_separable]	<span style="color: blue;">✓</span>	0.176
3689	$y^2 - 2x + 2xyy' = 0$	[[_homogeneous, 'class G'], _exact, _rational, _Bernoulli]	<span style="color: blue;">✓</span>	0.316
3690	$4e^{2x} + 2xy - y^2 + (x - y)^2 y' = 0$	[_exact, [_1st_order, '_with_symmetry_[F(x),G(x)]']]	<span style="color: blue;">✓</span>	0.586
3691	$\frac{1}{x} - \frac{y}{y^2 + x^2} + \frac{xy'}{y^2 + x^2} = 0$	[[_homogeneous, 'class A'], _exact, _rational, _Riccati]	<span style="color: blue;">✓</span>	0.347
3692	$y \cos(xy) - \sin(x) + x \cos(xy) y' = 0$	[_exact, [_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]']]	<span style="color: blue;">✓</span>	0.257
3693	$2y^2 e^{2x} + 3x^2 + 2y e^{2x} y' = 0$	[_exact, _Bernoulli]	<span style="color: blue;">✓</span>	0.357
3694	$y^2 + \cos(x) + (2xy + \sin(y)) y' = 0$	[_exact]	<span style="color: blue;">✓</span>	0.266
3695	$\sin(y) + \cos(x) y + (x \cos(y) + \sin(x)) y' = 0$	[_exact]	<span style="color: blue;">✓</span>	0.256
3696	$y'' - 2y' - 3y = 0$	[[_2nd_order, _missing_x]]	<span style="color: blue;">✓</span>	0.852
3697	$y'' + 7y' + 10y = 0$	[[_2nd_order, _missing_x]]	<span style="color: blue;">✓</span>	0.880
3698	$y'' - 36y = 0$	[[_2nd_order, _missing_x]]	<span style="color: blue;">✓</span>	2.232
3699	$y'' + 4y' = 0$	[[_2nd_order, _missing_x]]	<span style="color: blue;">✓</span>	1.478
3700	$y''' - 3y'' - y' + 3y = 0$	[[_3rd_order, _missing_x]]	<span style="color: blue;">✓</span>	0.077

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
3701	$y''' + 3y'' - 4y' - 12y = 0$	[[_3rd_order, _missing_x]]	✓	0.072
3702	$y''' + 3y'' - 18y' - 40y = 0$	[[_3rd_order, _missing_x]]	✓	0.072
3703	$y''' - y'' - 2y' = 0$	[[_3rd_order, _missing_x]]	✓	0.068
3704	$y''' + y'' - 10y' + 8y = 0$	[[_3rd_order, _missing_x]]	✓	0.075
3705	$y'''' - 2y''' - y'' + 2y' = 0$	[[_high_order, _missing_x]]	✓	0.075
3706	$y'''' - 13y'' + 36y = 0$	[[_high_order, _missing_x]]	✓	0.073
3707	$x^2y'' + 3xy' - 8y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓	1.076
3708	$2x^2y'' + 5xy' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	1.439
3709	$x^3y''' + x^2y'' - 2xy' + 2y = 0$	[[_3rd_order, _exact, _linear, _homogeneous]]	✓	0.128
3710	$x^3y''' + 3x^2y'' - 6xy' = 0$	[[_3rd_order, _missing_y]]	✓	0.129
3711	$y'' + y' - 6y = 18e^{5x}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.079
3712	$y'' + y' - 2y = 4x^2 + 5$	[[_2nd_order, _with_linear_symmetries]]	✓	1.149
3713	$y''' + 2y'' - y' - 2y = 4e^{2x}$	[[_3rd_order, _with_linear_symmetries]]	✓	0.124
3714	$y''' + y'' - 10y' + 8y = 24e^{-3x}$	[[_3rd_order, _with_linear_symmetries]]	✓	0.135
3715	$y''' + 5y'' + 6y' = 6e^{-x}$	[[_3rd_order, _missing_y]]	✓	0.121
3716	$y'' + y = 6e^x$	[[_2nd_order, _with_linear_symmetries]]	✓	1.902
3717	$y'' + 4y' + 4y = 5xe^{-2x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.062

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
3718	$y'' + 4y = 8 \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.717
3719	$y'' - y' - 2y = 5 e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.131
3720	$y'' + 2y' + 5y = 3 \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	13.005
3721	$y''' + 2y'' - 5y' - 6y = 4x^2$	[[_3rd_order, _with_linear_symmetries]]	✓	0.125
3722	$y''' - y'' + y' - y = 9 e^{-x}$	[[_3rd_order, _with_linear_symmetries]]	✓	0.132
3723	$y''' + 3y'' + 3y' + y = 2 e^{-x} + 3 e^{2x}$	[[_3rd_order, _linear, _nonhomogeneous]]	✓	0.175
3724	$y'' + 9y = 5 \cos(2x)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	4.000
3725	$y'' - y = 9x e^{2x}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.290
3726	$y'' + y' - 2y = -10 \sin(x)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.617
3727	$y'' + y' - 2y = 4 \cos(x) - 2 \sin(x)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.622
3728	$y'' + \omega^2 y = \frac{F_0 \cos(\omega t)}{m}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	2.187
3729	$y'' - 4y' + 6y = 7 e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓	19.028
3730	$y''' + y'' + y' + y = 4x e^x$	[[_3rd_order, _linear, _nonhomogeneous]]	✓	0.144
3731	$y'''' + 104y''' + 2740y'' = 5 e^{-2x} \cos(3x)$	[[_high_order, _missing_y]]	✓	0.211
3732	$y'' + 2y' - 3y = \sin(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.989
3733	$y'' + 6y = \sin(x)^2 \cos(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	5.438
3734	$y'' - 16y = 20 \cos(4x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.579

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
3735	$y'' + 2y' + y = 50 \sin(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.542
3736	$y'' - y = 10 e^{2x} \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.510
3737	$y'' + 4y' + 4y = 169 \sin(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.508
3738	$y'' - y' - 2y = 40 \sin(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.714
3739	$y'' + y = 3 e^x \cos(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	2.760
3740	$y'' + 2y' + 2y = 2 e^{-x} \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	5.408
3741	$y'' - 4y = 100x e^x \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.695
3742	$y'' + 2y' + 5y = 4 e^{-x} \cos(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	13.688
3743	$y'' - 2y' + 10y = 24 e^x \cos(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	20.135
3744	$y'' + 16y = 34 e^x + 16 \cos(4x) - 8 \sin(4x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	6.839
3745	$y'' - 6y' + 9y = 4 e^{3x} \ln(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.337
3746	$y'' + 4y' + 4y = \frac{e^{-2x}}{x^2}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.210
3747	$y'' + 9y = 18 \sec(3x)^3$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.074
3748	$y'' + 6y' + 9y = \frac{2 e^{-3x}}{x^2 + 1}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	4.013
3749	$y'' - 4y = \frac{8}{e^{2x} + 1}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.521
3750	$y'' - 4y' + 5y = e^{2x} \tan(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	43.078
3751	$y'' + 9y = \frac{36}{4 - \cos(3x)^2}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	29.645

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
3752	$y'' - 10y' + 25y = \frac{2e^{5x}}{x^2 + 4}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	2.859
3753	$y'' - 6y' + 13y = 4e^{3x} \sec(2x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	13.763
3754	$y'' + y = \sec(x) + 4e^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	5.741
3755	$y'' + y = \csc(x) + 2x^2 + 5x + 1$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	5.021
3756	$y'' - y = 2 \tanh(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	2.019
3757	$y'' - 2my' + m^2y = \frac{e^{mx}}{x^2 + 1}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	4.078
3758	$y'' - 2y' + y = \frac{4e^x \ln(x)}{x^3}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.292
3759	$y'' + 2y' + y = \frac{e^{-x}}{\sqrt{-x^2 + 4}}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.362
3760	$y'' + 2y' + 17y = \frac{64e^{-x}}{3 + \sin(4x)^2}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	50.790
3761	$y'' + 4y' + 4y = \frac{4e^{-2x}}{x^2 + 1} + 2x^2 - 1$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	2.029
3762	$y'' + 4y' + 4y = 15e^{-2x} \ln(x) + 25 \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	2.263
3763	$y''' - 3y'' + 3y' - y = \frac{2e^x}{x^2}$	[[_3rd_order, _linear, _nonhomogeneous]]	✓	0.330
3764	$y''' - 6y'' + 12y' - 8y = 36e^{2x} \ln(x)$	[[_3rd_order, _linear, _nonhomogeneous]]	✓	0.358
3765	$y''' + 3y'' + 3y' + y = \frac{2e^{-x}}{x^2 + 1}$	[[_3rd_order, _linear, _nonhomogeneous]]	✓	0.375
3766	$y''' - 6y'' + 9y' = 12e^{3x}$	[[_3rd_order, _missing_y]]	✓	0.140
3767	$y'' - 9y = F(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.887

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
3768	$y'' + 5y' + 4y = F(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.803
3769	$y'' + y' - 2y = F(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.905
3770	$y'' + 4y' - 12y = F(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.994
3771	<i>i.c.</i> $y'' - 4y' + 4y = 5x e^{2x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.638
3772	<i>i.c.</i> $y'' + y = \sec(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.862
3773	$x^2y'' + 4xy' + 2y = 4 \ln(x)$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓	2.642
3774	$x^2y'' + 4xy' + 2y = \cos(x)$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓	2.963
3775	$x^2y'' + xy' + 9y = 9 \ln(x)$	[[_2nd_order, _with_linear_symmetries]]	✓	5.889
3776	$x^2y'' - xy' + 5y = 8x \ln(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	24.847
3777	$x^2y'' - 4xy' + 6y = x^4 \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	12.729
3778	$x^2y'' + 6xy' + 6y = 4e^{2x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	2.361
3779	$x^2y'' - 3xy' + 4y = \frac{x^2}{\ln(x)}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	2.008
3780	$x^2y'' - (2m-1)xy' + m^2y = x^m \ln(x)^k$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	2.301
3781	<i>i.c.</i> $x^2y'' - xy' + 5y = 0$	[[_Emden, _Fowler]]	✓	4.324
3782	<i>i.c.</i> $t^2y'' + ty' + 25y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)][']]	✓	2.386

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
3783	$x^2 y'' - 3xy' + 4y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓	0.370
3784	$xy'' + (-2x + 1)y' + (x - 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.356
3785	$x^2 y'' - 2xy' + (x^2 + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.426
3786	$(-x^2 + 1)y'' - 2xy' + 2y = 0$	[_Gegenbauer]	✓	0.384
3787	$y'' - \frac{y'}{x} + 4x^2 y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓	0.427
3788	$4x^2 y'' + 4xy' + (4x^2 - 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.429
3789	$y'' + y = \csc(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.619
3790	$xy'' - (2x + 1)y' + 2y = 8x^2 e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓	0.517
3791	$x^2 y'' - 3xy' + 4y = 8x^4$	[[_2nd_order, _with_linear_symmetries]]	✓	0.457
3792	$y'' - 6y' + 9y = 15 e^{3x} \sqrt{x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.552
3793	$y'' - 4y' + 4y = 4 e^{2x} \ln(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.575
3794	$4x^2 y'' + y = \sqrt{x} \ln(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.463
3795	$y''' + 3y'' - 4y = 0$	[[_3rd_order, _missing_x]]	✓	0.091
3796	$y''' + 11y'' + 36y' + 26y = 0$	[[_3rd_order, _missing_x]]	✓	0.079
3797	$y'' + 6y' + 9y = 4 e^{-3x}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.127
3798	$y'' + 6y' + 9y = 4 e^{-2x}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.135

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
3799	$y''' - 6y'' + 25y' = x^2$	[[_3rd_order, _missing_y]]	✓	0.136
3800	$y''' - 6y'' + 25y' = \sin(4x)$	[[_3rd_order, _missing_y]]	✓	0.188
3801	$y''' + 9y'' + 24y' + 16y = 8e^{-x} + 1$	[[_3rd_order, _with_linear_symmetries]]	✓	0.152
3802	$y'' - 4y = 5e^x$	[[_2nd_order, _with_linear_symmetries]]	✓	1.134
3803	$y'' + 2y' + y = 2xe^{-x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.125
3804	$y'' - y = 4e^x$	[[_2nd_order, _with_linear_symmetries]]	✓	1.230
3805	$y'' + xy = \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.263
3806	$y'' + 4y = \ln(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	5.362
3807	$y'' + 2y' - 3y = 5e^x$	[[_2nd_order, _with_linear_symmetries]]	✓	1.216
3808	$y'' + y = \tan(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.214
3809	$y'' + y = 4\cos(2x) + 3e^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.668
3810	$\begin{bmatrix} x'_1 = 2x_1 + x_2 \\ x'_2 = 2x_1 + 3x_2 \end{bmatrix}$	system_of_ODEs	✓	0.362
3811	$\begin{bmatrix} x'_1 = 2x_1 - 3x_2 \\ x'_2 = x_1 - 2x_2 \end{bmatrix}$	system_of_ODEs	✓	0.351
3812	$\begin{bmatrix} x'_1 = 4x_1 + 2x_2 \\ x'_2 = x_2 - x_1 \end{bmatrix}$	system_of_ODEs	✓	0.361
3813	$\begin{bmatrix} x'_1 = 2x_1 + 4x_2 \\ x'_2 = -4x_1 - 6x_2 \end{bmatrix}$	system_of_ODEs	✓	0.349
3814	$\begin{bmatrix} x'_1 = 2x_2 \\ x'_2 = -2x_1 \end{bmatrix}$	system_of_ODEs	✓	0.395

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
3815	$\begin{bmatrix} x'_1 = x_1 - 3x_2 \\ x'_2 = 3x_1 + x_2 \end{bmatrix}$	system_of_ODEs	✓	0.415
3816	$\begin{bmatrix} x'_1 = 2x_1 \\ x'_2 = x_2 - x_3 \\ x'_3 = x_2 + x_3 \end{bmatrix}$	system_of_ODEs	✓	0.528
3817	$\begin{bmatrix} x'_1 = -2x_1 + x_2 + x_3 \\ x'_2 = x_1 - x_2 + 3x_3 \\ x'_3 = -x_2 - 3x_3 \end{bmatrix}$	system_of_ODEs	✓	0.656
3818	$\begin{bmatrix} x'_1 = 2x_2 \\ x'_2 = x_1 + x_2 \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.483
3819	$\begin{bmatrix} x'_1 = 2x_1 + 5x_2 \\ x'_2 = -x_1 - 2x_2 \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.461
3820	$\begin{bmatrix} x'_1 = 2x_1 + x_2 \\ x'_2 = -x_1 + 4x_2 \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.467
3821	$\begin{bmatrix} x'_1 = x_1 + 2x_2 + 5e^{4t} \\ x'_2 = 2x_1 + x_2 \end{bmatrix}$	system_of_ODEs	✓	0.538
3822	$\begin{bmatrix} x'_1 = -2x_1 + x_2 + t \\ x'_2 = -2x_1 + x_2 + 1 \end{bmatrix}$	system_of_ODEs	✓	0.470
3823	$\begin{bmatrix} x'_1 = x_1 + x_2 + e^{2t} \\ x'_2 = 3x_1 - x_2 + 5e^{2t} \end{bmatrix}$	system_of_ODEs	✓	0.563
3824	$\begin{bmatrix} x'_1 = -\tan(t)x_1 + 3\cos(t)^2 \\ x'_2 = x_1 + \tan(t)x_2 + 2\sin(t) \end{bmatrix}$ i.c.	system_of_ODEs	✗	0.058
3825	$\begin{bmatrix} x'_1 = 2x_1 - 4x_2 \\ x'_2 = x_1 - 3x_2 \end{bmatrix}$	system_of_ODEs	✓	0.367
3826	$\begin{bmatrix} x'_1 = x_2 \\ x'_2 = -bx_1 - ax_2 \end{bmatrix}$	system_of_ODEs	✓	0.693

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
3827	$\begin{bmatrix} x'_1 = 3x_2 \\ x'_2 = -3x_1 \end{bmatrix}$	system_of_ODEs	✓	0.386
3828	$\begin{bmatrix} x'_1 = -2x_1 + 3x_2 \\ x'_2 = -2x_1 + 5x_2 \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.492
3829	$\begin{bmatrix} x'_1 = x_1 - 2x_2 \\ x'_2 = 2x_1 + x_2 \end{bmatrix}$	system_of_ODEs	✓	0.402
3830	$\begin{bmatrix} x'_1 = 3x_1 + x_2 \\ x'_2 = x_2 - x_1 \end{bmatrix}$	system_of_ODEs	✓	0.324
3831	$\begin{bmatrix} x'_1 = 2x_1 - x_2 + 3x_3 \\ x'_2 = 3x_1 + x_2 \\ x'_3 = 2x_1 - x_2 + 3x_3 \end{bmatrix}$	system_of_ODEs	✓	0.534
3832	$\begin{bmatrix} x'_1 = \frac{x_1}{t} \\ x'_2 = x_2 \end{bmatrix}$	system_of_ODEs	✗	0.053
3833	$\begin{bmatrix} x'_1 = \frac{x_1}{t} + tx_2 \\ x'_2 = -\frac{x_1}{t} \end{bmatrix}$	system_of_ODEs	✗	0.054
3834	$\begin{bmatrix} x'_1 = -x_1 + 2x_2 \\ x'_2 = 2x_1 + 2x_2 \end{bmatrix}$	system_of_ODEs	✓	0.372
3835	$\begin{bmatrix} x'_1 = -2x_1 - 7x_2 \\ x'_2 = -x_1 + 4x_2 \end{bmatrix}$	system_of_ODEs	✓	0.377
3836	$\begin{bmatrix} x'_1 = -4x_2 \\ x'_2 = 4x_1 \end{bmatrix}$	system_of_ODEs	✓	0.410
3837	$\begin{bmatrix} x'_1 = x_1 - 2x_2 \\ x'_2 = 5x_1 - 5x_2 \end{bmatrix}$	system_of_ODEs	✓	0.467
3838	$\begin{bmatrix} x'_1 = -x_1 + 2x_2 \\ x'_2 = -2x_1 - x_2 \end{bmatrix}$	system_of_ODEs	✓	0.464
3839	$\begin{bmatrix} x'_1 = 2x_1 \\ x'_2 = 5x_2 - 7x_3 \\ x'_3 = 2x_2 - 4x_3 \end{bmatrix}$	system_of_ODEs	✓	0.519

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
3840	$\begin{bmatrix} x'_1 = -x_1 \\ x'_2 = x_1 + 5x_2 - x_3 \\ x'_3 = x_1 + 6x_2 - 2x_3 \end{bmatrix}$	system_of_ODEs	✓	0.404
3841	$\begin{bmatrix} x'_1 = x_2 \\ x'_2 = -x_1 \\ x'_3 = 5x_3 \end{bmatrix}$	system_of_ODEs	✓	0.546
3842	$\begin{bmatrix} x'_1 = 2x_1 + 3x_3 \\ x'_2 = -4x_2 \\ x'_3 = -3x_1 + 2x_3 \end{bmatrix}$	system_of_ODEs	✓	0.541
3843	$\begin{bmatrix} x'_1 = 3x_1 + 2x_2 + 6x_3 \\ x'_2 = -2x_1 + x_2 - 2x_3 \\ x'_3 = -x_1 - 2x_2 - 4x_3 \end{bmatrix}$	system_of_ODEs	✓	0.621
3844	$\begin{bmatrix} x'_1 = -3x_2 + x_3 \\ x'_2 = -2x_1 - x_2 + x_3 \\ x'_3 = 2x_3 \end{bmatrix}$	system_of_ODEs	✓	0.507
3845	$\begin{bmatrix} x'_1 = 3x_1 - x_3 \\ x'_2 = -3x_2 - x_3 \\ x'_3 = 2x_2 - x_3 \end{bmatrix}$	system_of_ODEs	✓	0.664
3846	$\begin{bmatrix} x'_1 = x_1 + x_2 - x_3 \\ x'_2 = x_1 + x_2 + x_3 \\ x'_3 = -x_1 + x_2 + x_3 \end{bmatrix}$	system_of_ODEs	✓	0.400
3847	$\begin{bmatrix} x'_1 = 2x_1 - x_2 + 3x_3 \\ x'_2 = 2x_1 - x_2 + 3x_3 \\ x'_3 = 2x_1 - x_2 + 3x_3 \end{bmatrix}$	system_of_ODEs	✓	0.384
3848	$\begin{bmatrix} x'_1 = x_1 + 2x_2 + 3x_3 + 4x_4 \\ x'_2 = 4x_1 + 3x_2 + 2x_3 + x_4 \\ x'_3 = 4x_1 + 5x_2 + 6x_3 + 7x_4 \\ x'_4 = 7x_1 + 6x_2 + 5x_3 + 4x_4 \end{bmatrix}$	system_of_ODEs	✓	0.827
3849	$\begin{bmatrix} x'_1 = x_2 \\ x'_2 = -x_1 \\ x'_3 = -x_4 \\ x'_4 = x_3 \end{bmatrix}$	system_of_ODEs	✓	0.595

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
3850	$\begin{bmatrix} x'_1 = -x_1 + 4x_2 \\ x'_2 = 2x_1 - 3x_2 \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.568
3851	$\begin{bmatrix} x'_1 = -x_1 - 6x_2 \\ x'_2 = 3x_1 + 5x_2 \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.568
3852	$\begin{bmatrix} x'_1 = 2x_1 - x_2 + 3x_3 \\ x'_2 = 3x_1 + x_2 \\ x'_3 = 2x_1 - x_2 + 3x_3 \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.545
3853	$\begin{bmatrix} x'_1 = 4x_2 \\ x'_2 = -4x_1 \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.471
3854	$\begin{bmatrix} x'_1 = x_2 \\ x'_2 = -bx_1 - ax_2 \end{bmatrix}$	system_of_ODEs	✓	0.657
3855	$\begin{bmatrix} x'_1 = x_1 + x_2 \\ x'_2 = -x_1 + 3x_2 \end{bmatrix}$	system_of_ODEs	✓	0.322
3856	$\begin{bmatrix} x'_1 = -2x_2 \\ x'_2 = 2x_1 + 4x_2 \end{bmatrix}$	system_of_ODEs	✓	0.369
3857	$\begin{bmatrix} x'_1 = -3x_1 - 2x_2 \\ x'_2 = 2x_1 + x_2 \end{bmatrix}$	system_of_ODEs	✓	0.334
3858	$\begin{bmatrix} x'_1 = x_2 \\ x'_2 = x_3 \\ x'_3 = x_1 + x_2 - x_3 \end{bmatrix}$	system_of_ODEs	✓	0.480
3859	$\begin{bmatrix} x'_1 = 2x_1 + 2x_2 - x_3 \\ x'_2 = 2x_1 + x_2 - x_3 \\ x'_3 = 2x_1 + 3x_2 - x_3 \end{bmatrix}$	system_of_ODEs	✓	0.482
3860	$\begin{bmatrix} x'_1 = -2x_1 \\ x'_2 = x_1 - 3x_2 - x_3 \\ x'_3 = -x_1 + x_2 - x_3 \end{bmatrix}$	system_of_ODEs	✓	0.374

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
3861	$\begin{bmatrix} x'_1 = 15x_1 - 32x_2 + 12x_3 \\ x'_2 = 8x_1 - 17x_2 + 6x_3 \\ x'_3 = -x_3 \end{bmatrix}$	system_of_ODEs	✓	0.415
3862	$\begin{bmatrix} x'_1 = 4x_1 \\ x'_2 = x_1 + 4x_2 \\ x'_3 = x_2 + 4x_3 \end{bmatrix}$	system_of_ODEs	✓	0.336
3863	$\begin{bmatrix} x'_1 = x_1 \\ x'_2 = 3x_2 + 2x_3 \\ x'_3 = 2x_1 - 2x_2 - x_3 \end{bmatrix}$	system_of_ODEs	✓	0.377
3864	$\begin{bmatrix} x'_1 = 3x_1 + x_2 \\ x'_2 = -x_1 + 5x_2 \\ x'_3 = 4x_3 \end{bmatrix}$	system_of_ODEs	✓	0.359
3865	$\begin{bmatrix} x'_1 = x_2 - x_1 \\ x'_2 = -2x_1 - 3x_2 + x_3 \\ x'_3 = x_1 + x_2 - 2x_3 \end{bmatrix}$	system_of_ODEs	✓	0.405
3866	$\begin{bmatrix} x'_1 = -x_2 \\ x'_2 = x_1 \\ x'_3 = x_1 + 2x_3 + x_4 \\ x'_4 = x_2 + 2x_4 \end{bmatrix}$	system_of_ODEs	✓	0.943
3867	$\begin{bmatrix} x'_1 = -2x_1 + 3x_2 \\ x'_2 = 3x_1 - 2x_2 \\ x'_3 = x_1 + x_3 + x_4 \\ x'_4 = x_2 + x_4 \end{bmatrix}$	system_of_ODEs	✓	0.674
3868	$\begin{bmatrix} x'_1 = -x_2 \\ x'_2 = x_1 \\ x'_3 = x_1 - x_4 \\ x'_4 = x_2 + x_3 \end{bmatrix}$	system_of_ODEs	✓	0.617
3869	$\begin{bmatrix} x'_1 = -2x_1 - x_2 \\ x'_2 = x_1 - 4x_2 \end{bmatrix}$	system_of_ODEs	✓	0.455
	i.c.			

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
3870	$\begin{bmatrix} x'_1 = -2x_1 - x_2 + 4x_3 \\ x'_2 = -x_2 \\ x'_3 = -x_1 - 3x_2 + 2x_3 \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.405
3871	$\begin{bmatrix} x'_1 = 4x_1 - 3x_2 + e^{2t} \\ x'_2 = 2x_1 - x_2 + e^t \end{bmatrix}$	system_of_ODEs	✓	0.576
3872	$\begin{bmatrix} x'_1 = 2x_1 - x_2 \\ x'_2 = -x_1 + 2x_2 + 4e^t \end{bmatrix}$	system_of_ODEs	✓	0.529
3873	$\begin{bmatrix} x'_1 = 3x_1 + x_2 + te^{3t} \\ x'_2 = 3x_2 + e^{3t} \end{bmatrix}$	system_of_ODEs	✓	0.395
3874	$\begin{bmatrix} x'_1 = -x_1 + x_2 + 20e^{3t} \\ x'_2 = 3x_1 + x_2 + 12e^t \end{bmatrix}$	system_of_ODEs	✓	0.600
3875	$\begin{bmatrix} x'_1 = -x_1 + 2x_2 + 54te^{3t} \\ x'_2 = -2x_1 + 4x_2 + 9e^{3t} \end{bmatrix}$	system_of_ODEs	✓	0.559
3876	$\begin{bmatrix} x'_1 = 2x_1 + 4x_2 + 8\sin(2t) \\ x'_2 = -2x_1 - 2x_2 + 8\cos(2t) \end{bmatrix}$	system_of_ODEs	✓	1.148
3877	$\begin{bmatrix} x'_1 = 3x_1 + 2x_2 - 3e^t \\ x'_2 = -2x_1 - x_2 + 6te^t \end{bmatrix}$	system_of_ODEs	✓	0.537
3878	$\begin{bmatrix} x'_1 = x_1 - e^t \\ x'_2 = 2x_1 - 3x_2 + 2x_3 + 6e^{-t} \\ x'_3 = x_1 - 2x_2 + 2x_3 + e^t \end{bmatrix}$	system_of_ODEs	✓	0.696
3879	$\begin{bmatrix} x'_1 = -x_1 - 2x_2 + 2x_3 - e^{3t} \\ x'_2 = 2x_1 + 4x_2 - x_3 + 4e^{3t} \\ x'_3 = 3x_3 + 3e^{3t} \end{bmatrix}$	system_of_ODEs	✓	0.652
3880	$\begin{bmatrix} x'_1 = 2x_1 - 3x_2 + 34\sin(t) \\ x'_2 = -4x_1 - 2x_2 + 17\cos(t) \end{bmatrix}$	system_of_ODEs	✓	0.706
3881	$\begin{bmatrix} x'_1 = 2x_1 + x_2 \\ x'_2 = 2x_2 \end{bmatrix}$	system_of_ODEs	✓	0.300

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
3882	$\begin{bmatrix} x_1' = x_1 + 2x_2 \\ x_2' = -x_2 \end{bmatrix}$	system_of_ODEs	✓	0.321
3883	$\begin{bmatrix} x_1' = 3x_1 \\ x_2' = 3x_2 - x_3 \\ x_3' = x_2 + x_3 \end{bmatrix}$	system_of_ODEs	✓	0.365
3884	$\begin{bmatrix} x_1' = -3x_1 - 2x_2 \\ x_2' = 2x_1 + x_2 \end{bmatrix}$	system_of_ODEs	✓	0.337
3885	$\begin{bmatrix} x_1' = 3x_1 - x_2 \\ x_2' = 4x_1 - x_2 \end{bmatrix}$	system_of_ODEs	✓	0.346
3886	$\begin{bmatrix} x_1' = 2x_1 \\ x_2' = x_2 - 8x_3 \\ x_3' = 2x_2 - 7x_3 \end{bmatrix}$	system_of_ODEs	✓	0.408
3887	$\begin{bmatrix} x_1' = x_2 + 3x_3 \\ x_2' = 2x_1 + 3x_2 - 2x_3 \\ x_3' = 2x_2 + 2x_3 \end{bmatrix}$	system_of_ODEs	✓	9.719
3888	$\begin{bmatrix} x_1' = -8x_1 + 6x_2 - 3x_3 \\ x_2' = -12x_1 + 10x_2 - 3x_3 \\ x_3' = -2x_3 \end{bmatrix}$	system_of_ODEs	✓	0.410
3889	$\begin{bmatrix} x_1' = x_1 \\ x_2' = 6x_2 - 7x_3 + 3x_4 \\ x_3' = 3x_3 - x_4 \\ x_4' = -4x_2 + 9x_3 - 3x_4 \end{bmatrix}$	system_of_ODEs	✓	0.664
3890	$\begin{bmatrix} x_1' = -x_2 \\ x_2' = x_1 \\ x_3' = x_2 - x_4 \\ x_4' = x_2 + x_3 \end{bmatrix}$	system_of_ODEs	✓	0.672
3891	$\begin{bmatrix} x_1' = (2t - 1)x_1 \\ x_2' = e^{-t^2+t}x_1 + x_2 \end{bmatrix}$	system_of_ODEs	✗	0.055
3892	$\begin{bmatrix} x_1' = t \cot(t^2)x_1 + \frac{t \cos(t^2)x_3}{2} \\ x_2' = \frac{x_2}{t} - x_3 + 2 - t \sin(t) \\ x_3' = \csc(t^2)x_1 + x_2 - x_3 + 1 - t \cos(t) \end{bmatrix}$	system_of_ODEs	✗	0.069

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
3893	$\begin{bmatrix} x'_1 = -6x_1 + x_2 \\ x'_2 = 6x_1 - 5x_2 \end{bmatrix}$	system_of_ODEs	✓	0.379
3894	$\begin{bmatrix} x'_1 = 9x_1 - 2x_2 \\ x'_2 = 5x_1 - 2x_2 \end{bmatrix}$	system_of_ODEs	✓	0.372
3895	$\begin{bmatrix} x'_1 = 10x_1 - 4x_2 \\ x'_2 = 4x_1 + 2x_2 \end{bmatrix}$	system_of_ODEs	✓	0.331
3896	$\begin{bmatrix} x'_1 = -8x_1 + 5x_2 \\ x'_2 = -5x_1 + 2x_2 \end{bmatrix}$	system_of_ODEs	✓	0.337
3897	$\begin{bmatrix} x'_1 = 3x_1 + 4x_3 \\ x'_2 = 2x_2 \\ x'_3 = -4x_1 - 5x_3 \end{bmatrix}$	system_of_ODEs	✓	0.394
3898	$\begin{bmatrix} x'_1 = -3x_1 - x_2 \\ x'_2 = 4x_1 - 7x_2 \\ x'_3 = 6x_1 + 6x_2 + 4x_3 \end{bmatrix}$	system_of_ODEs	✓	0.534
3899	$\begin{bmatrix} x'_1 = 3x_1 + 13x_2 \\ x'_2 = -x_1 - 3x_2 \end{bmatrix}$	system_of_ODEs	✓	0.484
3900	$\begin{bmatrix} x'_1 = -3x_1 - 10x_2 \\ x'_2 = 5x_1 + 11x_2 \end{bmatrix}$	system_of_ODEs	✓	0.460
3901	$\begin{bmatrix} x'_1 = -x_1 - 5x_2 + x_3 \\ x'_2 = 4x_1 - 9x_2 - x_3 \\ x'_3 = 3x_3 \end{bmatrix}$	system_of_ODEs	✓	0.682
3902	$\begin{bmatrix} x'_1 = -4x_1 \\ x'_2 = 2x_1 + 5x_2 - 9x_3 \\ x'_3 = 5x_2 - x_3 \end{bmatrix}$	system_of_ODEs	✓	0.698
3903	$\begin{bmatrix} x'_1 = 2x_1 - 2x_2 + x_3 \\ x'_2 = x_1 - 4x_2 + x_3 \\ x'_3 = 2x_1 + 2x_2 - 3x_3 \end{bmatrix}$	system_of_ODEs	✓	0.609
3904	$\begin{bmatrix} x'_1 = 2x_1 - 4x_2 + 3x_3 \\ x'_2 = -9x_1 - 3x_2 - 9x_3 \\ x'_3 = 4x_1 + 4x_2 + 3x_3 \end{bmatrix}$	system_of_ODEs	✓	0.576

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
3905	$\begin{bmatrix} x'_1 = -17x_1 - 42x_3 \\ x'_2 = -7x_1 + 4x_2 - 14x_3 \\ x'_3 = 7x_1 + 18x_3 \end{bmatrix}$	system_of_ODEs	✓	0.558
3906	$\begin{bmatrix} x'_1 = -16x_1 + 30x_2 - 18x_3 \\ x'_2 = -8x_1 + 8x_2 + 16x_3 \\ x'_3 = 8x_1 - 15x_2 + 9x_3 \end{bmatrix}$	system_of_ODEs	✓	1.548
3907	$\begin{bmatrix} x'_1 = -7x_1 - 6x_2 - 7x_3 \\ x'_2 = -3x_1 - 3x_2 - 3x_3 \\ x'_3 = 7x_1 + 6x_2 + 7x_3 \end{bmatrix}$	system_of_ODEs	✓	0.409
3908	$\begin{bmatrix} x'_1 = 3x_1 - x_2 - 2x_3 \\ x'_2 = x_1 + 6x_2 + x_3 \\ x'_3 = x_1 + 6x_3 \end{bmatrix}$	system_of_ODEs	✓	0.474
3909	$\begin{bmatrix} x'_1 = -x_1 - 4x_2 - 2x_3 \\ x'_2 = -4x_1 - 5x_2 - 6x_3 \\ x'_3 = 4x_1 + 8x_2 + 7x_3 \end{bmatrix}$	system_of_ODEs	✓	0.760
3910	$\begin{bmatrix} x'_1 = 7x_1 - 2x_2 + 2x_3 \\ x'_2 = 4x_2 - x_3 \\ x'_3 = -x_1 + x_2 + 4x_3 \end{bmatrix}$	system_of_ODEs	✓	0.479
3911	$\begin{bmatrix} x'_1 = -3x_1 - x_2 - 2x_3 \\ x'_2 = x_1 + x_3 \\ x'_3 = x_1 \end{bmatrix}$	system_of_ODEs	✓	0.407
3912	$\begin{bmatrix} x'_1 = -2x_1 - x_3 \\ x'_2 = -x_2 \\ x'_3 = x_1 \end{bmatrix}$	system_of_ODEs	✓	0.362
3913	$\begin{bmatrix} x'_1 = 2x_1 + 13x_2 \\ x'_2 = -x_1 - 2x_2 \\ x'_3 = 2x_3 + 4x_4 \\ x'_4 = 2x_4 \end{bmatrix}$	system_of_ODEs	✓	0.711
3914	$\begin{bmatrix} x'_1 = 7x_1 - x_4 \\ x'_2 = 6x_2 \\ x'_3 = -x_3 \\ x'_4 = 2x_1 + 5x_4 \end{bmatrix}$	system_of_ODEs	✓	0.719

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
3915	$\begin{bmatrix} x'_1 = -6x_1 + x_2 + 1 \\ x'_2 = 6x_1 - 5x_2 + e^{-t} \end{bmatrix}$	system_of_ODEs	✓	0.602
3916	$\begin{bmatrix} x'_1 = 9x_1 - 2x_2 + 9t \\ x'_2 = 5x_1 - 2x_2 \end{bmatrix}$	system_of_ODEs	✓	0.553
3917	$\begin{bmatrix} x'_1 = 10x_1 - 4x_2 \\ x'_2 = 4x_1 + 2x_2 + \frac{e^{6t}}{t} \end{bmatrix}$	system_of_ODEs	✓	0.555
3918	$\begin{bmatrix} x'_1 = 2x_1 - 4x_2 + 3x_3 + e^{6t} \\ x'_2 = -9x_1 - 3x_2 - 9x_3 + 1 \\ x'_3 = 4x_1 + 4x_2 + 3x_3 \end{bmatrix}$	system_of_ODEs	✓	0.942
3919	$\begin{bmatrix} x'_1 = 2x_1 - 2x_2 + x_3 + t \\ x'_2 = x_1 - 4x_2 + x_3 \\ x'_3 = 2x_1 + 2x_2 - 3x_3 + 1 \end{bmatrix}$	system_of_ODEs	✓	0.961
3920	$\begin{bmatrix} x'_1 = -3x_1 + 4x_2 \\ x'_2 = 8x_1 + x_2 \end{bmatrix}$	system_of_ODEs	✓	0.377
3921	$\begin{bmatrix} x'_1 = -6x_2 \\ x'_2 = x_1 - 5x_2 \end{bmatrix}$	system_of_ODEs	✓	0.366
3922	$\begin{bmatrix} x'_1 = 5x_1 + 9x_2 \\ x'_2 = -2x_1 - x_2 \end{bmatrix}$	system_of_ODEs	✓	0.476
3923	$\begin{bmatrix} x'_1 = -4x_1 \\ x'_2 = -4x_2 \end{bmatrix}$	system_of_ODEs	✓	0.253
3924	$\begin{bmatrix} x'_1 = 7x_1 - 2x_2 \\ x'_2 = x_1 + 4x_2 \end{bmatrix}$	system_of_ODEs	✓	0.376
3925	$\begin{bmatrix} x'_1 = -3x_1 - 5x_2 \\ x'_2 = x_1 - 7x_2 \end{bmatrix}$	system_of_ODEs	✓	0.440
3926	$\begin{bmatrix} x'_1 = -2x_1 - x_2 \\ x'_2 = x_1 - 4x_2 \end{bmatrix}$	system_of_ODEs	✓	0.329
3927	$\begin{bmatrix} x'_1 = 10x_1 - 8x_2 \\ x'_2 = 2x_1 + 2x_2 \end{bmatrix}$	system_of_ODEs	✓	0.341

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
3928	<i>i.c.</i> $y' - 2y = 6e^{5t}$	[[_linear, 'class A']]	✓	0.304
3929	<i>i.c.</i> $y' + y = 8e^{3t}$	[[_linear, 'class A']]	✓	0.282
3930	<i>i.c.</i> $y' + 3y = 2e^{-t}$	[[_linear, 'class A']]	✓	0.296
3931	<i>i.c.</i> $y' + 2y = 4t$	[[_linear, 'class A']]	✓	0.288
3932	<i>i.c.</i> $y' - y = 6 \cos(t)$	[[_linear, 'class A']]	✓	0.355
3933	<i>i.c.</i> $y' - y = 5 \sin(2t)$	[[_linear, 'class A']]	✓	0.368
3934	<i>i.c.</i> $y' + y = 5e^t \sin(t)$	[[_linear, 'class A']]	✓	0.386
3935	<i>i.c.</i> $y'' + y' - 2y = 0$	[[_2nd_order, _missing_x]]	✓	0.275
3936	<i>i.c.</i> $y'' + 4y = 0$	[[_2nd_order, _missing_x]]	✓	0.338
3937	<i>i.c.</i> $y'' - 3y' + 2y = 4$	[[_2nd_order, _missing_x]]	✓	0.280
3938	<i>i.c.</i> $y'' - y' - 12y = 36$	[[_2nd_order, _missing_x]]	✓	0.270
3939	<i>i.c.</i> $y'' + y' - 2y = 10e^{-t}$	[[_2nd_order, _with_linear_symmetries]]	✓	0.322
3940	<i>i.c.</i> $y'' - 3y' + 2y = 4e^{3t}$	[[_2nd_order, _with_linear_symmetries]]	✓	0.297
3941	<i>i.c.</i> $y'' - 2y' = 30e^{-3t}$	[[_2nd_order, _missing_y]]	✓	0.312
3942	<i>i.c.</i> $y'' - y = 12e^{2t}$	[[_2nd_order, _with_linear_symmetries]]	✓	0.312
3943	<i>i.c.</i> $y'' + 4y = 10e^{-t}$	[[_2nd_order, _with_linear_symmetries]]	✓	0.355
3944	<i>i.c.</i> $y'' - y' - 6y = 12 - 6e^t$	[[_2nd_order, _with_linear_symmetries]]	✓	0.324

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
3945	$y'' - y = 6 \cos(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.340
3946	$y'' - 9y = 13 \sin(2t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.358
3947	$y'' - y = 8 \sin(t) - 6 \cos(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.369
3948	$y'' - y' - 2y = 10 \cos(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.372
3949	$y'' + 5y' + 4y = 20 \sin(2t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.361
3950	$y'' + 5y' + 4y = 20 \sin(2t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.367
3951	$y'' - 3y' + 2y = 3 \cos(t) + \sin(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.372
3952	$y'' + 4y = 9 \sin(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.385
3953	$y'' + y = 6 \cos(2t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.375
3954	$y'' + 9y = 7 \sin(4t) + 14 \cos(4t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.478
3955	$y'' - y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	0.221
3956	$y' + 2y = 2 \text{Heaviside}(t - 1)$ i.c.	[[_linear, 'class A']]	✓	0.421
3957	$y' - 2y = \text{Heaviside}(t - 2) e^{t-2}$ i.c.	[[_linear, 'class A']]	✓	0.513
3958	$y' - y = 4 \text{Heaviside}\left(t - \frac{\pi}{4}\right) \sin\left(t + \frac{\pi}{4}\right)$ i.c.	[[_linear, 'class A']]	✓	0.643
3959	$y' + 2y = \text{Heaviside}(t - \pi) \sin(2t)$ i.c.	[[_linear, 'class A']]	✓	0.677
3960	$y' + 3y = \begin{cases} 1 & 0 \leq t < 1 \\ 0 & 1 \leq t \end{cases}$ i.c.	[[_linear, 'class A']]	✓	0.573

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
3961	$y' - 3y = \begin{cases} \sin(t) & 0 \leq t < \frac{\pi}{2} \\ 1 & \frac{\pi}{2} \leq t \end{cases}$ i.c.	[[_linear, 'class A']]	✓	0.756
3962	$y' - 3y = -10 e^{-t+a} \sin(-2t + 2a) \text{Heaviside}(t - a)$ i.c.	[[_linear, 'class A']]	✓	11.175
3963	$y'' - y = \text{Heaviside}(t - 1)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.480
3964	$y'' - y' - 2y = 1 - 3 \text{Heaviside}(t - 2)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.718
3965	$y'' - 4y = \text{Heaviside}(t - 1) - \text{Heaviside}(t - 2)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.089
3966	$y'' + y = t - \text{Heaviside}(t - 1)(t - 1)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.499
3967	$y'' + 3y' + 2y = -10 \text{Heaviside}\left(t - \frac{\pi}{4}\right) \cos\left(t + \frac{\pi}{4}\right)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.343
3968	$y'' + y' - 6y = 30 \text{Heaviside}(t - 1) e^{-t+1}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.846
3969	$y'' + 4y' + 5y = 5 \text{Heaviside}(t - 3)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.109
3970	$y'' - 2y' + 5y = 2 \sin(t) + \text{Heaviside}\left(t - \frac{\pi}{2}\right) (1 + \cos(t))$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	2.396
3971	$y' - y = \begin{cases} 2 & 0 \leq t < 1 \\ -1 & 1 \leq t \end{cases}$ i.c.	[[_linear, 'class A']]	✓	0.553
3972	$y' - y = \begin{cases} 2 & 0 \leq t < 1 \\ -1 & 1 \leq t \end{cases}$ i.c.	[[_linear, 'class A']]	✓	0.553
3973	$y' + y = \delta(t - 5)$ i.c.	[[_linear, 'class A']]	✓	0.385

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
3974	$y' - 2y = \delta(t - 2)$ i.c.	[[_linear, 'class A']]	✓	0.462
3975	$y' + 4y = 3\delta(t - 1)$ i.c.	[[_linear, 'class A']]	✓	0.415
3976	$y' - 5y = 2e^{-t} + \delta(t - 3)$ i.c.	[[_linear, 'class A']]	✓	0.529
3977	$y'' - 3y' + 2y = \delta(t - 1)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.554
3978	$y'' - 4y = \delta(t - 3)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.540
3979	$y'' + 2y' + 5y = \delta\left(t - \frac{\pi}{2}\right)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.690
3980	$y'' - 4y' + 13y = \delta\left(t - \frac{\pi}{4}\right)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	2.843
3981	$y'' + 4y' + 3y = \delta(t - 2)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.638
3982	$y'' + 6y' + 13y = \delta\left(t - \frac{\pi}{4}\right)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.904
3983	$y'' + 9y = 15 \sin(2t) + \delta\left(t - \frac{\pi}{6}\right)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.762
3984	$y'' + 16y = 4 \cos(3t) + \delta\left(t - \frac{\pi}{3}\right)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.007
3985	$y'' + 2y' + 5y = 4 \sin(t) + \delta\left(t - \frac{\pi}{6}\right)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.546
3986	$y'' - y = 0$	[[_2nd_order, _missing_x]]	✓	0.524
3987	$y'' + 2xy' + 4y = 0$	[_erf]	✓	0.583
3988	$y'' - 2xy' - 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.536
3989	$y'' - x^2y' - 2xy = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.581
3990	$y'' + xy = 0$	[[_Emden, _Fowler]]	✓	0.493

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
3991	$y'' + xy' + 3y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.529
3992	$y'' - x^2y' - 3xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.595
3993	$y'' + 2x^2y' + 2xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.611
3994	$(x^2 - 3)y'' - 3xy' - 5y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.665
3995	$(x^2 + 1)y'' + 4xy' + 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.628
3996	$(-4x^2 + 1)y'' - 20xy' - 16y = 0$	[_Gegenbauer]	✓	0.650
3997	$(x^2 - 1)y'' - 6xy' + 12y = 0$	[_Gegenbauer]	✓	0.583
3998	$y'' + 2y' + 4xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.617
3999	$y'' + xy' + (x + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.623
4000	$y'' - ye^x = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.662
4001	$xy'' - (x - 1)y' - xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.791
4002	$(2x^2 + 1)y'' + 7xy' + 2y = 0$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	0.645
4003	$4y'' + xy' + 4y = 0$ i.c.	[_Lienard]	✓	0.525
4004	$y'' + 2x^2y' + xy = 2 \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.712
4005	$y'' + xy' - 4y = 6e^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.634
4006	$y'' + \frac{y'}{1-x} + xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.678
4007	$x^2y'' + \frac{xy'}{(-x^2 + 1)^2} + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.821
4008	$(-2 + x)^2y'' + (-2 + x)e^xy' + \frac{4y}{x} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.925

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
4009	$y'' + \frac{2y'}{x(x-3)} - \frac{y}{x^3(x+3)} = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.135
4010	$x^2y'' + x(1-x)y' - 7y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.053
4011	$4x^2y'' + xe^xy' - y = 0$	[[_Emden, _Fowler]]	✓	1.085
4012	$4xy'' - xy' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.231
4013	$x^2y'' - x \cos(x)y' + 5e^{2x}y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.961
4014	$4x^2y'' + 3xy' + xy = 0$	[[_Emden, _Fowler]]	✓	0.851
4015	$6x^2y'' + x(1+18x)y' + (1+12x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.948
4016	$x^2y'' + xy' - (x+2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.069
4017	$2xy'' + y' - 2xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.759
4018	$3x^2y'' - x(8+x)y' + 6y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.938
4019	$2x^2y'' - x(2x+1)y' + 2(4x-1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.040
4020	$x^2y'' + x(1-x)y' - (x+5)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.137
4021	$3x^2y'' + x(7+3x)y' + (1+6x)y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.927
4022	$x^2y'' + xy' + (1-x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.849
4023	$3x^2y'' + x(3x^2+1)y' - 2xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.935
4024	$4x^2y'' - 4x^2y' + (2x+1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.882
4025	$x^2y'' + x(3-2x)y' + (-2x+1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.862
4026	$x^2y'' - x(x+3)y' + (4-x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.954

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
4027	$x^2y'' + x(3 - x)y' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.884
4028	$x^2y'' + xy' - (4 + x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.316
4029	$x^2y'' - (-x^2 + x)y' + (x^3 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.894
4030	$x^2y'' - (2\sqrt{5} - 1)xy' + \left(\frac{19}{4} - 3x^2\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.257
4031	$x^2y'' + (-2x^5 + 9x)y' + (10x^4 + 5x^2 + 25)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.931
4032	$x^2y'' + \left(4x + \frac{1}{2}x^2 - \frac{1}{3}x^3\right)y' - \frac{7y}{4} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.602
4033	$x^2y'' + x^2y' + xy = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓	1.251
4034	$x^2y'' + x(x - 3)y' + (4 - x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.935
4035	$4x^2y'' + 2x^2y' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.960
4036	$x^2y'' + x \cos(x)y' - 2ye^x = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.206
4037	$x^2y'' + x^2y' - (x + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.944
4038	$x^2y'' + 2x^2y' + \left(x - \frac{3}{4}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.036
4039	$x^2y'' + xy' + (2x - 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.317
4040	$x^2y'' + x^3y' - (x + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.439
4041	$x^2(x^2 + 1)y'' + 7xe^xy' + 9(1 + \tan(x))y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.448

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
4042	$x^2(x+1)y'' + x^2y' - 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.028
4043	$x^2y'' + 3xy' + (1-x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.933
4044	$xy'' - y = 0$	[[_Emden, _Fowler]]	✓	1.184
4045	$x^2y'' + x(x^2+6)y' + 6y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.954
4046	$x^2y'' + x(1-x)y' - y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.970
4047	$4x^2y'' + (1-4x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.896
4048	$xy'' + y' - 2y = 0$	[[_Emden, _Fowler]]	✓	0.776
4049	$x^2y'' + xy' - (x+1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.291
4050	$x^2y'' - x(x+3)y' + 4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.844
4051	$x^2y'' - x^2y' - 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.912
4052	$x^2y'' - x^2y' - (2+3x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.404
4053	$x^2y'' + x(5-x)y' + 4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.929
4054	$4x^2y'' + 4x(1-x)y' + (2x-9)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.006
4055	$x^2y'' + 2x(x+2)y' + 2(x+1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.491
4056	$x^2y'' - x(1-x)y' + (1-x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.857
4057	$4x^2y'' + 4x(2x+1)y' + (4x-1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.007
4058	$4x^2y'' - (3+4x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.306
4059	$xy'' - xy' + y = 0$	[_Laguerre, [_2nd_order, _linear, '_with_symmetry_[0,F(x)]]']	✓	1.193

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
4060	$x^2 y'' + x(4+x)y' + (x+2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.331
4061	$x^2 y'' + xy' + \left(x^2 - \frac{9}{4}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.902
4062	$xy'' - y' + xy = 0$	[_Lienard]	✓	1.168
4063	$y'' + xy = 0$	[[_Emden, _Fowler]]	✓	0.490
4064	$y'' - x^2 y = 0$	[[_Emden, _Fowler]]	✓	0.468
4065	$(-x^2 + 1)y'' - 6xy' - 4y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.644
4066	$xy'' + y' + 2y = 0$	[[_Emden, _Fowler]]	✓	0.753
4067	$xy'' + 2y' + xy = 0$	[_Lienard]	✓	0.761
4068	$2xy'' + 5(-2x + 1)y' - 5y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.946
4069	$xy'' + y' + xy = 0$	[_Lienard]	✓	0.641
4070	$(4x^2 + 1)y'' - 8y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.594
4071	$x^2 y'' + xy' + \left(x^2 - \frac{1}{4}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.935
4072	$4xy'' + 3y' + 3y = 0$	[[_Emden, _Fowler]]	✓	0.851
4073	$x^2 y'' + \frac{3xy'}{2} - \frac{(x+1)y}{2} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.908
4074	$x^2 y'' - x(2-x)y' + (x^2 + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.303
4075	$x^2 y'' - 3xy' + 4(x+1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.926
4076	$y'' + \left(1 - \frac{3}{4x^2}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.216
4077	$5xy + 4y^2 + 1 + (x^2 + 2xy)y' = 0$	[_rational, [_Abel, '2nd type', 'class B']]	✓	1.431
4078	$2x \tan(y) + (x - x^2 \tan(y))y' = 0$	[[_1st_order, _with_exponential_symmetries]]	✓	1.773

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
4079	$y^2(x^2 + 1) + y + (2xy + 1)y' = 0$	[_rational, [_Abel, '2nd type', 'class B']]	✗	1.445
4080	$4xy^2 + 6y + (5x^2y + 8x)y' = 0$	[[_homogeneous, 'class G'], _rational, [_Abel, '2nd type', 'class B']]	✓	2.049
4081	$5x + 2y + 1 + (2x + y + 1)y' = 0$	[[_homogeneous, 'class C'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓	2.373
4082	$3x - y + 1 - (6x - 2y - 3)y' = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	1.359
4083	$x - 2y - 3 + (2x + y - 1)y' = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	1.843
4084	$6x + 4y + 1 + (4x + 2y + 2)y' = 0$ i.c.	[[_homogeneous, 'class C'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓	4.061
4085	$3x - y - 6 + (x + y + 2)y' = 0$ i.c.	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	13.267
4086	$2x + 3y + 1 + (4x + 6y + 1)y' = 0$ i.c.	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	1.702
4087	$y = y' + \frac{y'^2}{2}$	[_quadrature]	✓	0.663
4088	$(y - xy')^2 = 1 + y'^2$	[[_1st_order, _with_linear_symmetries], _rational, _Clairaut]	✓	0.564
4089	$y - x = y'^2 \left(1 - \frac{2y'}{3}\right)$	[[_homogeneous, 'class C'], _dAlembert]	✓	1.786
4090	$x^2y' = x(y - 1) + (y - 1)^2$	[[_homogeneous, 'class C'], _rational, _Riccati]	✓	1.533
4091	$y' = e^{-x}$	[_quadrature]	✓	0.305
4092	$y' = 1 - x^5 + \sqrt{x}$	[_quadrature]	✓	0.283
4093	$3y - 2x + (3x - 2)y' = 0$	[_linear]	✓	1.470

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
4094	$x^2 + x - 1 + (2xy + y)y' = 0$	[_separable]	✓	1.638
4095	$e^{2y} + (x + 1)y' = 0$	[_separable]	✓	1.435
4096	$(x + 1)y' - y^2x^2 = 0$	[_separable]	✓	1.331
4097	$y' = \frac{y - 2x}{x}$	[_linear]	✓	1.219
4098	$x^3 + y^3 - xy^2y' = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓	7.622
4099	$y' + y = 0$	[_quadrature]	✓	0.999
4100	$y' + y = x^2 + 2$	[[_linear, 'class A']]	✓	0.996
4101	$y' - y \tan(x) = x$	[_linear]	✓	1.447
	i.c.			
4102	$y' = e^{x-2y}$	[_separable]	✓	2.402
	i.c.			
4103	$y' = \frac{y^2 + x^2}{2x^2}$	[[_homogeneous, 'class A'], _rational, _Riccati]	✓	1.744
4104	$xy' = x + y$	[_linear]	✓	1.337
	i.c.			
4105	$e^{-y} + (x^2 + 1)y' = 0$	[_separable]	✓	2.145
	i.c.			
4106	$y' = e^x \sin(x)$	[_quadrature]	✓	0.661
	i.c.			
4107	$y' - 3y = e^{3x} + e^{-3x}$	[[_linear, 'class A']]	✓	1.571
	i.c.			
4108	$y' = x + \frac{1}{x}$	[_quadrature]	✓	0.415
	i.c.			
4109	$xy' + 2y = (2 + 3x)e^{3x}$	[_linear]	✓	1.598
	i.c.			
4110	$2 \sin(3x) \sin(2y)y' - 3 \cos(3x) \cos(2y) = 0$	[_separable]	✓	4.483
	i.c.			
4111	$xyy' = (x + 1)(1 + y)$	[_separable]	✓	1.595
	i.c.			

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
4112	$y' = \frac{2x - y}{2x + y}$ i.c.	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓	18.308
4113	$y' = \frac{3x - y + 1}{3y - x + 5}$ i.c.	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	11.640
4114	$3y - 7x + 7 + (7y - 3x + 3)y' = 0$ i.c.	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	1580.469
4115	$x + (2 - x + 2y)y' = xy(y' - 1)$	[_quadrature]	✓	0.376
4116	$\cos(x)y' + y \sin(x) = 1$ i.c.	[_linear]	✓	1.972
4117	$(x + y^2)y' + y - x^2 = 0$ i.c.	[_exact, _rational]	✓	2.362
4118	$y'' + 8y' + 15y = 0$	[[_2nd_order, _missing_x]]	✓	0.823
4119	$y'' + 2y' - 15y = 0$	[[_2nd_order, _missing_x]]	✓	0.851
4120	$y'' + 6y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓	0.857
4121	$y'' + 6y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓	0.853
4122	$y'' - 3y' + 2y = 0$	[[_2nd_order, _missing_x]]	✓	0.788
4123	$y'' - 4y' + 13y = 0$	[[_2nd_order, _missing_x]]	✓	1.873
4124	$2y'' + 3y' = 0$	[[_2nd_order, _missing_x]]	✓	1.394
4125	$y'' + 25y = 0$	[[_2nd_order, _missing_x]]	✓	1.943
4126	$4y'' + y' + y = 0$	[[_2nd_order, _missing_x]]	✓	1.966
4127	$y'' = 0$	[[_2nd_order, _quadrature]]	✓	1.355
4128	$y'' - 6y' + 5y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	1.403

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
4129	$y'' - 4y' + 3y = 1$	[[_2nd_order, _missing_x]]	✓	0.982
4130	$y'' + y' - 2y = -2x^2 + 2x + 2$	[[_2nd_order, _with_linear_symmetries]]	✓	1.034
4131	$y'' + y = x^3 + x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.911
4132	$y'' - 6y' + 9y = e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.005
4133	$y'' + 2y = x + e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓	3.072
4134	$y'' + 2y = e^x + 2$	[[_2nd_order, _with_linear_symmetries]]	✓	3.510
4135	$y'' - y = 2e^x$	[[_2nd_order, _with_linear_symmetries]]	✓	1.111
4136	$y'' + y = \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	2.842
4137	$y'' - y = 4xe^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.148
4138	$y'' - 2y' + 3y = x^3 + \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	76.289
4139	$(x^2 + 1)y'' + xy' - 4y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)']]]	✓	1.448
4140	$x^2y'' - 2xy' + 2y = x^2 + 2$	[[_2nd_order, _with_linear_symmetries]]	✓	2.266
4141	<i>i.c.</i> $y'' + 2ny' + n^2y = A \cos(xp)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.579
4142	$y''' - 3y'' + 2y' = 0$	[[_3rd_order, _missing_x]]	✓	0.065
4143	$y''' - y'' - 12y = 0$	[[_3rd_order, _missing_x]]	✓	0.116
4144	$y''' - 3y'' + 4y' - 2y = 0$	[[_3rd_order, _missing_x]]	✓	0.071
4145	$y''' + 2y'' - 5y' - 6y = 0$	[[_3rd_order, _missing_x]]	✓	0.070

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
4146	$y''' - 3y'' + 3y' - y = 0$	[[_3rd_order, _missing_x]]	✓	0.065
4147	$y''' + 4y' = 0$	[[_3rd_order, _missing_x]]	✓	0.068
4148	$y'''' + 5y'' + 4y = 0$	[[_high_order, _missing_x]]	✓	0.076
4149	$y'''' - y''' - 9y'' - 11y' - 4y = 0$	[[_high_order, _missing_x]]	✓	0.072
4150	$y^{(6)} + 9y'''' + 24y'' + 16y = 0$	[[_high_order, _missing_x]]	✓	0.091
4151	$y''' - y = 0$	[[_3rd_order, _missing_x]]	✓	0.074
4152	$y'' - 3y' + 2y = \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.322
4153	$y'' + 2y' - 2y = x^2 + 1$	[[_2nd_order, _with_linear_symmetries]]	✓	1.428
4154	$y'' + \frac{y'}{2} + \frac{y}{8} = \frac{\sin(x)}{8} - \frac{\cos(x)}{4}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	44.675
4155	$y'' + 3y' + 2y = e^x - 2e^{2x} + \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.699
4156	$y'' - 4y' + 4y = x^3e^{2x} + xe^{2x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.112
4157	$y'' + 3y' + 2y = x \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.505
4158	$y'' - 6y' + 9y = e^x \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.451
4159	$y''' - y'' - 4y' + 4y = 2x^2 - 4x - 1 + 2x^2e^{2x} + 5xe^{2x} + e^{2x}$	[[_3rd_order, _linear, _nonhomogeneous]]	✓	0.165
4160	$y'''' + 10y'' + 9y = \cos(2x + 3)$	[[_high_order, _linear, _nonhomogeneous]]	✓	0.205
4161	$y'' - 3y' + 2y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	1.071
4162	$y'' + 9y = 8 \sin(x)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.538

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
4163	<i>i.c.</i> $25y'' - 30y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓	1.246
4164	<i>i.c.</i> $9y'' - 6y' + y = (4x^2 + 24x + 18)e^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.507
4165	$x^3y''' + x^2y'' - 2xy' + 2y = 0$	[[_3rd_order, _exact, _linear, _homogeneous]]	✓	0.129
4166	$\begin{bmatrix} y_1' = y_2 \\ y_2' = 3y_2 - 2y_1 \end{bmatrix}$	system_of_ODEs	✓	0.325
4167	$\begin{bmatrix} y_1' = y_1 + y_2 \\ y_2' = 3y_2 - y_1 \end{bmatrix}$	system_of_ODEs	✓	0.296
4168	$\begin{bmatrix} y_1' = y_1 - y_2 \\ y_2' = 2y_1 + 3y_2 \end{bmatrix}$	system_of_ODEs	✓	0.421
4169	$\begin{bmatrix} y_1' = 4y_2 \\ y_2' = 4y_2 - y_1 \end{bmatrix}$	system_of_ODEs	✓	0.306
4170	$\begin{bmatrix} y_1' = y_1 + y_2 \\ y_2' = y_1 - y_2 \end{bmatrix}$	system_of_ODEs	✓	0.432
4171	$\begin{bmatrix} y_1' = y_2 \\ y_2' = y_1 \end{bmatrix}$	system_of_ODEs	✓	0.308
4172	$\begin{bmatrix} y_1' = y_2 - y_1 \\ y_2' = 3y_1 - 4y_2 \end{bmatrix}$	system_of_ODEs	✓	0.522
4173	<i>i.c.</i> $\begin{bmatrix} 2y_1' = y_1 + y_2 \\ 2y_2' = 5y_2 - 3y_1 \end{bmatrix}$	system_of_ODEs	✓	0.448
4174	<i>i.c.</i> $\begin{bmatrix} y_1' = -2y_2 \\ y_2' = y_1 + 2y_2 \end{bmatrix}$	system_of_ODEs	✓	0.438
4175	$\begin{bmatrix} y_1' = 1 \\ y_2' = 2y_1 \end{bmatrix}$	system_of_ODEs	✓	0.341
4176	$\begin{bmatrix} 2y_1' + y_2' - 4y_1 - y_2 = e^x \\ y_1' + 3y_1 + y_2 = 0 \end{bmatrix}$	system_of_ODEs	✓	0.657

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
4177	$\begin{bmatrix} y_1' = y_2 \\ y_2' = -y_1 + y_3 \\ y_3' = -y_2 \end{bmatrix}$	system_of_ODEs	✓	0.562
4178	$y'' + \frac{y}{x^2} = 0$	[[_Emden, _Fowler]]	✓	0.599
4179	$y'' - \frac{(-3x^2 + x)y'}{2x^3 + 2x^2} + \frac{y}{2x^3 + 2x^2} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.870
4180	$y'' + \left(1 - \frac{1}{x}\right)y' - \frac{y}{x} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.844
4181	$y'' + \frac{2y'}{x} + y = 0$	[_Lienard]	✓	0.765
4182	$y'' - 2y' + \left(\frac{1}{4x^2} - 1\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.892
4183	$y'' - \frac{(x^2 + 4x + 2)((1 - x)y' + y)}{x(-x^2 + 2)} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.010
4184	$y'' - \frac{3y'}{x(1-x)} + \frac{2y}{x(1-x)} = 0$	[_Jacobi, [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓	0.831
4185	$y'' + \frac{(1-x)y'}{2x} - \frac{y}{4x} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.813
4186	$y'' - \frac{y'}{2x} + \frac{y}{4x} = 0$	[[_Emden, _Fowler]]	✓	0.892
4187	$y'' - \frac{y'}{x} + \left(1 + \frac{1}{x^2}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.750
4188	$y'' + \frac{(1-5x)y'}{-x^2+x} - \frac{4y}{-x^2+x} = 0$	[_Jacobi]	✓	0.776
4189	$y'' + \frac{(x-1)y'}{x(x+1)} - \frac{y}{x(x+1)} = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓	0.790
4190	$yy' = x$	[_separable]	✓	3.065

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
Continued from previous page

#	ODE	CAS classification	Solved?	time (sec)
4191	$y' - y = x^3$	[[_linear, 'class A']]	✓	1.271
4192	$y' + y \cot(x) = x$	[_linear]	✓	1.199
4193	$y' + y \cot(x) = \tan(x)$	[_linear]	✓	1.436
4194	$y' + y \tan(x) = \cot(x)$	[_linear]	✓	1.382
4195	$y' + y \ln(x) = x^{-x}$	[_linear]	✓	1.542
4196	$xy' + y = x$	[_linear]	✓	1.830
4197	$-y + xy' = x^3$	[_linear]	✓	1.231
4198	$xy' + ny = x^n$	[_linear]	✓	0.971
4199	$xy' - ny = x^n$	[_linear]	✓	0.795
4200	$(x^3 + x)y' + y = x$	[_linear]	✓	2.635
4201	$\cot(x)y' + y = x$	[_linear]	✓	1.528
4202	$\cot(x)y' + y = \tan(x)$	[_linear]	✓	1.925
4203	$\tan(x)y' + y = \cot(x)$	[_linear]	✓	1.860
4204	$\tan(x)y' = y - \cos(x)$	[_linear]	✓	2.398
4205	$y' + y \cos(x) = \sin(2x)$	[_linear]	✓	1.597
4206	$\cos(x)y' + y = \sin(2x)$	[_linear]	✓	2.572
4207	$y' + y \sin(x) = \sin(2x)$	[_linear]	✓	1.670
4208	$\sin(x)y' + y = \sin(2x)$	[_linear]	✓	2.780
4209	$\sqrt{x^2 + 1}y' + y = 2x$	[_linear]	✓	1.552
4210	$\sqrt{x^2 + 1}y' - y = 2\sqrt{x^2 + 1}$	[_linear]	✓	1.687
4211	$\sqrt{(x+a)(x+b)}(2y' - 3) + y = 0$	[_linear]	✓	2.375
4212	$\sqrt{(x+a)(x+b)}y' + y = \sqrt{x+a} - \sqrt{x+b}$	[_linear]	✓	3.307
4213	$3y^2y' = 2x - 1$	[_separable]	✓	1.737
4214	$y' = 6xy^2$	[_separable]	✓	1.526

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
4215	$y' = e^y \sin(x)$	[_separable]	✓	1.386
4216	$y' = e^{x-y}$	[_separable]	✓	1.496
4217	$y' = x \sec(y)$	[_separable]	✓	1.125
4218	$y' = 3 \cos(y)^2$	[_quadrature]	✓	1.177
4219	$xy' = y$	[_separable]	✓	1.221
4220	$(1-x)y' = y$	[_separable]	✓	1.500
4221	$y' = \frac{4xy}{x^2+1}$	[_separable]	✓	1.335
4222	$y' = \frac{2y}{x^2-1}$	[_separable]	✓	1.328
4223	$x^2y' - y^2 = 0$ i.c.	[_separable]	✓	2.906
4224	$y' + 2xy = 0$ i.c.	[_separable]	✓	1.536
4225	$\cot(x)y' = y$ i.c.	[_separable]	✓	2.028
4226	$y' = xe^{-2y}$ i.c.	[_separable]	✓	1.782
4227	$y' - 2xy = 2x$ i.c.	[_separable]	✓	1.433
4228	$xy' = xy + y$ i.c.	[_separable]	✓	1.514
4229	$(x^3+1)y' = 3x^2 \tan(x)$ i.c.	[_quadrature]	✓	1.082
4230	$x \cos(y)y' = 1 + \sin(y)$ i.c.	[_separable]	✓	2.965
4231	$xy' = 2y(y-1)$ i.c.	[_separable]	✓	2.261
4232	$2xy' = 1 - y^2$ i.c.	[_separable]	✓	1.909
4233	$(1-x)y' = xy$	[_separable]	✓	1.306

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
4234	$(x^2 - 1)y' = (x^2 + 1)y$	[_separable]	✓	1.487
4235	$y' = e^x(1 + y^2)$	[_separable]	✓	2.085
4236	$e^y y' + 2x = 2x e^y$	[_separable]	✓	1.414
4237	$e^{2x} y y' + 2x = 0$ i.c.	[_separable]	✓	2.835
4238	$x y y' = \sqrt{y^2 - 9}$ i.c.	[_separable]	✓	4.272
4239	$(y - 1 + x)y' = x + 1 - y$	[[_homogeneous, 'class C'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓	2.634
4240	$x y y' = 2x^2 - y^2$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓	4.835
4241	$x^2 - y^2 + x y y' = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓	4.482
4242	$x^2 y' - 2x y - 2y^2 = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓	2.281
4243	$x^2 y' = 3(y^2 + x^2) \arctan\left(\frac{y}{x}\right) + x y$	[[_homogeneous, 'class A'], _dAlembert]	✓	14.336
4244	$x \sin\left(\frac{y}{x}\right) y' = y \sin\left(\frac{y}{x}\right) + x$	[[_homogeneous, 'class A'], _dAlembert]	✓	4.669
4245	$x y' = y + 2e^{-\frac{y}{x}}$	[[_homogeneous, 'class D']]	✓	1.544
4246	$y' = (x + y)^2$	[[_homogeneous, 'class C'], _Riccati]	✓	1.489
4247	$y' = \sin(x + 1 - y)^2$	[[_homogeneous, 'class C'], _dAlembert]	✓	8.283
4248	$y' = \frac{x + y + 4}{x - y - 6}$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	1.845

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
4249	$y' = \frac{x+y+4}{x+y-6}$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	1.247
4250	$\left(x + \frac{2}{y}\right) y' + y = 0$	[[_homogeneous, 'class G'], _exact, _rational, [_Abel, '2nd type', 'class B']]	✓	1.439
4251	$\sin(x) \tan(y) + 1 + \cos(x) \sec(y)^2 y' = 0$	['y=_G(x,y)']	✓	39.289
4252	$y - x^3 + (x + y^3) y' = 0$	[_exact, _rational]	✓	1.167
4253	$2y^2 - 4x + 5 = (4 - 2y + 4xy) y'$	[_rational, [_Abel, '2nd type', 'class B']]	✗	1.433
4254	$y + y \cos(xy) + (x + x \cos(xy)) y' = 0$	[_separable]	✓	1.595
4255	$\cos(x) \cos(y)^2 + 2 \sin(x) \sin(y) \cos(y) y' = 0$	[_separable]	✓	2.621
4256	$(\sin(x) \sin(y) - x e^y) y' = e^y + \cos(x) \cos(y)$	[_exact]	✓	28.292
4257	$-\frac{\sin\left(\frac{x}{y}\right)}{y} + \frac{x \sin\left(\frac{x}{y}\right) y'}{y^2} = 0$	[_separable]	✓	1.473
4258	$1 + y + (1 - x) y' = 0$	[_separable]	✓	1.421
4259	$2xy^3 + y \cos(x) + (3y^2x^2 + \sin(x)) y' = 0$	[_exact, [_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)']]	✓	41.676
4260	$1 = \frac{y}{1 - y^2x^2} + \frac{xy'}{1 - y^2x^2}$	[_exact, _rational, _Riccati]	✓	1.356
4261	$(3x^2 - y^2) y' - 2xy = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	3.866
4262	$xy - 1 + (x^2 - xy) y' = 0$	[_rational, [_1st_order, '_with_symmetry_[F(x),G(x)']], [_Abel, '2nd type', 'class B']]	✓	1.127

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
4263	$(x + 3x^3y^4) y' + y = 0$	[[_homogeneous, 'class G'], _rational]	✓	6.214
4264	$(x - 1 - y^2) y' - y = 0$	[[_1st_order, _with_linear_symmetries], _rational]	✓	1.340
4265	$y - (x + xy^3) y' = 0$	[_separable]	✓	2.326
4266	$xy' = x^5 + x^3y^2 + y$	[[_homogeneous, 'class D'], _rational, _Riccati]	✓	2.958
4267	$(x + y) y' = y - x$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓	2.655
4268	$xy' = y + x^2 + 9y^2$	[[_homogeneous, 'class D'], _rational, _Riccati]	✓	1.212
4269	$xy' - 3y = x^4$	[_linear]	✓	1.313
4270	$y' + y = \frac{1}{e^{2x} + 1}$	[_linear]	✓	1.531
4271	$(x^2 + 1) y' + 2xy = \cot(x)$	[_linear]	✓	1.513
4272	$y' + y = 2x e^{-x} + x^2$	[[_linear, 'class A']]	✓	2.506
4273	$y' + y \cot(x) = 2x \csc(x)$	[_linear]	✓	1.523
4274	$2y - x^3 = xy'$	[_linear]	✓	1.353
4275	$(1 - xy) y' = y^2$	[[_homogeneous, 'class G'], _rational, [_Abel, '2nd type', 'class B']]	✓	1.373
4276	$2x + 3y + 1 + (2y - 3x + 5) y' = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	1.875
4277	$xy' = \sqrt{y^2 + x^2}$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	9.042
4278	$y^2 = (x^3 - xy) y'$	[[_homogeneous, 'class G'], _rational, [_Abel, '2nd type', 'class B']]	✓	2.472
4279	$x^2y^3 + y = (x^3y^2 - x) y'$	[[_homogeneous, 'class G'], _rational]	✓	1.995

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
4280	$xy' + y = x \cos(x)$	[_linear]	✓	1.197
4281	$(xy - x^2) y' = y^2$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓	4.274
4282	$(e^x - 3y^2x^2) y' + y e^x = 2xy^3$	[_exact, [_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)']]]	✓	2.131
4283	$y + x^2 = xy'$	[_linear]	✓	1.146
4284	$xy' + y = x^2 \cos(x)$	[_linear]	✓	1.234
4285	$6x + 4y + 3 + (3x + 2y + 2) y' = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	1.307
4286	$\cos(x + y) - x \sin(x + y) = x \sin(x + y) y'$	[[_1st_order, _with_linear_symmetries], _exact]	✓	4.069
4287	$y^2 e^{xy} + \cos(x) + (e^{xy} + xy e^{xy}) y' = 0$	[_exact]	✓	35.321
4288	$y' \ln(x - y) = 1 + \ln(x - y)$	[[_homogeneous, 'class C'], _exact, _dAlembert]	✓	1.938
4289	$y' + 2xy = e^{-x^2}$	[_linear]	✓	1.379
4290	$y^2 - 3xy - 2x^2 = (x^2 - xy) y'$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓	4.416
4291	$(x^2 + 1) y' + 2xy = 4x^3$	[_linear]	✓	1.435
4292	$e^x \sin(y) - y \sin(xy) + (e^x \cos(y) - x \sin(xy)) y' = 0$	[_exact]	✓	38.180
4293	$(x e^y + y - x^2) y' = 2xy - e^y - x$	[_exact]	✓	1.678
4294	$e^x(x + 1) = (x e^x - y e^y) y'$	['y=_G(x,y)']	✓	1.675
4295	$2xy + x^2 y' = 0$	[_separable]	✓	1.664
4296	$x + y + (x - y) y' = 0$ i.c.	[[_homogeneous, 'class A'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓	1.487
4297	$\ln(x) y' + \frac{x + y}{x} = 0$	[_linear]	✓	1.101

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
4298	$\cos(y) - x \sin(y) y' = \sec(x)^2$ i.c.	[_exact]	✓	39.525
4299	$y \sin\left(\frac{x}{y}\right) + x \cos\left(\frac{x}{y}\right) - 1 + \left(x \sin\left(\frac{x}{y}\right) - \frac{x^2 \cos\left(\frac{x}{y}\right)}{y}\right) y' = 0$	[_exact]	✓	35.924
4300	$\frac{x}{y^2 + x^2} + \frac{y}{x^2} + \left(\frac{y}{y^2 + x^2} - \frac{1}{x}\right) y' = 0$ i.c.	[[_homogeneous, 'class A'], _exact, _rational, _dAlembert]	✓	553.875
4301	$x^2(1 + y^2) y' + y^2(x^2 + 1) = 0$	[_separable]	✓	1.376
4302	$x(x - 1) y' = \cot(y)$	[_separable]	✓	2.822
4303	$ry' = \frac{(a^2 - r^2) \tan(y)}{a^2 + r^2}$	[_separable]	✓	2.462
4304	$\sqrt{x^2 + 1} y' + \sqrt{1 + y^2} = 0$	[_separable]	✓	4.121
4305	$y' = \frac{x(1 + y^2)}{y(x^2 + 1)}$ i.c.	[_separable]	✓	4.021
4306	$y^2 y' = 2 + 3y^6$ i.c.	[_quadrature]	✓	205.460
4307	$\cos(y)^2 + (1 + e^{-x}) \sin(y) y' = 0$	[_separable]	✓	3.029
4308	$y' = \frac{x^3 e^{x^2}}{y \ln(y)}$	[_separable]	✓	2.232
4309	$x \cos(y)^2 + e^x \tan(y) y' = 0$	[_separable]	✓	6.891
4310	$x(1 + y^2) + (2y + 1) e^{-x} y' = 0$	[_separable]	✓	1.688
4311	$xy^3 + e^{x^2} y' = 0$	[_separable]	✓	2.450
4312	$x \cos(y)^2 + \tan(y) y' = 0$	[_separable]	✓	19.911
4313	$xy^3 + (1 + y) e^{-x} y' = 0$	[_separable]	✓	2.054

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
4314	$y' + \frac{x}{y} + 2 = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓	1.868
4315	$-y + xy' = x \cot\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A'], _dAlembert]	✓	6.240
4316	$x \cos\left(\frac{y}{x}\right)^2 - y + xy' = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓	3.588
4317	$xy' = y(1 + \ln(y) - \ln(x))$	[[_homogeneous, 'class A'], _dAlembert]	✓	4.082
4318	$xy + (y^2 + x^2)y' = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	5.104
4319	$\left(1 - e^{-\frac{y}{x}}\right)y' + 1 - \frac{y}{x} = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓	6.067
4320	$x^2 - xy + y^2 - xyy' = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓	4.391
4321	$(3 + 2x + 4y)y' = 1 + x + 2y$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	1.404
4322	$y' = \frac{2x + y - 1}{x - y - 2}$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	3.651
4323	$y + 2 = (2x + y - 4)y'$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	2.933
4324	$y' = \sin(x - y)^2$	[[_homogeneous, 'class C'], _dAlembert]	✓	5.787
4325	$y' = (x + 1)^2 + (4y + 1)^2 + 8xy + 1$	[[_homogeneous, 'class C'], _Riccati]	✓	38.801
4326	$3x^2 + 6xy^2 + (6x^2y + 4y^3)y' = 0$	[_exact, _rational]	✓	1.633
4327	$2x^2 - xy^2 - 2y + 3 - (x^2y + 2x)y' = 0$	[_exact, _rational, [_Abel, '2nd type', 'class B']]	✓	1.540

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
4328	$xy^2 + x - 2y + 3 + (x^2y - 2x - 2y)y' = 0$	[_exact, _rational, [_Abel, '2nd type', 'class B']]	✓	1.493
4329	$3y(x^2 - 1) + (x^3 + 8y - 3x)y' = 0$	[_exact, _rational, [_1st_order, '_with_symmetry_[F(x)*G(y),0]'], [_Abel, '2nd type', 'class A']]	✓	1.371
4330	$x^2 + \ln(y) + \frac{xy'}{y} = 0$	[_exact, [_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]']]	✓	2.193
4331	$2x(3x + y - ye^{-x^2}) + (x^2 + 3y^2 + e^{-x^2})y' = 0$	[_exact]	✓	35.481
4332	$3 + y + 2y^2 \sin(x)^2 + (x + 2xy - y \sin(2x))y' = 0$	[_exact, [_Abel, '2nd type', 'class B']]	✓	36.661
4333	$2xy + (x^2 + 2xy + y^2)y' = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	70.995
4334	$x^2 - \sin(y)^2 + x \sin(2y)y' = 0$	['y=_G(x,y)']	✓	2.855
4335	$y(2x - y + 2) + 2(x - y)y' = 0$	[[_homogeneous, 'class D'], _rational, [_Abel, '2nd type', 'class A']]	✓	1.776
4336	$4xy + 3y^2 - x + x(x + 2y)y' = 0$	[_rational, [_Abel, '2nd type', 'class B']]	✓	1.448
4337	$y + x(y^2 + \ln(x))y' = 0$	[[_1st_order, '_with_symmetry_[F(x),G(y)]']]	✓	2.496
4338	$x^2 + 2x + y + (3x^2y - x)y' = 0$	[_rational, [_1st_order, '_with_symmetry_[F(x),G(x)]'], [_Abel, '2nd type', 'class B']]	✓	1.470
4339	$y^2 + (xy + y^2 - 1)y' = 0$	[[_1st_order, _with_linear_symmetries], _rational]	✓	1.127

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
4340	$3y^2 + 3x^2 + x(x^2 + 3y^2 + 6y) y' = 0$	[_rational]	✓	1.401
4341	$2y(x + y + 2) + (y^2 - x^2 - 4x - 1) y' = 0$	[[_1st_order, _with_linear_symmetries], _rational]	✓	2.844
4342	$2 + y^2 + 2x + 2yy' = 0$	[_rational, _Bernoulli]	✓	1.364
4343	$2xy^2 - y + (y^2 + x + y) y' = 0$	[_rational]	✓	1.363
4344	$y(x + y) + (x + 2y - 1) y' = 0$	[_rational, [_Abel, '2nd type', 'class A']]	✓	1.256
4345	$2x(x^2 - \sin(y) + 1) + (x^2 + 1) \cos(y) y' = 0$	['y=_G(x,y)']	✓	2.886
4346	$x^2 + y + y^2 - xy' = 0$	[[_homogeneous, 'class D'], _rational, _Riccati]	✓	1.442
4347	$x - \sqrt{y^2 + x^2} + (y - \sqrt{y^2 + x^2}) y' = 0$	[[_homogeneous, 'class G'], _dAlembert]	✓	76.696
4348	$y\sqrt{1 + y^2} + (x\sqrt{1 + y^2} - y) y' = 0$	[[_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓	3.536
4349	$y^2 - (xy + x^3) y' = 0$	[[_homogeneous, 'class G'], _rational, [_Abel, '2nd type', 'class B']]	✓	2.917
4350	$y - 2x^3 \tan\left(\frac{y}{x}\right) - xy' = 0$	[[_homogeneous, 'class D']]	✓	2.204
4351	$2y^2x^2 + y + (x^3y - x) y' = 0$	[[_homogeneous, 'class G'], _rational, [_Abel, '2nd type', 'class B']]	✓	1.619
4352	$y^2 + (xy + \tan(xy)) y' = 0$	[[_homogeneous, 'class G']]	✓	47.578
4353	$2x^2y^4 - y + (4x^3y^3 - x) y' = 0$	[[_homogeneous, 'class G'], _rational]	✓	3.603
4354	$x^2 + y^3 + y + (x^3 + y^2 - x) y' = 0$	[_rational]	✗	1.799
4355	$y(1 + y^2) + x(y^2 - x + 1) y' = 0$	[_rational, [_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓	2.343

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
4356	$y^2 + (e^x - y)y' = 0$	[[_1st_order, _with_linear_symmetries], [_Abel, '2nd type', 'class A']]	✓	1.144
4357	$y^2x^2 - 2y + (x^3y - x)y' = 0$	[[_homogeneous, 'class G'], _rational, [_Abel, '2nd type', 'class B']]	✓	1.430
4358	$2x^3y + y^3 - (x^4 + 2xy^2)y' = 0$	[[_homogeneous, 'class G'], _rational]	✓	12.507
4359	$1 + y \cos(x) - \sin(x)y' = 0$	[_linear]	✓	0.236
4360	$(\sin(y)^2 + x \cot(y))y' = 0$	[_quadrature]	✓	1.906
4361	$1 - (y - 2xy)y' = 0$	[_separable]	✓	1.297
4362	$1 - (1 + 2x \tan(y))y' = 0$	[[_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓	1.344
4363	$\left(y^3 + \frac{x}{y}\right)y' = 1$	[[_homogeneous, 'class G'], _rational]	✓	2.034
4364	$1 + (x - y^2)y' = 0$	[[_1st_order, _with_exponential_symmetries]]	✓	0.973
4365	$y^2 + (xy + y^2 - 1)y' = 0$	[[_1st_order, _with_linear_symmetries], _rational]	✓	1.111
4366	$y = (e^y + 2xy - 2x)y'$	[[_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓	1.492
4367	$(2x + 3)y' = y + \sqrt{2x + 3}$	[_linear]	✓	0.166
4368	$y + (y^2e^y - x)y' = 0$	[[_1st_order, _with_linear_symmetries]]	✓	1.147
4369	$y' = 1 + 3y \tan(x)$	[_linear]	✓	0.262
4370	$(\cos(x) + 1)y' = \sin(x) \left( \frac{\sin(x)}{\cos(x) - y} \right)$	[_linear]	✓	0.273
4371	$y' = (\sin(x)^2 - y) \cos(x)$	[_linear]	✓	0.270
4372	$(x + 1)y' - y = x(x + 1)^2$	[_linear]	✓	0.146

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
Continued from previous page

#	ODE	CAS classification	Solved?	time (sec)
4373	$1 + y + (x - y(1 + y)^2) y' = 0$	[_exact, _rational, [_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓	2.529
4374	$y' + y^2 = x^2 + 1$	[_Riccati]	✓	0.374
4375	$3xy' - 3xy^4 \ln(x) - y = 0$	[_Bernoulli]	✓	0.676
4376	$y' = \frac{4x^3 y^2}{x^4 y + 2}$	[[_homogeneous, 'class G'], _rational, [_Abel, '2nd type', 'class B']]	✓	6.104
4377	$y(6y^2 - x - 1) + 2xy' = 0$	[_rational, _Bernoulli]	✓	0.414
4378	$(x + 1)(y' + y^2) - y = 0$	[[_1st_order, _with_linear_symmetries], _rational, _Bernoulli]	✓	0.209
4379	$xyy' + y^2 - \sin(x) = 0$	[_Bernoulli]	✓	0.414
4380	$2x^3 - y^4 + xy^3 y' = 0$	[[_homogeneous, 'class D'], _rational, _Bernoulli]	✓	0.458
4381	$y' - y \tan(x) + y^2 \cos(x) = 0$	[_Bernoulli]	✓	0.281
4382	$6y^2 - x(2x^3 + y) y' = 0$	[[_homogeneous, 'class G'], _rational, [_Abel, '2nd type', 'class B']]	✓	3.665
4383	$xy'^3 - yy'^2 + 1 = 0$	[[_1st_order, _with_linear_symmetries], _Clairaut]	✓	0.599
4384	$y = xy' + y^3$	[[_1st_order, _with_linear_symmetries], _Clairaut]	✓	0.480
4385	$x(-1 + y'^2) = 2y'$	[_quadrature]	✓	0.225
4386	$xy'(y' + 2) = y$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	1.163
4387	$x = y' \sqrt{1 + y'^2}$	[_quadrature]	✓	0.917

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
Continued from previous page

#	ODE	CAS classification	Solved?	time (sec)
4388	$2y'^2(y - xy') = 1$	[[_1st_order, _with_linear_symmetries], _Clairaut]	✓	0.579
4389	$y = 2xy' + y^2y'^3$	[[_1st_order, _with_linear_symmetries]]	✓	105.657
4390	$y'^3 + y^2 = xyy'$	[[_1st_order, _with_linear_symmetries]]	✓	7.538
4391	$2xy' - y = y' \ln(yy')$	[[_1st_order, _with_linear_symmetries]]	✓	31.756
4392	$y = xy' - x^2y'^3$	[[_1st_order, _with_linear_symmetries]]	✓	9.036
4393	$y(y - 2xy')^3 = y'^2$	[[_homogeneous, 'class G']]	✓	115.534
4394	$xy' + y = 4\sqrt{y'}$	[[_homogeneous, 'class G'], _dAlembert]	✓	4.934
4395	$2xy' - y = \ln(y')$	[[_1st_order, _with_linear_symmetries], _dAlembert]	✓	6.626
4396	$xy^2(xy' + y) = 1$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓	2.519
4397	$5y + y'^2 = x(x + y')$	[[_homogeneous, 'class G']]	✓	2.487
4398	$y' = \frac{y + 2}{x + 1}$	[_separable]	✓	1.434
4399	$xy' = y - x e^{\frac{y}{x}}$	[[_homogeneous, 'class A'], _dAlembert]	✓	8.168
4400	$1 + y^2 \sin(2x) - 2y \cos(x)^2 y' = 0$	[_exact, _Bernoulli]	✓	5.958
4401	$2\sqrt{xy} - y - xy' = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓	8.934
4402	$y' = e^{\frac{xy'}{y}}$	[[_homogeneous, 'class A'], _dAlembert]	✓	3.199
4403	$2x^3y^2 - y + (2x^2y^3 - x)y' = 0$	[_rational]	✓	1.537
4404	$y - 1 - xy + xy' = 0$	[_linear]	✓	1.042

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
4405	$-y + xy' = x \tan\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A'], _dAlembert]	✓	3.805
4406	$y' + \frac{y}{x} = e^{xy}$	[[_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]]]	✓	1.355
4407	$yy'' - yy' = y'^2$	[[_2nd_order, _missing_x], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓	0.454
4408	$2y - x(\ln(x^2y) - 1)y' = 0$	[[_homogeneous, 'class G']]	✓	2.787
4409	$y' = \frac{1}{xy + x^3y^3}$	[[_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓	1.631
4410	$y' = \frac{2(y+2)^2}{(y-1+x)^2}$	[[_homogeneous, 'class C'], _rational]	✓	1.720
4411	$e^x + 3y^2 + 2xyy' = 0$	[_Bernoulli]	✓	1.562
4412	$xy + 2x^3y + x^2y' = 0$	[_separable]	✓	1.326
4413	$xy'^2 - 2yy' + 4x = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	1.524
4414	$y''' = 2(y'' - 1) \cot(x)$	[[_3rd_order, _missing_y]]	✓	1.253
4415	$y + 3y^2x^4 + (x + 2x^2y^3)y' = 0$	[_rational]	✓	1.516
4416	$xy' = y + \sqrt{x^2 - y^2}$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	67.682
4417	$2y(xe^{x^2} + y \sin(x) \cos(x)) + (2e^{x^2} + 3y \sin(x)^2)y' = 0$	[[_Abel, '2nd type', 'class B']]	✓	12.457
4418	$\cos(y) + \sin(y)(x - \sin(y) \cos(y))y' = 0$	[[_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓	4.775

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
4419	$y^3 + (3x^2 - 2xy^2)y' = 0$	[[_homogeneous, 'class G'], _rational]	✓	1.902
4420	$(y' + 1) \ln\left(\frac{x+y}{x+3}\right) = \frac{x+y}{x+3}$	[[_homogeneous, 'class C'], _exact, _dAlembert]	✓	6.964
4421	$2x^3yy' + 3y^2x^2 + 7 = 0$	[[_homogeneous, 'class G'], _exact, _rational, _Bernoulli]	✓	1.951
4422	$x - y \cos\left(\frac{y}{x}\right) + x \cos\left(\frac{y}{x}\right)y' = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓	5.346
4423	$x^2(-y + xy') = y(x + y)$	[[_homogeneous, 'class D'], _rational, _Bernoulli]	✓	1.816
4424	$y^4 + xy + (xy^3 - x^2)y' = 0$	[[_homogeneous, 'class G'], _rational]	✓	2.628
4425	$x^2 + 3 \ln(y) - \frac{xy'}{y} = 0$	[[_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]']]	✓	2.394
4426	$xy'' = x + y'$	[[_2nd_order, _missing_y]]	✓	1.185
4427	$y + (xy - x - y^3)y' = 0$	[_rational, [_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓	1.787
4428	$y + 2y^3y' = (x + 4y \ln(y))y'$	[[_1st_order, _with_linear_symmetries]]	✓	1.294
4429	$y \ln(x) \ln(y) + y' = 0$	[_separable]	✓	1.398
4430	$2x^{3/2} + x^2 + y^2 + 2y\sqrt{x}y' = 0$	[[_homogeneous, 'class D'], _rational, _Bernoulli]	✓	3.344
4431	$2x + y \cos(xy) + x \cos(xy)y' = 0$	[_exact, [_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]']]	✓	5.745
4432	$yy'' - y^2y' - y'^2 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _with_potential_symmetries], [_2nd_order, _reducible, _mu_xy]]	✓	0.414

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
4433	$2y' + x = 4\sqrt{y}$	[[_1st_order, _with_linear_symmetries], _Chini]	✓	2.749
4434	$2y'^3 - 3y'^2 + x = y$	[[_homogeneous, 'class C'], _dAlembert]	✓	0.663
4435	$y' - 6x e^{x-y} - 1 = 0$	[[_1st_order, _with_linear_symmetries]]	✓	1.228
4436	$(1 + y^2) y'' + y'^3 + y' = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓	2.081
4437	$y \sin(x) + \cos(x)^2 - \cos(x) y' = 0$	[_linear]	✓	2.187
4438	$y(6y^2 - x - 1) + 2xy' = 0$	[_rational, _Bernoulli]	✓	1.327
4439	$y'(x - \ln(y')) = 1$	[_quadrature]	✓	0.788
4440	$(\cos(x) + 1) y' + \sin(x) (\sin(x) + \sin(x) \cos(x) - y) = 0$	[_linear]	✓	3.345
4441	$x + \sin\left(\frac{y}{x}\right)^2 (y - xy') = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓	6.577
4442	$2xy^4 e^y + 2xy^3 + y + (x^2 y^4 e^y - y^2 x^2 - 3x) y' = 0$	['x=_G(y,y)']	✓	4.389
4443	$xy^3 - 1 + x^2 y^2 y' = 0$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓	2.615
4444	$y''' - 2y'' + y' - 2y = 0$	[[_3rd_order, _missing_x]]	✓	0.072
4445	$y''' + y'' + 9y' + 9y = 0$	[[_3rd_order, _missing_x]]	✓	0.073
4446	$y''' + y'' - y' - y = 0$	[[_3rd_order, _missing_x]]	✓	0.068
4447	$y''' + 8y = 0$	[[_3rd_order, _missing_x]]	✓	0.074
4448	$y''' - 8y = 0$	[[_3rd_order, _missing_x]]	✓	0.080
4449	$y'''' + 4y = 0$	[[_high_order, _missing_x]]	✓	0.079

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
4450	$y'''' + 18y'' + 81y = 0$	[[_high_order, _missing_x]]	✓	0.083
4451	$y'''' - 4y'' + 16y = 0$	[[_high_order, _missing_x]]	✓	0.138
4452	$y'''' - 2y''' + 2y'' - 2y' + y = 0$	[[_high_order, _missing_x]]	✓	0.078
4453	$y'''' - 5y''' + 5y'' + 5y' - 6y = 0$	[[_high_order, _missing_x]]	✓	0.075
4454	$y^{(5)} - 6y'''' + 9y''' = 0$	[[_high_order, _missing_x]]	✓	0.072
4455	$y^{(6)} - 64y = 0$	[[_high_order, _missing_x]]	✓	0.109
4456	$y'' + 6y' + 10y = 3x e^{-3x} - 2 e^{3x} \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	16.417
4457	$y'' - 8y' + 17y = e^{4x}(x^2 - 3x \sin(x))$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	10.539
4458	$y'' - 2y' + 2y = (x + e^x) \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	16.096
4459	$y'' + 4y = \sinh(x) \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	4.240
4460	$y'' + 2y' + 2y = \cosh(x) \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	16.444
4461	$y''' + y' = \sin(x) + x \cos(x)$	[[_3rd_order, _missing_y]]	✓	0.581
4462	$y''' - 2y'' + 4y' - 8y = e^{2x} \sin(2x) + 2x^2$	[[_3rd_order, _linear, _nonhomogeneous]]	✓	1.080
4463	$y''' - 4y'' + 3y' = x^2 + x e^{2x}$	[[_3rd_order, _missing_y]]	✓	0.148
4464	$y'''' + 2y'' = 7x - 3 \cos(x)$	[[_high_order, _missing_y]]	✓	0.174
4465	$y'''' + 5y'' + 4y = \sin(x) \cos(2x)$	[[_high_order, _linear, _nonhomogeneous]]	✓	1.201
4466	$y^{(5)} - 3y''' + y = 9 e^{2x}$	[[_high_order, _with_linear_symmetries]]	✓	0.164

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
4467	$y''' - 3y'' + 3y' - y = 48x e^x$	[[_3rd_order, _linear, _nonhomogeneous]]	✓	0.135
4468	$y''' - 3y' = 9x^2$	[[_3rd_order, _missing_y]]	✓	0.113
4469	$y^{(5)} + 4y''' = 7 + x$	[[_high_order, _missing_y]]	✓	0.126
4470	$y'' - y' - 2y = 36x e^{2x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.148
4471	$y'''' + 16y = 64 \cos(2x)$	[[_high_order, _linear, _nonhomogeneous]]	✓	0.158
4472	$y'''' + 4y'' - y = 44 \sin(3x)$	[[_high_order, _linear, _nonhomogeneous]]	✓	0.207
4473	$y''' + y'' + 5y' + 5y = 5 \cos(2x)$	[[_3rd_order, _linear, _nonhomogeneous]]	✓	0.158
4474	$y'' + 3y' + 5y = 5 e^{-x} \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	75.092
4475	$y'''' - y = 4 e^{-x}$	[[_high_order, _with_linear_symmetries]]	✓	0.125
4476	$y'' + 4y = 8 \sin(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.464
4477	$y''' - y'' + y' - y = 4 \sin(x)$	[[_3rd_order, _linear, _nonhomogeneous]]	✓	0.690
4478	$y'''' - y'' = 2 e^x$	[[_high_order, _missing_y]]	✓	0.118
4479	$y'' - 4y' + 4y = e^x(x+1) + 2 e^{2x} + 3 e^{3x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.247
4480	$y'' - 2y' + 5y = 4 e^x \cos(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	13.000
4481	$y'' + 4y = 4 \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.624
4482	$y'' - y = 12 e^x x^2 + 3 e^{2x} + 10 \cos(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.363
4483	$y'' + y = 2 \sin(x) - 3 \cos(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	2.881

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
4484	$y'' - y' = e^x(x^2 + 10)$	[[_2nd_order, _missing_y]]	✓	1.599
4485	$y'' - 4y = 96x^2e^{2x} + 4e^{-2x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.416
4486	$y'' + 2y' + 2y = 5 \cos(x) + 10 \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	12.184
4487	$y'' - 2y' + 2y = 4x - 2 + 2e^x \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	13.156
4488	$y'' - 4y' + 4y = 4xe^{2x} \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.809
4489	$y''' - y'' + y' - y = 15 \sin(2x)$	[[_3rd_order, _linear, _nonhomogeneous]]	✓	0.154
4490	$y''' + 3y'' - 4y = 40 \sin(2x)$	[[_3rd_order, _linear, _nonhomogeneous]]	✓	0.153
4491	$y''' - y'' + y' - y = 2e^x + 5e^{2x}$	[[_3rd_order, _linear, _nonhomogeneous]]	✓	0.151
4492	$y''' - 6y'' + 11y' - 6y = 10e^x \sin(x)$	[[_3rd_order, _linear, _nonhomogeneous]]	✓	0.147
4493	$y''' - 2y' - 4y = 50 \sin(x) + 50e^{2x}$	[[_3rd_order, _linear, _nonhomogeneous]]	✓	0.196
4494	$y''' - 3y'' + 4y = 12e^{2x} + 4e^{3x}$	[[_3rd_order, _linear, _nonhomogeneous]]	✓	0.155
4495	$y'''' - 8y'' + 16y = 32e^{2x} + 16x^3$	[[_high_order, _linear, _nonhomogeneous]]	✓	0.152
4496	$y'''' - 18y'' + 81y = 72e^{3x} + 729x^2$	[[_high_order, _linear, _nonhomogeneous]]	✓	0.150
4497	$y'' - y = \frac{1}{x} - \frac{2}{x^3}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.089
4498	$y'' - y = \frac{1}{\sinh(x)}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.582
4499	$y'' - 2y' + y = \frac{e^x}{x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.103
4500	$y'' + 3y' + 2y = \sin(e^x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.477

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
4501	$y'' - 3y' + 2y = \sin(e^{-x})$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.469
4502	$y'' + y = \sec(x)^3$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.935
4503	$y'' - y = \frac{1}{\sqrt{1 - e^{2x}}}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.694
4504	$y'' - y = e^{-2x} \sin(e^{-x})$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.933
4505	$y'' + 2y' + y = 15e^{-x}\sqrt{x+1}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.204
4506	$y'' + 4y = 2 \tan(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	4.495
4507	$y'' - 2y' + y = \frac{e^{2x}}{(1 + e^x)^2}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.932
4508	$y'' + y' = \frac{1}{1 + e^x}$	[[_2nd_order, _missing_y]]	✓	1.613
4509	$x^2y'' - xy' + y = \ln(x)$	[[_2nd_order, _with_linear_symmetries]]	✓	1.874
4510	$x^2y'' + 3xy' + 5y = \frac{5 \ln(x)}{x^2}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	17.988
4511	$x^3y''' + 2x^2y'' - xy' + y = 9x^2 \ln(x)$	[[_3rd_order, _exact, _linear, _nonhomogeneous]]	✓	0.275
4512	$(-2 + x)^2 y'' - 3(-2 + x) y' + 4y = x$	[[_2nd_order, _with_linear_symmetries]]	✓	1.536
4513	$x^3y''' + 3x^2y'' + xy' - y = x^2$	[[_3rd_order, _with_linear_symmetries]]	✓	1.314
4514	<i>i.c.</i> $y'' + 4y' + 3y = 60 \cos(3t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.364
4515	<i>i.c.</i> $y'' + y' - 2y = 9e^{-2t}$	[[_2nd_order, _with_linear_symmetries]]	✓	0.274
4516	<i>i.c.</i> $y'' - y' - 2y = 2t^2 + 1$	[[_2nd_order, _with_linear_symmetries]]	✓	0.276

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
4517	$y'' + 4y = 8 \sin(2t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.343
4518	$y'' - 2y' + y = 4e^{-t} + 2e^t$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.293
4519	$y'' - 2y' + 2y = 8e^{-t} \sin(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.465
4520	$y'' - 2y' + 5y = 8e^t \sin(2t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.336
4521	$y'' + y' - 2y = 54te^{-2t}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.289
4522	$y'' - y' - 2y = 9e^{2t} \text{Heaviside}(t - 1)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.598
4523	$y'' + 2y' + y = 2 \sin(t) \text{Heaviside}(t - \pi)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.778
4524	$y'' + 4y = 8 \sin(2t) \text{Heaviside}(t - \pi)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.601
4525	$y'' + 4y = 8(t^2 + t - 1) \text{Heaviside}(t - 2)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.189
4526	$y'' - 3y' + 2y = e^t \text{Heaviside}(t - 2)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.553
4527	$y'' - 5y' + 6y = \delta(t - 2)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.503
4528	$y'' + 4y = 4 \text{Heaviside}(t - \pi) + 2\delta(t - \pi)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.803
4529	$y''' - y'' + 4y' - 4y = 10e^{-t}$ i.c.	[[_3rd_order, _with_linear_symmetries]]	✓	0.379
4530	$y'''' - 5y'' + 4y = 120e^{3t} \text{Heaviside}(t - 1)$ i.c.	[[_high_order, _linear, _nonhomogeneous]]	✓	7.901
4531	$y'''' + 3y'' - 4y = 40t^2 \text{Heaviside}(t - 2)$ i.c.	[[_high_order, _linear, _nonhomogeneous]]	✓	7.991
4532	$y'''' + 4y = (2t^2 + t + 1) \delta(t - 1)$ i.c.	[[_high_order, _linear, _nonhomogeneous]]	✓	3.273

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
4533	$\begin{bmatrix} x' + 2x - y = 0 \\ x + y' - 2y = 0 \end{bmatrix}$	system_of_ODEs	✓	0.448
4534	$\begin{bmatrix} 2x' + x - 5y' - 4y = 0 \\ -y' - 2x + y = 0 \end{bmatrix}$	system_of_ODEs	✓	0.333
4535	$\begin{bmatrix} x' - x + 3y = 0 \\ 3x - y' + y = 0 \end{bmatrix}$	system_of_ODEs	✓	0.365
4536	$\begin{bmatrix} x'' + x' + y' - 2y = 0 \\ x' + x - y' = 0 \end{bmatrix}$	system_of_ODEs	✗	0.047
4537	$\begin{bmatrix} x'' - 3x - 4y = 0 \\ x + y'' + y = 0 \end{bmatrix}$	system_of_ODEs	✗	0.049
4538	$\begin{bmatrix} y_1' - y_2 = 0 \\ 4y_1 + y_2' - 4y_2 - 2y_3 = 0 \\ -2y_1 + y_2 + y_3' + y_3 = 0 \end{bmatrix}$	system_of_ODEs	✓	0.470
4539	$\begin{bmatrix} y_1' - 2y_1 + 3y_2 - 3y_3 = 0 \\ -4y_1 + y_2' + 5y_2 - 3y_3 = 0 \\ -4y_1 + 4y_2 + y_3' - 2y_3 = 0 \end{bmatrix}$	system_of_ODEs	✓	0.473
4540	$\begin{bmatrix} x' + x + 2y = 8 \\ 2x + y' - 2y = 2e^{-t} - 8 \end{bmatrix}$	system_of_ODEs	✓	0.529
4541	$\begin{bmatrix} x' = 2x - 3y + te^{-t} \\ y' = 2x - 3y + e^{-t} \end{bmatrix}$	system_of_ODEs	✓	0.492
4542	$\begin{bmatrix} x' - x - 2y = e^t \\ -4x + y' - 3y = 1 \end{bmatrix}$	system_of_ODEs	✓	0.513
4543	$\begin{bmatrix} x' - 4x + 3y = \sin(t) \\ -2x + y' + y = -2\cos(t) \end{bmatrix}$	system_of_ODEs	✓	0.593
4544	$\begin{bmatrix} x' - y = 0 \\ -x + y' = e^t + e^{-t} \end{bmatrix}$	system_of_ODEs	✓	0.476
4545	$\begin{bmatrix} x' + 2x + 5y = 0 \\ -x + y' - 2y = \sin(2t) \end{bmatrix}$	system_of_ODEs	✓	0.631

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
4546	$\begin{bmatrix} x' - 2x + 2y' = -4e^{2t} \\ 2x' - 3x + 3y' - y = 0 \end{bmatrix}$	system_of_ODEs	✓	0.515
4547	$\begin{bmatrix} 3x' + 2x + y' - 6y = 5e^t \\ 4x' + 2x + y' - 8y = 5e^t + 2t - 3 \end{bmatrix}$	system_of_ODEs	✓	0.669
4548	$\begin{bmatrix} x' - 5x + 3y = 2e^{3t} \\ -x + y' - y = 5e^{-t} \end{bmatrix}$	system_of_ODEs	✓	0.547
4549	$\begin{bmatrix} x' - 2x + y = 0 \\ x + y' - 2y = -5e^t \sin(t) \end{bmatrix}$	system_of_ODEs	✓	0.564
4550	$\begin{bmatrix} x' + 4x + 2y = \frac{2}{e^t - 1} \\ 6x - y' + 3y = \frac{3}{e^t - 1} \end{bmatrix}$	system_of_ODEs	✗	0.061
4551	$\begin{bmatrix} x' - x + y = \sec(t) \\ -2x + y' + y = 0 \end{bmatrix}$	system_of_ODEs	✓	0.787
4552	$\begin{bmatrix} x' - x - 2y = 16te^t \\ 2x - y' - 2y = 0 \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.285
4553	$\begin{bmatrix} x' - 2x + y = 5e^t \cos(t) \\ x + y' - 2y = 10e^t \sin(t) \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.356
4554	$\begin{bmatrix} x' - 4x + 3y = \sin(t) \\ 2x + y' - y = 2 \cos(t) \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.280
4555	$\begin{bmatrix} x' - 2x - y = 2e^t \\ x - y' + 2y = 3e^{4t} \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.223
4556	$\begin{bmatrix} x'' + x' + y' - 2y = 40e^{3t} \\ x' + x - y' = 36e^t \end{bmatrix}$ i.c.	system_of_ODEs	✗	0.001
4557	$\begin{bmatrix} x' - 2x - y = 2e^t \\ y' - 2y - 4z = 4e^{2t} \\ x - z' - z = 0 \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.235

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
4558	$\begin{cases} x'' + 2x - 2y' = 0 \\ 3x' + y'' - 8y = 240 e^t \end{cases}$ i.c.	system_of_ODEs	<span style="color: red;">✗</span>	0.001
4559	$\begin{cases} x' - x - 2y = 0 \\ x - y' = 15 \cos(t) \text{Heaviside}(t - \pi) \end{cases}$ i.c.	system_of_ODEs	<span style="color: blue;">✓</span>	0.326
4560	$\begin{cases} x' - x + y = 2 \sin(t) (1 - \text{Heaviside}(t - \pi)) \\ 2x - y' - y = 0 \end{cases}$ i.c.	system_of_ODEs	<span style="color: blue;">✓</span>	0.491
4561	$\begin{cases} 2x' + x - 5y' - 4y = 28 e^t \text{Heaviside}(t - \pi) \\ 3x' - 2x - 4y' + y = 0 \end{cases}$ i.c.	system_of_ODEs	<span style="color: blue;">✓</span>	0.400
4562	$\begin{cases} x'_1 = x_1 - x_2 \\ x'_2 = -4x_1 + x_2 \end{cases}$	system_of_ODEs	<span style="color: blue;">✓</span>	0.342
4563	$\begin{cases} x'_1 = x_1 - 3x_2 \\ x'_2 = 3x_1 + x_2 \end{cases}$	system_of_ODEs	<span style="color: blue;">✓</span>	0.375
4564	$\begin{cases} x'_1 = 5x_1 + 3x_2 \\ x'_2 = -3x_1 - x_2 \end{cases}$ i.c.	system_of_ODEs	<span style="color: blue;">✓</span>	0.435
4565	$\begin{cases} x'_1 = 2x_1 - x_2 + x_3 \\ x'_2 = x_1 + 2x_2 - x_3 \\ x'_3 = x_1 - x_2 + 2x_3 \end{cases}$	system_of_ODEs	<span style="color: blue;">✓</span>	0.457
4566	$\begin{cases} x'_1 = 3x_1 - x_2 + x_3 \\ x'_2 = x_1 + x_2 + x_3 \\ x'_3 = 4x_1 - x_2 + 4x_3 \end{cases}$	system_of_ODEs	<span style="color: blue;">✓</span>	0.509
4567	$\begin{cases} x'_1 = 2x_1 + x_2 \\ x'_2 = x_1 + 3x_2 - x_3 \\ x'_3 = -x_1 + 2x_2 + 3x_3 \end{cases}$	system_of_ODEs	<span style="color: blue;">✓</span>	0.686
4568	$\begin{cases} x'_1 = 3x_1 - 2x_2 - x_3 \\ x'_2 = 3x_1 - 4x_2 - 3x_3 \\ x'_3 = 2x_1 - 4x_2 \end{cases}$	system_of_ODEs	<span style="color: blue;">✓</span>	0.490

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
4569	$\begin{bmatrix} x'_1 = x_1 - x_2 + x_3 \\ x'_2 = x_1 + x_2 - x_3 \\ x'_3 = -2x_2 + 2x_3 \end{bmatrix}$ <p>i.c.</p>	system_of_ODEs	✓	0.450
4570	$\begin{bmatrix} x'_1 = -x_1 + x_2 - 2x_3 \\ x'_2 = 4x_1 + x_2 \\ x'_3 = 2x_1 + x_2 - x_3 \end{bmatrix}$	system_of_ODEs	✓	0.464
4571	$\begin{bmatrix} x'_1 = 2x_1 + x_2 + 26 \sin(t) \\ x'_2 = 3x_1 + 4x_2 \end{bmatrix}$	system_of_ODEs	✓	0.602
4572	$\begin{bmatrix} x'_1 = -x_1 + 8x_2 + 9t \\ x'_2 = x_1 + x_2 + 3e^{-t} \end{bmatrix}$	system_of_ODEs	✓	0.544
4573	$\begin{bmatrix} x'_1 = -x_1 + 2x_2 \\ x'_2 = -3x_1 + 4x_2 + \frac{e^{3t}}{1+e^{2t}} \end{bmatrix}$	system_of_ODEs	✗	0.064
4574	$\begin{bmatrix} x'_1 = -4x_1 - 2x_2 + \frac{2}{e^t - 1} \\ x'_2 = 6x_1 + 3x_2 - \frac{3}{e^t - 1} \end{bmatrix}$	system_of_ODEs	✗	0.061
4575	$\begin{bmatrix} x'_1 = x_1 + x_2 + e^{2t} \\ x'_2 = -2x_1 + 3x_2 \end{bmatrix}$	system_of_ODEs	✓	0.638
4576	$\begin{bmatrix} x'_1 = -x_1 - 5x_2 \\ x'_2 = x_1 + x_2 + \frac{4}{\sin(2t)} \end{bmatrix}$	system_of_ODEs	✓	0.968
4577	$\begin{bmatrix} x'_1 = 2x_1 + x_2 + 27t \\ x'_2 = -x_1 + 4x_2 \end{bmatrix}$	system_of_ODEs	✓	0.401
4578	$\begin{bmatrix} x'_1 = 3x_1 - x_2 + e^t \\ x'_2 = 4x_1 - x_2 \end{bmatrix}$	system_of_ODEs	✓	0.472
4579	$\begin{bmatrix} x'_1 = 3x_1 - 2x_2 \\ x'_2 = 2x_1 - x_2 + 35e^t t^{3/2} \end{bmatrix}$	system_of_ODEs	✓	0.507
4580	$\begin{bmatrix} x'_1 = x_1 - x_2 + x_3 \\ x'_2 = x_1 + x_2 - x_3 + 6e^{-t} \\ x'_3 = 2x_1 - x_2 \end{bmatrix}$	system_of_ODEs	✓	0.728

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
4581	$\begin{bmatrix} x_1' = x_1 - 2x_2 - x_3 \\ x_2' = -x_1 + x_2 + x_3 + 12t \\ x_3' = x_1 - x_3 \end{bmatrix}$	system_of_ODEs	✓	0.750
4582	$\begin{bmatrix} x_1' = -3x_1 + 4x_2 - 2x_3 + e^t \\ x_2' = x_1 + x_2 \\ x_3' = 6x_1 - 6x_2 + 5x_3 \end{bmatrix}$	system_of_ODEs	✓	153.299
4583	$\begin{bmatrix} x_1' = x_1 - x_2 - x_3 + 4e^t \\ x_2' = x_1 + x_2 \\ x_3' = 3x_1 + x_3 \end{bmatrix}$	system_of_ODEs	✓	0.962
4584	$\begin{bmatrix} x_1' = 2x_1 - x_2 + 2x_3 \\ x_2' = x_1 + 2x_3 \\ x_3' = -2x_1 + x_2 - x_3 + 4 \sin(t) \end{bmatrix}$	system_of_ODEs	✓	1.290
4585	$\begin{bmatrix} x_1' = 4x_1 - x_2 - x_3 + e^{3t} \\ x_2' = x_1 + 2x_2 - x_3 \\ x_3' = x_1 + x_2 + 2x_3 \end{bmatrix}$	system_of_ODEs	✓	1.916
4586	$\begin{bmatrix} x_1' = 2x_1 - x_2 - x_3 + 2e^{2t} \\ x_2' = 3x_1 - 2x_2 - 3x_3 \\ x_3' = -x_1 + x_2 + 2x_3 \end{bmatrix}$	system_of_ODEs	✓	0.564
4587	$\begin{bmatrix} x_1' = 2x_1 - x_3 + 24t \\ x_2' = x_1 - x_2 \\ x_3' = 3x_1 - x_2 - x_3 \end{bmatrix}$	system_of_ODEs	✓	0.558
4588	$y'' - xy = 0$	[[_Emden, _Fowler]]	✓	0.466
4589	$(x^2 + 1)y'' + 4xy' + 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.597
4590	$y'' + xy = 0$	[[_Emden, _Fowler]]	✓	0.463
4591	$(-x^2 + 1)y'' + y = 0$	[_Gegenbauer]	✓	0.584
4592	$y'' - 2x^2y = 0$	[[_Emden, _Fowler]]	✓	0.464
4593	$y'' - 2x^2y' + xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.519
4594	$(x^2 - 1)y'' + (4x - 1)y' + 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.673

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
4595	$y'' + (\cos(x) + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.657
4596	$y'' + \sin(x)y' + y\cos(x) = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.858
4597	$xy'' + y' - xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.613
4598	$xy'' + (1 - x)y' + ky = 0$	[_Laguerre]	✓	0.912
4599	$x^2y'' + (-2x^2 + x)y' - xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.796
4600	$x^2y'' - (x^2 + 2x)y' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.261
4601	$x^2y'' + \left(\frac{1}{2}x + x^2\right)y' + xy = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]]	✓	0.809
4602	$x^2y'' + (-x^2 + x)y' - (x + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.938
4603	$x^2y'' + 2xy' - (x^2 + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.875
4604	$xy'' - 2xy' - y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.269
4605	$xy'' + 2y' - xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.756
4606	$x^2y'' - x^2y' + 2(x - 1)y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]]	✓	1.273
4607	$xy'' + y' - xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.658
4608	$y' = af(x)$	[_quadrature]	✓	0.468
4609	$y' = x + \sin(x) + y$	[[_linear, 'class A']]	✓	1.332
4610	$y' = x^2 + 3\cosh(x) + 2y$	[[_linear, 'class A']]	✓	1.582
4611	$y' = a + bx + cy$	[[_linear, 'class A']]	✓	0.809

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
4612	$y' = a \cos (bx + c) + ky$	[[_linear, 'class A']]	✓	1.469
4613	$y' = a \sin (bx + c) + ky$	[[_linear, 'class A']]	✓	1.465
4614	$y' = a + b e^{kx} + cy$	[[_linear, 'class A']]	✓	1.042
4615	$y' = x(x^2 - y)$	[_linear]	✓	1.474
4616	$y' = x(e^{-x^2} + ay)$	[_linear]	✓	1.150
4617	$y' = x^2(ax^3 + by)$	[_linear]	✓	1.878
4618	$y' = ax^ny$	[_separable]	✓	1.059
4619	$y' = \sin (x) \cos (x) + y \cos (x)$	[_linear]	✓	1.638
4620	$y' = e^{\sin (x)} + y \cos (x)$	[_linear]	✓	1.489
4621	$y' = y \cot (x)$	[_separable]	✓	1.361
4622	$y' = 1 - y \cot (x)$	[_linear]	✓	1.136
4623	$y' = x \csc (x) - y \cot (x)$	[_linear]	✓	1.490
4624	$y' = (2 \csc (2x) + \cot (x)) y$	[_separable]	✓	2.818
4625	$y' = \sec (x) - y \cot (x)$	[_linear]	✓	1.531
4626	$y' = e^x \sin (x) + y \cot (x)$	[_linear]	✓	1.952
4627	$y' + \csc (x) + 2y \cot (x) = 0$	[_linear]	✓	1.495
4628	$y' = 4 \csc (x) x \sec (x)^2 - 2y \cot (2x)$	[_linear]	✓	16.899
4629	$y' = 2 \cot (x)^2 \cos (2x) - 2y \csc (2x)$	[_linear]	✓	2.923
4630	$y' = 4 \csc (x) x(\sin (x)^3 + y)$	[_linear]	✓	10.421
4631	$y' = 4 \csc (x) x(1 - \tan (x)^2 + y)$	[_linear]	✓	88.287
4632	$y' = y \sec (x)$	[_separable]	✓	1.873
4633	$y' + \tan (x) = (1 - y) \sec (x)$	[_linear]	✓	1.848
4634	$y' = y \tan (x)$	[_separable]	✓	1.374
4635	$y' = \cos (x) + y \tan (x)$	[_linear]	✓	1.616

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
4636	$y' = \cos(x) - y \tan(x)$	[_linear]	✓	1.528
4637	$y' = \sec(x) - y \tan(x)$	[_linear]	✓	1.408
4638	$y' = \sin(2x) + y \tan(x)$	[_linear]	✓	1.686
4639	$y' = \sin(2x) - y \tan(x)$	[_linear]	✓	1.710
4640	$y' = \sin(x) + 2y \tan(x)$	[_linear]	✓	1.666
4641	$y' = 2 + 2 \sec(2x) + 2y \tan(2x)$	[_linear]	✓	4.126
4642	$y' = \csc(x) + 3y \tan(x)$	[_linear]	✓	1.679
4643	$y' = (a + \cos(\ln(x)) + \sin(\ln(x)))y$	[_separable]	✓	1.670
4644	$y' = 6e^{2x} - y \tanh(x)$	[_linear]	✓	1.664
4645	$y' = f(x)f'(x) + f'(x)y$	[_linear]	✓	0.577
4646	$y' = f(x) + g(x)y$	[_linear]	✓	1.454
4647	$y' = x^2 - y^2$	[_Riccati]	✓	0.974
4648	$y' + f(x)^2 = f'(x) + y^2$	[_Riccati]	✓	1.119
4649	$y' + 1 - x = y(x + y)$	[_Riccati]	✓	1.341
4650	$y' = (x + y)^2$	[[_homogeneous, 'class C', _Riccati]	✓	1.473
4651	$y' = (x - y)^2$	[[_homogeneous, 'class C', _Riccati]	✓	1.682
4652	$y' = 3 - 3x + 3y + (x - y)^2$	[[_homogeneous, 'class C', _Riccati]	✓	3.326
4653	$y' = 2x - (x^2 + 1)y + y^2$	[_Riccati]	✓	1.721
4654	$y' = x(x^3 + 2) - (2x^2 - y)y$	[[_1st_order, _with_linear_symmetries], _Riccati]	✓	0.943
4655	$y' = 1 + x(-x^3 + 2) + (2x^2 - y)y$	[[_1st_order, _with_linear_symmetries], _Riccati]	✓	1.768
4656	$y' = \cos(x) - (\sin(x) - y)y$	[_Riccati]	✓	2.856
4657	$y' = \cos(2x) + (\sin(2x) + y)y$	[_Riccati]	✓	4.960

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
4658	$y' = f(x) + xf(x)y + y^2$	[_Riccati]	✓	1.828
4659	$y' = (3 + x - 4y)^2$	[[_homogeneous, 'class C'], _Riccati]	✓	4.091
4660	$y' = (1 + 4x + 9y)^2$	[[_homogeneous, 'class C'], _Riccati]	✓	36.381
4661	$y' = 3a + 3bx + 3by^2$	[_Riccati]	✓	1.326
4662	$y' = a + by^2$	[_quadrature]	✓	1.034
4663	$y' = ax + by^2$	[[_Riccati, _special]]	✓	1.029
4664	$y' = a + bx + cy^2$	[_Riccati]	✓	1.236
4665	$y' = ax^{n-1} + bx^{2n} + cy^2$	[_Riccati]	✓	3.181
4666	$y' = x^2a + by^2$	[[_Riccati, _special]]	✓	1.225
4667	$y' = a_0 + a_1y + a_2y^2$	[_quadrature]	✓	1.097
4668	$y' = f(x) + ay + by^2$	[_Riccati]	✗	1.202
4669	$y' = 1 + a(x - y)y$	[_Riccati]	✓	1.310
4670	$y' = f(x) + g(x)y + y^2a$	[_Riccati]	✗	1.442
4671	$y' = xy(y + 3)$	[_separable]	✓	1.828
4672	$y' = 1 - x - x^3 + (2x^2 + 1)y - xy^2$	[_Riccati]	✓	2.122
4673	$y' = x(2 + x^2y - y^2)$	[_Riccati]	✓	1.878
4674	$y' = x + (-2x + 1)y - (1 - x)y^2$	[_Riccati]	✓	1.977
4675	$y' = axy^2$	[_separable]	✓	1.285
4676	$y' = x^n(a + by^2)$	[_separable]	✓	2.231
4677	$y' = ax^m + bx^ny^2$	[_Riccati]	✓	2.074
4678	$y' = (a + by \cos(kx))y$	[_Bernoulli]	✓	2.108
4679	$y' = \sin(x)(2 \sec(x)^2 - y)$	[_linear]	✓	2.292
4680	$y' + 4 \csc(x) = (3 - \cot(x))y + y^2 \sin(x)$	[_Riccati]	✓	6.318

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
4681	$y' = y \sec(x) + (\sin(x) - 1)^2$	[_linear]	✓	2.696
4682	$y' + \tan(x)(1 - y^2) = 0$	[_separable]	✓	2.468
4683	$y' = f(x) + g(x)y + h(x)y^2$	[_Riccati]	✗	2.374
4684	$y' = (a + by + cy^2)f(x)$	[_separable]	✓	3.759
4685	$y' + (ax + y)y^2 = 0$	[_Abel]	✗	0.804
4686	$y' = (ae^x + y)y^2$	[_Abel]	✗	1.343
4687	$y' + 3a(2x + y)y^2 = 0$	[_Abel]	✗	0.888
4688	$y' = y(a + by^2)$	[_quadrature]	✓	1.742
4689	$y' = a_0 + a_1y + a_2y^2 + a_3y^3$	[_quadrature]	✓	1.446
4690	$y' = xy^3$	[_separable]	✓	2.095
4691	$y' + y(1 - xy^2) = 0$	[_Bernoulli]	✓	2.286
4692	$y' = (a + bxy)y^2$	[[_homogeneous, 'class G'], _Abel]	✓	2.080
4693	$y' + 2xy(1 + axy^2) = 0$	[_Bernoulli]	✓	1.272
4694	$y' + (\tan(x) + y^2 \sec(x))y = 0$	[_Bernoulli]	✓	2.392
4695	$y' + y^3 \sec(x) \tan(x) = 0$	[_separable]	✓	2.819
4696	$y' = f_0(x) + f_1(x)y + f_2(x)y^2 + f_3(x)y^3$	[_Abel]	✗	4.281
4697	$y' = ax^{\frac{n}{1-n}} + by^n$	[[_homogeneous, 'class G'], _Chini]	✓	1.914
4698	$y' = f(x)y + g(x)y^k$	[_Bernoulli]	✓	1.992
4699	$y' = f(x) + g(x)y + h(x)y^n$	[_Chini]	✗	2.463
4700	$y' = \sqrt{ y }$	[_quadrature]	✓	1.352
4701	$y' = a + by + \sqrt{A_0 + B_0y}$	[_quadrature]	✓	5.025
4702	$y' = ax + b\sqrt{y}$	[[_homogeneous, 'class G'], _Chini]	✓	3.626

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
4703	$y' + x^3 = x\sqrt{x^4 + 4y}$	[[_1st_order, _with_linear_symmetries]]	✓	2.850
4704	$y' + 2y(1 - x\sqrt{y}) = 0$	[_Bernoulli]	✓	1.296
4705	$y' = \sqrt{a + by^2}$	[_quadrature]	✓	1.862
4706	$y' = y\sqrt{a + by}$	[_quadrature]	✓	9.448
4707	$y' + (f(x) - y)g(x)\sqrt{(y-a)(y-b)} = 0$	['y=_G(x,y)']	✗	5.178
4708	$y' = \sqrt{XY}$	[_quadrature]	✓	0.375
4709	$y' = \cos(x)^2 \cos(y)$	[_separable]	✓	2.104
4710	$y' = \sec(x)^2 \cot(y) \cos(y)$	[_separable]	✓	2.627
4711	$y' = a + b \cos(Ax + By)$	[[_homogeneous, 'class C'], _dAlembert]	✓	38.395
4712	$y' + f(x) + g(x) \sin(ay) + h(x) \cos(ay) = 0$	['y=_G(x,y)']	✗	5.752
4713	$y' = a + b \cos(y)$	[_quadrature]	✓	1.026
4714	$y' + x(\sin(2y) - x^2 \cos(y)^2) = 0$	['y=_G(x,y)']	✗	4.840
4715	$y' + \tan(x) \sec(x) \cos(y)^2 = 0$	[_separable]	✓	2.350
4716	$y' = \cot(x) \cot(y)$	[_separable]	✓	1.693
4717	$y' + \cot(x) \cot(y) = 0$	[_separable]	✓	1.780
4718	$y' = \sin(x) (\csc(y) - \cot(y))$	[_separable]	✓	2.796
4719	$y' = \tan(x) \cot(y)$	[_separable]	✓	1.556
4720	$y' + \tan(x) \cot(y) = 0$	[_separable]	✓	1.601
4721	$y' + \sin(2x) \csc(2y) = 0$	[_separable]	✓	4.930
4722	$y' = \tan(x) (\tan(y) + \sec(x) \sec(y))$	['y=_G(x,y)']	✗	8.078
4723	$y' = \cos(x) \sec(y)^2$	[_separable]	✓	1.840
4724	$y' = \sec(x)^2 \sec(y)^3$	[_separable]	✓	1.879

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
4725	$y' = a + b \sin(y)$	[_quadrature]	✓	1.051
4726	$y' = (1 + \cos(x) \sin(y)) \tan(y)$	unknown	✗	6.940
4727	$y' + \csc(2x) \sin(2y) = 0$	[_separable]	✓	4.485
4728	$y' + f(x) + g(x) \tan(y) = 0$	['y=_G(x,y)']	✗	3.326
4729	$y' = \sqrt{a + b \cos(y)}$	[_quadrature]	✓	2.326
4730	$y' = e^y + x$	[[_1st_order, '_with_symmetry_[F(x),G(x)]]]	✓	1.254
4731	$y' = e^{x+y}$	[_separable]	✓	1.852
4732	$y' = e^x(a + b e^{-y})$	[_separable]	✓	1.681
4733	$y \ln(x) \ln(y) + y' = 0$	[_separable]	✓	1.302
4734	$y' = x^{m-1} y^{1-n} f(ax^m + by^n)$	[[_1st_order, '_with_symmetry_[F(x),G(y)]]]	✗	3.319
4735	$y' = af(y)$	[_quadrature]	✓	0.612
4736	$y' = f(a + bx + cy)$	[[_homogeneous, 'class C'], _dAlembert]	✓	1.074
4737	$y' = f(x)g(y)$	[_separable]	✓	0.996
4738	$y' = \sec(x)^2 + y \sec(x) \operatorname{Csc}(x)$	[_linear]	✓	2.264
4739	$2y' = 2 \sin(y)^2 \tan(y) - x \sin(2y)$	['y=_G(x,y)']	✗	57.187
4740	$2y' + ax = \sqrt{a^2 x^2 - 4b x^2 - 4cy}$	[[_homogeneous, 'class G']]	✓	5.864
4741	$3y' = x + \sqrt{x^2 - 3y}$	[[_1st_order, _with_linear_symmetries], _dAlembert]	✓	5.567
4742	$xy' = \sqrt{a^2 - x^2}$	[_quadrature]	✓	0.533
4743	$xy' + x + y = 0$	[_linear]	✓	1.785
4744	$xy' + x^2 - y = 0$	[_linear]	✓	1.157
4745	$xy' = x^3 - y$	[_linear]	✓	1.195

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
4746	$xy' = 1 + x^3 + y$	[_linear]	✓	1.026
4747	$xy' = x^m + y$	[_linear]	✓	0.698
4748	$xy' = x \sin(x) - y$	[_linear]	✓	1.183
4749	$xy' = x^2 \sin(x) + y$	[_linear]	✓	1.247
4750	$xy' = x^n \ln(x) - y$	[_linear]	✓	1.171
4751	$xy' = \sin(x) - 2y$	[_linear]	✓	1.236
4752	$xy' = ay$	[_separable]	✓	1.246
4753	$xy' = 1 + x + ay$	[_linear]	✓	1.311
4754	$xy' = ax + by$	[_linear]	✓	1.566
4755	$xy' = x^2a + by$	[_linear]	✓	1.101
4756	$xy' = a + bx^n + cy$	[_linear]	✓	1.107
4757	$xy' + 2 + (3 - x)y = 0$	[_linear]	✓	1.105
4758	$xy' + x + (ax + 2)y = 0$	[_linear]	✓	1.043
4759	$xy' + (bx + a)y = 0$	[_separable]	✓	1.058
4760	$xy' = x^3 + (-2x^2 + 1)y$	[_linear]	✓	1.337
4761	$xy' = ax - (-bx^2 + 1)y$	[_linear]	✓	1.106
4762	$xy' + x + (-x^2a + 2)y = 0$	[_linear]	✓	1.127
4763	$xy' + x^2 + y^2 = 0$	[_rational, _Riccati]	✓	1.030
4764	$xy' = x^2 + y(1 + y)$	[[_homogeneous, 'class D'], _rational, _Riccati]	✓	1.359
4765	$xy' - y + y^2 = x^{2/3}$	[_rational, _Riccati]	✓	11.352
4766	$xy' = a + by^2$	[_separable]	✓	1.727
4767	$xy' = x^2a + y + by^2$	[[_homogeneous, 'class D'], _rational, _Riccati]	✓	1.353
4768	$xy' = ax^{2n} + (n + by)y$	[_rational, _Riccati]	✓	1.843
4769	$xy' = ax^n + by + cy^2$	[_rational, _Riccati]	✓	2.105

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
Continued from previous page

#	ODE	CAS classification	Solved?	time (sec)
4770	$xy' = k + ax^n + by + cy^2$	[_rational, _Riccati]	✓	2.168
4771	$xy' + a + xy^2 = 0$	[_rational, [_Riccati, _special]]	✓	0.991
4772	$xy' + (1 - xy)y = 0$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓	1.263
4773	$xy' = (1 - xy)y$	[[_homogeneous, 'class D'], _rational, _Bernoulli]	✓	1.789
4774	$xy' = (xy + 1)y$	[[_homogeneous, 'class D'], _rational, _Bernoulli]	✓	1.827
4775	$xy' = ax^3(1 - xy)y$	[_Bernoulli]	✓	1.290
4776	$xy' = x^3 + (2x^2 + 1)y + xy^2$	[[_homogeneous, 'class D'], _rational, _Riccati]	✓	1.940
4777	$xy' = y(2xy + 1)$	[[_homogeneous, 'class D'], _rational, _Bernoulli]	✓	1.662
4778	$xy' + bx + (2 + axy)y = 0$	[_rational, [_1st_order, '_with_symmetry_[F(x),G(x)']], _Riccati]	✓	1.385
4779	$xy' + a_0 + a_1x + (a_2 + a_3xy)y = 0$	[_rational, _Riccati]	✓	5.806
4780	$xy' + ax^2y^2 + 2y = b$	[_rational, _Riccati]	✓	1.398
4781	$xy' + x^m + \frac{(n-m)y}{2} + x^ny^2 = 0$	[_rational, _Riccati]	✓	2.189
4782	$xy' + (a + bx^ny)y = 0$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓	1.630
4783	$xy' = ax^m - by - cx^ny^2$	[_rational, _Riccati]	✓	2.711
4784	$xy' = 2x - y + ax^n(x - y)^2$	[[_1st_order, _with_linear_symmetries], _rational, _Riccati]	✓	2.887
4785	$xy' + (1 - ay \ln(x))y = 0$	[_Bernoulli]	✓	1.879

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
4786	$xy' = y + (x^2 - y^2) f(x)$	[[_homogeneous, 'class D'], _Riccati]	✓	2.184
4787	$xy' = y(1 + y^2)$	[_separable]	✓	3.134
4788	$xy' + y(1 - xy^2) = 0$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓	2.696
4789	$xy' + y = a(x^2 + 1) y^3$	[_rational, _Bernoulli]	✓	2.354
4790	$xy' = ay + b(x^2 + 1) y^3$	[_rational, _Bernoulli]	✓	3.470
4791	$xy' + 2y = a x^{2k} y^k$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓	3.875
4792	$xy' = 4y - 4\sqrt{y}$	[_separable]	✓	3.663
4793	$xy' + 2y = \sqrt{1 + y^2}$	[_separable]	✓	2.716
4794	$xy' = y + \sqrt{y^2 + x^2}$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	6.625
4795	$xy' = y + \sqrt{x^2 - y^2}$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	63.228
4796	$xy' = y + x\sqrt{y^2 + x^2}$	[[_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]]]	✗	3.957
4797	$xy' = y - x(x - y) \sqrt{y^2 + x^2}$	[[_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]]]	✗	5.267
4798	$xy' = y + a\sqrt{y^2 + b^2x^2}$	[[_homogeneous, 'class A'], _dAlembert]	✓	11.209
4799	$xy' + (\sin(y) - 3x^2 \cos(y)) \cos(y) = 0$	['y=_G(x,y)']	✓	2.457
4800	$xy' + x - y + x \cos\left(\frac{y}{x}\right) = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓	2.890
4801	$xy' = y - x \cos\left(\frac{y}{x}\right)^2$	[[_homogeneous, 'class A'], _dAlembert]	✓	3.589
4802	$xy' = (-2x^2 + 1) \cot(y)^2$	[_separable]	✓	2.461

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
4803	$xy' = y - \cot(y)^2$	[_separable]	✓	2.289
4804	$xy' + y + 2x \sec(xy) = 0$	[[_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]]]	✓	5.870
4805	$xy' - y + x \sec\left(\frac{y}{x}\right) = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓	4.534
4806	$xy' = y + x \sec\left(\frac{y}{x}\right)^2$	[[_homogeneous, 'class A'], _dAlembert]	✓	6.168
4807	$xy' = \sin(x - y)$	['y=_G(x,y)']	✗	3.622
4808	$xy' = y + x \sin\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A'], _dAlembert]	✓	3.195
4809	$xy' + \tan(y) = 0$	[_separable]	✓	1.895
4810	$xy' + x + \tan(x + y) = 0$	[[_1st_order, _with_linear_symmetries]]	✓	2.655
4811	$xy' = y - x \tan\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A'], _dAlembert]	✓	3.422
4812	$xy' = (1 + y^2)(x^2 + \arctan(y))$	['y=_G(x,y)']	✓	2.352
4813	$xy' = y + x e^{\frac{y}{x}}$	[[_homogeneous, 'class A'], _dAlembert]	✓	9.470
4814	$xy' = x + y + x e^{\frac{y}{x}}$	[[_homogeneous, 'class A'], _dAlembert]	✓	9.487
4815	$xy' = y \ln(y)$	[_separable]	✓	1.608
4816	$xy' = (1 + \ln(x) - \ln(y))y$	[[_homogeneous, 'class A'], _dAlembert]	✓	4.112
4817	$xy' + (1 - \ln(x) - \ln(y))y = 0$	[[_homogeneous, 'class G']]	✓	2.333
4818	$xy' = y - 2x \tanh\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A'], _dAlembert]	✓	6.394
4819	$xy' + ny = f(x)g(x^ny)$	[[_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]]]	✗	2.887
4820	$xy' = yf(x^my^n)$	[[_homogeneous, 'class G']]	✓	1.345

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
4821	$(x + 1)y' = x^3(3x + 4) + y$	[_linear]	✓	1.015
4822	$(x + 1)y' = (x + 1)^4 + 2y$	[_linear]	✓	1.325
4823	$(x + 1)y' = e^x(x + 1)^{n+1} + ny$	[_linear]	✓	1.427
4824	$(x + 1)y' = ay + bxy^2$	[_rational, _Bernoulli]	✓	3.038
4825	$(x + 1)y' + y + (x + 1)^4 y^3 = 0$	[[_1st_order, _with_linear_symmetries], _rational, _Bernoulli]	✓	2.691
4826	$(x + 1)y' = (1 - xy^3)y$	[_rational, _Bernoulli]	✓	1.888
4827	$(x + 1)y' = 1 + y + (x + 1)\sqrt{1 + y}$	[[_1st_order, _with_linear_symmetries]]	✓	3.724
4828	$(x + a)y' = bx$	[_quadrature]	✓	0.265
4829	$(x + a)y' = bx + y$	[_linear]	✓	0.855
4830	$(x + a)y' + bx^2 + y = 0$	[_linear]	✓	0.780
4831	$(x + a)y' = 2(x + a)^5 + 3y$	[_linear]	✓	1.193
4832	$(x + a)y' = b + cy$	[_separable]	✓	1.310
4833	$(x + a)y' = bx + cy$	[_linear]	✓	1.391
4834	$(x + a)y' = y(1 - ay)$	[_separable]	✓	1.264
4835	$(-x + a)y' = y + (cx + b)y^3$	[_rational, _Bernoulli]	✓	2.182
4836	$2xy' = 2x^3 - y$	[_linear]	✓	6.972
4837	$2xy' + 1 = 4ixy + y^2$	[_rational, _Riccati]	✓	2.023
4838	$2xy' = y(1 + y^2)$	[_separable]	✓	3.043
4839	$2xy' + y(1 + y^2) = 0$	[_separable]	✓	4.007
4840	$2xy' = (1 + x - 6y^2)y$	[_rational, _Bernoulli]	✓	1.258
4841	$2xy' + 4y + a + \sqrt{a^2 - 4b - 4cy} = 0$	[_separable]	✓	3.985
4842	$(-2x + 1)y' = 16 + 32x - 6y$	[_linear]	✓	1.607
4843	$(2x + 1)y' = 4e^{-y} - 2$	[_separable]	✓	1.610

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
4844	$2(1-x)y' = 4x\sqrt{1-x} + y$	[_linear]	✓	1.552
4845	$2(x+1)y' + 2y + (x+1)^4 y^3 = 0$	[[_1st_order, _with_linear_symmetries], _rational, _Bernoulli]	✓	2.272
4846	$3xy' = 3x^{2/3} + (1-3y)y$	[_rational, _Riccati]	✓	1.616
4847	$3xy' = (2 + xy^3)y$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓	2.628
4848	$3xy' = (1 + 3xy^3 \ln(x))y$	[_Bernoulli]	✓	3.121
4849	$x^2y' = -y + a$	[_separable]	✓	0.933
4850	$x^2y' = a + bx + cx^2 + xy$	[_linear]	✓	0.773
4851	$x^2y' = a + bx + cx^2 - xy$	[_linear]	✓	0.788
4852	$x^2y' + (-2x+1)y = x^2$	[_linear]	✓	1.461
4853	$x^2y' = a + bxy$	[_linear]	✓	1.100
4854	$x^2y' = (bx+a)y$	[_separable]	✓	1.089
4855	$x^2y' + x(x+2)y = x(1 - e^{-2x}) - 2$	[_linear]	✓	1.536
4856	$x^2y' + 2x(1-x)y = e^x(2e^x - 1)$	[_linear]	✓	1.687
4857	$x^2y' + x^2 + xy + y^2 = 0$	[[_homogeneous, 'class A'], _rational, _Riccati]	✓	1.762
4858	$x^2y' = (1 + 2x - y)^2$	[[_homogeneous, 'class C'], _rational, _Riccati]	✓	2.289
4859	$x^2y' = a + by^2$	[_separable]	✓	1.837
4860	$x^2y' = (x + ay)y$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓	14.161
4861	$x^2y' = (ax + by)y$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓	21.999
4862	$x^2y' + x^2a + bxy + cy^2 = 0$	[[_homogeneous, 'class A'], _rational, _Riccati]	✓	72.817
4863	$x^2y' = a + bx^n + y^2x^2$	[_rational, _Riccati]	✓	2.103

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
4864	$x^2y' + 2 + xy(4 + xy) = 0$	[[_homogeneous, 'class G'], _rational, _Riccati]	✓	1.666
4865	$x^2y' + 2 + ax(1 - xy) - y^2x^2 = 0$	[_rational, _Riccati]	✓	1.692
4866	$x^2y' = a + bx^2y^2$	[[_homogeneous, 'class G'], _rational, [_Riccati, _special]]	✓	1.842
4867	$x^2y' = a + bx^n + cx^2y^2$	[_rational, _Riccati]	✓	2.254
4868	$x^2y' = a + bxy + cx^2y^2$	[[_homogeneous, 'class G'], _rational, _Riccati]	✓	2.314
4869	$x^2y' = a + bxy + cx^4y^2$	[_rational, _Riccati]	✓	4.639
4870	$x^2y' + (x^2 + y^2 - x)y = 0$	[[_homogeneous, 'class D'], _rational, _Bernoulli]	✓	1.705
4871	$x^2y' = 2y(x - y^2)$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓	2.826
4872	$x^2y' = ax^2y^2 - ay^3$	[_rational, _Abel]	✗	0.900
4873	$x^2y' + y^2a + bx^2y^3 = 0$	[_rational, _Abel]	✗	0.968
4874	$x^2y' = (ax + by^3)y$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓	2.572
4875	$x^2y' + xy + \sqrt{y} = 0$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓	4.867
4876	$x^2y' = \sec(y) + 3x \tan(y)$	['y=_G(x,y)']	✗	7.043
4877	$(-x^2 + 1)y' = 1 - x^2 + y$	[_linear]	✓	1.290
4878	$(-x^2 + 1)y' + 1 = xy$	[_linear]	✓	1.105
4879	$(-x^2 + 1)y' = 5 - xy$	[_linear]	✓	2.358
4880	$(x^2 + 1)y' + a + xy = 0$	[_linear]	✓	1.036
4881	$(x^2 + 1)y' + a - xy = 0$	[_linear]	✓	1.872
4882	$(-x^2 + 1)y' + a - xy = 0$	[_linear]	✓	1.046

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
4883	$(-x^2 + 1)y' - x + xy = 0$	[_separable]	✓	1.255
4884	$(-x^2 + 1)y' - x^2 + xy = 0$	[_linear]	✓	1.152
4885	$(-x^2 + 1)y' + x^2 + xy = 0$	[_linear]	✓	1.149
4886	$(x^2 + 1)y' = x(x^2 + 1) - xy$	[_linear]	✓	3.253
4887	$(x^2 + 1)y' = x(3x^2 - y)$	[_linear]	✓	3.199
4888	$(-x^2 + 1)y' + 2xy = 0$	[_separable]	✓	1.324
4889	$(x^2 + 1)y' = 2x(x - y)$	[_linear]	✓	1.078
4890	$(x^2 + 1)y' = 2x(x^2 + 1)^2 + 2xy$	[_linear]	✓	1.637
4891	$(-x^2 + 1)y' + \cos(x) = 2xy$	[_linear]	✓	2.405
4892	$(x^2 + 1)y' = \tan(x) - 2xy$	[_linear]	✓	1.544
4893	$(-x^2 + 1)y' = a + 4xy$	[_linear]	✓	1.030
4894	$(x^2 + 1)y' = (2bx + a)y$	[_separable]	✓	1.255
4895	$(x^2 + 1)y' = 1 + y^2$	[_separable]	✓	1.813
4896	$(-x^2 + 1)y' = 1 - y^2$	[_separable]	✓	1.746
4897	$(-x^2 + 1)y' = 1 - (2x - y)y$	[_rational, [_1st_order, '_with_symmetry_[F(x),G(x)]'], _Riccati]	✓	1.682
4898	$(-x^2 + 1)y' = n(1 - 2xy + y^2)$	[_rational, _Riccati]	✗	6.544
4899	$(x^2 + 1)y' + xy(1 - y) = 0$	[_separable]	✓	2.392
4900	$(-x^2 + 1)y' = xy(1 + ay)$	[_separable]	✓	2.177
4901	$(x^2 + 1)y' = 1 + y^2 - 2xy(1 + y^2)$	[_rational, _Abel]	✗	1.286
4902	$(x^2 + 1)y' + x \sin(y) \cos(y) = x(x^2 + 1) \cos(y)^2$	['y=_G(x,y)']	✗	16.555
4903	$(x^2 + 1)y' = 1 + x^2 - y \operatorname{arccot}(x)$	[_linear]	✓	1.998

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
4904	$(-x^2 + 4)y' + 4y = (x + 2)y^2$	[_rational, _Bernoulli]	✓	1.433
4905	$(a^2 + x^2)y' = b + xy$	[_linear]	✓	1.179
4906	$(a^2 + x^2)y' = (b + y)(x + \sqrt{a^2 + x^2})$	[_separable]	✓	3.706
4907	$(a^2 + x^2)y' + (x - y)y = 0$	[_rational, _Bernoulli]	✓	2.369
4908	$(a^2 + x^2)y' = a^2 + 3xy - 2y^2$	[_rational, _Riccati]	✓	160.245
4909	$(a^2 + x^2)y' + xy + bxy^2 = 0$	[_separable]	✓	2.671
4910	$x(1 - x)y' = a + (x + 1)y$	[_linear]	✓	1.098
4911	$x(1 - x)y' = 2xy + 2$	[_linear]	✓	1.107
4912	$x(1 - x)y' = 2xy - 2$	[_linear]	✓	1.098
4913	$x(x + 1)y' = (-2x + 1)y$	[_separable]	✓	1.332
4914	$x(1 - x)y' + (2x + 1)y = a$	[_linear]	✓	1.270
4915	$x(1 - x)y' = a + 2(2 - x)y$	[_linear]	✓	1.417
4916	$x(1 - x)y' + 2 - 3xy + y = 0$	[_linear]	✓	1.168
4917	$x(x + 1)y' = (x + 1)(x^2 - 1) + (x^2 + x - 1)y$	[_linear]	✓	1.362
4918	$(-2 + x)(x - 3)y' + x^2 - 8y + 3xy = 0$	[_linear]	✓	1.447
4919	$x(x + a)y' = (b + cy)y$	[_separable]	✓	2.566
4920	$(x + a)^2 y' = 2(x + a)(b + y)$	[_separable]	✓	1.186
4921	$(x - a)^2 y' + k(x + y - a)^2 + y^2 = 0$	[[_homogeneous, 'class C <sup>1</sup> '], _rational, _Riccati]	✓	42.557
4922	$(x - a)(x - b)y' + ky = 0$	[_separable]	✓	2.079
4923	$(x - a)(x - b)y' = (x - a)(x - b) + (2x - a - b)y$	[_linear]	✓	1.554
4924	$(x - a)(x - b)y' = cy^2$	[_separable]	✓	1.789
4925	$(x - a)(x - b)y' + k(y - a)(y - b) = 0$	[_separable]	✓	3.460

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
4926	$(x - a)(x - b)y' + k(x + y - a)(x + y - b) + y^2 = 0$	[_rational, [_1st_order, '._with_symmetry_[F(x),G(x)]'], _Riccati]	✓	2.917
4927	$2x^2y' = y$	[_separable]	✓	1.349
4928	$2x^2y' + x \cot(x) - 1 + 2x^2y \cot(x) = 0$	[_linear]	✓	1.985
4929	$2x^2y' + 1 + 2xy - y^2x^2 = 0$	[[_homogeneous, 'class G'], _rational, _Riccati]	✓	1.632
4930	$2x^2y' = 2xy + (1 - x \cot(x))(x^2 - y^2)$	[[_homogeneous, 'class D'], _Riccati]	✓	49.634
4931	$2(-x^2 + 1)y' = \sqrt{-x^2 + 1} + (x + 1)y$	[_linear]	✓	2.403
4932	$x(-2x + 1)y' + 1 + (1 - 4x)y = 0$	[_linear]	✓	1.138
4933	$x(-2x + 1)y' = 4x - (1 + 4x)y + y^2$	[_rational, [_1st_order, '._with_symmetry_[F(x),G(x)]'], _Riccati]	✓	2.392
4934	$2x(1 - x)y' + x + (-2x + 1)y = 0$	[_linear]	✓	1.267
4935	$2x(1 - x)y' + x + (1 - x)y^2 = 0$	[_rational, _Riccati]	✓	2.185
4936	$2(x^2 + x + 1)y' = 1 + 8x^2 - (2x + 1)y$	[_linear]	✓	3.825
4937	$4(x^2 + 1)y' - 4xy - x^2 = 0$	[_linear]	✓	1.172
4938	$ax^2y' = x^2 + axy + b^2y^2$	[[_homogeneous, 'class A'], _rational, _Riccati]	✓	23.751
4939	$(bx^2 + a)y' = A + By^2$	[_separable]	✓	2.505
4940	$(bx^2 + a)y' = cxy \ln(y)$	[_separable]	✓	1.937
4941	$x(ax + 1)y' + a - y = 0$	[_separable]	✓	0.990
4942	$(bx + a)^2y' + cy^2 + (bx + a)y^3 = 0$	[_rational, _Abel]	✗	1.974
4943	$x^3y' = a + bx^2y$	[_linear]	✓	1.161
4944	$x^3y' = 3 - x^2 + x^2y$	[_linear]	✓	1.018
4945	$x^3y' = x^4 + y^2$	[[_homogeneous, 'class G'], _rational, _Riccati]	✓	1.158

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
4946	$x^3 y' = y(y + x^2)$	[[_homogeneous, 'class D'], _rational, _Bernoulli]	✓	1.727
4947	$x^3 y' = x^2(y - 1) + y^2$	[[_homogeneous, 'class D'], _rational, _Riccati]	✓	2.105
4948	$x^3 y' = (x + 1) y^2$	[_separable]	✓	1.322
4949	$x^3 y' + 20 + x^2 y(1 - x^2 y) = 0$	[[_homogeneous, 'class G'], _rational, _Riccati]	✓	1.899
4950	$x^3 y' + 3 + (3 - 2x) x^2 y - x^6 y^2 = 0$	[_rational, _Riccati]	✓	1.753
4951	$x^3 y' = (2x^2 + y^2) y$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓	92.586
4952	$x^3 y' = \cos(y) (\cos(y) - 2x^2 \sin(y))$	['y=_G(x,y)']	✗	45.219
4953	$x(x^2 + 1) y' = x^2 a + y$	[_linear]	✓	1.105
4954	$x(-x^2 + 1) y' = x^2 a + y$	[_linear]	✓	1.168
4955	$x(x^2 + 1) y' = a x^3 + y$	[_linear]	✓	1.044
4956	$x(x^2 + 1) y' = a - x^2 y$	[_linear]	✓	1.114
4957	$x(x^2 + 1) y' = (-x^2 + 1) y$	[_separable]	✓	1.382
4958	$x(-x^2 + 1) y' = (x^2 - x + 1) y$	[_separable]	✓	1.521
4959	$x(-x^2 + 1) y' = a x^3 + (-2x^2 + 1) y$	[_linear]	✓	1.142
4960	$x(-x^2 + 1) y' = x^3(-x^2 + 1) + (-2x^2 + 1) y$	[_linear]	✓	2.648
4961	$x(x^2 + 1) y' = 2 - 4x^2 y$	[_linear]	✓	1.174
4962	$x(x^2 + 1) y' = x - (5x^2 + 3) y$	[_linear]	✓	1.217
4963	$x(-x^2 + 1) y' + x^2 + (-x^2 + 1) y^2 = 0$	[_rational, _Riccati]	✓	108.021
4964	$x^2(1 - x) y' = (2 - x) xy - y^2$	[[_homogeneous, 'class D'], _rational, _Bernoulli]	✓	2.034

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
4965	$2x^3y' = (x^2 - y^2)y$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓	89.667
4966	$2x^3y' = (3x^2 + y^2a)y$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓	14.138
4967	$6x^3y' = 4x^2y + (1 - 3x)y^4$	[_rational, _Bernoulli]	✓	2.119
4968	$x(cx^2 + bx + a)y' + x^2 - (cx^2 + bx + a)y = y^2$	[[_homogeneous, 'class D'], _rational, _Riccati]	✓	2.731
4969	$x^4y' = (x^3 + y)y$	[[_homogeneous, 'class D'], _rational, _Bernoulli]	✓	1.747
4970	$x^4y' + a^2 + x^4y^2 = 0$	[_rational, [_Riccati, _special]]	✓	2.958
4971	$x^4y' + x^3y + \csc(xy) = 0$	[[_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]']]	✓	12.951
4972	$(-x^4 + 1)y' = 2x(1 - y^2)$	[_separable]	✓	2.381
4973	$x(-x^3 + 1)y' = 2x - (-4x^3 + 1)y$	[_linear]	✓	1.214
4974	$x(-x^3 + 1)y' = x^2 + (1 - 2xy)y$	[_rational, _Riccati]	✓	1.690
4975	$x^2(-x^2 + 1)y' = (x - 3x^3y)y$	[_rational, _Bernoulli]	✓	1.373
4976	$x(-2x^3 + 1)y' = 2(-x^3 + 1)y$	[_separable]	✓	1.495
4977	$(cx^2 + bx + a)^2(y' + y^2) + A = 0$	[_rational, _Riccati]	✓	3.735
4978	$x^5y' = 1 - 3x^4y$	[_linear]	✓	1.220
4979	$x(-x^4 + 1)y' = 2x(x^2 - y^2) + (-x^4 + 1)y$	[[_homogeneous, 'class D'], _rational, _Riccati]	✓	2.195
4980	$x^7y' + 5x^3y^2 + 2(x^2 + 1)y^3 = 0$	[_rational, _Abel]	✗	1.246
4981	$x^n y' = a + b x^{n-1} y$	[_linear]	✓	1.163
4982	$x^n y' = x^{2n-1} - y^2$	[_Riccati]	✓	1.883
4983	$x^n y' + x^{-2+2n} + y^2 + (1 - n)x^{n-1} = 0$	[_Riccati]	✓	9.745

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
4984	$x^n y' = a^2 x^{-2+2n} + b^2 y^2$	[[_homogeneous, 'class G'], _Riccati]	✓	4.224
4985	$x^n y' = x^{n-1} (a x^{2n} + n y - b y^2)$	[_rational, _Riccati]	✓	2.495
4986	$x^k y' = a x^m + b y^n$	[_Chini]	✗	1.643
4987	$y' \sqrt{x^2 + 1} = 2x - y$	[_linear]	✓	1.558
4988	$y' \sqrt{-x^2 + 1} = 1 + y^2$	[_separable]	✓	2.983
4989	$(x - \sqrt{x^2 + 1}) y' = y + \sqrt{1 + y^2}$	[_separable]	✓	2.543
4990	$y' \sqrt{a^2 + x^2} + x + y = \sqrt{a^2 + x^2}$	[_linear]	✓	1.520
4991	$y' \sqrt{b^2 + x^2} = \sqrt{y^2 + a^2}$	[_separable]	✓	13.111
4992	$y' \sqrt{b^2 - x^2} = \sqrt{a^2 - y^2}$	[_separable]	✓	13.316
4993	$xy' \sqrt{a^2 + x^2} = y \sqrt{b^2 + y^2}$	[_separable]	✓	2.165
4994	$xy' \sqrt{-a^2 + x^2} = y \sqrt{y^2 - b^2}$	[_separable]	✓	21.060
4995	$y' \sqrt{X} + \sqrt{Y} = 0$	[_quadrature]	✓	0.406
4996	$y' \sqrt{X} = \sqrt{Y}$	[_quadrature]	✓	0.408
4997	$x^{3/2} y' = a + b x^{3/2} y^2$	[_rational, [_Riccati, _special]]	✓	1.779
4998	$y' \sqrt{x^3 + 1} = \sqrt{y^3 + 1}$	[_separable]	✓	2.131
4999	$y' \sqrt{x(1-x)(-ax+1)} = \sqrt{y(1-y)(1-ay)}$	[_separable]	✓	3.080
5000	$y' \sqrt{-x^4 + 1} = \sqrt{1 - y^4}$	[_separable]	✓	2.706
5001	$y' \sqrt{x^4 + x^2 + 1} = \sqrt{1 + y^2 + y^4}$	[_separable]	✓	2.904
5002	$y' \sqrt{X} = 0$	[_quadrature]	✓	0.418
5003	$y' \sqrt{X} + \sqrt{Y} = 0$	[_quadrature]	✓	0.407
5004	$y' \sqrt{X} = \sqrt{Y}$	[_quadrature]	✓	0.408
5005	$y' (x^3 + 1)^{2/3} + (y^3 + 1)^{2/3} = 0$	[_separable]	✓	1.868

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
5006	$y'(4x^3 + a_1 x + a_0)^{2/3} + (a_0 + a_1 y + 4y^3)^{2/3} = 0$	[_separable]	✓	2.333
5007	$X^{2/3} y' = Y^{2/3}$	[_quadrature]	✓	0.544
5008	$y' \left( a + \cos \left( \frac{x}{2} \right)^2 \right) = y \tan \left( \frac{x}{2} \right) \left( 1 + a + \cos \left( \frac{x}{2} \right)^2 - y \right)$	[_Bernoulli]	✓	18.404
5009	$(1 - 4 \cos(x)^2) y' = \tan(x) (1 + 4 \cos(x)^2) y$	[_separable]	✓	7.220
5010	$(-\sin(x) + 1) y' + y \cos(x) = 0$	[_separable]	✓	2.752
5011	$(\cos(x) - \sin(x)) y' + y(\cos(x) + \sin(x)) = 0$	[_separable]	✓	3.184
5012	$(a_0 + a_1 \sin(x)^2) y' + a_2 x (a_3 + a_1 \sin(x)^2) + a_1 y \sin(2x) = 0$	[_linear]	✓	12.011
5013	$(-e^x + x) y' + x e^x + (1 - e^x) y = 0$	[_linear]	✓	1.597
5014	$y' x \ln(x) = a x (\ln(x) + 1) - y$	[_linear]	✓	1.260
5015	$yy' + x = 0$	[_separable]	✓	2.845
5016	$yy' + x e^{x^2} = 0$	[_separable]	✓	1.309
5017	$yy' + x^3 + y = 0$	[_rational, [_Abel, '2nd type', 'class A']]	✗	0.661
5018	$yy' + ax + by = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓	7.948
5019	$yy' + x e^{-x}(1 + y) = 0$	[_separable]	✓	1.975
5020	$yy' + f(x) = g(x) y$	[[_Abel, '2nd type', 'class A']]	✗	0.980
5021	$yy' + 4x(x + 1) + y^2 = 0$	[[_homogeneous, 'class D'], _rational, _Bernoulli]	✓	1.888
5022	$yy' = ax + by^2$	[_rational, _Bernoulli]	✓	1.427

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
5023	$yy' = b \cos(x + c) + y^2 a$	[_Bernoulli]	✓	2.908
5024	$yy' = a_0 + a_1 y + a_2 y^2$	[_quadrature]	✓	3.483
5025	$yy' = ax + bxy^2$	[_separable]	✓	1.920
5026	$yy' = \csc(x)^2 - y^2 \cot(x)$	[_Bernoulli]	✓	13.714
5027	$yy' = \sqrt{y^2 + a^2}$	[_quadrature]	✓	6.200
5028	$yy' = \sqrt{y^2 - a^2}$	[_quadrature]	✓	5.960
5029	$yy' + x + f(y^2 + x^2)g(x) = 0$	[NONE]	✗	2.837
5030	$(1 + y)y' = x + y$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	5.071
5031	$(1 + y)y' = x^2(1 - y)$	[_separable]	✓	1.273
5032	$(x + y)y' + y = 0$	[[_homogeneous, 'class A'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓	3.727
5033	$(x - y)y' = y$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓	2.506
5034	$(x + y)y' + x - y = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓	2.625
5035	$(x + y)y' = x - y$	[[_homogeneous, 'class A'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓	3.635
5036	$1 - y' = x + y$	[[_linear, 'class A']]	✓	0.997
5037	$(x - y)y' = y(2xy + 1)$	[[_homogeneous, 'class D'], _rational, [_Abel, '2nd type', 'class A']]	✓	1.476
5038	$(x + y)y' + \tan(y) = 0$	[[_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓	2.139
5039	$(x - y)y' = \left(e^{-\frac{x}{y}} + 1\right)y$	[[_homogeneous, 'class A'], _dAlembert]	✓	3.987

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
5040	$(1 + x + y)y' + 1 + 4x + 3y = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	1.802
5041	$(2 + x + y)y' = 1 - x - y$	[[_homogeneous, 'class C'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓	1.457
5042	$(3 - x - y)y' = 1 + x - 3y$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	1.911
5043	$(3 - x + y)y' = 11 - 4x + 3y$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	1.914
5044	$(2x + y)y' + x - 2y = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓	2.690
5045	$(2x - y + 2)y' + 3 + 6x - 3y = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	1.370
5046	$(2x - y + 3)y' + 2 = 0$	[[_homogeneous, 'class C'], [_Abel, '2nd type', 'class C'], _dAlembert]	✓	1.355
5047	$(4 + 2x - y)y' + 5 + x - 2y = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	3.212
5048	$(5 - 2x - y)y' + 4 - x - 2y = 0$	[[_homogeneous, 'class C'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓	2.568
5049	$(1 - 3x + y)y' = 2x - 2y$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	7.142
5050	$(2 - 3x + y)y' + 5 - 2x - 3y = 0$	[[_homogeneous, 'class C'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓	2.608
5051	$(4x - y)y' + 2x - 5y = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓	3.364

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
5052	$(6 - 4x - y)y' = 2x - y$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	2.621
5053	$(1 + 5x - y)y' + 5 + x - 5y = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	2.752
5054	$(a + bx + y)y' + a - bx - y = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	1.777
5055	$(x^2 - y)y' + x = 0$	[_rational, [_1st_order, '_with_symmetry_[F(x)*G(y),0]'], [_Abel, '2nd type', 'class C']]	✓	0.951
5056	$(x^2 - y)y' = 4xy$	[[_homogeneous, 'class G'], _rational, [_Abel, '2nd type', 'class A']]	✓	2.026
5057	$(y - \cot(x) \csc(x))y' + \csc(x)(1 + y \cos(x))y = 0$	[[_Abel, '2nd type', 'class A']]	✓	39.678
5058	$2yy' + 2x + x^2 + y^2 = 0$	[[_homogeneous, 'class D'], _rational, _Bernoulli]	✓	1.983
5059	$2yy' = xy^2 + x^3$	[_rational, _Bernoulli]	✓	1.391
5060	$(x - 2y)y' = y$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓	2.656
5061	$(x + 2y)y' + 2x - y = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓	2.715
5062	$(x - 2y)y' + 2x + y = 0$	[[_homogeneous, 'class A'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓	3.291
5063	$(1 + x - 2y)y' = 1 + 2x - y$	[[_homogeneous, 'class C'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓	2.953

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
5064	$(1 + x + 2y) y' + 1 - x - 2y = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	1.317
5065	$(1 + x + 2y) y' + 7 + x - 4y = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	3.336
5066	$2(x + y) y' + x^2 + 2y = 0$	[_exact, _rational, [_1st_order, '_with_symmetry_[F(x),G(x)]'], [_Abel, '2nd type', 'class A']]	✓	1.120
5067	$(3 + 2x - 2y) y' = 1 + 6x - 2y$	[[_homogeneous, 'class C'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓	2.598
5068	$(1 - 4x - 2y) y' + 2x + y = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	1.471
5069	$(6x - 2y) y' = 2 + 3x - y$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	1.404
5070	$(19 + 9x + 2y) y' + 18 - 2x - 6y = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	4.189
5071	$(x^3 + 2y) y' = 3x(2 - xy)$	[_exact, _rational, [_1st_order, '_with_symmetry_[F(x),G(x)]'], [_Abel, '2nd type', 'class A']]	✓	1.296
5072	$(\tan(x) \sec(x) - 2y) y' + \sec(x) (1 + 2y \sin(x)) = 0$	[[_Abel, '2nd type', 'class A']]	✗	10.423
5073	$(x e^{-x} - 2y) y' = 2x e^{-2x} - (e^{-x} + x e^{-x} - 2y) y$	[[_Abel, '2nd type', 'class B']]	✓	2.592
5074	$3yy' + 5 \cot(x) \cot(y) \cos(y)^2 = 0$	[_separable]	✓	6.485
5075	$3(2 - y) y' + xy = 0$	[_separable]	✓	1.214

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
5076	$(x - 3y)y' + 4 + 3x - y = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	3.949
5077	$(4 - x - 3y)y' + 3 - x - 3y = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	1.332
5078	$(2 + 2x + 3y)y' = 1 - 2x - 3y$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	1.320
5079	$(5 - 2x - 3y)y' + 1 - 2x - 3y = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	1.325
5080	$(1 + 9x - 3y)y' + 2 + 3x - y = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	1.531
5081	$(4y + x)y' + 4x - y = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓	3.237
5082	$(3 + 2x + 4y)y' = 1 + x + 2y$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	1.351
5083	$(5 + 2x - 4y)y' = 3 + x - 2y$	[[_homogeneous, 'class C'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓	1.648
5084	$(5 + 3x - 4y)y' = 2 + 7x - 3y$	[[_homogeneous, 'class C'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓	2.753
5085	$4(1 - x - y)y' + 2 - x = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class C'], _dAlembert]	✓	1.816
5086	$(11 - 11x - 4y)y' = 62 - 8x - 25y$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	8.635
5087	$(6 + 3x + 5y)y' = 2 + x + 7y$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	61.956

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
5088	$(7x + 5y)y' + 10x + 8y = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓	3.119
5089	$(x + 4x^3 + 5y)y' + 7x^3 + 3x^2y + 4y = 0$	[_rational, [_Abel, '2nd type', 'class A']]	✗	2.758
5090	$(5 - x + 6y)y' = 3 - x + 4y$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	4.266
5091	$3(x + 2y)y' = 1 - x - 2y$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	1.282
5092	$(3 - 3x + 7y)y' + 7 - 7x + 3y = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	3.420
5093	$(1 + x + 9y)y' + 1 + x + 5y = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	1.837
5094	$(8 + 5x - 12y)y' = 3 + 2x - 5y$	[[_homogeneous, 'class C'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓	2.839
5095	$(140 + 7x - 16y)y' + 25 + 8x + y = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	3.164
5096	$(3 + 9x + 21y)y' = 45 + 7x - 5y$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	3.000
5097	$(ax + by)y' + x = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class C'], _dAlembert]	✓	11.329
5098	$(ax + by)y' + y = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓	2.711
5099	$(ax + by)y' + bx + ay = 0$	[[_homogeneous, 'class A'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓	3.369

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
5100	$(ax + by)y' = bx + ay$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓	3.207
5101	$xyy' + 1 + y^2 = 0$	[_separable]	✓	2.130
5102	$xyy' = x + y^2$	[[_homogeneous, 'class D'], _rational, _Bernoulli]	✓	2.198
5103	$xyy' + x^2 + y^2 = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓	4.640
5104	$xyy' + x^4 - y^2 = 0$	[[_homogeneous, 'class D'], _rational, _Bernoulli]	✓	2.112
5105	$xyy' = ax^3 \cos(x) + y^2$	[[_homogeneous, 'class D'], _Bernoulli]	✓	3.357
5106	$xyy' = x^2 - xy + y^2$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓	4.321
5107	$xyy' + 2x^2 - 2xy - y^2 = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓	2.789
5108	$xyy' = a + by^2$	[_separable]	✓	2.037
5109	$xyy' = ax^n + by^2$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓	1.937
5110	$xyy' = (x^2 + 1)(1 - y^2)$	[_separable]	✓	2.102
5111	$xyy' + x^2 \operatorname{arccot}\left(\frac{y}{x}\right) - y^2 = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓	7.610
5112	$xyy' + x^2 e^{-\frac{2y}{x}} - y^2 = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓	2.771
5113	$(xy + 1)y' + y^2 = 0$	[[_homogeneous, 'class G'], _rational, [_Abel, '2nd type', 'class B']]	✓	1.309
5114	$x(1 + y)y' - (1 - x)y = 0$	[_separable]	✓	1.164
5115	$x(1 - y)y' + (x + 1)y = 0$	[_separable]	✓	1.326

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
5116	$x(1 - y)y' + (1 - x)y = 0$	[_separable]	✓	1.292
5117	$x(y + 2)y' + ax = 0$	[_quadrature]	✓	0.799
5118	$(2 + 3x - xy)y' + y = 0$	[_rational, [_1st_order, '._with_symmetry_[F(x)*G(y),0]'], [_Abel, '2nd type', 'class B']]	✓	1.056
5119	$x(4 + y)y' = 2x + 2y + y^2$	[_rational, [_Abel, '2nd type', 'class B']]	✓	4.635
5120	$x(a + y)y' + bx + cy = 0$	[_rational, [_Abel, '2nd type', 'class B']]	✗	0.859
5121	$x(a + y)y' = y(Bx + A)$	[_separable]	✓	1.425
5122	$x(x + y)y' + y^2 = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓	6.013
5123	$x(x - y)y' + y^2 = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓	6.685
5124	$x(x + y)y' = y^2 + x^2$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓	3.107
5125	$x(x - y)y' + 2x^2 + 3xy - y^2 = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓	4.289
5126	$x(x + y)y' - y(x + y) + x\sqrt{x^2 - y^2} = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓	4.154
5127	$(a + x(x + y))y' = b(x + y)y$	[_rational, [_Abel, '2nd type', 'class B']]	✗	1.198
5128	$x(2x + y)y' = x^2 + xy - y^2$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓	4.533
5129	$x(4x - y)y' + 4x^2 - 6xy - y^2 = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓	7.022
5130	$x(x^3 + y)y' = (x^3 - y)y$	[[_homogeneous, 'class G'], _rational, [_Abel, '2nd type', 'class B']]	✓	3.729

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
5131	$x(2x^3 + y)y' = (2x^3 - y)y$	[[_homogeneous, 'class G'], _rational, [_Abel, '2nd type', 'class B']]	✓	3.881
5132	$x(2x^3 + y)y' = 6y^2$	[[_homogeneous, 'class G'], _rational, [_Abel, '2nd type', 'class B']]	✓	3.641
5133	$y(1 - x)y' + x(1 - y) = 0$	[_separable]	✓	1.159
5134	$(x + a)(x + b)y' = xy$	[_separable]	✓	1.488
5135	$2xyy' + 1 - 2x^3 - y^2 = 0$	[_rational, _Bernoulli]	✓	1.337
5136	$2xyy' + a + y^2 = 0$	[_separable]	✓	1.698
5137	$2xyy' = ax + y^2$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓	1.230
5138	$2xyy' + x^2 + y^2 = 0$	[[_homogeneous, 'class A'], _exact, _rational, _Bernoulli]	✓	3.911
5139	$2xyy' = y^2 + x^2$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓	7.615
5140	$2xyy' = 4x^2(2x + 1) + y^2$	[_rational, _Bernoulli]	✓	3.833
5141	$2xyy' + x^2(ax^3 + 1) = 6y^2$	[_rational, _Bernoulli]	✓	1.424
5142	$(3 - x + 2xy)y' + 3x^2 - y + y^2 = 0$	[_exact, _rational, [_Abel, '2nd type', 'class B']]	✓	1.544
5143	$x(x - 2y)y' + y^2 = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓	15.697
5144	$x(x + 2y)y' + (2x - y)y = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓	66.096
5145	$x(x - 2y)y' + (2x - y)y = 0$	[[_homogeneous, 'class A'], _exact, _rational, [_Abel, '2nd type', 'class B']]	✓	4.576
5146	$x(1 + x - 2y)y' + (1 - 2x + y)y = 0$	[_rational, [_Abel, '2nd type', 'class B']]	✓	1.399

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
5147	$x(1 - x - 2y)y' + (2x + y + 1)y = 0$	[_rational, [_Abel, '2nd type', 'class B']]	✓	1.383
5148	$2x(2x^2 + y)y' + (12x^2 + y)y = 0$	[[_homogeneous, 'class G'], _exact, _rational, [_Abel, '2nd type', 'class B']]	✓	2.777
5149	$2(x + 1)yy' + 2x - 3x^2 + y^2 = 0$	[_exact, _rational, _Bernoulli]	✓	1.625
5150	$x(2x + 3y)y' = y^2$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓	3.912
5151	$x(2x + 3y)y' + 3(x + y)^2 = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓	5.805
5152	$(3 + 6xy + x^2)y' + 2x + 2xy + 3y^2 = 0$	[_exact, _rational, [_Abel, '2nd type', 'class B']]	✓	1.334
5153	$3x(x + 2y)y' + x^3 + 3y(2x + y) = 0$	[_exact, _rational, [_Abel, '2nd type', 'class B']]	✓	1.413
5154	$axy y' = y^2 + x^2$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓	5.385
5155	$axy y' + x^2 - y^2 = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓	5.226
5156	$x(a + by)y' = cy$	[_separable]	✓	1.681
5157	$x(x - ay)y' = y(y - ax)$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓	5.042
5158	$x(x^n + ay)y' + (b + cy)y^2 = 0$	[_rational, [_1st_order, '_with_symmetry_[F(x)*G(y),0]'], [_Abel, '2nd type', 'class C']]	✓	4.803
5159	$(1 - x^2y)y' + 1 - xy^2 = 0$	[_exact, _rational, [_Abel, '2nd type', 'class B']]	✓	1.224

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
5160	$(1 - x^2y)y' - 1 + xy^2 = 0$	[_rational, [_Abel, '2nd type', 'class B']]	✗	1.799
5161	$x(1 - xy)y' + (xy + 1)y = 0$	[[_homogeneous, 'class G'], _rational, [_Abel, '2nd type', 'class B']]	✓	1.596
5162	$x(xy + 2)y' = 3 + 2x^3 - 2y - xy^2$	[_exact, _rational, [_Abel, '2nd type', 'class B']]	✓	1.530
5163	$x(2 - xy)y' + 2y - xy^2(xy + 1) = 0$	[[_homogeneous, 'class G'], _rational, [_Abel, '2nd type', 'class C']]	✓	2.339
5164	$x(3 - xy)y' = y(xy - 1)$	[[_homogeneous, 'class G'], _rational, [_Abel, '2nd type', 'class B']]	✓	1.915
5165	$x^2(1 - y)y' + (1 - x)y = 0$	[_separable]	✓	1.434
5166	$x^2(1 - y)y' + (x + 1)y^2 = 0$	[_separable]	✓	1.567
5167	$(x^2 + 1)yy' + x(1 - y^2) = 0$	[_separable]	✓	3.180
5168	$(-x^2 + 1)yy' + 2x^2 + xy^2 = 0$	[_rational, _Bernoulli]	✓	1.577
5169	$2x^2yy' = x^2(2x + 1) - y^2$	[[_homogeneous, 'class D'], _rational, _Bernoulli]	✓	2.066
5170	$x(1 - 2xy)y' + y(2xy + 1) = 0$	[[_homogeneous, 'class G'], _rational, [_Abel, '2nd type', 'class B']]	✓	1.697
5171	$x(2xy + 1)y' + (2 + 3xy)y = 0$	[[_homogeneous, 'class G'], _rational, [_Abel, '2nd type', 'class B']]	✓	9.819
5172	$x(2xy + 1)y' + (1 + 2xy - y^2x^2)y = 0$	[[_homogeneous, 'class G'], _rational, [_Abel, '2nd type', 'class C']]	✓	2.452
5173	$x^2(x - 2y)y' = 2x^3 - 4xy^2 + y^3$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class C'], _dAlembert]	✓	33.526
5174	$2(x + 1)xyy' = 1 + y^2$	[_separable]	✓	2.414

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
Continued from previous page

#	ODE	CAS classification	Solved?	time (sec)
5175	$3x^2yy' + 1 + 2xy^2 = 0$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓	2.032
5176	$x^2(4x - 3y)y' = (6x^2 - 3xy + 2y^2)y$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class C', _dAlembert]	✓	9.763
5177	$(1 - x^3y)y' = y^2x^2$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]	✓	2.038
5178	$2x^3yy' + a + 3y^2x^2 = 0$	[[_homogeneous, 'class G', _exact, _rational, _Bernoulli]	✓	1.662
5179	$x(3 - 2x^2y)y' = 4x - 3y + 3y^2x^2$	[_exact, _rational, [_Abel, '2nd type', 'class B']]	✓	1.451
5180	$x(3 + 2x^2y)y' + (4 + 3x^2y)y = 0$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]	✓	5.220
5181	$8x^3yy' + 3x^4 - 6y^2x^2 - y^4 = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓	6.167
5182	$xy(bx^2 + a)y' = A + By^2$	[_separable]	✓	3.468
5183	$3x^4yy' = 1 - 2x^3y^2$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓	2.398
5184	$x^7yy' = 2x^2 + 2 + 5x^3y$	[_rational, [_Abel, '2nd type', 'class B']]	✗	0.927
5185	$yy'\sqrt{x^2 + 1} + x\sqrt{1 + y^2} = 0$	[_separable]	✓	2.768
5186	$(1 + y)y'\sqrt{x^2 + 1} = y^3$	[_separable]	✓	2.222
5187	$(g_0(x) + yg_1(x))y' = f_0(x) + f_1(x)y + f_2(x)y^2 + f_3(x)y^3$	[[_Abel, '2nd type', 'class C']]	✗	4.609
5188	$y^2y' + x(2 - y) = 0$	[_separable]	✓	1.185
5189	$y^2y' = x(1 + y^2)$	[_separable]	✓	1.250

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
5190	$(x + y^2) y' + y = bx + a$	[_exact, _rational]	✓	1.332
5191	$(x - y^2) y' = x^2 - y$	[_exact, _rational]	✓	1.117
5192	$(y^2 + x^2) y' + xy = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	5.083
5193	$(y^2 + x^2) y' = xy$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	2.869
5194	$(x^2 - y^2) y' = 2xy$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	4.457
5195	$(x^2 - y^2) y' + x(x + 2y) = 0$	[[_homogeneous, 'class A'], _exact, _rational, _dAlembert]	✓	56.606
5196	$(y^2 + x^2) y' + 2x(2x + y) = 0$	[[_homogeneous, 'class A'], _exact, _rational, _dAlembert]	✓	4.260
5197	$(1 - x^2 + y^2) y' = 1 + x^2 - y^2$	[[_1st_order, _with_linear_symmetries], _rational]	✓	1.068
5198	$(a^2 + x^2 + y^2) y' + 2xy = 0$	[_exact, _rational, [_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓	1.068
5199	$(a^2 + x^2 + y^2) y' + b^2 + x^2 + 2xy = 0$	[_exact, _rational]	✓	1.278
5200	$(x + x^2 + y^2) y' = y$	[_rational]	✓	1.115
5201	$(3x^2 - y^2) y' = 2xy$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	4.009
5202	$(x^4 + y^2) y' = 4x^3y$	[[_homogeneous, 'class G'], _rational]	✓	2.276
5203	$y(1 + y) y' = x(x + 1)$	[_separable]	✓	1.387
5204	$(x + 2y + y^2) y' + y(1 + y) + (x + y)^2 y^2 = 0$	[_rational]	✗	3.712

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
5205	$(x^2 + 2y + y^2) y' + 2x = 0$	[_rational, [_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓	1.174
5206	$(x^3 + 2y - y^2) y' + 3x^2 y = 0$	[_exact, _rational, [_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓	1.148
5207	$(1 + y + xy + y^2) y' + 1 + y = 0$	[[_1st_order, _with_linear_symmetries], _rational]	✓	1.299
5208	$(x + y)^2 y' = a^2$	[[_homogeneous, 'class C'], _dAlembert]	✓	3.371
5209	$(x - y)^2 y' = a^2$	[[_homogeneous, 'class C'], _dAlembert]	✓	2.345
5210	$(x^2 + 2xy - y^2) y' + x^2 - 2xy + y^2 = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	7.826
5211	$(x + y)^2 y' = x^2 - 2xy + 5y^2$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	6.150
5212	$(a + b + x + y)^2 y' = 2(a + y)^2$	[[_homogeneous, 'class C'], _rational]	✓	2.007
5213	$(2x^2 + 4xy - y^2) y' = x^2 - 4xy - 2y^2$	[[_homogeneous, 'class A'], _exact, _rational, _dAlembert]	✓	4.562
5214	$(3x + y)^2 y' = 4(3x + 2y) y$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	17.880
5215	$(1 - 3x - y)^2 y' = (1 - 2y) (3 - 6x - 4y)$	[[_homogeneous, 'class C'], _rational]	✓	3.237
5216	$(\cot(x) - 2y^2) y' = y^3 \csc(x) \sec(x)$	['y=_G(x,y)']	✗	58.056
5217	$3y^2 y' = 1 + x + ay^3$	[_rational, _Bernoulli]	✓	1.688
5218	$(x^2 - 3y^2) y' + 1 + 2xy = 0$	[_exact, _rational]	✓	1.112
5219	$(2x^2 + 3y^2) y' + x(3x + y) = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	7.506

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
5220	$3(x^2 - y^2)y' + 3e^x + 6xy(x + 1) - 2y^3 = 0$	['y=_G(x,y)']	✓	1.911
5221	$(3x^2 + 2xy + 4y^2)y' + 2x^2 + 6xy + y^2 = 0$	[[_homogeneous, 'class A'], _exact, _rational, _dAlembert]	✓	7.796
5222	$(1 - 3x + 2y)^2 y' = (4 + 2x - 3y)^2$	[[_homogeneous, 'class C'], _rational]	✓	36.577
5223	$(1 - 3x^2y + 6y^2)y' + x^2 - 3xy^2 = 0$	[_exact, _rational]	✓	1.471
5224	$(x - 6y)^2 y' + a + 2xy - 6y^2 = 0$	[_exact, _rational, [_1st_order, '_with_symmetry_[F(x),G(x)]]]	✓	1.389
5225	$(x^2 + y^2a)y' = xy$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	2.731
5226	$(x^2 + xy + y^2a)y' = x^2a + xy + y^2$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	22.418
5227	$(x^2a + 2xy - y^2a)y' + x^2 - 2axy - y^2 = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	9.435
5228	$(x^2a + 2bxy + cy^2)y' + kx^2 + 2axy + by^2 = 0$	[[_homogeneous, 'class A'], _exact, _rational, _dAlembert]	✓	293.157
5229	$x(1 - y^2)y' = (x^2 + 1)y$	[_separable]	✓	1.672
5230	$x(3x - y^2)y' + (5x - 2y^2)y = 0$	[[_homogeneous, 'class G'], _rational]	✓	6.188
5231	$x(y^2 + x^2)y' = (x^2 + x^4 + y^2)y$	[[_homogeneous, 'class D'], _rational]	✓	1.550
5232	$x(1 - x^2 + y^2)y' + (1 + x^2 - y^2)y = 0$	[_rational, [_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]]]	✓	4.194
5233	$x(a - x^2 - y^2)y' + (a + x^2 + y^2)y = 0$	[_rational, [_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]]]	✓	4.155

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
5234	$x(2x^2 + y^2) y' = (2x^2 + 3y^2) y$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	15.579
5235	$(x(a - x^2 - y^2) + y) y' + x - (a - x^2 - y^2) y = 0$	[[_1st_order, _with_linear_symmetries], _rational]	✓	1.757
5236	$x(a + y)^2 y' = by^2$	[_separable]	✓	1.484
5237	$x(x^2 - xy + y^2) y' + (y^2 + xy + x^2) y = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	52.489
5238	$x(x^2 - xy - y^2) y' = (x^2 + xy - y^2) y$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	68.483
5239	$x(x^2 + axy + y^2) y' = (x^2 + bxy + y^2) y$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	176.970
5240	$x(x^2 - 2y^2) y' = (2x^2 - y^2) y$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	23.350
5241	$x(x^2 + 2y^2) y' = (2x^2 + 3y^2) y$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	26.695
5242	$2x(5x^2 + y^2) y' = x^2y - y^3$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	22.674
5243	$x(x^2 + axy + 2y^2) y' = (ax + 2y) y^2$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	298.046
5244	$3xy^2y' = 2x - y^3$	[[_homogeneous, 'class G'], _exact, _rational, _Bernoulli]	✓	2.297
5245	$(1 - 4x + 3xy^2) y' = (2 - y^2) y$	[_rational, [_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓	1.601
5246	$x(x - 3y^2) y' + (2x - y^2) y = 0$	[[_homogeneous, 'class G'], _exact, _rational]	✓	2.004

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
5247	$3x(x + y^2)y' + x^3 - 3xy - 2y^3 = 0$	[_rational]	✓	1.539
5248	$x(x^3 - 3x^3y + 4y^2)y' = 6y^3$	[_rational, [_1st_order, '._with_symmetry_[F(x)*G(y),0]']]	✓	2.260
5249	$6xy^2y' + x + 2y^3 = 0$	[[_homogeneous, 'class G'], _exact, _rational, _Bernoulli]	✓	2.438
5250	$x(x + 6y^2)y' + xy - 3y^3 = 0$	[[_homogeneous, 'class G'], _rational]	✓	1.858
5251	$x(x^2 - 6y^2)y' = 4(x^2 + 3y^2)y$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	28.779
5252	$x(3x - 7y^2)y' + (5x - 3y^2)y = 0$	[[_homogeneous, 'class G'], _rational]	✓	2.249
5253	$x^2y^2y' + 1 - x + x^3 = 0$	[_separable]	✓	1.993
5254	$(1 - y^2x^2)y' = xy^3$	[[_homogeneous, 'class G'], _rational]	✓	1.760
5255	$(1 - y^2x^2)y' = (xy + 1)y^2$	[[_homogeneous, 'class G'], _rational, [_Abel, '2nd type', 'class B']]	✓	1.469
5256	$x(1 + xy^2)y' + y = 0$	[[_homogeneous, 'class G'], _rational]	✓	3.535
5257	$x(1 + xy^2)y' = (2 - 3xy^2)y$	[[_homogeneous, 'class G'], _rational]	✓	5.036
5258	$x^2(a + y)^2y' = (x^2 + 1)(y^2 + a^2)$	[_separable]	✓	1.345
5259	$(x^2 + 1)(1 + y^2)y' + 2xy(1 - y^2) = 0$	[_separable]	✓	23.106
5260	$(x^2 + 1)(1 + y^2)y' + 2xy(1 - y)^2 = 0$	[_separable]	✓	2.019
5261	$(1 - x^3 + 6y^2x^2)y' = (6 + 3xy - 4y^3)x$	[_exact, _rational]	✓	1.552
5262	$x(3 + 5x - 12xy^2 + 4x^2y)y' + (3 + 10x - 8xy^2 + 6x^2y)y = 0$	[_exact, _rational]	✓	2.079
5263	$x^3(1 + y^2)y' + 3x^2y = 0$	[_separable]	✓	2.396
5264	$x(1 - xy)^2y' + (1 + y^2x^2)y = 0$	[[_homogeneous, 'class G'], _rational]	✓	1.812

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
5265	$(1 - x^4 y^2) y' = x^3 y^3$	[[_homogeneous, 'class G'], _rational]	✓	2.697
5266	$(3x - y^3) y' = x^2 - 3y$	[_exact, _rational]	✓	1.236
5267	$(x^3 - y^3) y' + x^2 y = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	10.713
5268	$(x^3 + y^3) y' + x^2(ax + 3y) = 0$	[[_homogeneous, 'class A'], _exact, _rational, _dAlembert]	✓	331.203
5269	$(x - x^2 y - y^3) y' = x^3 - y + xy^2$	[_exact, _rational]	✓	1.631
5270	$(a^2 x + (x^2 - y^2) y) y' + x(x^2 - y^2) = a^2 y$	[_rational]	✓	1.701
5271	$(a + x^2 + y^2) yy' = x(a - x^2 - y^2)$	[_exact, _rational]	✓	1.618
5272	$(3x^2 + y^2) yy' + x(x^2 + 3y^2) = 0$	[[_homogeneous, 'class A'], _exact, _rational, _dAlembert]	✓	63.525
5273	$(a - 3x^2 - y^2) yy' + x(a - x^2 + y^2) = 0$	[_rational]	✗	2.780
5274	$2y^3 y' = x^3 - xy^2$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	16.878
5275	$y(1 + 2y^2) y' = x(2x^2 + 1)$	[_separable]	✓	2.042
5276	$(3x^2 + 2y^2) yy' + x^3 = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	80.948
5277	$(5x^2 + 2y^2) yy' + x(x^2 + 5y^2) = 0$	[[_homogeneous, 'class A'], _exact, _rational, _dAlembert]	✓	105.450
5278	$(x^2 - x^3 + 3xy^2 + 2y^3) y' + 2x^3 + 3x^2 y + y^2 - y^3 = 0$	[_rational]	✗	2.763
5279	$(3x^3 + 6x^2 y - 3xy^2 + 20y^3) y' + 4x^3 + 9x^2 y + 6xy^2 - y^3 = 0$	[[_homogeneous, 'class A'], _exact, _rational, _dAlembert]	✓	112.334

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
5280	$(x^3 + ay^3) y' = x^2y$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	10.284
5281	$xy^3y' = (-x^2 + 1)(1 + y^2)$	[_separable]	✓	2.015
5282	$x(x - y^3) y' = (3x + y^3) y$	[[_homogeneous, 'class G'], _rational]	✓	2.783
5283	$x(2x^3 + y^3) y' = (2x^3 - x^2y + y^3) y$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	5.188
5284	$x(2x^3 - y^3) y' = (x^3 - 2y^3) y$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	12.769
5285	$x(x^3 + 3x^2y + y^3) y' = (3x^2 + y^2) y^2$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	6.349
5286	$x(x^3 - 2y^3) y' = (2x^3 - y^3) y$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	6.359
5287	$x(x^4 - 2y^3) y' + (2x^4 + y^3) y = 0$	[[_homogeneous, 'class G'], _rational]	✓	4.244
5288	$x(x + y + 2y^3) y' = (x - y) y$	[_rational]	✓	1.527
5289	$(5x - y - 7xy^3) y' + 5y - y^4 = 0$	[_rational, [_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓	2.093
5290	$x(1 - 2xy^3) y' + (1 - 2x^3y) y = 0$	[_rational]	✓	1.521
5291	$x(2 - xy^2 - 2xy^3) y' + 1 + 2y = 0$	[_rational, [_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓	2.591
5292	$(2 - 10x^2y^3 + 3y^2) y' = x(1 + 5y^4)$	[_exact, _rational, [_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓	1.494
5293	$x(a + bxy^3) y' + (a + cx^3y) y = 0$	[_rational]	✓	1.697
5294	$x(1 - 2x^2y^3) y' + (1 - 2x^3y^2) y = 0$	[_rational]	✓	1.436

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
5295	$x(1 - xy)(1 - y^2x^2)y' + (xy + 1)(1 + y^2x^2)y = 0$	[[_homogeneous, 'class G', _rational]	✓	1.844
5296	$(x^2 - y^4)y' = xy$	[[_homogeneous, 'class G', _rational]	✓	4.134
5297	$(x^3 - y^4)y' = 3x^2y$	[[_homogeneous, 'class G', _rational]	✓	2.784
5298	$(a^2x^2 + (y^2 + x^2)^2)y' = a^2xy$	[_rational]	✓	3.829
5299	$2(x - y^4)y' = y$	[[_homogeneous, 'class G', _rational]	✓	4.067
5300	$(4x - xy^3 - 2y^4)y' = (2 + y^3)y$	[_rational, [_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓	2.848
5301	$(ax^3 + (ax + by)^3)yy' + x((ax + by)^3 + by^3) = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓	55.238
5302	$(x + 2y + 2x^2y^3 + xy^4)y' + (1 + y^4)y = 0$	[_rational]	✓	991.852
5303	$2x(x^3 + y^4)y' = (x^3 + 2y^4)y$	[[_homogeneous, 'class G', _rational]	✓	5.474
5304	$x(1 - x^2y^4)y' + y = 0$	[[_homogeneous, 'class G', _rational]	✓	6.516
5305	$(x^2 - y^5)y' = 2xy$	[[_homogeneous, 'class G', _rational]	✓	3.787
5306	$x(x^3 + y^5)y' = (x^3 - y^5)y$	[[_homogeneous, 'class G', _rational]	✓	2.411
5307	$x^3(1 + 5x^3y^7)y' + (3x^5y^5 - 1)y^3 = 0$	[_rational]	✓	1.565
5308	$(1 + a(x + y))^n y' + a(x + y)^n = 0$	[[_homogeneous, 'class C', _dAlembert]	✓	3.243
5309	$x(a + y^n x)y' + by = 0$	[[_homogeneous, 'class G', _rational]	✓	1.332
5310	$f(x)y^m y' + g(x)y^{m+1} + h(x)y^n = 0$	[_Bernoulli]	✗	4.390
5311	$y'\sqrt{b^2 + y^2} = \sqrt{a^2 + x^2}$	[_separable]	✓	1.889

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
5312	$y' \sqrt{b^2 - y^2} = \sqrt{a^2 - x^2}$	[_separable]	✓	2.177
5313	$y' \sqrt{y} = \sqrt{x}$	[_separable]	✓	19.321
5314	$(1 + \sqrt{x+y}) y' + 1 = 0$	[[_homogeneous, 'class C'], _dAlembert]	✓	1.654
5315	$y' \sqrt{xy} + x - y = \sqrt{xy}$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	6.448
5316	$(x - 2\sqrt{xy}) y' = y$	[[_homogeneous, 'class A'], _dAlembert]	✓	98.035
5317	$(y + \sqrt{1+y^2}) (x^2+1)^{3/2} y' = 1+y^2$	[_separable]	✓	2.680
5318	$(y + \sqrt{1+y^2}) (x^2+1)^{3/2} y' = 1+y^2$	[_separable]	✓	2.677
5319	$(x - \sqrt{y^2+x^2}) y' = y$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	4.935
5320	$x(1 - \sqrt{x^2-y^2}) y' = y$	['y=_G(x,y)']	✗	4.292
5321	$x(x + \sqrt{y^2+x^2}) y' + y\sqrt{y^2+x^2} = 0$	[[_homogeneous, 'class G'], _dAlembert]	✓	70.388
5322	$xy(x + \sqrt{x^2-y^2}) y' = xy^2 - (x^2-y^2)^{3/2}$	[[_1st_order, _with_linear_symmetries], _dAlembert]	✓	22.987
5323	$(x\sqrt{1+x^2+y^2} - y(y^2+x^2)) y' = x(y^2+x^2) + y\sqrt{1+x^2+y^2}$	[[_1st_order, _with_linear_symmetries]]	✓	2.496
5324	$y' \cos(y) (\cos(y) - \sin(A) \sin(x)) + \cos(x) (\cos(x) - \sin(A) \sin(y)) = 0$	unknown	✓	39.924
5325	$(a \cos(bx+ay) - b \sin(ax+by)) y' + b \cos(bx+ay) - a \sin(ax+by) = 0$	[_exact]	✓	37.059
5326	$(x + \cos(x) \sec(y)) y' + \tan(y) - y \sin(x) \sec(y) = 0$	[NONE]	✓	42.227

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
5327	$(1 + (x + y) \tan(y)) y' + 1 = 0$	[[_1st_order, _with_linear_symmetries]]	✓	1.575
5328	$x \left( x - y \tan\left(\frac{y}{x}\right) \right) y' + \left( x + y \tan\left(\frac{y}{x}\right) \right) y = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓	6.023
5329	$(e^x + x e^y) y' + y e^x + e^y = 0$	[_exact]	✓	1.450
5330	$(1 - 2x - \ln(y)) y' + 2y = 0$	[[_1st_order, _with_linear_symmetries]]	✓	1.351
5331	$(\sinh(x) + x \cosh(y)) y' + y \cosh(x) + \sinh(y) = 0$	[_exact]	✓	36.632
5332	$y'(1 + \sinh(x)) \sinh(y) + \cosh(x) (\cosh(y) - 1) = 0$	[_separable]	✓	6.838
5333	$y'^2 = a x^n$	[_quadrature]	✓	0.291
5334	$y'^2 = y$	[_quadrature]	✓	0.536
5335	$y'^2 = x - y$	[[_homogeneous, 'class C'], _dAlembert]	✓	0.480
5336	$y'^2 = y + x^2$	[[_homogeneous, 'class G']]	✓	2.166
5337	$y'^2 + x^2 = 4y$	[[_homogeneous, 'class G']]	✓	2.563
5338	$y'^2 + 3x^2 = 8y$	[[_homogeneous, 'class G']]	✓	2.240
5339	$y'^2 + x^2 a + by = 0$	[[_homogeneous, 'class G']]	✓	2.344
5340	$y'^2 = 1 + y^2$	[_quadrature]	✓	0.554
5341	$y'^2 = 1 - y^2$	[_quadrature]	✓	0.563
5342	$y'^2 = a^2 - y^2$	[_quadrature]	✓	0.661
5343	$y'^2 = a^2 y^2$	[_quadrature]	✓	1.214
5344	$y'^2 = a + by^2$	[_quadrature]	✓	1.357
5345	$y'^2 = y^2 x^2$	[_separable]	✓	2.385
5346	$y'^2 = (y - 1) y^2$	[_quadrature]	✓	3.993

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
5347	$y'^2 = (y - a)(y - b)(y - c)$	[_quadrature]	✓	34.592
5348	$y'^2 = a^2 y^n$	[_quadrature]	✓	3.780
5349	$y'^2 = a^2(1 - \ln(y)^2)y^2$	[_quadrature]	✓	3.257
5350	$y'^2 + f(x)(y - a)(y - b) = 0$	[[_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]']]	✓	0.809
5351	$y'^2 + f(x)(y - a)^2(y - b) = 0$	[[_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]']]	✓	0.946
5352	$y'^2 + f(x)(y - a)(y - b)(y - c) = 0$	[[_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]']]	✓	3.105
5353	$y'^2 + f(x)(y - a)^2(y - b)(y - c) = 0$	[[_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]']]	✓	1.838
5354	$y'^2 = f(x)^2(y - a)(y - b)(y - c)^2$	[_separable]	✓	1.643
5355	$y'^2 = f(x)^2(y - u(x))^2(y - a)(y - b)$	['y=_G(x,y)']	✓	10.811
5356	$y'^2 + 2y' + x = 0$	[_quadrature]	✓	0.214
5357	$y'^2 - 2y' + a(x - y) = 0$	[[_homogeneous, 'class C'], _dAlembert]	✓	0.447
5358	$y'^2 - 2y' - y^2 = 0$	[_quadrature]	✓	0.440
5359	$y'^2 - 5y' + 6 = 0$	[_quadrature]	✓	0.842
5360	$y'^2 - 7y' + 12 = 0$	[_quadrature]	✓	0.842
5361	$y'^2 + ay' + b = 0$	[_quadrature]	✓	0.211
5362	$y'^2 + ay' + bx = 0$	[_quadrature]	✓	0.222
5363	$y'^2 + ay' + by = 0$	[_quadrature]	✓	0.818
5364	$y'^2 + xy' + 1 = 0$	[_quadrature]	✓	0.273
5365	$y'^2 + xy' - y = 0$	[[_1st_order, _with_linear_symmetries], _Clairaut]	✓	0.347

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
5366	$y'^2 - xy' + y = 0$	[[_1st_order, _with_linear_symmetries], _Clairaut]	✓	0.333
5367	$y'^2 - xy' - y = 0$	[[_1st_order, _with_linear_symmetries], _dAlembert]	✓	0.439
5368	$y'^2 + xy' + x - y = 0$	[[_1st_order, _with_linear_symmetries], _dAlembert]	✓	0.490
5369	$y'^2 + (1 - x)y' + y = 0$	[[_1st_order, _with_linear_symmetries], _Clairaut]	✓	0.435
5370	$y'^2 - (x + 1)y' + y = 0$	[[_1st_order, _with_linear_symmetries], _Clairaut]	✓	0.381
5371	$y'^2 - (2 - x)y' + 1 - y = 0$	[[_1st_order, _with_linear_symmetries], _Clairaut]	✓	0.472
5372	$y'^2 + (x + a)y' - y = 0$	[[_1st_order, _with_linear_symmetries], _Clairaut]	✓	0.474
5373	$y'^2 - 2xy' + 1 = 0$	[_quadrature]	✓	0.304
5374	$y'^2 + 2xy' - 3x^2 = 0$	[_quadrature]	✓	0.490
5375	$y'^2 + 2xy' - y = 0$	[[_1st_order, _with_linear_symmetries], _dAlembert]	✓	0.437
5376	$y'^2 + 2xy' - y = 0$	[[_1st_order, _with_linear_symmetries], _dAlembert]	✓	0.434
5377	$y'^2 - 2xy' + 2y = 0$	[[_1st_order, _with_linear_symmetries], _Clairaut]	✓	0.336
5378	$y'^2 - (2x + 1)y' - x(1 - x) = 0$	[_quadrature]	✓	0.226
5379	$y'^2 + 2(1 - x)y' - 2x + 2y = 0$	[[_1st_order, _with_linear_symmetries], _dAlembert]	✓	0.470

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
5380	$y'^2 + 3xy' - y = 0$	[[_1st_order, _with_linear_symmetries], _dAlembert]	✓	0.455
5381	$y'^2 - 4(x+1)y' + 4y = 0$	[[_1st_order, _with_linear_symmetries], _Clairaut]	✓	0.406
5382	$y'^2 + axy' = bcx^2$	[_quadrature]	✓	0.214
5383	$y'^2 - axy' + ay = 0$	[[_1st_order, _with_linear_symmetries], _Clairaut]	✓	0.382
5384	$y'^2 + axy' + bx^2 + cy = 0$	[[_homogeneous, 'class G']]	✓	3.567
5385	$y'^2 + (bx+a)y' + c = by$	[[_1st_order, _with_linear_symmetries], _Clairaut]	✓	0.579
5386	$y'^2 - 2x^2y' + 2xy' = 0$	[_quadrature]	✓	0.626
5387	$y'^2 + ax^3y' - 2ax^2y = 0$	[[_1st_order, _with_linear_symmetries]]	✓	3.188
5388	$y'^2 - 2ax^3y' + 4ax^2y = 0$	[[_1st_order, _with_linear_symmetries]]	✓	3.032
5389	$y'^2 + 4x^5y' - 12x^4y = 0$	[[_1st_order, _with_linear_symmetries]]	✓	2.372
5390	$y'^2 - 2y' \cosh(x) + 1 = 0$	[_quadrature]	✓	0.376
5391	$y'^2 + yy' = x(x+y)$	[_quadrature]	✓	1.139
5392	$y'^2 - yy' + e^x = 0$	[[_1st_order, _with_linear_symmetries]]	✓	3.365
5393	$y'^2 + (x+y)y' + xy = 0$	[_quadrature]	✓	1.204
5394	$y'^2 - 2yy' - 2x = 0$	[_dAlembert]	✓	44.766
5395	$y'^2 + (1+2y)y' + y(y-1) = 0$	[_quadrature]	✓	0.670
5396	$y'^2 - 2(x-y)y' - 4xy = 0$	[_quadrature]	✓	1.271
5397	$y'^2 - (1+4y)y' + (1+4y)y = 0$	[_quadrature]	✓	1.106

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
5398	$y'^2 - 2(1 - 3y)y' - (4 - 9y)y = 0$	[_quadrature]	✓	1.369
5399	$y'^2 + (a + 6y)y' + y(3a + b + 9y) = 0$	[_quadrature]	✓	1.111
5400	$y'^2 + ayy' - ax = 0$	[_dAlembert]	✓	1.626
5401	$y'^2 - ayy' - ax = 0$	[_dAlembert]	✓	116.157
5402	$y'^2 + (ax + by)y' + abxy = 0$	[_quadrature]	✓	0.870
5403	$y'^2 - xyy' + y^2 \ln(ay) = 0$	[[_1st_order, '_with_symmetry_[F(x),G(y)]']]	✓	4.448
5404	$y'^2 - (2xy + 1)y' + 2xy = 0$	[_quadrature]	✓	1.521
5405	$y'^2 - (4 + y^2)y' + 4 + y^2 = 0$	[_quadrature]	✓	3.278
5406	$y'^2 - (x - y)yy' - xy^3 = 0$	[_separable]	✓	1.996
5407	$y'^2 + xy^2y' + y^3 = 0$	[[_homogeneous, 'class G']]	✓	3.194
5408	$y'^2 - 2x^3y^2y' - 4x^2y^3 = 0$	[[_1st_order, _with_linear_symmetries]]	✓	2.692
5409	$y'^2 - xy(y^2 + x^2)y' + x^4y^4 = 0$	[_separable]	✓	3.160
5410	$y'^2 + 2xy^3y' + y^4 = 0$	[[_homogeneous, 'class G']]	✓	2.995
5411	$y'^2 + 2yy' \cot(x) - y^2 = 0$	[_separable]	✓	1.099
5412	$y'^2 - 3xy^{2/3}y' + 9y^{5/3} = 0$	[[_1st_order, _with_linear_symmetries]]	✓	4.483
5413	$y'^2 = e^{4x-2y}(y' - 1)$	[[_homogeneous, 'class C'], _dAlembert]	✓	0.776
5414	$2y'^2 + xy' - 2y = 0$	[[_1st_order, _with_linear_symmetries], _dAlembert]	✓	0.529
5415	$2y'^2 - (1 - x)y' - y = 0$	[[_1st_order, _with_linear_symmetries], _Clairaut]	✓	0.408
5416	$2y'^2 - 2x^2y' + 3xy = 0$	[[_homogeneous, 'class G']]	✓	2.658

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
5417	$2y'^2 + 2(6y - 1)y' + 3y(6y - 1) = 0$	[_quadrature]	✓	3.014
5418	$3y'^2 - 2xy' + y = 0$	[[_1st_order, _with_linear_symmetries], _dAlembert]	✓	0.371
5419	$3y'^2 + 4xy' + x^2 - y = 0$	[[_homogeneous, 'class G']]	✓	2.504
5420	$4y'^2 = 9x$	[_quadrature]	✓	0.251
5421	$4y'^2 + 2x e^{-2y}y' - e^{-2y} = 0$	[[_1st_order, _with_linear_symmetries]]	✓	9.411
5422	$4y'^2 + 2e^{2x-2y}y' - e^{2x-2y} = 0$	[[_homogeneous, 'class C'], _dAlembert]	✓	0.886
5423	$5y'^2 + 3xy' - y = 0$	[[_1st_order, _with_linear_symmetries], _dAlembert]	✓	0.410
5424	$5y'^2 + 6xy' - 2y = 0$	[[_1st_order, _with_linear_symmetries], _dAlembert]	✓	0.454
5425	$9y'^2 + 3xy^4y' + y^5 = 0$	[[_1st_order, _with_linear_symmetries]]	✓	80.854
5426	$xy'^2 = a$	[_quadrature]	✓	0.234
5427	$xy'^2 = -x^2 + a$	[_quadrature]	✓	0.481
5428	$xy'^2 = y$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	1.392
5429	$xy'^2 + x - 2y = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	1.849
5430	$xy'^2 + y' = y$	[_rational, _dAlembert]	✓	0.895
5431	$xy'^2 + 2y' - y = 0$	[_rational, _dAlembert]	✓	0.890
5432	$xy'^2 - 2y' - y = 0$	[_rational, _dAlembert]	✓	0.887
5433	$xy'^2 + 4y' - 2y = 0$	[_rational, _dAlembert]	✓	1.070

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
5434	$xy'^2 + xy' - y = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	1.788
5435	$xy'^2 - (x^2 + 1)y' + x = 0$	[_quadrature]	✓	0.512
5436	$xy'^2 + yy' + a = 0$	[[_homogeneous, 'class G'], _dAlembert]	✓	0.486
5437	$xy'^2 - yy' + a = 0$	[[_homogeneous, 'class G'], _rational, _Clairaut]	✓	0.375
5438	$xy'^2 - yy' + ax = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	3.040
5439	$xy'^2 + yy' + x^3 = 0$	[[_homogeneous, 'class G']]	✓	3.474
5440	$xy'^2 - yy' + ay = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	4.819
5441	$xy'^2 + yy' - y^4 = 0$	[[_homogeneous, 'class G']]	✓	15.436
5442	$xy'^2 + (-y + a)y' + b = 0$	[[_1st_order, _with_linear_symmetries], _rational, _Clairaut]	✓	0.495
5443	$xy'^2 + (x - y)y' + 1 - y = 0$	[[_1st_order, _with_linear_symmetries], _rational, _dAlembert]	✓	0.526
5444	$xy'^2 + (a + x - y)y' - y = 0$	[[_1st_order, _with_linear_symmetries], _rational, _dAlembert]	✓	0.569
5445	$xy'^2 - (3x - y)y' + y = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓	3.673
5446	$xy'^2 + a + bx - y - by = 0$	[[_homogeneous, 'class C'], _rational, _dAlembert]	✓	1.116
5447	$xy'^2 - 2yy' + a = 0$	[[_homogeneous, 'class G'], _rational, _dAlembert]	✓	0.504

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
5448	$xy'^2 - 2yy' + ax = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	1.508
5449	$xy'^2 - 2yy' + x + 2y = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	1.707
5450	$xy'^2 - 3yy' + 9x^2 = 0$	[[_homogeneous, 'class G']]	✓	6.117
5451	$xy'^2 - (2x + 3y)y' + 6y = 0$	[_quadrature]	✓	2.004
5452	$xy'^2 - ayy' + b = 0$	[[_homogeneous, 'class G'], _rational, _dAlembert]	✓	0.638
5453	$xy'^2 + ayy' + bx = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓	2.026
5454	$xy'^2 - (xy + 1)y' + y = 0$	[_quadrature]	✓	1.191
5455	$xy'^2 + y(1 - x)y' - y^2 = 0$	[_quadrature]	✓	2.388
5456	$xy'^2 + (1 - x^2y)y' - xy = 0$	[_quadrature]	✓	1.387
5457	$(x + 1)y'^2 = y$	[[_homogeneous, 'class C'], _rational, _dAlembert]	✓	0.716
5458	$(x + 1)y'^2 - (x + y)y' + y = 0$	[[_1st_order, _with_linear_symmetries], _rational, _dAlembert]	✓	0.575
5459	$(-x + a)y'^2 + yy' - b = 0$	[[_1st_order, _with_linear_symmetries], _Clairaut]	✓	0.512
5460	$2xy'^2 + (2x - y)y' + 1 - y = 0$	[_rational, _dAlembert]	✓	1.098
5461	$3xy'^2 - 6yy' + x + 2y = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	2.460
5462	$(3x + 1)y'^2 - 3(y + 2)y' + 9 = 0$	[[_1st_order, _with_linear_symmetries], _Clairaut]	✓	0.562
5463	$(5 + 3x)y'^2 - (3 + 3y)y' + y = 0$	[_rational, _dAlembert]	✓	2.182

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
5464	$4xy'^2 = (a - 3x)^2$	[_quadrature]	✓	0.291
5465	$4xy'^2 + 2xy' - y = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	2.245
5466	$4xy'^2 - 3yy' + 3 = 0$	[[_homogeneous, 'class G'], _rational, _dAlembert]	✓	0.487
5467	$4xy'^2 + 4yy' = 1$	[[_homogeneous, 'class G'], _dAlembert]	✓	0.499
5468	$4xy'^2 + 4yy' - y^4 = 0$	[[_homogeneous, 'class G']]	✓	15.424
5469	$4(2 - x)y'^2 + 1 = 0$	[_quadrature]	✓	0.226
5470	$16xy'^2 + 8yy' + y^6 = 0$	[[_homogeneous, 'class G']]	✓	3.424
5471	$x^2y'^2 = a^2$	[_quadrature]	✓	0.385
5472	$x^2y'^2 = y^2$	[_separable]	✓	2.663
5473	$x^2y'^2 + x^2 - y^2 = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	5.385
5474	$x^2y'^2 = (x - y)^2$	[_linear]	✓	2.872
5475	$x^2y'^2 + y^2 - y^4 = 0$	[_separable]	✓	2.182
5476	$x^2y'^2 - xy' + y(1 - y) = 0$	[_separable]	✓	2.539
5477	$x^2y'^2 + 2axy' + a^2 + x^2 - 2ay = 0$	[_rational]	✓	85.112
5478	$x^2y'^2 - 2xyy' - x + y(1 + y) = 0$	[[_1st_order, _with_linear_symmetries], _rational]	✓	3.471
5479	$x^2y'^2 - 2xyy' - x^4 + (-x^2 + 1)y^2 = 0$	[_rational, [_1st_order, 'with_symmetry_[F(x),G(x)*y+H(x)']]	✓	9.206
5480	$x^2y'^2 - (2xy + 1)y' + 1 + y^2 = 0$	[[_1st_order, _with_linear_symmetries], _rational, _Clairaut]	✓	0.636

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
5481	$x^2 y'^2 - (a + 2xy) y' + y^2 = 0$	[[_homogeneous, 'class G'], _rational, _Clairaut]	✓	0.671
5482	$x^2 y'^2 - x(x - 2y) y' + y^2 = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	1.661
5483	$x^2 y'^2 + 2x(2x + y) y' - 4a + y^2 = 0$	[[_1st_order, '_with_symmetry_[F(x),G(y)]']]	✓	4.290
5484	$x^2 y'^2 + x(x^3 - 2y) y' - (2x^3 - y) y = 0$	[[_homogeneous, 'class G'], _rational]	✓	4.176
5485	$x^2 y'^2 + 3xyy' + 2y^2 = 0$	[_separable]	✓	2.952
5486	$x^2 y'^2 - 3xyy' + x^3 + 2y^2 = 0$	[[_homogeneous, 'class G'], _rational]	✓	73.020
5487	$x^2 y'^2 + 4xyy' - 5y^2 = 0$	[_separable]	✓	2.744
5488	$x^2 y'^2 - 4x(y + 2) y' + 4(y + 2) y = 0$	[_separable]	✓	0.744
5489	$x^2 y'^2 - 5xyy' + 6y^2 = 0$	[_separable]	✓	3.003
5490	$x^2 y'^2 + x(x^2 + xy - 2y) y' + (1 - x)(x^2 - y) y = 0$	[_rational]	✓	78.914
5491	$x^2 y'^2 + (2x + y) yy' + y^2 = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓	148.817
5492	$x^2 y'^2 + (2x - y) yy' + y^2 = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓	151.102
5493	$x^2 y'^2 + (a + b x^2 y^3) y' + aby^3 = 0$	[_quadrature]	✓	1.015
5494	$(-x^2 + 1) y'^2 = 1 - y^2$	[_rational, [_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]']]	✓	1.000
5495	$(-x^2 + 1) y'^2 + 2xyy' + 4x^2 = 0$	[[_1st_order, '_with_symmetry_[F(x),G(y)]']]	✓	44.562
5496	$(a^2 + x^2) y'^2 = b^2$	[_quadrature]	✓	0.556
5497	$(a^2 - x^2) y'^2 + b^2 = 0$	[_quadrature]	✓	0.335
5498	$(a^2 - x^2) y'^2 = b^2$	[_quadrature]	✓	0.372

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
5499	$(a^2 - x^2) y'^2 = x^2$	[_quadrature]	✓	0.273
5500	$(a^2 - x^2) y'^2 + 2xyy' + x^2 = 0$	[[_1st_order, '_with_symmetry_[F(x),G(y)]']]	✓	27.424
5501	$(a^2 - x^2) y'^2 - 2xyy' - y^2 = 0$	[_separable]	✓	2.072
5502	$(a^2 + x^2) y'^2 - 2xyy' + b + y^2 = 0$	[[_1st_order, _with_linear_symmetries], _rational, _Clairaut]	✓	1.320
5503	$4x^2y'^2 - 4xyy' = 8x^3 - y^2$	[_linear]	✓	0.562
5504	$a x^2y'^2 - 2axy y' + a(-a + 1)x^2 + y^2 = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	4.275
5505	$(-a^2 + 1)x^2y'^2 - 2xyy' - a^2x^2 + y^2 = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓	74.624
5506	$x^3y'^2 = a$	[_quadrature]	✓	0.263
5507	$x^3y'^2 + xy' - y = 0$	[[_homogeneous, 'class G'], _rational]	✓	1.888
5508	$x^3y'^2 + x^2yy' + a = 0$	[[_homogeneous, 'class G'], _rational]	✓	5.456
5509	$x(-x^2 + 1)y'^2 - 2(-x^2 + 1)yy' + x(1 - y^2) = 0$	[_rational, [_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]']]	✓	10.993
5510	$4x(-x + a)(b - x)y'^2 = (ab - 2x(a + b) + 2x^2)^2$	[_quadrature]	✓	0.798
5511	$x^4y'^2 - xy' - y = 0$	[[_homogeneous, 'class G'], _rational]	✓	1.983
5512	$x^4y'^2 + 2x^3yy' - 4 = 0$	[[_homogeneous, 'class G'], _rational]	✓	2.070
5513	$x^4y'^2 + xy^2y' - y^3 = 0$	[[_homogeneous, 'class G']]	✓	3.383
5514	$x^2(a^2 - x^2)y'^2 + 1 = 0$	[_quadrature]	✓	0.559

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
Continued from previous page

#	ODE	CAS classification	Solved?	time (sec)
5515	$3x^4y'^2 - xy - y = 0$	[_rational, [_1st_order, '._with_symmetry_[F(x),G(x)*y+H(x)']]]	✓	1.151
5516	$4x^5y'^2 + 12x^4yy' + 9 = 0$	[[_homogeneous, 'class G']]	✓	5.808
5517	$x^6y'^2 - 2xy' - 4y = 0$	[[_homogeneous, 'class G'], _rational]	✓	2.155
5518	$x^8y'^2 + 3xy' + 9y = 0$	[[_homogeneous, 'class G']]	✓	2.238
5519	$yy'^2 = a$	[_quadrature]	✓	0.624
5520	$yy'^2 = a^2x$	[[_homogeneous, 'class A'], _dAlembert]	✓	2.227
5521	$yy'^2 = e^{2x}$	[[_1st_order, _with_linear_symmetries]]	✓	1.320
5522	$yy'^2 + 2axy' - ay = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	1.396
5523	$yy'^2 - 4a^2xy' + a^2y = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓	5.056
5524	$yy'^2 + axy' + by = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	1.713
5525	$yy'^2 - (-2bx + a)y' - by = 0$	[[_homogeneous, 'class C'], _rational, _dAlembert]	✓	1.053
5526	$yy'^2 + x^3y' - x^2y = 0$	[[_1st_order, _with_linear_symmetries]]	✓	2.960
5527	$yy'^2 + (x - y)y' - x = 0$	[_quadrature]	✓	3.168
5528	$yy'^2 - (x + y)y' + y = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	1.774
5529	$yy'^2 - (xy + 1)y' + x = 0$	[_quadrature]	✓	1.482
5530	$yy'^2 + (x - y^2)y' - xy = 0$	[_quadrature]	✓	3.630
5531	$yy'^2 + y = a$	[_quadrature]	✓	0.491

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
5532	$(x + y)y'^2 + 2xy' - y = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	1.904
5533	$(2x - y)y'^2 - 2(1 - x)y' + 2 - y = 0$	[[_homogeneous, 'class C'], _dAlembert]	✓	0.961
5534	$2yy'^2 + (5 - 4x)y' + 2y = 0$	[[_homogeneous, 'class C'], _rational, _dAlembert]	✓	0.829
5535	$9yy'^2 + 4x^3y' - 4x^2y = 0$	[[_1st_order, _with_linear_symmetries]]	✓	3.119
5536	$(1 - ay)y'^2 = ay$	[_quadrature]	✓	1.007
5537	$(x^2 - ay)y'^2 - 2xyy' = 0$	[_quadrature]	✓	1.644
5538	$xyy'^2 + (x + y)y' + 1 = 0$	[_quadrature]	✓	1.576
5539	$xyy'^2 + (y^2 + x^2)y' + xy = 0$	[_separable]	✓	4.162
5540	$xyy'^2 + (x^2 - y^2)y' - xy = 0$	[_separable]	✓	3.922
5541	$xyy'^2 - (x^2 - y^2)y' - xy = 0$	[_separable]	✓	4.332
5542	$xyy'^2 + (a + x^2 - y^2)y' - xy = 0$	[_rational]	✓	1473.682
5543	$xyy'^2 - (a - bx^2 + y^2)y' - bxy = 0$	[_rational]	✓	171.316
5544	$xyy'^2 + (3x^2 - 2y^2)y' - 6xy = 0$	[_separable]	✓	4.305
5545	$x(x - 2y)y'^2 - 2xyy' - 2xy + y^2 = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	4.301
5546	$x(x - 2y)y'^2 + 6xyy' - 2xy + y^2 = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓	72.194
5547	$y^2y'^2 = a^2$	[_quadrature]	✓	1.685
5548	$y^2y'^2 - a^2 + y^2 = 0$	[_quadrature]	✓	4.559
5549	$y^2y'^2 - 3xy' + y = 0$	[[_1st_order, _with_linear_symmetries], _rational]	✓	3.635

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
5550	$y^2 y'^2 - 6x^3 y' + 4x^2 y = 0$	[[_1st_order, _with_linear_symmetries]]	✓	3.150
5551	$y^2 y'^2 - 4a y y' + 4a^2 - 4ax + y^2 = 0$	[_rational, [_1st_order, '_with_symmetry_[F(x),G(y)]']]	✓	75.082
5552	$y^2 y'^2 - (x + 1) y y' + x = 0$	[_quadrature]	✓	4.064
5553	$y^2 y'^2 + 2x y y' + x^2 = 0$	[_separable]	✓	0.990
5554	$y^2 y'^2 + 2x y y' + a - y^2 = 0$	[_rational, [_1st_order, '_with_symmetry_[F(x),G(y)]']]	✓	23.096
5555	$y^2 y'^2 - 2x y y' - x^2 + 2y^2 = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	2.755
5556	$y^2 y'^2 - 2x y y' + a - x^2 + 2y^2 = 0$	[_rational, [_1st_order, '_with_symmetry_[F(x),G(y)]']]	✓	77.717
5557	$y^2 y'^2 + 2a x y y' + (a - 1) b + x^2 a + (-a + 1) y^2 = 0$	[_rational, [_1st_order, '_with_symmetry_[F(x),G(y)]']]	✓	9.357
5558	$(1 - y^2) y'^2 = 1$	[_quadrature]	✓	0.600
5559	$(a^2 - y^2) y'^2 = y^2$	[_quadrature]	✓	0.898
5560	$(a^2 - 2a x y + y^2) y'^2 + 2a y y' + y^2 = 0$	['y=_G(x,y)']	✓	76.530
5561	$((-a + 1) x^2 + y^2) y'^2 + 2a x y y' + x^2 + (-a + 1) y^2 = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	311.661
5562	$((-4a^2 + 1) x^2 + y^2) y'^2 - 8a^2 x y y' + x^2 + (-4a^2 + 1) y^2 = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓	341.808
5563	$((-a^2 + 1) x^2 + y^2) y'^2 + 2a^2 x y y' + x^2 + (-a^2 + 1) y^2 = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	168.690
5564	$(x + y)^2 y'^2 = y^2$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓	5.720

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
5565	$(x+y)^2 y'^2 - (x^2 - xy - 2y^2) y' - (x-y)y = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓	6.802
5566	$(a^2 - (x-y)^2) y'^2 + 2a^2 y' + a^2 - (x-y)^2 = 0$	[[_homogeneous, 'class C'], _dAlembert]	✓	21.116
5567	$2y^2 y'^2 + 2xyy' - 1 + x^2 + y^2 = 0$	[_rational, [_1st_order, '._with_symmetry_[F(x),G(y)]']]	✓	141.877
5568	$3y^2 y'^2 - 2xyy' - x^2 + 4y^2 = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓	2.576
5569	$4y^2 y'^2 + 2(3x+1)xyy' + 3x^3 = 0$	[_separable]	✓	4.113
5570	$(x^2 - 4y^2) y'^2 + 6xyy' - 4x^2 + y^2 = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓	17.116
5571	$9y^2 y'^2 - 3xy' + y = 0$	[[_1st_order, _with_linear_symmetries], _rational]	✓	3.601
5572	$(2-3y)^2 y'^2 = 4-4y$	[_quadrature]	✓	0.464
5573	$(-a^2+1) y^2 y'^2 - 3a^2 xyy' - a^2 x^2 + y^2 = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	157.786
5574	$(-b+a) y^2 y'^2 - 2bxyy' - ab - b^2 x^2 + y^2 a = 0$	[_rational, [_1st_order, '._with_symmetry_[F(x),G(y)]']]	✓	10.479
5575	$a^2(b^2 - (cx - ay)^2) y'^2 + 2ab^2 cy' + c^2(b^2 - (cx - ay)^2) = 0$	[[_homogeneous, 'class C'], _dAlembert]	✓	28.197
5576	$xy^2 y'^2 - y^3 y' + a^2 x = 0$	[[_homogeneous, 'class G'], _rational]	✓	10.733
5577	$xy^2 y'^2 + (a - x^3 - y^3) y' + x^2 y = 0$	[_rational]	✓	14.556
5578	$2xy^2 y'^2 - y^3 y' - a = 0$	[[_homogeneous, 'class G'], _rational]	✓	9.802
5579	$4x^2 y^2 y'^2 = (y^2 + x^2)^2$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓	11.218

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
5580	$4y^3y'^2 - 4xy' + y = 0$	[[_1st_order, _with_linear_symmetries], _rational]	✓	3.313
5581	$3xy^4y'^2 - y^5y' + 1 = 0$	[[_homogeneous, 'class G'], _rational]	✓	52.020
5582	$9xy^4y'^2 - 3y^5y' - a = 0$	[[_homogeneous, 'class G'], _rational]	✓	3.246
5583	$9(-x^2 + 1)y^4y'^2 + 6xy^5y' + 4x^2 = 0$	[[_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]]]	✓	14.401
5584	$y'^3 = bx + a$	[_quadrature]	✓	0.323
5585	$y'^3 = ax^n$	[_quadrature]	✓	0.457
5586	$y'^3 + x - y = 0$	[[_homogeneous, 'class C'], _dAlembert]	✓	4.622
5587	$y'^3 = (a + by + cy^2)f(x)$	[[_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]]]	✓	1.542
5588	$y'^3 = (y - a)^2(y - b)^2$	[_quadrature]	✓	1.016
5589	$y'^3 + f(x)(y - a)^2(y - b)^2 = 0$	[[_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]]]	✓	1.374
5590	$y'^3 + f(x)(y - a)^2(y - b)^2(y - c)^2 = 0$	[[_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]]]	✓	2.872
5591	$y'^3 + y' + a - bx = 0$	[_quadrature]	✓	1.127
5592	$y'^3 + y' - y = 0$	[_quadrature]	✓	0.730
5593	$y'^3 + y' = e^y$	[_quadrature]	✓	1.014
5594	$y'^3 - 7y' + 6 = 0$	[_quadrature]	✓	1.232
5595	$y'^3 - xy' + ay = 0$	[[_1st_order, _with_linear_symmetries], _dAlembert]	✓	0.654
5596	$y'^3 + 2xy' - y = 0$	[[_1st_order, _with_linear_symmetries], _dAlembert]	✓	0.539

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
5597	$y'^3 - 2xy' - y = 0$	[[_1st_order, _with_linear_symmetries], _dAlembert]	✓	0.519
5598	$y'^3 - axy' + x^3 = 0$	[_quadrature]	✓	0.617
5599	$y'^3 + axy' - ay = 0$	[[_1st_order, _with_linear_symmetries], _Clairaut]	✓	0.587
5600	$y'^3 - (bx + a)y' + by = 0$	[[_1st_order, _with_linear_symmetries], _Clairaut]	✓	0.612
5601	$y'^3 - 2yy' + y^2 = 0$	[_quadrature]	✓	1.827
5602	$y'^3 - axyy' + 2y^2a = 0$	[[_1st_order, _with_linear_symmetries]]	✓	8.256
5603	$y'^3 - xy^4y' - y^5 = 0$	[[_1st_order, _with_linear_symmetries]]	✓	10.211
5604	$y'^3 + e^{-2y+3x}(y' - 1) = 0$	[[_homogeneous, 'class C'], _dAlembert]	✓	1.027
5605	$y'^3 + e^{-2y}(e^{2x} + e^{3x})y' - e^{-2y+3x} = 0$	['y=_G(x,y)']	✓	459.484
5606	$y'^3 + y'^2 - y = 0$	[_quadrature]	✓	101.891
5607	$y'^3 - y'^2 + y^2 = 0$	[_quadrature]	✓	34.980
5608	$y'^3 - y'^2 + xy' - y = 0$	[[_1st_order, _with_linear_symmetries], _Clairaut]	✓	0.648
5609	$y'^3 - ay'^2 + by + abx = 0$	[[_homogeneous, 'class C'], _dAlembert]	✓	1.008
5610	$y'^3 + a_0y'^2 + a_1y' + a_2 + a_3y = 0$	[_quadrature]	✓	141.084
5611	$y'^3 + (1 - 3x)y'^2 - x(1 - 3x)y' - 1 - x^3 = 0$	[_quadrature]	✓	0.689
5612	$y'^3 - yy'^2 + y^2 = 0$	[_quadrature]	✓	2.277
5613	$y'^3 + (\cos(x)\cot(x) - y)y'^2 - (1 + y\cos(x)\cot(x))y' + y = 0$	[_quadrature]	✓	1.470
5614	$y'^3 + (2x - y^2)y'^2 - 2xy^2y' = 0$	[_quadrature]	✓	1.437

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
5615	$y'^3 - (2x + y^2) y'^2 + (x^2 - y^2 + 2xy^2) y' - (x^2 - y^2) y^2 = 0$	[_quadrature]	✓	2.450
5616	$y'^3 - (y^2 + xy + x^2) y'^2 + xy(y^2 + xy + x^2) y' - x^3 y^3 = 0$	[_quadrature]	✓	2.166
5617	$y'^3 - (x^2 + xy^2 + y^4) y'^2 + xy^2(x^2 + xy^2 + y^4) y' - x^3 y^6 = 0$	[_quadrature]	✓	3.375
5618	$2y'^3 + xy' - 2y = 0$	[[_1st_order, _with_linear_symmetries], _dAlembert]	✓	0.504
5619	$2y'^3 + y'^2 - y = 0$	[_quadrature]	✓	68.112
5620	$3y'^3 - x^4 y' + 2x^3 y = 0$	[[_1st_order, _with_linear_symmetries]]	✓	80.428
5621	$4y'^3 + 4y' = x$	[_quadrature]	✓	0.413
5622	$8y'^3 + 12y'^2 = 27x + 27y$	[[_homogeneous, 'class C'], _dAlembert]	✓	0.704
5623	$xy'^3 - yy'^2 + a = 0$	[[_1st_order, _with_linear_symmetries], _Clairaut]	✓	0.731
5624	$xy'^3 - (x + x^2 + y) y'^2 + (x^2 + y + xy) y' - xy = 0$	[_quadrature]	✓	1.766
5625	$xy'^3 - 2yy'^2 + 4x^2 = 0$	[[_1st_order, _with_linear_symmetries]]	✓	126.563
5626	$2xy'^3 - 3yy'^2 - x = 0$	[[_1st_order, _with_linear_symmetries], _dAlembert]	✓	0.615
5627	$4xy'^3 - 6yy'^2 - x + 3y = 0$	[[_1st_order, _with_linear_symmetries], _dAlembert]	✓	0.928
5628	$8xy'^3 - 12yy'^2 + 9y = 0$	[[_1st_order, _with_linear_symmetries], _dAlembert]	✓	0.905
5629	$x^2 y'^3 - 2xyy'^2 + y^2 y' + 1 = 0$	[[_1st_order, _with_linear_symmetries], _Clairaut]	✓	2.230

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
5630	$(a^2 - x^2)y'^3 + bx(a^2 - x^2)y'^2 - y' - bx = 0$	[_quadrature]	✓	0.571
5631	$xy'^3 - 3x^2yy'^2 + x(x^5 + 3y^2)y' - 2x^5y - y^3 = 0$	['y=_G(x,y)']	✓	514.535
5632	$2x^3y'^3 + 6x^2yy'^2 - (1 - 6xy)yy' + 2y^3 = 0$	[[_homogeneous, 'class G']]	✓	11.096
5633	$x^4y'^3 - x^3yy'^2 - x^2y^2y' + xy^3 = 1$	[[_1st_order, _with_linear_symmetries]]	✓	117.246
5634	$x^6y'^3 - xy' - y = 0$	[[_1st_order, _with_linear_symmetries]]	✓	11.360
5635	$yy'^3 - 3xy' + 3y = 0$	[[_1st_order, _with_linear_symmetries], _dAlembert]	✓	7.302
5636	$2yy'^3 - 3xy' + 2y = 0$	[[_1st_order, _with_linear_symmetries], _dAlembert]	✓	1.579
5637	$(x + 2y)y'^3 + 3(x + y)y'^2 + (2x + y)y' = 0$	[_quadrature]	✓	4.231
5638	$y^2y'^3 - xy' + y = 0$	[[_1st_order, _with_linear_symmetries]]	✓	104.613
5639	$y^2y'^3 + 2xy' - y = 0$	[[_1st_order, _with_linear_symmetries]]	✓	105.770
5640	$4y^2y'^3 - 2xy' + y = 0$	[[_1st_order, _with_linear_symmetries]]	✓	105.123
5641	$16y^2y'^3 + 2xy' - y = 0$	[[_1st_order, _with_linear_symmetries]]	✓	110.700
5642	$xy^2y'^3 - y^3y'^2 + x(x^2 + 1)y' - x^2y = 0$	['y=_G(x,y)']	✓	233.235
5643	$y^3y'^3 - (1 - 3x)y^2y'^2 + 3x^2yy' + x^3 - y^2 = 0$	['y=_G(x,y)']	✓	241.734
5644	$y^4y'^3 - 6xy' + 2y = 0$	[[_1st_order, _with_linear_symmetries]]	✓	108.170
5645	$y'^4 = (y - a)^3(y - b)^2$	[_quadrature]	✓	1.013

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
5646	$y'^4 + f(x)(y-a)^3(y-b)^2 = 0$	[[_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]]]	✓	1.410
5647	$y'^4 + f(x)(y-a)^3(y-b)^3 = 0$	[[_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]]]	✓	1.434
5648	$y'^4 + f(x)(y-a)^3(y-b)^3(y-c)^2 = 0$	[[_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]]]	✓	3.024
5649	$y'^4 + xy' - 3y = 0$	[[_1st_order, _with_linear_symmetries], _dAlembert]	✓	1.997
5650	$y'^4 - 4x^2yy'^2 + 16xy^2y' - 16y^3 = 0$	[[_homogeneous, 'class G']]	✓	0.732
5651	$y'^4 + 4yy'^3 + 6y^2y'^2 - (1 - 4y^3)y' - (3 - y^3)y = 0$	[_quadrature]	✓	2.157
5652	$2y'^4 - yy' - 2 = 0$	[_quadrature]	✓	1.179
5653	$xy'^4 - 2yy'^3 + 12x^3 = 0$	[[_1st_order, _with_linear_symmetries]]	✓	2.806
5654	$3y'^5 - yy' + 1 = 0$	[_quadrature]	✓	0.521
5655	$y'^6 = (y-a)^4(y-b)^3$	[_quadrature]	✓	1.496
5656	$y'^6 + f(x)(y-a)^4(y-b)^3 = 0$	[[_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]]]	✓	3.655
5657	$y'^6 + f(x)(y-a)^5(y-b)^3 = 0$	[[_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]]]	✓	4.238
5658	$y'^6 + f(x)(y-a)^5(y-b)^4 = 0$	[[_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]]]	✓	5.084
5659	$x^2(y'^6 + 3y^4 + 3y^2 + 1) = a^2$	[_rational]	✓	15.960
5660	$2\sqrt{ay'} + xy' - y = 0$	[[_homogeneous, 'class G'], _Clairaut]	✓	1.719
5661	$(x-y)\sqrt{y'} = a(1+y')$	[[_homogeneous, 'class C'], _dAlembert]	✓	2.626

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
5662	$2(1+y)^{3/2} + 3xy' - 3y = 0$	[_separable]	✓	5.009
5663	$\sqrt{1+y'^2} + ay' = x$	[_quadrature]	✓	1.100
5664	$\sqrt{1+y'^2} + ay' = y$	[_quadrature]	✓	1.748
5665	$\sqrt{1+y'^2} = xy'$	[_quadrature]	✓	1.059
5666	$\sqrt{a^2 + b^2y'^2} + xy' - y = 0$	[[_1st_order, _with_linear_symmetries], _Clairaut]	✓	7.552
5667	$a\sqrt{1+y'^2} + xy' - y = 0$	[[_1st_order, _with_linear_symmetries], _Clairaut]	✓	6.130
5668	$ax\sqrt{1+y'^2} + xy' - y = 0$	[[_homogeneous, 'class A'], _dAlembert]	✗	341.099
5669	$\sqrt{(x^2a + y^2)(1+y'^2)} - yy' - ax = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	78.882
5670	$a(1+y'^3)^{1/3} + xy' - y = 0$	[_Clairaut]	✓	71.256
5671	$\cos(y') + xy' = y$	[_Clairaut]	✓	1.125
5672	$a \cos(y') + by' + x = 0$	[_quadrature]	✓	0.448
5673	$\sin(y') + y' = x$	[_quadrature]	✓	0.490
5674	$y' \sin(y') + \cos(y') = y$	[_quadrature]	✓	30.961
5675	$y'^2(x + \sin(y')) = y$	[_dAlembert]	✓	1.486
5676	$(1+y'^2) \sin(-y + xy')^2 = 1$	[_Clairaut]	✓	7.783
5677	$(1+y'^2)(\arctan(y') + ax) + y' = 0$	[_quadrature]	✓	1.110
5678	$e^{y'-y} - y'^2 + 1 = 0$	[_quadrature]	✓	1.308
5679	$\ln(y') + xy' + a = 0$	[_quadrature]	✓	0.654

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
5680	$\ln(y') + xy' + a = y$	[[_1st_order, _with_linear_symmetries], _Clairaut]	✓	1.533
5681	$\ln(y') + xy' + a + by = 0$	[[_1st_order, _with_linear_symmetries], _dAlembert]	✓	3.139
5682	$\ln(y') + 4xy' - 2y = 0$	[[_1st_order, _with_linear_symmetries], _dAlembert]	✓	2.941
5683	$\ln(y') + a(-y + xy') = 0$	[[_1st_order, _with_linear_symmetries], _Clairaut]	✓	1.640
5684	$a(\ln(y') - y') - x + y = 0$	[[_homogeneous, 'class C'], _dAlembert]	✓	3.312
5685	$y \ln(y') + y' - y \ln(y) - xy = 0$	[_separable]	✓	3.561
5686	$y' \ln(y') - (x + 1)y' + y = 0$	[[_1st_order, _with_linear_symmetries], _Clairaut]	✓	1.849
5687	$y' \ln\left(y' + \sqrt{a + y'^2}\right) - \sqrt{1 + y'^2} - xy' + y = 0$	[_Clairaut]	✓	11.352
5688	$\ln(\cos(y')) + y' \tan(y') = y$	[_dAlembert]	✓	0.363
5689	$y' = \frac{xy}{x^2 - y^2}$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	2.872
5690	$y' = \frac{x + y - 3}{x - y - 1}$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	1.817
5691	$y' = \frac{2x + y - 1}{4x + 2y + 5}$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	1.490
5692	$y' - \frac{2y}{x + 1} = (x + 1)^2$	[_linear]	✓	1.263
5693	$y' + xy = x^3 y^3$	[_Bernoulli]	✓	1.154

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
5694	$\frac{2x}{y^3} + \frac{(y^2 - 3x^2)y'}{y^4} = 0$	[[_homogeneous, 'class A'], _exact, _rational, _dAlembert]	✓	4.020
5695	$y + xy^2 - xy' = 0$	[[_homogeneous, 'class D'], _rational, _Bernoulli]	✓	1.807
5696	$y^2(1 + y'^2) = R^2$	[_quadrature]	✓	4.748
5697	$y = xy' + \frac{ay'}{\sqrt{1 + y'^2}}$	[_Clairaut]	✓	23.505
5698	$y = xy'^2 + y'^2$	[[_homogeneous, 'class C'], _rational, _dAlembert]	✓	0.490
5699	$(x + 1)y + (1 - y)xy' = 0$	[_separable]	✓	1.267
5700	$y^2 + xy^2 + (x^2 - x^2y)y' = 0$	[_separable]	✓	1.584
5701	$xy(x^2 + 1)y' - 1 - y^2 = 0$	[_separable]	✓	2.957
5702	$1 + y^2 - (y + \sqrt{1 + y^2})(x^2 + 1)^{3/2}y' = 0$	[_separable]	✓	2.781
5703	$\sin(x)\cos(y) - \cos(x)\sin(y)y' = 0$	[_separable]	✓	2.521
5704	$\sec(x)^2 \tan(y) + \sec(y)^2 \tan(x)y' = 0$	[_separable]	✓	37.183
5705	$(y - x)y' + y = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓	2.423
5706	$(2\sqrt{xy} - x)y' + y = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓	90.099
5707	$xy' - y - \sqrt{y^2 + x^2} = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	6.477
5708	$x - y \cos\left(\frac{y}{x}\right) + x \cos\left(\frac{y}{x}\right)y' = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓	4.707
5709	$8y + 10x + (7x + 5y)y' = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓	3.090

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
5710	$2x - y + 1 + (2y - 1)y' = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	3.082
5711	$3y - 7x + 7 + (7y - 3x + 3)y' = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	3.409
5712	$y' + \frac{xy}{x^2 + 1} = \frac{1}{2x(x^2 + 1)}$	[_linear]	✓	1.178
5713	$x(-x^2 + 1)y' + (2x^2 - 1)y = ax^3$	[_linear]	✓	1.138
5714	$y' + \frac{y}{(-x^2 + 1)^{3/2}} = \frac{x + \sqrt{-x^2 + 1}}{(-x^2 + 1)^2}$	[_linear]	✓	3.297
5715	$y' + y \cos(x) = \frac{\sin(2x)}{2}$	[_linear]	✓	2.103
5716	$(x^2 + 1)y' + y = \arctan(x)$	[_linear]	✓	1.713
5717	$(-x^2 + 1)z' - xz = axz^2$	[_separable]	✓	2.164
5718	$3z^2z' - az^3 = x + 1$	[_rational, _Bernoulli]	✓	1.636
5719	$z' + 2xz = 2ax^3z^3$	[_Bernoulli]	✓	1.204
5720	$z' + z \cos(x) = z^n \sin(2x)$	[_Bernoulli]	✓	5.260
5721	$xy' + y = y^2 \ln(x)$	[_Bernoulli]	✓	1.962
5722	$x^3 + 3xy^2 + (y^3 + 3x^2y)y' = 0$	[[_homogeneous, 'class A'], _exact, _rational, _dAlembert]	✓	0.548
5723	$1 + \frac{y^2}{x^2} - \frac{2yy'}{x} = 0$	[[_homogeneous, 'class A'], _exact, _rational, _Bernoulli]	✓	0.311
5724	$\frac{3x}{y^3} + \left(\frac{1}{y^2} - \frac{3x^2}{y^4}\right)y' = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	0.382
5725	$x + yy' + \frac{xy'}{y^2 + x^2} - \frac{y}{y^2 + x^2} = 0$	[[_1st_order, _with_linear_symmetries], _exact, _rational]	✓	0.402

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
5726	$1 + e^{\frac{x}{y}} + e^{\frac{x}{y}} \left(1 - \frac{x}{y}\right) y' = 0$	[[_homogeneous, 'class A'], _exact, _dAlembert]	✓	0.336
5727	$e^x(x^2 + y^2 + 2x) + 2y e^x y' = 0$	[[_homogeneous, 'class D'], _exact, _rational, _Bernoulli]	✓	0.371
5728	$n \cos(nx + my) - m \sin(mx + ny) + (m \cos(nx + my) - n \sin(mx + ny)) y' = 0$	[_exact]	✓	0.276
5729	$\frac{x}{\sqrt{1+x^2+y^2}} + \frac{yy'}{\sqrt{1+x^2+y^2}} + \frac{y}{y^2+x^2} - \frac{xy'}{y^2+x^2} = 0$	[[_1st_order, _with_linear_symmetries], _exact]	✓	0.635
5730	$\frac{x^n y'}{by^2 - cx^{2a}} - \frac{ayx^{a-1}}{by^2 - cx^{2a}} + x^{a-1} = 0$	[_Riccati]	✗	6.634
5731	$2xy + (y^2 - 2x^2) y' = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	0.365
5732	$\frac{1}{x} + \frac{y'}{y} + \frac{2}{y} - \frac{2y'}{x} = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓	0.332
5733	$-y + xy' = \sqrt{y^2 + x^2}$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	6.605
5734	$8y + 10x + (7x + 5y) y' = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓	3.116
5735	$x^2 + 2xy - y^2 + (y^2 + 2xy - x^2) y' = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	5.681
5736	$y^2 + (xy + x^2) y' = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓	6.019
5737	$\left(x \cos\left(\frac{y}{x}\right) + y \sin\left(\frac{y}{x}\right)\right) y + \left(x \cos\left(\frac{y}{x}\right) - y \sin\left(\frac{y}{x}\right)\right) xy' = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓	0.531

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
5738	$(y^2x^2 + xy)y + (y^2x^2 - 1)xy' = 0$	[[_homogeneous, 'class G'], _rational, [_Abel, '2nd type', 'class B']]	✓	1.414
5739	$(x^3y^3 + y^2x^2 + xy + 1)y + (x^3y^3 - y^2x^2 - xy + 1)xy' = 0$	[[_homogeneous, 'class G'], _rational]	✓	1.860
5740	$x^2 + y^2 + 2x + 2yy' = 0$	[[_homogeneous, 'class D'], _rational, _Bernoulli]	✓	0.388
5741	$x^2 + y^2 - 2xyy' = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓	0.338
5742	$2xy + (y^2 - 3x^2)y' = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	0.310
5743	$y + (2y - x)y' = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓	0.351
5744	$xy' - ay + y^2 = x^{-2a}$	[_rational, _Riccati]	✓	0.637
5745	$xy' - ay + y^2 = x^{-\frac{2a}{3}}$	[_rational, _Riccati]	✓	2.435
5746	$u' + u^2 = \frac{c}{x^{4/3}}$	[_rational, [_Riccati, _special]]	✓	0.313
5747	$u' + bu^2 = \frac{c}{x^4}$	[_rational, [_Riccati, _special]]	✓	0.278
5748	$u' - u^2 = \frac{2}{x^{8/3}}$	[_rational, [_Riccati, _special]]	✓	0.350
5749	$\frac{\sqrt{fx^4 + cx^3 + cx^2 + bx + a}y'}{\sqrt{a + by + cy^2 + cy^3 + fy^4}} = -1$	[_separable]	✓	8.758
5750	$y'^2 - 5y' + 6 = 0$	[_quadrature]	✓	0.839
5751	$y'^2 - \frac{a^2}{x^2} = 0$	[_quadrature]	✓	0.383
5752	$y'^2 = \frac{1-x}{x}$	[_quadrature]	✓	0.290

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
5753	$y'^2 + \frac{2xy'}{y} - 1 = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	1.931
5754	$y = ay' + by'^2$	[_quadrature]	✓	0.601
5755	$x = ay' + by'^2$	[_quadrature]	✓	0.227
5756	$y = \sqrt{1 + y'^2} + ay'$	[_quadrature]	✓	1.756
5757	$x = \sqrt{1 + y'^2} + ay'$	[_quadrature]	✓	1.094
5758	$y' - \frac{\sqrt{1 + y'^2}}{x} = 0$	[_quadrature]	✓	1.209
5759	$x^2(1 + y'^2)^3 - a^2 = 0$	[_quadrature]	✓	2.121
5760	$1 + y'^2 = \frac{(x + a)^2}{2ax + x^2}$	[_quadrature]	✓	0.608
5761	$y = xy' + y' - y'^2$	[[_1st_order, _with_linear_symmetries], _Clairaut]	✓	0.380
5762	$y = xy' + \sqrt{b^2 - a^2y'^2}$	[[_1st_order, _with_linear_symmetries], _rational, _Clairaut]	✓	3.269
5763	$y = xy' + x\sqrt{1 + y'^2}$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓	32.394
5764	$y = xy' + ax\sqrt{1 + y'^2}$	[[_homogeneous, 'class A'], _dAlembert]	✗	337.064
5765	$x - yy' = ay'^2$	[_dAlembert]	✗	641.628
5766	$x + yy' = a\sqrt{1 + y'^2}$	[[_1st_order, _with_linear_symmetries], _rational, _dAlembert]	✗	488.152
5767	$yy' = x + y^2 - y^2y'^2$	[_rational, [_1st_order, 'with_symmetry_[F(x),G(y)]]]	✓	7.134

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
5768	$y - \frac{1}{\sqrt{1+y^2}} = x + \frac{y'}{\sqrt{1+y^2}}$	[[_homogeneous, 'class C'], _dAlembert]	✓	1.657
5769	$y - 2xy' = xy'^2$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	1.224
5770	$\frac{y - xy'}{y^2 + y'} = \frac{y - xy'}{1 + x^2y'}$	[_separable]	✓	0.527
5771	$2xy + (y^2 + x^2)y' = 0$	[[_homogeneous, 'class A'], _exact, _rational, _dAlembert]	✓	3.475
5772	$(x + \sqrt{y^2 - xy})y' - y = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	5.411
5773	$x + y - (x - y)y' = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓	2.649
5774	$xy' - y - x \sin\left(\frac{y}{x}\right) = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓	3.191
5775	$2x^2y + y^3 + (xy^2 - 2x^3)y' = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	25.534
5776	$y^2 + (x\sqrt{y^2 - x^2} - xy)y' = 0$	[[_homogeneous, 'class G'], _dAlembert]	✓	10.810
5777	$\frac{y \cos\left(\frac{y}{x}\right)}{x} - \left(\frac{x \sin\left(\frac{y}{x}\right)}{y} + \cos\left(\frac{y}{x}\right)\right)y' = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓	4.965
5778	$y + x \ln\left(\frac{y}{x}\right)y' - 2xy' = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓	5.711
5779	$2ye^{\frac{x}{y}} + (y - 2xe^{\frac{x}{y}})y' = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓	3.463
5780	$xe^{\frac{y}{x}} - y \sin\left(\frac{y}{x}\right) + x \sin\left(\frac{y}{x}\right)y' = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓	5.197
5781	<i>i.c.</i> $y^2 + x^2 = 2xyy'$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓	9.121

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
5782	<i>i.c.</i> $x e^{\frac{y}{x}} + y = xy'$	[[_homogeneous, 'class A'], _dAlembert]	✓	4.743
5783	<i>i.c.</i> $y' - \frac{y}{x} + \csc\left(\frac{y}{x}\right) = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓	4.519
5784	<i>i.c.</i> $xy - y^2 - x^2y' = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓	2.744
5785	$x + 2y - 4 - (2x - 4y)y' = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	1.850
5786	$3x + 2y + 1 - (3x + 2y - 1)y' = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	1.393
5787	$x + y + 1 + (2x + 2y + 2)y' = 0$	[_quadrature]	✓	0.519
5788	$x + y - 1 + (2x + 2y - 3)y' = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	1.264
5789	$x + y - 1 - (x - y - 1)y' = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	1.777
5790	$x + y + (2x + 2y - 1)y' = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	1.233
5791	$7y - 3 + (2x + 1)y' = 0$	[_separable]	✓	1.620
5792	$x + 2y + (3x + 6y + 3)y' = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	1.283
5793	$x + 2y + (y - 1)y' = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	1.687
5794	$3x - 2y + 4 - (2x + 7y - 1)y' = 0$	[[_homogeneous, 'class C'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓	45.924
5795	<i>i.c.</i> $x + y + (3x + 3y - 4)y' = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	1.662

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
5796	$3x + 2y + 3 - (x + 2y - 1)y' = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	2.992
5797	<i>i.c.</i> $y + 7 + (2x + y + 3)y' = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	21.966
5798	$x + y + 2 - (x - y - 4)y' = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	1.837
5799	$3x^2y + 8xy^2 + (x^3 + 8x^2y + 12y^2)y' = 0$	[_exact, _rational]	✓	0.330
5800	$\frac{2xy + 1}{y} + \frac{(y - x)y'}{y^2} = 0$	[[_homogeneous, 'class D'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓	0.345
5801	$2xy + (y^2 + x^2)y' = 0$	[[_homogeneous, 'class A'], _exact, _rational, _dAlembert]	✓	0.234
5802	$e^x \sin(y) + e^{-y} - (xe^{-y} - e^x \cos(y))y' = 0$	[_exact]	✓	0.303
5803	$\cos(y) - (x \sin(y) - y^2)y' = 0$	[_exact, [_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓	0.255
5804	$x - 2xy + e^y + (y - x^2 + xe^y)y' = 0$	[_exact]	✓	1.657
5805	$x^2 - x + y^2 - (e^y - 2xy)y' = 0$	[_exact]	✓	1.434
5806	$2x + y \cos(x) + (2y + \sin(x) - \sin(y))y' = 0$	[_exact]	✓	0.285
5807	$x\sqrt{y^2 + x^2} - \frac{x^2yy'}{y - \sqrt{y^2 + x^2}} = 0$	[[_homogeneous, 'class A'], _exact, _dAlembert]	✓	0.298
5808	$4x^3 - \sin(x) + y^3 - (y^2 + 1 - 3xy^2)y' = 0$	[_exact]	✓	0.408
5809	<i>i.c.</i> $e^x(y^3 + xy^3 + 1) + 3y^2(xe^x - 6)y' = 0$	[_exact, _Bernoulli]	✓	0.744
5810	<i>i.c.</i> $\sin(x) \cos(y) + \cos(x) \sin(y)y' = 0$	[_separable]	✓	0.995

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
5811	$y^2 e^{xy^2} + 4x^3 + (2xy e^{xy^2} - 3y^2) y' = 0$ i.c.	[_exact]	✓	0.335
5812	$y^2 + y - xy' = 0$	[_separable]	✓	0.224
5813	$y \sec(x) + \sin(x) y' = 0$	[_separable]	✓	0.270
5814	$e^x - \sin(y) + \cos(y) y' = 0$	['y=_G(x,y)']	✓	0.290
5815	$xy + (x^2 + 1) y' = 0$	[_separable]	✓	0.259
5816	$y^3 + xy^2 + y + (x^3 + x^2y + x) y' = 0$	[_rational, [_Abel, '2nd type', 'class C']]	✓	0.549
5817	$3y - xy' = 0$	[_separable]	✓	0.210
5818	$y - 3xy' = 0$	[_separable]	✓	0.239
5819	$y(2x^2y^3 + 3) + x(x^2y^3 - 1) y' = 0$	[[_homogeneous, 'class G'], _rational]	✓	2.881
5820	$2xy + x^2 + (y^2 + x^2) y' = 0$	[[_homogeneous, 'class A'], _exact, _rational, _dAlembert]	✓	0.261
5821	$x^2 + y \cos(x) + (y^3 + \sin(x)) y' = 0$	[_exact]	✓	0.246
5822	$x^2 + y^2 + x + xyy' = 0$	[_rational, _Bernoulli]	✓	0.342
5823	$x - 2xy + e^y + (y - x^2 + x e^y) y' = 0$	[_exact]	✓	0.269
5824	$e^x \sin(y) + e^{-y} - (x e^{-y} - e^x \cos(y)) y' = 0$	[_exact]	✓	0.299
5825	$x^2 - y^2 - y - (x^2 - y^2 - x) y' = 0$	[[_1st_order, _with_linear_symmetries], _rational]	✓	1.407
5826	$x^4 y^2 - y + (x^2 y^4 - x) y' = 0$	[_rational]	✓	0.316
5827	$y(2x + y^3) - x(2x - y^3) y' = 0$	[[_homogeneous, 'class G'], _rational]	✓	0.315
5828	$\arctan(xy) + \frac{xy - 2xy^2}{1 + y^2 x^2} + \frac{(x^2 - 2x^2 y) y'}{1 + y^2 x^2} = 0$	[_exact]	✓	0.410
5829	$e^x(x + 1) + (y e^y - x e^x) y' = 0$	['y=_G(x,y)']	✓	0.324

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
5830	$\frac{xy+1}{y} + \frac{(2y-x)y'}{y^2} = 0$	[[_homogeneous, 'class D'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓	0.353
5831	$y^2 - 3xy - 2x^2 + (xy - x^2)y' = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓	0.470
5832	$y(2x + y + 1) - x(x + 2y - 1)y' = 0$	[_rational, [_Abel, '2nd type', 'class B']]	✓	0.377
5833	$y(2x - y - 1) + x(2y - x - 1)y' = 0$	[_rational, [_Abel, '2nd type', 'class B']]	✓	0.380
5834	$y^2 + 12x^2y + (2xy + 4x^3)y' = 0$	[[_homogeneous, 'class G'], _exact, _rational, [_Abel, '2nd type', 'class B']]	✓	0.403
5835	$3(x + y)^2 + x(3y + 2x)y' = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓	0.538
5836	$y - (y^2 + x^2 + x)y' = 0$	[_rational]	✓	1.104
5837	$2xy + (a + x^2 + y^2)y' = 0$	[_exact, _rational, [_1st_order, 'with_symmetry_[F(x)*G(y),0]']]	✓	0.195
5838	$2xy + x^2 + b + (a + x^2 + y^2)y' = 0$	[_exact, _rational]	✓	0.220
5839	$xy' + y = x^3$	[_linear]	✓	1.170
5840	$y' + ay = b$	[_quadrature]	✓	0.696
5841	$xy' + y = y^2 \ln(x)$	[_Bernoulli]	✓	1.888
5842	$x' + 2xy = e^{-y^2}$	[_linear]	✓	1.347
5843	$r' = (r + e^{-\theta}) \tan(\theta)$	[_linear]	✓	1.715
5844	$y' - \frac{2xy}{x^2 + 1} = 1$	[_linear]	✓	1.402
5845	$y' + y = xy^3$	[_Bernoulli]	✓	0.411
5846	$(-x^3 + 1)y' - 2(x + 1)y = y^{5/2}$	[_rational, _Bernoulli]	✓	7.113

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
5847	$\tan(\theta) r' - r = \tan(\theta)^2$	[_linear]	✓	1.508
5848	$y' + 2y = 3e^{-2x}$	[[_linear, 'class A']]	✓	1.016
5849	$y' + 2y = \frac{3e^{-2x}}{4}$	[[_linear, 'class A']]	✓	1.012
5850	$y' + 2y = \sin(x)$	[[_linear, 'class A']]	✓	1.188
5851	$y' + y \cos(x) = e^{2x}$	[_linear]	✓	1.857
5852	$y' + y \cos(x) = \frac{\sin(2x)}{2}$	[_linear]	✓	2.062
5853	$xy' + y = x \sin(x)$	[_linear]	✓	1.191
5854	$-y + xy' = x^2 \sin(x)$	[_linear]	✓	1.253
5855	$xy' + xy^2 - y = 0$	[[_homogeneous, 'class D'], _rational, _Bernoulli]	✓	1.720
5856	$xy' - y(2y \ln(x) - 1) = 0$	[_Bernoulli]	✓	2.010
5857	$x^2(x-1)y' - y^2 - x(-2+x)y = 0$	[[_homogeneous, 'class D'], _rational, _Bernoulli]	✓	2.001
5858	$y' - y = e^x$ i.c.	[[_linear, 'class A']]	✓	1.200
5859	$y' + \frac{y}{x} = \frac{y^2}{x}$ i.c.	[_separable]	✓	2.997
5860	$2 \cos(x) y' = y \sin(x) - y^3$ i.c.	[_Bernoulli]	✓	13.740
5861	$(x - \cos(y)) y' + \tan(y) = 0$ i.c.	[[_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓	4.434
5862	$y' = x^3 + \frac{2y}{x} - \frac{y^2}{x}$	[_rational, _Riccati]	✓	1.398
5863	$y' = 2 \tan(x) \sec(x) - y^2 \sin(x)$	[_Riccati]	✓	4.023
5864	$y' = \frac{1}{x^2} - \frac{y}{x} - y^2$	[[_homogeneous, 'class G'], _rational, _Riccati]	✓	1.772

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
5865	$y' = 1 + \frac{y}{x} - \frac{y^2}{x^2}$	[[_homogeneous, 'class A'], _rational, _Riccati]	✓	2.231
5866	$2xyy' + (x + 1)y^2 = e^x$	[_Bernoulli]	✓	1.699
5867	$\cos(y)y' + \sin(y) = x^2$	['y=_G(x,y)']	✓	1.960
5868	$(x + 1)y' - 1 - y = (x + 1)\sqrt{1 + y}$	[[_1st_order, _with_linear_symmetries]]	✓	3.738
5869	$e^y(1 + y') = e^x$	[[_homogeneous, 'class C'], _dAlembert]	✓	1.337
5870	$y' \sin(y) + \sin(x) \cos(y) = \sin(x)$	[_separable]	✓	34.163
5871	$(x - y)^2 y' = 4$	[[_homogeneous, 'class C'], _dAlembert]	✓	2.378
5872	$-y + xy' = \sqrt{y^2 + x^2}$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	6.628
5873	$(3x + 2y + 1)y' + 4x + 3y + 2 = 0$	[[_homogeneous, 'class C'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓	2.696
5874	$(x^2 - y^2)y' = 2xy$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	4.223
5875	$y + (1 + y^2 e^{2x})y' = 0$	[[_1st_order, _with_linear_symmetries]]	✓	1.247
5876	$x^2 y + y^2 + x^3 y' = 0$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓	1.727
5877	$y^2 e^{xy^2} + 4x^3 + (2xy e^{xy^2} - 3y^2)y' = 0$	[_exact]	✓	34.992
5878	$y' = (x^2 + 2y - 1)^{2/3} - x$	[[_1st_order, _with_linear_symmetries]]	✓	1.385
5879	$xy' + y = x^2(1 + e^x)y^2$	[_Bernoulli]	✓	2.680
5880	$2y - xy \ln(x) - 2x \ln(x)y' = 0$	[_separable]	✓	1.726
5881	$y' + ay = k e^{bx}$	[[_linear, 'class A']]	✓	0.908

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
5882	$y' = (x + y)^2$	[[_homogeneous, 'class C'], _Riccati]	✓	1.482
5883	$y' + 8x^3y^3 + 2xy = 0$	[_Bernoulli]	✓	1.192
5884	$(xy\sqrt{x^2 - y^2} + x)y' = y - x^2\sqrt{x^2 - y^2}$	[NONE]	✗	48.839
5885	$y' + ay = b \sin(kx)$	[[_linear, 'class A']]	✓	1.335
5886	$xy' - y^2 + 1 = 0$	[_separable]	✓	1.464
5887	$(y^2 + a \sin(x))y' = \cos(x)$	[[_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓	1.904
5888	$xy' = x e^{\frac{y}{x}} + x + y$	[[_homogeneous, 'class A'], _dAlembert]	✓	10.152
5889	$y' + y \cos(x) = e^{-\sin(x)}$	[_linear]	✓	1.520
5890	$xy' - y(\ln(xy) - 1) = 0$	[[_homogeneous, 'class G']]	✓	1.744
5891	$x^3y' - y^2 - x^2y = 0$	[[_homogeneous, 'class D'], _rational, _Bernoulli]	✓	1.740
5892	$xy' + ay + bx^n = 0$	[_linear]	✓	1.040
5893	$xy' - y - x \sin\left(\frac{y}{x}\right) = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓	3.217
5894	$y^2 - 3xy - 2x^2 + (xy - x^2)y' = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓	4.406
5895	$(3 + 6xy + x^2)y' + 2x + 2xy + 3y^2 = 0$	[_exact, _rational, [_Abel, '2nd type', 'class B']]	✓	1.347
5896	$x^2y' + y^2 + xy + x^2 = 0$	[[_homogeneous, 'class A'], _rational, _Riccati]	✓	1.759
5897	$(x^2 - 1)y' + 2xy - \cos(x) = 0$	[_linear]	✓	2.438
5898	$(x^2y - 1)y' + xy^2 - 1 = 0$	[_exact, _rational, [_Abel, '2nd type', 'class B']]	✓	1.209

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
5899	$(x^2 - 1)y' + xy - 3xy^2 = 0$	[_separable]	✓	2.533
5900	$(x^2 - 1)y' - 2xy \ln(y) = 0$	[_separable]	✓	2.525
5901	$(1 + x^2 + y^2)y' + 2xy + x^2 + 3 = 0$	[_exact, _rational]	✓	1.232
5902	$\cos(x)y' + y + (\sin(x) + 1)\cos(x) = 0$	[_linear]	✓	2.710
5903	$y^2 + 12x^2y + (2xy + 4x^3)y' = 0$	[[_homogeneous, 'class G'], _exact, _rational, [_Abel, '2nd type', 'class B']]	✓	2.783
5904	$(x^2 - y)y' + x = 0$	[_rational, [_1st_order, 'with_symmetry_[F(x)*G(y),0]'], [_Abel, '2nd type', 'class C']]	✓	0.901
5905	$(x^2 - y)y' - 4xy = 0$	[[_homogeneous, 'class G'], _rational, [_Abel, '2nd type', 'class A']]	✓	2.028
5906	$xyy' + x^2 + y^2 = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓	4.637
5907	$2xyy' + 3x^2 - y^2 = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓	60.458
5908	$(2xy^3 - x^4)y' + 2x^3y - y^4 = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	6.369
5909	$(xy - 1)^2 xy' + (1 + y^2 x^2)y = 0$	[[_homogeneous, 'class G'], _rational]	✓	1.837
5910	$(y^2 + x^2)y' + 2x(2x + y) = 0$	[[_homogeneous, 'class A'], _exact, _rational, _dAlembert]	✓	4.291
5911	$3xy^2y' + y^3 - 2x = 0$	[[_homogeneous, 'class G'], _exact, _rational, _Bernoulli]	✓	2.283
5912	$2y^3y' + xy^2 - x^3 = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	15.842

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
5913	$(2xy^3 + xy + x^2)y' - xy + y^2 = 0$	[_rational]	✓	1.539
5914	$(2y^3 + y)y' - 2x^3 - x = 0$	[_separable]	✓	2.172
5915	$y' - e^{x-y} + e^x = 0$	[_separable]	✓	1.472
5916	$y'' + 2y' = 0$	[[_2nd_order, _missing_x]]	✓	1.392
5917	$y'' - 3y' + 2y = 0$	[[_2nd_order, _missing_x]]	✓	0.832
5918	$y'' - y = 0$	[[_2nd_order, _missing_x]]	✓	1.941
5919	$6y'' - 11y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓	0.845
5920	$y'' + 2y' - y = 0$	[[_2nd_order, _missing_x]]	✓	0.992
5921	$y''' + y'' - 10y' - 6y = 0$	[[_3rd_order, _missing_x]]	✓	0.072
5922	$y'''' - y''' - 4y'' + 4y' = 0$	[[_high_order, _missing_x]]	✓	0.071
5923	$y'''' + 4y''' + y'' - 4y' - 2y = 0$	[[_high_order, _missing_x]]	✓	0.075
5924	$y'''' - a^2y = 0$	[[_high_order, _missing_x]]	✓	0.096
5925	$y'' - 2ky' - 2y = 0$	[[_2nd_order, _missing_x]]	✓	1.028
5926	$y'' + 4ky' - 12k^2y = 0$	[[_2nd_order, _missing_x]]	✓	0.851
5927	$y'''' = 0$	[[_high_order, _quadrature]]	✓	0.039
5928	$y'' + 4y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓	0.842
5929	$3y''' + 5y'' + y' - y = 0$	[[_3rd_order, _missing_x]]	✓	0.068
5930	$y''' - 6y'' + 12y' - 8y = 0$	[[_3rd_order, _missing_x]]	✓	0.066
5931	$y'' - 2ay' + a^2y = 0$	[[_2nd_order, _missing_x]]	✓	0.662

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
5932	$y'''' + 3y''' = 0$	[[_high_order, _missing_x]]	✓	0.068
5933	$y'''' - 2y'' = 0$	[[_high_order, _missing_x]]	✓	0.069
5934	$y'''' + 2y''' - 11y'' - 12y' + 36y = 0$	[[_high_order, _missing_x]]	✓	0.079
5935	$36y'''' - 37y'' + 4y' + 5y = 0$	[[_high_order, _missing_x]]	✓	0.074
5936	$y'''' - 8y'' + 36y = 0$	[[_high_order, _missing_x]]	✓	0.135
5937	$y'' - 2y' + 5y = 0$	[[_2nd_order, _missing_x]]	✓	1.760
5938	$y'' - y' + y = 0$	[[_2nd_order, _missing_x]]	✓	2.153
5939	$y'''' + 5y'' + 6y = 0$	[[_high_order, _missing_x]]	✓	0.087
5940	$y'' - 4y' + 20y = 0$	[[_2nd_order, _missing_x]]	✓	1.837
5941	$y'''' + 4y'' + 4y = 0$	[[_high_order, _missing_x]]	✓	0.089
5942	$y''' + 8y = 0$	[[_3rd_order, _missing_x]]	✓	0.076
5943	$y'''' + 4y'' = 0$	[[_high_order, _missing_x]]	✓	0.069
5944	$y^{(5)} + 2y''' + y' = 0$	[[_high_order, _missing_x]]	✓	0.089
5945	<i>i.c.</i> $y'' = 0$	[[_2nd_order, _quadrature]]	✓	5.684
5946	<i>i.c.</i> $y'' + 4y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓	1.164
5947	<i>i.c.</i> $y'' - 2y' + 5y = 0$	[[_2nd_order, _missing_x]]	✓	2.560
5948	<i>i.c.</i> $y'' - 4y' + 20y = 0$	[[_2nd_order, _missing_x]]	✓	2.631
5949	<i>i.c.</i> $3y''' + 5y'' + y' - y = 0$	[[_3rd_order, _missing_x]]	✓	0.142

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
5950	$y'' + 3y' + 2y = 4$	[[_2nd_order, _missing_x]]	✓	0.946
5951	$y'' + 3y' + 2y = 12e^x$	[[_2nd_order, _with_linear_symmetries]]	✓	0.992
5952	$y'' + 3y' + 2y = e^{ix}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.119
5953	$y'' + 3y' + 2y = \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.345
5954	$y'' + 3y' + 2y = \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.345
5955	$y'' + 3y' + 2y = 8 + 6e^x + 2\sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.602
5956	$y'' + y' + y = x^2$	[[_2nd_order, _with_linear_symmetries]]	✓	27.852
5957	$y'' - 2y' - 8y = 9xe^x + 10e^{-x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.201
5958	$y'' - 3y' = 2e^{2x}\sin(x)$	[[_2nd_order, _missing_y]]	✓	2.352
5959	$y'' + y' = x^2 + 2x$	[[_2nd_order, _missing_y]]	✓	1.496
5960	$y'' + y' = x + \sin(2x)$	[[_2nd_order, _missing_y]]	✓	2.293
5961	$y'' + y = 4x\sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.274
5962	$y'' + 4y = x\sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	4.792
5963	$y'' + 2y' + y = x^2e^{-x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.038
5964	$y'' + 3y' + 2y = e^{-2x} + x^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.194
5965	$y'' - 3y' + 2y = xe^{-x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.091
5966	$y'' + y' - 6y = x + e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.722
5967	$y'' + y = \sin(x) + e^{-x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.003

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
5968	$y'' + y = \sin(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.845
5969	$y'' + y = \sin(2x) \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.593
5970	<i>i.c.</i> $y'' - 5y' - 6y = e^{3x}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.614
5971	<i>i.c.</i> $y'' - y' - 2y = 5 \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.580
5972	<i>i.c.</i> $y'' + 9y = 8 \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.237
5973	<i>i.c.</i> $y'' - 5y' + 6y = e^x(2x - 3)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.435
5974	<i>i.c.</i> $y'' - 3y' + 2y = e^{-x}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.264
5975	$y'' + y = \sec(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	2.706
5976	$y'' + y = \cot(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	2.064
5977	$y'' + y = \sec(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	2.908
5978	$y'' - y = \sin(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.701
5979	$y'' + y = \sin(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.854
5980	$y'' + 3y' + 2y = 12 e^x$	[[_2nd_order, _with_linear_symmetries]]	✓	0.982
5981	$y'' + 2y' + y = x^2 e^{-x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.038
5982	$y'' + y = 4x \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.273
5983	$y'' + 2y' + y = e^{-x} \ln(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.182
5984	$y'' + y = \csc(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.707
5985	$y'' + y = \tan(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.408

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
5986	$y'' + 2y' + y = \frac{e^{-x}}{x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.095
5987	$y'' + y = \sec(x) \csc(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.207
5988	$y'' - 2y' + y = e^x \ln(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.148
5989	$y'' - 3y' + 2y = \cos(e^{-x})$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.487
5990	$x^2y'' - xy' + y = x$	[[_2nd_order, _with_linear_symmetries]]	✓	1.809
5991	$y'' - \frac{2y'}{x} + \frac{2y}{x^2} = x \ln(x)$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓	2.265
5992	$x^2y'' + xy' - 4y = x^3$	[[_2nd_order, _with_linear_symmetries]]	✓	1.431
5993	$x^2y'' + xy' - y = x^2e^{-x}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓	2.353
5994	$2x^2y'' + 3xy' - y = \frac{1}{x}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓	1.856
5995	$y'' = 2yy'$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Lagerstrom, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓	0.591
5996	$y^3y'' = k$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓	1.109
5997	$yy'' = -1 + y^2$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓	2.140
5998	$x^2y'' + xy' = 1$	[[_2nd_order, _missing_y]]	✓	0.935

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
Continued from previous page

#	ODE	CAS classification	Solved?	time (sec)
5999	$xy'' - y' = x^2$	[[_2nd_order, _missing_y]]	✓	1.132
6000	$(1 + y)y'' = 3y'^2$	[[_2nd_order, _missing_x], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓	0.450
6001	$r'' = -\frac{k}{r^2}$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓	70.770
6002	$y'' = \frac{3ky^2}{2}$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓	2.089
6003	$y'' = 2ky^3$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓	1.908
6004	$yy'' + y'^2 - y' = 0$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓	0.594
6005	$r'' = \frac{h^2}{r^3} - \frac{k}{r^2}$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓	2.288
6006	$yy'' + y'^3 - y'^2 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_y_y1]]	✓	0.620
6007	$yy'' - 3y'^2 = 0$	[[_2nd_order, _missing_x], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓	0.349

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
6008	$(x^2 + 1)y'' + y'^2 + 1 = 0$	[[_2nd_order, _missing_y], [_2nd_order, _reducible, _mu_y_y1]]	✓	0.734
6009	$(x^2 + 1)y'' + 2x(1 + y') = 0$	[[_2nd_order, _missing_y]]	✓	1.428
6010	<i>i.c.</i> $(1 + y)y'' = 3y'^2$	[[_2nd_order, _missing_x], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓	0.637
6011	<i>i.c.</i> $y'' = y'e^y$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], [_2nd_order, _reducible, _mu_xy]]	✓	0.853
6012	<i>i.c.</i> $y'' = 2yy'$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Lagerstrom, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓	1.004
6013	<i>i.c.</i> $2y'' = e^y$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓	18.148
6014	<i>i.c.</i> $x^2y'' + xy' = 1$	[[_2nd_order, _missing_y]]	✓	1.298
6015	<i>i.c.</i> $xy'' - y' = x^2$	[[_2nd_order, _missing_y]]	✓	1.486
6016	$xyy'' - 2xy'^2 + yy' = 0$	[_Liouville, [_2nd_order, _with_linear_symmetries], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓	0.206

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
6017	$xyy'' + xy'^2 - yy' = 0$	[[_2nd_order, _exact, _nonlinear], _Liouville, [_2nd_order, _with_linear_symmetries], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓	0.763
6018	$xyy'' - 2xy'^2 + (1 + y)y' = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✗	0.144
6019	$-ay^3 - \frac{b}{x^{3/2}} + y' = 0$	[[_homogeneous, 'class G'], _rational, _Abel]	✓	8.006
6020	$axy^3 + by^2 + y' = 0$	[[_homogeneous, 'class G'], _Abel]	✓	2.117
6021	$y' - x^a y^3 + 3y^2 - x^{-a} y - x^{-2a} + a x^{-a-1} = 0$	[_Abel]	✓	3.974
6022	$y' - (y - f(x))(y - g(x)) \left( y - \frac{af(x) + bg(x)}{a + b} \right) h(x) - \frac{f'(x)(y - g(x))}{f(x) - g(x)} - \frac{g'(x)(y - f(x))}{g(x) - f(x)} = 0$	[_Abel]	✗	30.313
6023	$x^2 y' + xy^3 + y^2 a = 0$	[_rational, _Abel]	✗	0.882
6024	$(ax + b)^2 y' + (ax + b)y^3 + cy^2 = 0$	[_rational, _Abel]	✗	1.863
6025	$y' + y \tan(x) = 0$	[_separable]	✓	1.352
6026	$x^2 y'' - 2xy' + 2y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓	1.228
6027	$yy'^2 + 2xy' - y = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	1.924

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
6028	$(-x^2 + 1)y'^2 + 1 = 0$	[_quadrature]	✓	0.296
6029	$y' = e^{ax} + ay$	[[_linear, 'class A']]	✓	0.686
6030	$(1 + y'^2)^3 = a^2 y''^2$	[[_2nd_order, _missing_x]]	✓	5.758
6031	$(x + 1)y + (1 - y)xy' = 0$	[_separable]	✓	1.303
6032	$y' = ay^2x$	[_separable]	✓	1.275
6033	$y^2 + xy^2 + (x^2 - x^2y)y' = 0$	[_separable]	✓	1.576
6034	$xy(x^2 + 1)y' = 1 + y^2$	[_separable]	✓	2.901
6035	$\frac{x}{1 + y} = \frac{yy'}{x + 1}$	[_separable]	✓	1.452
6036	$y' + b^2y^2 = a^2$	[_quadrature]	✓	1.534
6037	$y' = \frac{1 + y^2}{x^2 + 1}$	[_separable]	✓	1.775
6038	$\sin(x)\cos(y) = \cos(x)\sin(y)y'$	[_separable]	✓	2.620
6039	$axy' + 2y = xyy'$	[_separable]	✓	1.422
6040	$xy'' + (x + n)y' + (n + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.935
6041	$y'' + xy = 0$	[[_Emden, _Fowler]]	✓	0.463
6042	$2x^2y'' - xy' + (-x^2 + 1)y = x^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.931
6043	$xy'' + 2y' + a^3x^2y = 2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.885
6044	$y'' + ax^2y = x + 1$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.510
6045	$x^4y'' + xy' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.175
6046	$x^2y'' + (2x^2 + x)y' - 4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.935
6047	$(-x^2 + x)y'' + 3y' + 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.897

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
6048	$(4x^3 - 14x^2 - 2x)y'' - (6x^2 - 7x + 1)y' + (6x - 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.026
6049	$x^2y'' + x^2y' + (-2 + x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.944
6050	$x^2y'' - x^2y' + (-2 + x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.936
6051	$x^2(1 - 4x)y'' + ((1 - n)x - (6 - 4n)x^2)y' + n(1 - n)xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.138
6052	$x^2y'' + (x^2 + x)y' + (x - 9)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.076
6053	$(a^2 + x^2)y'' + xy' - n^2y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓	0.675
6054	$(-x^2 + 1)y'' - xy' + a^2y = 0$	[_Gegenbauer, [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓	0.659
6055	$xy'' + y' + y = 0$	[[_Emden, _Fowler]]	✓	0.720
6056	$xy'' + y' + pxy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.685
6057	$xy'' + y = 0$	[[_Emden, _Fowler]]	✓	1.157
6058	$x^3y'' - (2x - 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.116
6059	$x^2y'' + x(x + 1)y' + (3x - 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.283
6060	$(-x^2 + x)y'' - y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.225
6061	$x(-x^2 + 1)y'' + (-3x^2 + 1)y' - xy = 0$	[[_elliptic, _class_I]]	✓	0.775
6062	$y'' + \frac{ay}{x^{3/2}} = 0$	[[_Emden, _Fowler]]	✗	0.171
6063	$x^2y'' - (x^2 + 4x)y' + 4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.273

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
6064	$x(-x^2+1)y'' + (-x^2+1)y' + xy = 0$	[[_elliptic, _class_II]]	✓	0.740
6065	$4x(1-x)y'' - 4y' - y = 0$	[_Jacobi]	✓	1.337
6066	$x^3y'' + y = x^{3/2}$	[[_2nd_order, _linear, _nonhomogeneous]]	✗	0.170
6067	$2x^2y'' - (2+3x)y' + \frac{(2x-1)y}{x} = \sqrt{x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✗	0.143
6068	$(-x^2+x)y'' + 3y' + 2y = 3x^2$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓	1.029
6069	$x(1-x)y'' + \left(\frac{3}{2} - 2x\right)y' - \frac{y}{4} = 0$	[_Jacobi]	✓	0.953
6070	$2x(1-x)y'' + xy' - y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.297
6071	$2x(1-x)y'' + (1-11x)y' - 10y = 0$	[_Jacobi]	✓	0.872
6072	$x(1-x)y'' + \frac{(-2x+1)y'}{3} + \frac{20y}{9} = 0$	[_Jacobi]	✓	0.908
6073	$2x(1-x)y'' + y' + 4y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.847
6074	$4y'' + \frac{3(-x^2+2)y}{(-x^2+1)^2} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.638
6075	$y^2 + y' = \frac{a^2}{x^4}$	[_rational, _Riccati]	✓	1.431
6076	$u'' - \frac{a^2u}{x^{2/3}} = 0$	[[_Emden, _Fowler]]	✓	0.821
6077	$u'' - \frac{2u'}{x} - a^2u = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.247
6078	$u'' + \frac{2u'}{x} - a^2u = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.427
6079	$u'' + \frac{2u'}{x} + a^2u = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.442
6080	$u'' + \frac{4u'}{x} - a^2u = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	4.102

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
6081	$u'' + \frac{4u'}{x} + a^2u = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	2.774
6082	$y'' - a^2y = \frac{6y}{x^2}$	[[_2nd_order, _with_linear_symmetries]]	✓	5.179
6083	$y'' + n^2y = \frac{6y}{x^2}$	[[_2nd_order, _with_linear_symmetries]]	✓	3.966
6084	$x^2y'' + xy' - \left(x^2 + \frac{1}{4}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	2.439
6085	$x^2y'' + xy' + \frac{(-9a^2 + 4x^2)y}{4a^2} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	4.083
6086	$x^2y'' + xy' + \left(x^2 - \frac{25}{4}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	3.125
6087	$y'' + qy' = \frac{2y}{x^2}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.126
6088	$y'' + e^{2x}y = n^2y$	[[_2nd_order, _with_linear_symmetries]]	✓	0.656
6089	$y'' + \frac{y}{4x} = 0$	[[_Emden, _Fowler]]	✓	0.729
6090	$xy'' + y' + y = 0$	[[_Emden, _Fowler]]	✓	0.701
6091	$xy'' + 3y' + 4x^3y = 0$	[[_Emden, _Fowler]]	✓	2.226
6092	$y' = y$	[_quadrature]	✓	0.957
6093	$xy' = y$ i.c.	[_separable]	✓	1.503
6094	$x\sqrt{1-y^2} + y\sqrt{-x^2+1}y' = 0$ i.c.	[_separable]	✓	3.141
6095	$y' \sin(x) = y \ln(y)$ i.c.	[_separable]	✓	8.257
6096	$1 + y^2 + xyy' = 0$ i.c.	[_separable]	✓	2.773
6097	$xyy' - xy = y$ i.c.	[_quadrature]	✓	0.546

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
6098	$y' = \frac{2xy^2 + x}{x^2y - y}$ i.c.	[_separable]	✓	2.276
6099	$yy' + xy^2 - 8x = 0$ i.c.	[_separable]	✓	2.902
6100	$y' + 2xy^2 = 0$ i.c.	[_separable]	✓	1.976
6101	$(1 + y)y' = y$ i.c.	[_quadrature]	✓	1.354
6102	$y' - xy = x$ i.c.	[_separable]	✓	1.399
6103	$2y' = 3(y - 2)^{1/3}$ i.c.	[_quadrature]	✓	1.418
6104	$(x + xy)y' + y = 0$ i.c.	[_separable]	✓	1.836
6105	$y' + y = e^x$	[[_linear, 'class A']]	✓	0.170
6106	$x^2y' + 3xy = 1$	[_linear]	✓	0.145
6107	$y' + 2xy - xe^{-x^2} = 0$	[_linear]	✓	0.181
6108	$2xy' + y = 2x^{5/2}$	[_linear]	✓	0.159
6109	$\cos(x)y' + y = \cos(x)^2$	[_linear]	✓	0.301
6110	$y' + \frac{y}{\sqrt{x^2 + 1}} = \frac{1}{x + \sqrt{x^2 + 1}}$	[_linear]	✓	0.189
6111	$(1 + e^x)y' + 2ye^x = (1 + e^x)e^x$	[_linear]	✓	0.192
6112	$x \ln(x)y' + y = \ln(x)$	[_linear]	✓	0.171
6113	$(-x^2 + 1)y' = xy + 2x\sqrt{-x^2 + 1}$	[_linear]	✓	0.204
6114	$y' + y \tanh(x) = 2e^x$	[_linear]	✓	0.220
6115	$y' + y \cos(x) = \sin(2x)$	[_linear]	✓	0.245
6116	$x' = \cos(y) - x \tan(y)$	[_linear]	✓	0.199
6117	$x' + x - e^y = 0$	[[_linear, 'class A']]	✓	0.175

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
6118	$x' = \frac{3y^{2/3} - x}{3y}$	[_linear]	✓	0.148
6119	$y' + y = xy^{2/3}$	[_Bernoulli]	✓	1.295
6120	$y' + \frac{y}{x} = 2x^{3/2}\sqrt{y}$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓	7.948
6121	$3xy^2y' + 3y^3 = 1$	[_separable]	✓	2.642
6122	$2xe^{3y} + e^x + (3x^2e^{3y} - y^2)y' = 0$	[_exact]	✓	1.668
6123	$(x - y)y' + y + x + 1 = 0$	[[_homogeneous, 'class C'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓	2.561
6124	$\cos(x)\cos(y) + \sin(x)^2 - (\sin(x)\sin(y) + \cos(y)^2)y' = 0$	unknown	✓	41.030
6125	$x^2y' + y^2 - xy = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓	1.828
6126	$yy' = -x + \sqrt{y^2 + x^2}$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	5.558
6127	$xy + (y^2 - x^2)y' = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	2.941
6128	$y^2 - xy + (xy + x^2)y' = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓	3.089
6129	$y' = \cos(x + y)$	[[_homogeneous, 'class C'], _dAlembert]	✓	2.361
6130	$y' = \frac{y}{x} - \tan\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A'], _dAlembert]	✓	3.541
6131	$(x - 1)y' + y - \frac{1}{x^2} + \frac{2}{x^3} = 0$	[_linear]	✓	2.521
6132	$y' = xy^2 - \frac{2y}{x} - \frac{1}{x^3}$	[[_homogeneous, 'class G'], _rational, _Riccati]	✓	1.648

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
6133	$y' = \frac{2y^2}{x} + \frac{y}{x} - 2x$	[[_homogeneous, 'class D', _rational, _Riccati]	✓	1.601
6134	$y' = e^{-x}y^2 + y - e^x$	[[_1st_order, _with_linear_symmetries], _Riccati]	✓	1.270
6135	$y'' + y' - 2y = 0$	[[_2nd_order, _missing_x]]	✓	0.823
6136	$y'' - 4y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓	0.844
6137	$y'' + 9y' = 0$	[[_2nd_order, _missing_x]]	✓	1.384
6138	$y'' + 2y' + 2y = 0$	[[_2nd_order, _missing_x]]	✓	1.247
6139	$y'' - 2y' + 6y = 0$	[[_2nd_order, _missing_x]]	✓	1.979
6140	$y'' + 16y = 0$	[[_2nd_order, _missing_x]]	✓	1.984
6141	$y'' - 5y' + 6y = 0$	[[_2nd_order, _missing_x]]	✓	0.813
6142	$y'' + 5y' = 0$	[[_2nd_order, _missing_x]]	✓	1.356
6143	$y'' - 4y' + 13y = 0$	[[_2nd_order, _missing_x]]	✓	1.867
6144	$2y'' + y' - y = 0$	[[_2nd_order, _missing_x]]	✓	0.821
6145	$y'' + (1 + 2i)y' + (-1 + i)y = 0$	[[_2nd_order, _missing_x]]	✓	0.684
6146	$y'' + (1 + 2i)y' + (-1 + i)y = 0$	[[_2nd_order, _missing_x]]	✓	0.680
6147	$y''' + y = 0$	[[_3rd_order, _missing_x]]	✓	0.075
6148	$y''' + y'' - 6y' = 0$	[[_3rd_order, _missing_x]]	✓	0.066
6149	$y''' + 3y'' - 9y' - 5y = 0$	[[_3rd_order, _missing_x]]	✓	0.124

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
6150	$y'''' + 4y = 0$	[[_high_order, _missing_x]]	✓	0.079
6151	$y'' - 4y' = 10$	[[_2nd_order, _missing_x]]	✓	1.535
6152	$y'' - 4y' + 4y = 16$	[[_2nd_order, _missing_x]]	✓	1.006
6153	$y'' + y' - 2y = e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.029
6154	$y'' - 2y' - 3y = 24e^{-3x}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.112
6155	$y'' + y = 2e^x$	[[_2nd_order, _with_linear_symmetries]]	✓	1.873
6156	$y'' + 6y' + 9y = 12e^{-x}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.049
6157	$y'' - y' - 2y = 3e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.114
6158	$y'' - 16y = 40e^{4x}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.151
6159	$y'' + 2y' + y = 2e^{-x}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.011
6160	$y'' - 6y' + 9y = 6e^{3x}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.024
6161	$y'' + 2y' + 10y = 100 \cos(4x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	71.672
6162	$y'' + 4y' + 12y = 80 \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	74.471
6163	$y'' - 2y' + y = 2 \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.321
6164	$y'' + 8y' + 25y = 120 \sin(5x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	72.868
6165	$5y'' + 12y' + 20y = 120 \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	48.160
6166	$y'' + 9y = 30 \sin(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.642
6167	$y'' + 16y = 16 \cos(4x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.705

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
6168	$y'' + 2y' + 17y = 60 e^{-4x} \sin(5x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	73.134
6169	$4y'' + 4y' + 5y = 40 e^{-\frac{3x}{2}} \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	9.697
6170	$y'' + 4y' + 8y = 30 e^{-\frac{x}{2}} \cos\left(\frac{5x}{2}\right)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	39.625
6171	$5y'' + 6y' + 2y = x^2 + 6x$	[[_2nd_order, _with_linear_symmetries]]	✓	39.829
6172	$2y'' + y' = 2x$	[[_2nd_order, _missing_y]]	✓	1.601
6173	$y'' + y = 2x e^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.852
6174	$y'' - 6y' + 9y = 12x e^{3x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.044
6175	$y'' - 2y' - 3y = 16x^2 e^{-x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.136
6176	$y'' + y = 8x \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.253
6177	$y'' + y = x^3 - 1 + 2 \cos(x) + (2 - 4x) e^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	5.299
6178	$y'' - 5y' + 6y = 2 e^x + 6x - 5$	[[_2nd_order, _with_linear_symmetries]]	✓	1.183
6179	$y'' - y = \sinh(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	2.447
6180	$y'' + y = 2 \sin(x) + 4x \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.229
6181	$y'' + 2y' + y = 4 e^x + (1 - x) (-1 + e^{2x})$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.263
6182	$y'' - 2y' = 9x e^{-x} - 6x^2 + 4 e^{2x}$	[[_2nd_order, _missing_y]]	✓	2.028

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
6183	<i>i.c.</i> $y'' + yy' = 0$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _non-linear], _Lagerstrom, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓	0.825
6184	<i>i.c.</i> $y'' + yy' = 0$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _non-linear], _Lagerstrom, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓	0.714
6185	<i>i.c.</i> $y'' + yy' = 0$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _non-linear], _Lagerstrom, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓	38.107
6186	<i>i.c.</i> $y'' + yy' = 0$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _non-linear], _Lagerstrom, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓	1.167
6187	$y'' + 2xy' = 0$	[[_2nd_order, _missing_y]]	✓	0.845
6188	$2yy'' = y'^2$	[[_2nd_order, _missing_x], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓	0.331
6189	$xy'' = y' + y'^3$	[[_2nd_order, _missing_y], [_2nd_order, _reducible, _mu_y_y1]]	✓	0.633

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
6190	$y''^2 = k^2(1 + y'^2)$	[[_2nd_order, _missing_x]]	✓	1.000
6191	$k = \frac{y''}{(1 + y')^{3/2}}$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear]]	✓	2.216
6192	$x^2y'' + 3xy' - 3y = 0$	[[_Emden, _Fowler]]	✓	1.148
6193	$x^2y'' + xy' - 4y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓	1.024
6194	$x^2y'' + 7xy' + 9y = 0$	[[_Emden, _Fowler]]	✓	1.138
6195	$x^2y'' - xy' + 6y = 0$	[[_Emden, _Fowler]]	✓	2.513
6196	$x^2y'' + xy' - 16y = 8x^4$	[[_2nd_order, _with_linear_symmetries]]	✓	1.921
6197	$x^2y'' + xy' - y = x - \frac{1}{x}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓	2.268
6198	$x^2y'' - 5xy' + 9y = 2x^3$	[[_2nd_order, _with_linear_symmetries]]	✓	1.839
6199	$x^2y'' - 3xy' + 4y = 6x^2 \ln(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.834
6200	$x^2y'' + y = 3x^2$	[[_2nd_order, _with_linear_symmetries]]	✓	1.467
6201	$x^2y'' + xy' + y = 2x$	[[_2nd_order, _with_linear_symmetries]]	✓	3.014
6202	$x^2(2 - x)y'' + 2xy' - 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.334
6203	$(x^2 + 1)y'' - 2xy' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.317
6204	$xy'' - 2(x + 1)y' + (x + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.331
6205	$3xy'' - 2(3x - 1)y' + (3x - 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.348
6206	$x^2y'' + (x + 1)y' - y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.345

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
6207	$x(x+1)y'' - (x-1)y' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.340
6208	$x^2y' - xy = \frac{1}{x}$	[_linear]	✓	1.296
6209	$x \ln(y)y' - y \ln(x) = 0$	[_separable]	✓	1.571
6210	$y''' + 2y'' + 2y' = 0$	[[_3rd_order, _missing_x]]	✓	0.069
6211	$r'' - 6r' + 9r = 0$	[[_2nd_order, _missing_x]]	✓	0.840
6212	$2x - y \sin(2x) = (\sin(x)^2 - 2y)y'$	[_exact, [_1st_order, '_with_symmetry_[F(x),G(x)]'], [_Abel, '2nd type', 'class A']]	✓	3.415
6213	$y'' + 2y' + 2y = 10e^x + 6e^{-x} \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	16.559
6214	$3x^3y^2y' - x^2y^3 = 1$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓	2.670
6215	$x^2y'' - xy' + y = x$	[[_2nd_order, _with_linear_symmetries]]	✓	1.758
6216	$y' - 2y - y^2e^{3x} = 0$	[[_1st_order, _with_linear_symmetries], _Bernoulli]	✓	1.368
6217	$u(-v+1) + v^2(1-u)u' = 0$	[_separable]	✓	1.450
6218	$y + 2x - xy' = 0$	[_linear]	✓	1.240
6219	$xy'' + y' = 4x$	[[_2nd_order, _missing_y]]	✓	1.085
6220	$y'' + 4y' + 5y = 26e^{3x}$	[[_2nd_order, _with_linear_symmetries]]	✓	7.002
6221	$y'' + 4y' + 5y = 2e^{-2x} \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	5.455
6222	$y'' - 4y' + 4y = 6e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.043
6223	$y'' - 5y' + 6y = e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.000

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
6224	$(2x + y)y' - x + 2y = 0$	[[_homogeneous, 'class A'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓	3.949
6225	$(x \cos(y) - e^{-\sin(y)})y' + 1 = 0$	[[_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓	2.073
6226	$\sin(x)^2 y' + \sin(x)^2 + (x + y) \sin(2x) = 0$	[_linear]	✓	4.275
6227	$y'' - 2y' + 5y = 5x + 4e^x(1 + \sin(2x))$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	29.241
6228	$y' + xy = \frac{x}{y}$	[_separable]	✓	1.568
6229	$y'''' - 2y''' + 13y'' - 18y' + 36y = 0$	[[_high_order, _missing_x]]	✓	0.083
6230	$\sin(\theta) \cos(\theta) r' - \sin(\theta)^2 = r \cos(\theta)^2$	[_linear]	✓	2.898
6231	$x(yy'' + y'^2) = yy'$	[[_2nd_order, _exact, _nonlinear], _Liouville, [_2nd_order, _with_linear_symmetries], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓	0.757
6232	<i>i.c.</i> $3x^2y + x^3y' = 0$	[_separable]	✓	2.172
6233	<i>i.c.</i> $-y + xy' = x^2$	[_linear]	✓	1.487
6234	<i>i.c.</i> $y'' + y' - 6y = 6$	[[_2nd_order, _missing_x]]	✓	1.557
6235	<i>i.c.</i> $yy'' + y'^2 + 4 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓	2.838
6236	$xy' = xy + y$	[_separable]	✓	0.487

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
6237	$xy' = xy + y$	[_separable]	✓	1.111
6238	$y' = 3x^2y$	[_separable]	✓	0.560
6239	$y' = 3x^2y$	[_separable]	✓	1.175
6240	$xy' = y$	[_separable]	✓	0.427
6241	$xy' = y$	[_separable]	✓	1.220
6242	$y'' = -4y$	[[_2nd_order, _missing_x]]	✓	0.532
6243	$y'' = -4y$	[[_2nd_order, _missing_x]]	✓	1.983
6244	$y'' = y$	[[_2nd_order, _missing_x]]	✓	0.500
6245	$y'' = y$	[[_2nd_order, _missing_x]]	✓	1.945
6246	$y'' - 2y' + y = 0$	[[_2nd_order, _missing_x]]	✓	0.592
6247	$y'' - 2y' + y = 0$	[[_2nd_order, _missing_x]]	✓	0.844
6248	$x^2y'' - 3xy' + 3y = 0$	[[_Emden, _Fowler]]	✓	0.777
6249	$x^2y'' - 3xy' + 3y = 0$	[[_Emden, _Fowler]]	✓	1.243
6250	$(x^2 + 2x)y'' - 2(x + 1)y' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.942
6251	$(x^2 + 2x)y'' - 2(x + 1)y' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.148
6252	$(x^2 + 1)y'' - 2xy' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.465
6253	$(x^2 + 1)y'' - 2xy' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.216
6254	$y'' - 4xy' + (4x^2 - 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.534
6255	$y'' - 4xy' + (4x^2 - 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.692
6256	$y' - \sin(x + y) = 0$	[[_homogeneous, 'class C', _dAlembert]]	✓	2.217

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
6257	$y' = 4y^2 - 3y + 1$	[_quadrature]	✓	1.079
6258	$s' = t \ln(s^{2t}) + 8t^2$	['y=_G(x,y)']	✗	1.780
6259	$y' = \frac{y e^{x+y}}{x^2 + 2}$	[_separable]	✓	1.739
6260	$(xy^2 + 3y^2)y' - 2x = 0$	[_separable]	✓	1.648
6261	$s^2 + s' = \frac{s+1}{st}$	[_rational, [_Abel, '2nd type', 'class C']]	✗	0.920
6262	$xy' = \frac{1}{y^3}$	[_separable]	✓	1.955
6263	$x' = 3xt^2$	[_separable]	✓	1.168
6264	$x' = \frac{t e^{-t-2x}}{x}$	[_separable]	✓	1.386
6265	$y' = \frac{x}{y^2 \sqrt{x+1}}$	[_separable]	✓	1.889
6266	$xv' = \frac{1-4v^2}{3v}$	[_separable]	✓	4.040
6267	$y' = \frac{\sec(y)^2}{x^2 + 1}$	[_separable]	✓	2.275
6268	$y' = 3x^2(1+y^2)^{3/2}$	[_separable]	✓	100.783
6269	$x' - x^3 = x$	[_quadrature]	✓	3.894
6270	$x + xy^2 + e^{x^2}yy' = 0$	[_separable]	✓	2.143
6271	$\frac{y'}{y} + y e^{\cos(x)} \sin(x) = 0$	[_separable]	✓	2.036
6272	$y' = (1+y^2) \tan(x)$ i.c.	[_separable]	✓	3.584
6273	$y' = x^3(1-y)$ i.c.	[_separable]	✓	1.402
6274	$\frac{y'}{2} = \sqrt{1+y} \cos(x)$ i.c.	[_separable]	✓	2.055

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
6275	$x^2 y' = \frac{4x^2 - x - 2}{(x+1)(1+y)}$ i.c.	[_separable]	✓	3.508
6276	$\frac{y'}{\theta} = \frac{y \sin(\theta)}{y^2 + 1}$ i.c.	[_separable]	✓	3.580
6277	$x^2 + 2yy' = 0$ i.c.	[_separable]	✓	5.270
6278	$y' = 2t \cos(y)^2$ i.c.	[_separable]	✓	1.615
6279	$y' = 8x^3 e^{-2y}$ i.c.	[_separable]	✓	2.074
6280	$y' = x^2(1+y)$ i.c.	[_separable]	✓	1.457
6281	$\sqrt{y} + (x+1)y' = 0$ i.c.	[_separable]	✓	2.656
6282	$y' = e^{x^2}$ i.c.	[_quadrature]	✓	0.522
6283	$y' = \frac{e^{x^2}}{y^2}$ i.c.	[_separable]	✓	2.783
6284	$y' = \sqrt{\sin(x)+1} (1+y^2)$ i.c.	[_separable]	✓	21.435
6285	$y' = 2y - 2ty$ i.c.	[_separable]	✓	1.695
6286	$y' = y^{1/3}$	[_quadrature]	✓	1.563
6287	$y' = y^{1/3}$ i.c.	[_quadrature]	✓	1.694
6288	$y' = (x-3)(1+y)^{2/3}$	[_separable]	✓	6.533
6289	$y' = xy^3$	[_separable]	✓	2.168
6290	$y' = xy^3$ i.c.	[_separable]	✓	3.638
6291	$y' = xy^3$ i.c.	[_separable]	✓	3.972

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
6292	$y' = xy^3$ i.c.	[_separable]	✓	4.011
6293	$y' = y^2 - 3y + 2$ i.c.	[_quadrature]	✓	1.675
6294	$x^2y' + \sin(x) - y = 0$	[_linear]	✓	1.910
6295	$x' + xt = e^x$	['y=_G(x,y)']	✗	0.940
6296	$(t^2 + 1)y' = ty - y$	[_separable]	✓	1.492
6297	$3t = e^t y' + y \ln(t)$	[_linear]	✓	4.437
6298	$xx' + xt^2 = \sin(t)$	[[_Abel, '2nd type', 'class A']]	✗	2.306
6299	$3r = r' - \theta^3$	[[_linear, 'class A']]	✓	1.289
6300	$y' - y - e^{3x} = 0$	[[_linear, 'class A']]	✓	1.029
6301	$y' = \frac{y}{x} + 2x + 1$	[_linear]	✓	1.004
6302	$r' + r \tan(\theta) = \sec(\theta)$	[_linear]	✓	1.419
6303	$xy' + 2y = \frac{1}{x^3}$	[_linear]	✓	1.225
6304	$t + y + 1 - y' = 0$	[[_linear, 'class A']]	✓	0.966
6305	$y' = x^2 e^{-4x} - 4y$	[[_linear, 'class A']]	✓	1.464
6306	$yx' + 2x = 5y^3$	[_linear]	✓	1.337
6307	$xy' + 3y + 3x^2 = \frac{\sin(x)}{x}$	[_linear]	✓	1.617
6308	$(x^2 + 1)y' + xy - x = 0$	[_separable]	✓	1.246
6309	$(-x^2 + 1)y' - x^2y = (x+1)\sqrt{-x^2 + 1}$	[_linear]	✓	2.393
6310	$y' - \frac{y}{x} = x e^x$ i.c.	[_linear]	✓	1.345
6311	$y' + 4y - e^{-x} = 0$ i.c.	[[_linear, 'class A']]	✓	1.389
6312	$t^2x' + 3xt = t^4 \ln(t) + 1$ i.c.	[_linear]	✓	1.492

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
6313	$y' + \frac{3y}{x} + 2 = 3x$ i.c.	[_linear]	✓	1.451
6314	$\cos(x)y' + y \sin(x) = 2x \cos(x)^2$ i.c.	[_linear]	✓	2.947
6315	$y' \sin(x) + y \cos(x) = x \sin(x)$ i.c.	[_linear]	✓	2.340
6316	$y' + y\sqrt{1 + \sin(x)^2} = x$ i.c.	[_linear]	✓	15.873
6317	$(e^{4y} + 2x)y' - 1 = 0$	[[_1st_order, _with_exponential_symmetries]]	✓	4.123
6318	$y' + 2y = \frac{x}{y^2}$	[_rational, _Bernoulli]	✓	1.399
6319	$y' + \frac{3y}{x} = x^2$	[_linear]	✓	1.345
6320	$x' = \alpha - \beta \cos\left(\frac{\pi t}{12}\right) - kx$ i.c.	[[_linear, 'class A']]	✓	1.832
6321	$u' = \alpha(1 - u) - \beta u$	[_quadrature]	✓	0.914
6322	$x^2y + x^4 \cos(x) - x^3y' = 0$	[_linear]	✓	1.260
6323	$x^{10/3} - 2y + xy' = 0$	[_linear]	✓	1.358
6324	$\sqrt{-2y - y^2} + (-x^2 + 2x + 3)y' = 0$	[_separable]	✓	2.940
6325	$ye^{xy} + 2x + (xe^{xy} - 2y)y' = 0$	[_exact]	✓	0.283
6326	$y' + xy = 0$	[_separable]	✓	0.220
6327	$y^2 + (2xy + \cos(y))y' = 0$	[_exact, [_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓	0.249
6328	$2x + y \cos(xy) + (x \cos(xy) - 2y)y' = 0$	[_exact]	✓	0.295
6329	$\theta r' + 3r - \theta - 1 = 0$	[_linear]	✓	0.255
6330	$2xy + 3 + (x^2 - 1)y' = 0$	[_linear]	✓	0.193

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
6331	$2x + y + (x - 2y)y' = 0$	[[_homogeneous, 'class A'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓	0.316
6332	$e^x \sin(y) - 3x^2 + \left(e^x \cos(y) + \frac{1}{3y^{2/3}}\right)y' = 0$	[_exact]	✓	0.390
6333	$\cos(x) \cos(y) + 2x - (\sin(x) \sin(y) + 2y)y' = 0$	[_exact]	✓	6.810
6334	$e^t(-t + y) + (1 + e^t)y' = 0$	[_linear]	✓	0.221
6335	$\frac{ty'}{y} + 1 + \ln(y) = 0$	[_separable]	✓	0.287
6336	$\cos(\theta)r' - r \sin(\theta) + e^\theta = 0$	[_linear]	✓	0.225
6337	$ye^{xy} - \frac{1}{y} + \left(xe^{xy} + \frac{x}{y^2}\right)y' = 0$	[_exact]	✓	0.281
6338	$\frac{1}{y} - \left(3y - \frac{x}{y^2}\right)y' = 0$	[[_homogeneous, 'class G'], _rational]	✓	0.203
6339	$2x + y^2 - \cos(x + y) + (2xy - \cos(x + y) - e^y)y' = 0$	[_exact]	✓	36.481
6340	$y' = \frac{e^{x+y}}{y-1}$	[_separable]	✓	1.474
6341	$y' - 4y = 32x^2$	[[_linear, 'class A']]	✓	1.036
6342	$\left(x^2 - \frac{2}{y^3}\right)y' + 2xy - 3x^2 = 0$	[_exact, _rational]	✓	2.217
6343	$y' + \frac{3y}{x} = x^2 - 4x + 3$	[_linear]	✓	1.599
6344	$2xy^3 - (-x^2 + 1)y' = 0$	[_separable]	✓	2.411
6345	$y^2t^3 + \frac{t^4y'}{y^6} = 0$	[_separable]	✓	1.424
6346	$(x + 1)y'' - x^2y' + 3y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.642
6347	$x^2y'' + 3y' - xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.170

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
6348	$(x^2 - 2)y'' + 2y' + y \sin(x) = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.739
6349	$(x^2 + x)y'' + 3y' - 6xy = 0$	[[_Emden, _Fowler]]	✓	1.307
6350	$(t^2 - t - 2)x'' + (t + 1)x' - (t - 2)x = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.695
6351	$(x^2 - 1)y'' + (1 - x)y' + (x^2 - 2x + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.652
6352	$\sin(x)y'' + y \cos(x) = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.589
6353	$e^x y'' - (x^2 - 1)y' + 2xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.012
6354	$\sin(x)y'' - y \ln(x) = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	4.825
6355	$y' + (x + 2)y = 0$	[_separable]	✓	0.534
6356	$y' - y = 0$	[_quadrature]	✓	0.455
6357	$z' - x^2 z = 0$	[_separable]	✓	0.496
6358	$(x^2 + 1)y'' + y = 0$	[[_Emden, _Fowler]]	✓	0.576
6359	$y'' + (x - 1)y' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.552
6360	$y'' - 2y' + y = 0$	[[_2nd_order, _missing_x]]	✓	0.636
6361	$w'' - x^2 w' + w = 0$	[_Lienard]	✓	0.593
6362	$(2x - 3)y'' - xy' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.592
6363	$(x + 1)y'' - 3xy' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.693
6364	$y'' - xy' - 3y = 0$	[_Hermite]	✓	0.638
6365	$(x^2 + x + 1)y'' - 3y = 0$	[[_Emden, _Fowler]]	✓	0.678
6366	$(x^2 - 5x + 6)y'' - 3xy' - y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.666
6367	$y'' - \tan(x)y' + y = 0$	[_Lienard]	✓	1.826

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
6368	$(x^3 + 1)y'' - xy' + 2x^2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.807
6369	$y' + 2(x - 1)y = 0$	[_separable]	✓	0.586
6370	$y' - 2xy = 0$	[_separable]	✓	0.612
6371	$(x^2 - 2x)y'' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.622
6372	$x^2y'' - xy' + 2y = 0$	[[_Emden, _Fowler]]	✓	0.661
6373	$x^2y'' - y' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.686
6374	$y'' + (3x - 1)y' - y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.654
6375	<i>i.c.</i> $x' + \sin(t)x = 0$	[_separable]	✓	0.683
6376	<i>i.c.</i> $y' - ye^x = 0$	[_separable]	✓	0.661
6377	<i>i.c.</i> $(x^2 + 1)y'' - e^xy' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.947
6378	<i>i.c.</i> $y'' + ty' + e^ty = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.732
6379	<i>i.c.</i> $y'' - e^{2x}y' + y \cos(x) = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.143
6380	$y' - xy = \sin(x)$	[_linear]	✓	0.585
6381	$w' + wx = e^x$	[_linear]	✓	0.605
6382	$z'' + xz' + z = x^2 + 2x + 1$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓	0.561
6383	$y'' - 2xy' + 3y = x^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.536
6384	$(x^2 + 1)y'' - xy' + y = \cos(x)$	[[_2nd_order, _with_linear_symmetries]]	✓	0.674
6385	$y'' - xy' + 2y = \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.622
6386	$(-x^2 + 1)y'' - y' + y = \tan(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.501

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
6387	$y'' - y \sin(x) = \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.721
6388	$(-x^2 + 1)y'' - 2xy' + n(n+1)y = 0$	[_Gegenbauer]	✓	0.734
6389	$x'' - \omega^2 x = 0$	[[_2nd_order, _missing_x]]	✓	3.242
6390	$x''' - x'' + x' - x = 0$	[[_3rd_order, _missing_x]]	✓	0.072
6391	<i>i.c.</i> $x'' + 42x' + x = 0$	[[_2nd_order, _missing_x]]	✓	1.413
6392	$x'''' + x = 0$	[[_high_order, _missing_x]]	✓	0.086
6393	$x''' - 3x'' - 9x' - 5x = 0$	[[_3rd_order, _missing_x]]	✓	0.073
6394	$x'' + 2\gamma x' + \omega_0 x = F \cos(\omega t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.457
6395	<i>i.c.</i> $y'' - y' - 2y = e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.716
6396	<i>i.c.</i> $y'' - 2y' + y = 2 \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.641
6397	<i>i.c.</i> $y'' + 16y = 16 \cos(4x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	4.306
6398	<i>i.c.</i> $y'' - y = \cosh(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	2.792
6399	$y' - y = e^{2x}$	[[_linear, 'class A']]	✓	1.025
6400	<i>i.c.</i> $x^2 y' + 2xy - x + 1 = 0$	[_linear]	✓	1.334
6401	<i>i.c.</i> $y' + y = (x+1)^2$	[[_linear, 'class A']]	✓	1.277
6402	<i>i.c.</i> $x^2 y' + 2xy = \sinh(x)$	[_linear]	✓	1.484
6403	$y' + \frac{y}{1-x} + 2x - x^2 = 0$	[_linear]	✓	1.104
6404	$y' + \frac{y}{1-x} + x - x^2 = 0$	[_linear]	✓	1.001

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
6405	$(x^2 + 1) y' = xy + 1$	[_linear]	✓	2.100
6406	$y' + xy = xy^2$	[_separable]	✓	1.767
6407	$3xy' + y + x^2y^4 = 0$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓	2.921
6408	$x(x + 1)^2 y'' + (-x^2 + 1) y' + (x - 1) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.941
6409	$x(1 - x) y'' + 2(-2x + 1) y' - 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	1.172
6410	$x^2 y'' + xy' - 9y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)']]]	✓	0.972
6411	$xy'' + \frac{y'}{2} + 2y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)']]]	✓	1.462
6412	$x^2 y'' - xy' + y = 0$	[[_Emden, _Fowler]]	✓	1.195
6413	$2xy'' - y' + 2y = 0$	[[_Emden, _Fowler]]	✓	1.188
6414	$xy'' + xy' - 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.235
6415	$x(x - 1)^2 y'' - 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.967
6416	$y' - \frac{2y}{x} - x^2 = 0$	[_linear]	✓	1.235
6417	$y' + \frac{2y}{x} - x^3 = 0$	[_linear]	✓	1.337
6418	$xy'' + (1 - x) y' + my = 0$	[_Laguerre]	✗	0.645
6419	$xy' = x^2 + 2x - 3$	[_quadrature]	✓	0.356
6420	$(x + 1)^2 y' = 1 + y^2$	[_separable]	✓	2.036
6421	$y' + 2y = e^{3x}$	[[_linear, 'class A']]	✓	1.049
6422	$-y + xy' = x^2$	[_linear]	✓	1.172

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
6423	$x^2 y' = x^3 \sin(3x) + 4$	[_quadrature]	✓	0.563
6424	$x \cos(y) y' - \sin(y) = 0$	[_separable]	✓	3.610
6425	$(x^3 + xy^2) y' = 2y^3$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	74.500
6426	$(x^2 - 1) y' + 2xy = x$	[_separable]	✓	1.250
6427	$y' + y \tanh(x) = 2 \sinh(x)$	[_linear]	✓	1.705
6428	$xy' - 2y = x^3 \cos(x)$	[_linear]	✓	1.591
6429	$y' + \frac{y}{x} = y^3$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓	2.685
6430	$xy' + 3y = y^2 x^2$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓	1.495
6431	$x(-3 + y) y' = 4y$	[_separable]	✓	1.786
6432	$(x^3 + 1) y' = x^2 y$ i.c.	[_separable]	✓	2.177
6433	$x^3 + (1 + y)^2 y' = 0$	[_separable]	✓	1.643
6434	$\cos(y) + (1 + e^{-x}) \sin(y) y' = 0$ i.c.	[_separable]	✓	2.758
6435	$x^2(1 + y) + y^2(x - 1) y' = 0$	[_separable]	✓	1.358
6436	$(2y - x) y' = 2x + y$	[[_homogeneous, 'class A'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓	3.380
6437	$xy + y^2 + (x^2 - xy) y' = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓	3.381
6438	$x^3 + y^3 = 3xy^2 y'$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓	9.591
6439	$y - 3x + (4y + 3x) y' = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓	5.276

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
6440	$(x^3 + 3xy^2) y' = y^3 + 3x^2y$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	45.891
6441	$-y + xy' = x^3 + 3x^2 - 2x$	[_linear]	✓	0.173
6442	$y' + y \tan(x) = \sin(x)$	[_linear]	✓	0.236
6443	$-y + xy' = x^3 \cos(x)$ i.c.	[_linear]	✓	0.364
6444	$(x^2 + 1) y' + 3xy = 5x$ i.c.	[_separable]	✓	0.585
6445	$y' + y \cot(x) = 5 e^{\cos(x)}$ i.c.	[_linear]	✓	0.375
6446	$(3x + 3y - 4) y' = -x - y$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	1.261
6447	$x - xy^2 = (x + x^2y) y'$	[_rational, [_1st_order, '_with_symmetry_[F(x)*G(y),0']], [_Abel, '2nd type', 'class B']]	✓	2.816
6448	$x - y - 1 + (4y + x - 1) y' = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	1.878
6449	$3y - 7x + 7 + (7y - 3x + 3) y' = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	3.237
6450	$y(xy + 1) + x(1 + xy + y^2x^2) y' = 0$	[[_homogeneous, 'class G'], _rational]	✓	1.610
6451	$y' + y = xy^3$	[_Bernoulli]	✓	0.416
6452	$y' + y = y^4 e^x$	[[_1st_order, _with_linear_symmetries], _Bernoulli]	✓	0.325
6453	$2y' + y = y^3(x - 1)$	[_Bernoulli]	✓	0.411
6454	$y' - 2y \tan(x) = y^2 \tan(x)^2$	[_Bernoulli]	✓	0.342
6455	$y' + y \tan(x) = y^3 \sec(x)^4$	[_Bernoulli]	✓	0.445

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
6456	$(-x^2 + 1) y' = xy + 1$	[_linear]	✓	1.102
6457	$xyy' - (x + 1) \sqrt{y - 1} = 0$	[_separable]	✓	1.637
6458	$x^2 - 2xy + 5y^2 = (x^2 + 2xy + y^2) y'$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	6.234
6459	<i>i.c.</i> $y' - y \cot(x) = y^2 \sec(x)^2$	[_Bernoulli]	✓	2.602
6460	$y + (x^2 - 4x) y' = 0$	[_separable]	✓	1.388
6461	<i>i.c.</i> $y' - y \tan(x) = \cos(x) - 2x \sin(x)$	[_linear]	✓	2.458
6462	$y' = \frac{2xy + y^2}{x^2 + 2xy}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓	73.601
6463	$(x^2 + 1) y' = x(1 + y)$	[_separable]	✓	1.185
6464	<i>i.c.</i> $xy' + 2y = 3x - 1$	[_linear]	✓	1.901
6465	<i>i.c.</i> $x^2 y' = y^2 - xyy'$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓	8.902
6466	<i>i.c.</i> $y' = e^{-2y+3x}$	[_separable]	✓	3.610
6467	<i>i.c.</i> $y' + \frac{y}{x} = \sin(2x)$	[_linear]	✓	1.728
6468	$y^2 + x^2 y' = xyy'$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓	37.135
6469	$2xyy' = x^2 - y^2$	[[_homogeneous, 'class A'], _exact, _rational, _Bernoulli]	✓	3.732
6470	<i>i.c.</i> $y' = \frac{x - 2y + 1}{2x - 4y}$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	1.959
6471	$(-x^3 + 1) y' + x^2 y = x^2(-x^3 + 1)$	[_linear]	✓	2.482

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
6472	$y' + \frac{y}{x} = \sin(x)$ i.c.	[_linear]	✓	1.462
6473	$y' + x + xy^2 = 0$ i.c.	[_separable]	✓	2.459
6474	$y' + \left(\frac{1}{x} - \frac{2x}{-x^2 + 1}\right)y = \frac{1}{-x^2 + 1}$	[_linear]	✓	1.198
6475	$xy + (x^2 + 1)y' = (x^2 + 1)^{3/2}$	[_linear]	✓	1.612
6476	$x(1 + y^2) - y(x^2 + 1)y' = 0$	[_separable]	✓	3.285
6477	$\frac{r \tan(\theta) r'}{a^2 - r^2} = 1$ i.c.	[_separable]	✓	2.386
6478	$y' + y \cot(x) = \cos(x)$ i.c.	[_linear]	✓	1.944
6479	$y' + \frac{y}{x} = xy^2$	[[_homogeneous, 'class G', _rational, _Bernoulli]]	✓	1.660
6480	$y'' - y' - 2y = 8$	[[_2nd_order, _missing_x]]	✓	0.957
6481	$y'' - 4y = 10e^{3x}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.043
6482	$y'' + 2y' + y = e^{-2x}$	[[_2nd_order, _with_linear_symmetries]]	✓	0.996
6483	$y'' + 25y = 5x^2 + x$	[[_2nd_order, _with_linear_symmetries]]	✓	3.100
6484	$y'' - 2y' + y = 4 \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.291
6485	$y'' + 4y' + 5y = 2e^{-2x}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	3.294
6486	$3y'' - 2y' - y = 2x - 3$	[[_2nd_order, _with_linear_symmetries]]	✓	1.140
6487	$y'' - 6y' + 8y = 8e^{4x}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.055
6488	$2y'' - 7y' - 4y = e^{3x}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.034

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
6489	$y'' - 6y' + 9y = 54x + 18$	[[_2nd_order, _with_linear_symmetries]]	✓	1.053
6490	$y'' - 5y' + 6y = 100 \sin(4x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.422
6491	$y'' + 2y' + y = 4 \sinh(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	2.387
6492	$y'' + y' - 2y = 2 \cosh(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.290
6493	$y'' - y' + 10y = 20 - e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓	21.645
6494	$y'' + 4y' + 4y = 2 \cos(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.701
6495	$y'' - 4y' + 3y = x + e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.118
6496	$y'' - 2y' + 3y = x^2 - 1$	[[_2nd_order, _with_linear_symmetries]]	✓	19.063
6497	$y'' - 9y = e^{3x} + \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.838
6498	<i>i.c.</i> $x'' + 4x' + 3x = e^{-3t}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.661
6499	$y'' + 4y' + 5y = 6 \sin(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	8.183
6500	<i>i.c.</i> $x'' - 3x' + 2x = \sin(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.593
6501	<i>i.c.</i> $y'' + 3y' + 2y = 3 \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.786
6502	$y'' + 6y' + 10y = 50x$	[[_2nd_order, _with_linear_symmetries]]	✓	8.180
6503	<i>i.c.</i> $x'' + 2x' + 2x = 85 \sin(3t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	9.493
6504	<i>i.c.</i> $y'' = 3 \sin(x) - 4y$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	2.672
6505	<i>i.c.</i> $\frac{x''}{2} = -48x$	[[_2nd_order, _missing_x]]	✓	2.451

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
6506	$x'' + 5x' + 6x = \cos(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.766
6507	$y'' - y' - 2y = 4x^2$	[[_2nd_order, _with_linear_symmetries]]	✓	1.072
6508	$y'' - y' - 2y = e^{3x}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.026
6509	$y'' - y' - 2y = \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.415
6510	$y'' - 6y' + 25y = 2 \sin\left(\frac{t}{2}\right) - \cos\left(\frac{t}{2}\right)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	53.820
6511	$y'' - 6y' + 25y = 64e^{-t}$	[[_2nd_order, _with_linear_symmetries]]	✓	11.555
6512	$y'' - 6y' + 25y = 50t^3 - 36t^2 - 63t + 18$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	16.074
6513	$y''' - 6y'' + 11y' - 6y = 2xe^{-x}$	[[_3rd_order, _linear, _nonhomogeneous]]	✓	0.125
6514	$y'' = 9x^2 + 2x - 1$	[[_2nd_order, _quadrature]]	✓	1.325
6515	$y'' - 5y = 2e^{5x}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.244
6516	$y' - 5y = (x - 1) \sin(x) + (x + 1) \cos(x)$	[[_linear, 'class A']]	✓	1.864
6517	$y' - 5y = 3e^x - 2x + 1$	[[_linear, 'class A']]	✓	1.237
6518	$y' - 5y = e^x x^2 - x e^{5x}$	[[_linear, 'class A']]	✓	1.520
6519	$y'' - 2y' + y = x^2 - 1$	[[_2nd_order, _with_linear_symmetries]]	✓	1.074
6520	$y'' - 2y' + y = 4e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.012
6521	$y'' - 2y' + y = 4 \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.329
6522	$y'' - 2y' + y = 3e^x$	[[_2nd_order, _with_linear_symmetries]]	✓	1.014
6523	$y'' - 2y' + y = x e^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.024

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
6524	$y' - y = e^x$	[[_linear, 'class A']]	✓	0.895
6525	$y' - y = x e^{2x} + 1$	[[_linear, 'class A']]	✓	1.177
6526	$y' - y = \sin(x) + \cos(2x)$	[[_linear, 'class A']]	✓	1.903
6527	$y''' - 3y'' + 3y' - y = 1 + e^x$	[[_3rd_order, _with_linear_symmetries]]	✓	0.135
6528	$y''' + y' = \sec(x)$	[[_3rd_order, _missing_y]]	✓	0.556
6529	$y''' - 3y'' + 2y' = \frac{e^x}{1 + e^{-x}}$	[[_3rd_order, _missing_y]]	✓	0.247
6530	$y'' - 2y' + y = \frac{e^x}{x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.118
6531	$y'' - y' - 2y = e^{3x}$	[[_2nd_order, _with_linear_symmetries]]	✓	0.986
6532	$x'' + 4x = \sin(2t)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	2.502
6533	$t^2 N'' - 2tN' + 2N = t \ln(t)$	[[_2nd_order, _with_linear_symmetries]]	✓	2.122
6534	$y' + \frac{4y}{x} = x^4$	[_linear]	✓	1.336
6535	$y'''' = 5x$	[[_high_order, _quadrature]]	✓	0.112
6536	$y'' - 2y' + y = \frac{e^x}{x^5}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.087
6537	$y'' + y = \sec(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	2.736
6538	$y'' - y' - 2y = e^{3x}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.001
6539	$y'' - 60y' - 900y = 5e^{10x}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.423
6540	$y'' - 7y' = -3$	[[_2nd_order, _missing_x]]	✓	1.534
6541	$y'' + \frac{y'}{x} - \frac{y}{x^2} = \ln(x)$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓	2.215

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
6542	$x^2 y'' - xy' = x^3 e^x$	[[_2nd_order, __missing_y]]	✓	1.026
6543	$y' - \frac{y}{x} = x^2$	[_linear]	✓	1.210
6544	$y' + 2y = 0$ i.c.	[_quadrature]	✓	0.274
6545	$y' + 2y = 2$ i.c.	[_quadrature]	✓	0.258
6546	$y' + 2y = e^x$ i.c.	[[_linear, 'class A']]	✓	0.296
6547	$y'' - y = 0$ i.c.	[[_2nd_order, __missing_x]]	✓	0.216
6548	$y'' - y = \sin(x)$ i.c.	[[_2nd_order, __linear, __nonhomogeneous]]	✓	0.304
6549	$y'' - y = e^x$ i.c.	[[_2nd_order, __with_linear_symmetries]]	✓	0.279
6550	$y'' + 2y' - 3y = \sin(2x)$ i.c.	[[_2nd_order, __linear, __nonhomogeneous]]	✓	0.434
6551	$y'' + y = \sin(x)$ i.c.	[[_2nd_order, __linear, __nonhomogeneous]]	✓	0.328
6552	$y'' + y' + y = 0$ i.c.	[[_2nd_order, __missing_x]]	✓	0.469
6553	$y'' + 2y' + 5y = 3e^{-2x}$ i.c.	[[_2nd_order, __with_linear_symmetries]]	✓	0.356
6554	$y'' + 5y' - 3y = \text{Heaviside}(x - 4)$ i.c.	[[_2nd_order, __linear, __nonhomogeneous]]	✓	1.096
6555	$y''' - y = 5$ i.c.	[[_3rd_order, __missing_x]]	✓	0.470
6556	$y'''' - y = 0$ i.c.	[[_high_order, __missing_x]]	✓	0.351
6557	$y''' - 3y'' + 3y' - y = e^x x^2$ i.c.	[[_3rd_order, __linear, __nonhomogeneous]]	✓	0.303
6558	$x'' + 4x' + 4x = 0$ i.c.	[[_2nd_order, __missing_x]]	✓	0.251

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
6559	$q'' + 9q' + 14q = \frac{\sin(t)}{2}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.342
6560	$(x+1)y'' + \frac{y'}{x} + xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.784
6561	$x^3y'' + y = 0$	[[_Emden, _Fowler]]	✗	0.108
6562	$y'' + xy = 0$	[[_Emden, _Fowler]]	✓	0.516
6563	$y'' - 2xy' - 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.560
6564	$y'' + x^2y' + 2xy = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.557
6565	$y'' - x^2y' - y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.535
6566	$y'' + 2x^2y = 0$	[[_Emden, _Fowler]]	✓	0.475
6567	$(x^2 - 1)y'' + xy' - y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.579
6568	$y'' - xy = 0$	[[_Emden, _Fowler]]	✓	0.509
6569	$y'' - 2xy' + x^2y = 0$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	0.523
6570	$xy' = 2y$	[_separable]	✓	1.581
6571	$yy' + x = 0$	[_separable]	✓	2.796
6572	$y = xy' + y'^4$	[[_1st_order, _with_linear_symmetries], _Clairaut]	✓	2.321
6573	$2x^3y' = y(y^2 + 3x^2)$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓	80.734
6574	$y'' - 2y' + y = 0$	[[_2nd_order, _missing_x]]	✓	0.827
6575	$(x-1)y'' - xy' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.260
6576	$y'' - y = 0$	[[_2nd_order, _missing_x]]	✓	1.938

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
6577	$y'' - y = 4 - x$	[[_2nd_order, _with_linear_symmetries]]	✓	1.032
6578	$y'' - 3y' + 2y = 0$	[[_2nd_order, _missing_x]]	✓	0.793
6579	$y'' - 3y' + 2y = 2e^x(1 - x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.096
6580	$4y + xy' = 0$	[_separable]	✓	1.621
6581	$1 + 2y + (-x^2 + 4)y' = 0$	[_separable]	✓	1.373
6582	$y^2 - x^2y' = 0$	[_separable]	✓	2.227
6583	$1 + y - (x + 1)y' = 0$	[_separable]	✓	1.428
6584	$xy^2 + y + (x^2y - x)y' = 0$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]]	✓	1.579
6585	$x \sin\left(\frac{y}{x}\right) - y \cos\left(\frac{y}{x}\right) + x \cos\left(\frac{y}{x}\right)y' = 0$	[[_homogeneous, 'class A', _dAlembert]]	✓	3.709
6586	$y^2(x^2 + 2) + (x^3 + y^3)(y - xy') = 0$	[[_homogeneous, 'class D', _rational]]	✓	1.708
6587	$y\sqrt{y^2 + x^2} - x(x + \sqrt{y^2 + x^2})y' = 0$	[[_homogeneous, 'class G', _dAlembert]]	✓	4.599
6588	$x + y + 1 + (2x + 2y + 1)y' = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓	1.268
6589	$1 + 2y - (4 - x)y' = 0$	[_separable]	✓	1.536
6590	$xy + (x^2 + 1)y' = 0$	[_separable]	✓	1.300
6591	$x + 2y + (3y + 2x)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓	3.953
6592	$2xy' - 2y = \sqrt{4y^2 + x^2}$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓	6.655

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
6593	$3y - 7x + 7 + (7y - 3x + 3)y' = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	3.199
6594	$xyy' = (1 + y)(1 - x)$	[_separable]	✓	1.177
6595	$y^2 - x^2 + xyy' = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓	4.335
6596	$y(1 + 2xy) + x(1 - xy)y' = 0$	[[_homogeneous, 'class G'], _rational, [_Abel, '2nd type', 'class B']]	✓	1.597
6597	$1 + (-x^2 + 1) \cot(y) y' = 0$	[_separable]	✓	2.002
6598	$x^3 + y^3 + 3xy^2y' = 0$	[[_homogeneous, 'class A'], _exact, _rational, _Bernoulli]	✓	9.382
6599	$3x + 2y + 1 - (3x + 2y - 1)y' = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	1.405
6600	<i>i.c.</i> $xy' + 2y = 0$	[_separable]	✓	2.189
6601	<i>i.c.</i> $xyy' + x^2 + y^2 = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓	5.978
6602	<i>i.c.</i> $\cos(y) + (1 + e^{-x}) \sin(y) y' = 0$	[_separable]	✓	2.711
6603	<i>i.c.</i> $y^2 + xy - xy' = 0$	[_rational, _Bernoulli]	✓	1.271
6604	$y' = -2(3y + 2x)^2$	[[_homogeneous, 'class C'], _Riccati]	✓	10.519
6605	$x - 2 \sin(y) + 3 + (2x - 4 \sin(y) - 3) \cos(y) y' = 0$	[[_1st_order, '_with_symmetry_[F(x),G(y)]']]	✗	6.904
6606	$x^2 - y - xy' = 0$	[_linear]	✓	0.185
6607	$x^2 + y^2 + 2xyy' = 0$	[[_homogeneous, 'class A'], _exact, _rational, _Bernoulli]	✓	0.341
6608	$x + y \cos(x) + y' \sin(x) = 0$	[_linear]	✓	0.211

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
6609	$2x + 3y + 4 + (3x + 4y + 5)y' = 0$	[[_homogeneous, 'class C'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓	0.333
6610	$4x^3y^3 + \frac{1}{x} + \left(3x^4y^2 - \frac{1}{y}\right)y' = 0$	[[_homogeneous, 'class G'], _exact, _rational]	✓	0.467
6611	$2u^2 + 2uv + (u^2 + v^2)v' = 0$	[[_homogeneous, 'class A'], _exact, _rational, _dAlembert]	✓	0.263
6612	$x\sqrt{y^2 + x^2} - y + \left(y\sqrt{y^2 + x^2} - x\right)y' = 0$	[_exact]	✓	0.319
6613	$x + y + 1 - (y - x + 3)y' = 0$	[[_homogeneous, 'class C'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓	0.308
6614	$y^2 - \frac{y}{x(x+y)} + 2 + \left(\frac{1}{x+y} + 2y(x+1)\right)y' = 0$	[_exact, _rational]	✓	0.350
6615	$2xy e^{x^2y} + y^2 e^{xy^2} + 1 + \left(x^2 e^{x^2y} + 2xy e^{xy^2} - 2y\right)y' = 0$	[_exact]	✓	0.319
6616	$y(x - 2y) - x^2y' = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓	1.815
6617	$xyy' + x^2 + y^2 = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓	4.644
6618	$x^2 + y^2 + 2xyy' = 0$	[[_homogeneous, 'class A'], _exact, _rational, _Bernoulli]	✓	3.918
6619	$1 - \sqrt{a^2 - x^2}y' = 0$	[_quadrature]	✓	0.524
6620	$x + y + 1 - (x - y - 3)y' = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	1.842
6621	$x - x^2 - y^2 + yy' = 0$	[[_homogeneous, 'class D'], _rational, _Bernoulli]	✓	0.405

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
6622	$2y - 3x + xy' = 0$	[_linear]	✓	0.211
6623	$x - y^2 + 2xyy' = 0$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓	0.351
6624	$-y - 3x^2(y^2 + x^2) + xy' = 0$	[[_homogeneous, 'class D', _rational, _Riccati]	✓	0.395
6625	$y - \ln(x) - xy' = 0$	[_linear]	✓	0.217
6626	$3x^2 + y^2 - 2xyy' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓	0.339
6627	$xy - 2y^2 - (x^2 - 3xy)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓	0.470
6628	$x + y - (x - y)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓	0.399
6629	$2y - 3xy^2 - xy' = 0$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓	0.744
6630	$y + x(x^2y - 1)y' = 0$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]	✓	0.310
6631	$y + x^3y + 2x^2 + (x + 4xy^4 + 8y^3)y' = 0$	[_rational]	✓	0.344
6632	$-y - e^x x^2 + xy' = 0$	[_linear]	✓	0.222
6633	$1 + y^2 = (x^2 + x)y'$	[_separable]	✓	2.090
6634	$2y - x^3 + xy' = 0$	[_linear]	✓	0.214
6635	$y + (y^2 - x)y' = 0$	[[_homogeneous, 'class G', _rational]	✓	0.439
6636	$3y^3 - xy - (x^2 + 6xy^2)y' = 0$	[[_homogeneous, 'class G', _rational]	✓	0.550
6637	$3y^2x^2 + 4(x^3y - 3)y' = 0$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]	✓	0.251

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
6638	$y(x + y) - x^2y' = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓	0.274
6639	$2y + 3xy^2 + (x + 2x^2y)y' = 0$	[[_homogeneous, 'class G'], _rational, [_Abel, '2nd type', 'class B']]	✓	0.447
6640	$y(y^2 - 2x^2) + x(2y^2 - x^2)y' = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	0.739
6641	$-y + xy' = 0$	[_separable]	✓	0.201
6642	$y' + y = 2x + 2$	[[_linear, 'class A']]	✓	1.114
6643	$y' - y = xy$	[_separable]	✓	1.223
6644	$-3y - (-2 + x)e^x + xy' = 0$	[_linear]	✓	2.369
6645	$i' - 6i = 10 \sin(2t)$	[[_linear, 'class A']]	✓	1.306
6646	$y' + y = y^2e^x$	[[_1st_order, _with_linear_symmetries], _Bernoulli]	✓	1.005
6647	$y + (xy + x - 3y)y' = 0$	[_rational, [_1st_order, '_with_symmetry_[F(x)*G(y),0]'], [_Abel, '2nd type', 'class B']]	✓	1.032
6648	$(2s - e^{2t})s' = 2se^{2t} - 2 \cos(2t)$	[_exact, [_1st_order, '_with_symmetry_[F(x),G(x)]'], [_Abel, '2nd type', 'class A']]	✓	6.635
6649	$xy' + y - x^3y^6 = 0$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓	2.242
6650	$r' + 2r \cos(\theta) + \sin(2\theta) = 0$	[_linear]	✓	1.666
6651	$y(1 + y^2) = 2(1 - 2xy^2)y'$	[_rational, [_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓	1.599
6652	$yy' - xy^2 + x = 0$	[_separable]	✓	1.695

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
6653	$(x - x\sqrt{x^2 - y^2})y' - y = 0$	['y=_G(x,y)']	✗	4.088
6654	$2x' - \frac{x}{y} + x^3 \cos(y) = 0$	[_Bernoulli]	✓	5.803
6655	$xy' = y(1 - x \tan(x)) + x^2 \cos(x)$	[_linear]	✓	13.980
6656	$2 + y^2 - (xy + 2y + y^3)y' = 0$	[_rational, [_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓	6.098
6657	$1 + y^2 = (\arctan(y) - x)y'$	[[_1st_order, '_with_symmetry_[F(x),G(y)]']]	✓	5.541
6658	$2y^5x - y + 2xy' = 0$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓	2.764
6659	$1 + \sin(y) = (2y \cos(y) - x(\sec(y) + \tan(y)))y'$	[[_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓	37.596
6660	<i>i.c.</i> $xy' = 2y + x^3e^x$	[_linear]	✓	1.644
6661	<i>i.c.</i> $Li' + Ri = E \sin(2t)$	[[_linear, 'class A']]	✓	1.557
6662	$x^2 \cos(y)y' = 2x \sin(y) - 1$	['y=_G(x,y)']	✓	2.094
6663	$4x^2yy' = 3x(3y^2 + 2) + 2(3y^2 + 2)^3$	[_rational]	✗	2.467
6664	$xy^3 - y^3 - e^xx^2 + 3xy^2y' = 0$	[_Bernoulli]	✓	2.227
6665	$y' + x(x + y) = x^3(x + y)^3 - 1$	[_Abel]	✓	1.809
6666	$y + e^y - e^{-x} + (1 + e^y)y' = 0$	['y=_G(x,y)']	✓	1.710
6667	$x^2y'^2 + xyy' - 6y^2 = 0$	[_separable]	✓	3.034
6668	$xy'^2 + (y - 1 - x^2)y' - x(y - 1) = 0$	[_quadrature]	✓	1.729
6669	$xy'^2 - 2yy' + 4x = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	1.517
6670	$3x^4y'^2 - xy' - y = 0$	[[_homogeneous, 'class G'], _rational]	✓	1.914

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
6671	$8yy'^2 - 2xy' + y = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	1.725
6672	$y^2y'^2 + 3xy' - y = 0$	[[_1st_order, _with_linear_symmetries], _rational]	✓	3.639
6673	$y'^2 - xy' + y = 0$	[[_1st_order, _with_linear_symmetries], _Clairaut]	✓	0.341
6674	$16y^3y'^2 - 4xy' + y = 0$	[[_1st_order, _with_linear_symmetries], _rational]	✓	3.420
6675	$xy'^5 - yy'^4 + (x^2 + 1)y'^3 - 2xyy'^2 + (x + y^2)y' - y = 0$	[[_homogeneous, 'class G'], _rational, _Clairaut]	✓	0.753
6676	$xy'^2 - yy' - y = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	2.127
6677	$y = 2xy' + y^2y'^3$	[[_1st_order, _with_linear_symmetries]]	✓	106.514
6678	$y'^2 - xy' - y = 0$	[[_1st_order, _with_linear_symmetries], _dAlembert]	✓	0.440
6679	$y = (1 + y')x + y'^2$	[[_1st_order, _with_linear_symmetries], _dAlembert]	✓	0.492
6680	$y = 2y' + \sqrt{1 + y'^2}$	[_quadrature]	✓	2.766
6681	$yy'^2 - xy' + 3y = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	2.277
6682	$y = xy' - 2y'^2$	[[_1st_order, _with_linear_symmetries], _Clairaut]	✓	0.333
6683	$y^2y'^2 + 3xy' - y = 0$	[[_1st_order, _with_linear_symmetries], _rational]	✓	3.628

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
6684	$xy'^2 - 2yy' + 4x = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	1.514
6685	$xy'^2 - 2yy' + x + 2y = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	1.698
6686	$(3y - 1)^2 y'^2 = 4y$	[_quadrature]	✓	76.214
6687	$y = -xy' + x^4 y'^2$	[[_homogeneous, 'class G'], _rational]	✓	1.924
6688	$2y = y'^2 + 4xy'$	[[_1st_order, _with_linear_symmetries], _dAlembert]	✓	0.439
6689	$y(3 - 4y)^2 y'^2 = 4 - 4y$	[_quadrature]	✓	12.471
6690	$y'^3 - 4x^4 y' + 8x^3 y = 0$	[[_1st_order, _with_linear_symmetries]]	✓	76.833
6691	$(1 + y'^2)(x - y)^2 = (yy' + x)^2$	[[_homogeneous, 'class A'], _dAlembert]	✓	4.260
6692	$y'' + y' - 6y = 0$	[[_2nd_order, _missing_x]]	✓	0.838
6693	$y''' - 6y'' + 12y' - 8y = 0$	[[_3rd_order, _missing_x]]	✓	0.069
6694	$y'' - 3y' + 2y = e^{5x}$	[[_2nd_order, _with_linear_symmetries]]	✓	0.981
6695	$y'' + 9y = x \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	7.902
6696	$x^2 y'' - 3xy' + 4y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]]	✓	1.147
6697	$x^3 y''' + xy' - y = 3x^4$	[[_3rd_order, _with_linear_symmetries]]	✓	0.262
6698	$xy'' - y' + 4x^3 y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]]	✓	1.342

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
6699	$y'' + y'^2 + 1 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_xy]]	✓	0.381
6700	$yy'' + y'^2 = 2$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓	1.301
6701	$yy'' + y'^3 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_y_y1]]	✓	0.531
6702	$y'' + 2y' - 15y = 0$	[[_2nd_order, _missing_x]]	✓	0.820
6703	$y''' + y'' - 2y' = 0$	[[_3rd_order, _missing_x]]	✓	0.063
6704	$y'' + 6y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓	0.845
6705	$y'''' - 6y''' + 12y'' - 8y' = 0$	[[_high_order, _missing_x]]	✓	0.072
6706	$y'' - 4y' + 13y = 0$	[[_2nd_order, _missing_x]]	✓	1.898
6707	$y'' + 25y = 0$	[[_2nd_order, _missing_x]]	✓	1.951
6708	$y''' - y'' + 9y' - 9y = 0$	[[_3rd_order, _missing_x]]	✓	0.071
6709	$y'''' + 4y'' = 0$	[[_high_order, _missing_x]]	✓	0.070
6710	$y'''' - 6y''' + 13y'' - 12y' + 4y = 0$	[[_high_order, _missing_x]]	✓	0.073
6711	$y^{(6)} + 9y'''' + 24y'' + 16y = 0$	[[_high_order, _missing_x]]	✓	0.090
6712	$y'' - 4y' + 3y = 1$	[[_2nd_order, _missing_x]]	✓	0.980

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
6713	$y'' - 4y' = 5$	[[_2nd_order, _missing_x]]	✓	1.540
6714	$y''' - 4y'' = 5$	[[_3rd_order, _missing_x]]	✓	0.098
6715	$y^{(5)} - 4y''' = 5$	[[_high_order, _missing_x]]	✓	0.117
6716	$y''' - 4y' = x$	[[_3rd_order, _missing_y]]	✓	0.106
6717	$y'' - 6y' + 9y = e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.021
6718	$y'' + y' - 2y = -2x^2 + 2x + 2$	[[_2nd_order, _with_linear_symmetries]]	✓	1.068
6719	$y'' - y = 4x e^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.148
6720	$y'' - y = \sin(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.754
6721	$y'' - y = \frac{1}{(1 + e^{-x})^2}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.330
6722	$y'' + y = \csc(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.596
6723	$y'' - 3y' + 2y = \sin(e^{-x})$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.512
6724	$y'' + y = \csc(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.753
6725	$y'' + 4y = 4 \sec(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	4.503
6726	$y'' - 4y' + 3y = \frac{1}{1 + e^{-x}}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.382
6727	$y'' - y = e^{-x} \sin(e^{-x}) + \cos(e^{-x})$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	2.014
6728	$y'' - y = \frac{1}{(1 + e^{-x})^2}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.319
6729	$y'' + 2y = 2 + e^x$	[[_2nd_order, _with_linear_symmetries]]	✓	3.485

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
6730	$y'' - y = e^x \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.778
6731	$y'' + 2y' + 2y = x^2 + \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	14.701
6732	$y'' - 9y = x + e^{2x} - \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	2.300
6733	$y''' + 3y'' + 2y' = x^2 + 4x + 8$	[[_3rd_order, _missing_y]]	✓	0.121
6734	$y'' + y = -2 \sin(x) + 4x \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.327
6735	$y''' - y'' - 4y' + 4y = 2x^2 - 4x - 1 + 2x^2 e^{2x} + 5x e^{2x} + e^{2x}$	[[_3rd_order, _linear, _nonhomogeneous]]	✓	0.171
6736	$y'' + y' + y = e^{3x} + 6e^x - 3e^{-2x} + 5$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	61.632
6737	$y'' - y = e^x$	[[_2nd_order, _with_linear_symmetries]]	✓	1.098
6738	$y'' - 4y' + 4y = e^x + x e^{2x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.158
6739	$y'''' - y = \sin(2x)$	[[_high_order, _linear, _nonhomogeneous]]	✓	0.146
6740	$y''' + y = \cos(x)$	[[_3rd_order, _linear, _nonhomogeneous]]	✓	0.137
6741	$y'' + 4y = \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.673
6742	$y'' + 5y = \cos(\sqrt{5}x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.947
6743	$y''' + y'' + y' + y = e^x + e^{-x} + \sin(x)$	[[_3rd_order, _linear, _nonhomogeneous]]	✓	0.653
6744	$y'' - y = x^2$	[[_2nd_order, _with_linear_symmetries]]	✓	1.029
6745	$y'' + 2y = x^3 + x^2 + e^{-2x} + \cos(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	8.266
6746	$y'' - 2y' - y = e^x \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.800

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
6747	$y'' - 4y' + 4y = \frac{e^{2x}}{x^2}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.115
6748	$y'' - y = x e^{3x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.154
6749	$y'' + 5y' + 6y = e^{-2x} \sec(x)^2 (2 \tan(x) + 1)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	2.008
6750	$x^2 y'' - 3xy' + 4y = x + x^2 \ln(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.770
6751	$x^2 y'' - 2xy' + 2y = \ln(x)^2 - \ln(x^2)$	[[_2nd_order, _with_linear_symmetries]]	✓	2.819
6752	$x^3 y''' + 2x^2 y'' = x + \sin(\ln(x))$	[[_3rd_order, _missing_y]]	✓	0.361
6753	$x^3 y''' + xy' - y = 3x^4$	[[_3rd_order, _with_linear_symmetries]]	✓	0.259
6754	$(x+1)^2 y'' + (x+1)y' - y = \ln(x+1)^2 + x - 1$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓	2.719
6755	$(2x+1)^2 y'' - 2(2x+1)y' - 12y = 6x$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓	1.419
6756	$xy'' - (x+2)y' + 2y = 0$	[_Laguerre]	✓	0.963
6757	$(x^2+1)y'' - 2xy' + 2y = 2$	[[_2nd_order, _with_linear_symmetries]]	✓	1.630
6758	$(x^2+4)y'' - 2xy' + 2y = 8$	[[_2nd_order, _with_linear_symmetries]]	✓	1.516
6759	$(x+1)y'' - (2x+3)y' + (x+2)y = (x^2+2x+1)e^{2x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.163
6760	$y'' - 2 \tan(x)y' - 10y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.584
6761	$x^2 y'' - x(2x+3)y' + (x^2+3x+3)y = (-x^2+6)e^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.116
6762	$4x^2 y'' + 4x^3 y' + (x^2+1)^2 y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.980

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
6763	$x^2 y'' + (-4x^2 + x) y' + (4x^2 - 2x + 1) y = (x^2 - x + 1) e^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.521
6764	$xy'' - y' + 4x^3 y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)']]]	✓	1.370
6765	$x^4 y'' + 2x^3 y' + y = \frac{x+1}{x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	107.525
6766	$x^8 y'' + 4x^7 y' + y = \frac{1}{x^3}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.880
6767	$(x \sin(x) + \cos(x)) y'' - x \cos(x) y' + y \cos(x) = x$	[[_2nd_order, _with_linear_symmetries]]	✓	3.648
6768	$xy'' - 3y' + \frac{3y}{x} = x + 2$	[[_2nd_order, _with_linear_symmetries]]	✓	1.829
6769	$(x+1) y'' - (3x+4) y' + 3y = (2+3x) e^{3x}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.540
6770	$x^2 y'' - 4xy' + (9x^2 + 6) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	4.579
6771	$xy'' + 2y' + 4xy = 4$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.779
6772	$(x^2 + 1) y'' - 2xy' + 2y = \frac{-x^2 + 1}{x}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.726
6773	$y'' + y'^2 + 1 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_xy]]	✓	0.388
6774	$(x^2 + 1) y'' + 2xy' = \frac{2}{x^3}$	[[_2nd_order, _missing_y]]	✓	1.428
6775	$xy'' - y' = -\frac{2}{x} - \ln(x)$	[[_2nd_order, _missing_y]]	✓	1.269
6776	$y''' + y'' = x^2$	[[_3rd_order, _missing_y]]	✓	0.112

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
6777	$yy'' + y'^3 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_y_y1]]	✓	0.525
6778	$yy'' + y'^2 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓	0.398
6779	$yy'' = y'^2(1 - y' \cos(y) + yy' \sin(y))$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_y_y1]]	✓	1.223
6780	$(2x - 3)y''' - (6x - 7)y'' + 4xy' - 4y = 8$	[[_3rd_order, _with_linear_symmetries]]	✗	0.053
6781	$(2x^3 - 1)y''' - 6x^2y'' + 6xy' = 0$	[[_3rd_order, _missing_y]]	✓	0.326
6782	$yy'' - y'^2 = y^2 \ln(y)$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_xy]]	✓	4.237
6783	$(x + 2y)y'' + 2y'^2 + 2y' = 2$	[[_2nd_order, _exact, _nonlinear], [_2nd_order, _with_linear_symmetries], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_y_y1], [_2nd_order, _reducible, _mu_xy]]	✓	1.508
6784	$(1 + 2y + 3y^2)y''' + 6y'(y'' + y'^2 + 3yy'') = x$	[[_3rd_order, _exact, _nonlinear]]	✗	0.058
6785	$3x(y^2y''' + 6yy'y'' + 2y'^3) - 3y(yy'' + 2y'^2) = -\frac{2}{x}$	[[_3rd_order, _exact, _nonlinear], [_3rd_order, _with_linear_symmetries]]	✗	0.061

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
6786	$yy''' + 3y'y'' - 2yy'' - 2y'^2 + yy' = e^{2x}$	[[_3rd_order, _exact, _nonlinear], [_3rd_order, _with_linear_symmetries]]	✗	0.062
6787	$2(1 + y)y'' + 2y'^2 + y^2 + 2y = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_xy]]	✓	4.378
6788	$\begin{cases} x' - y' + y = -e^t \\ x + y' - y = e^{2t} \end{cases}$	system_of_ODEs	✓	0.472
6789	$\begin{cases} x' + 2x + y' + y = t \\ 5x + y' + 3y = t^2 \end{cases}$	system_of_ODEs	✓	0.717
6790	$\begin{cases} x' + x + 2y' + 7y = e^t + 2 \\ -2x + y' + 3y = e^t - 1 \end{cases}$	system_of_ODEs	✓	0.811
6791	$\begin{cases} x' - x + y' + 3y = e^{-t} - 1 \\ x' + 2x + y' + 3y = 1 + e^{2t} \end{cases}$	system_of_ODEs	✓	0.206
6792	$\begin{cases} x' - x + y' + 2y = 1 + e^t \\ y' + 2y + z' + z = e^t + 2 \\ x' - x + z' + z = 3 + e^t \end{cases}$	system_of_ODEs	✓	0.517
6793	$(1 - x)y' = x^2 - y$	[_linear]	✓	0.511
6794	$xy' = 1 - x + 2y$	[_linear]	✓	0.530
6795	$xy' = 1 - x + 2y$	[_linear]	✓	1.391
6796	$y' = 2x^2 + 3y$	[[_linear, 'class A']]	✓	0.575
6797	$(x + 1)y' = x^2 - 2x + y$	[_linear]	✓	0.500
6798	$y'' + xy = 0$	[[_Emden, _Fowler]]	✓	0.464
6799	$y'' + 2x^2y = 0$	[[_Emden, _Fowler]]	✓	0.513
6800	$y'' - xy' + x^2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.513
6801	$(-x^2 + 1)y'' - 2xy' + p(p + 1)y = 0$	[_Gegenbauer]	✓	0.739
6802	$y'' + x^2y = x^2 + x + 1$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.508

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

*Continued from previous page*

#	ODE	CAS classification	Solved?	time (sec)
6803	$2(x^3 + x^2)y'' - (-3x^2 + x)y' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.874
6804	$4xy'' + 2(1 - x)y' - y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.828
6805	$2x^2y'' - xy' + (-x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.850
6806	$xy'' + y' + xy = 0$	[_Lienard]	✓	0.658
6807	$x^2y'' - xy' + (x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.757
6808	$xy'' - 2y' + y = 0$	[[_Emden, _Fowler]]	✓	1.184
6809	$xy'' + 2y' + xy = 0$	[_Lienard]	✓	0.738
6810	$x^2(x + 1)y'' + x(x + 1)y' - y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.919
6811	$2xy'' + y' - y = x + 1$	[[_2nd_order, _with_linear_symmetries]]	✓	1.008
6812	$2x^3y'' + x^2y' + y = 0$	[[_Emden, _Fowler]]	✓	0.867
6813	$x^3y'' + (x^2 + x)y' - y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.845
6814	$z'' + tz' + \left(t^2 - \frac{1}{9}\right)z = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.574
6815	$x(-x^2 + 2)y'' - (x^2 + 4x + 2)((1 - x)y' + y) = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.967
6816	$x^2(x + 1)y'' - (2x + 1)(-y + xy') = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.918
6817	$x^3(x + 1)y''' - (2 + 4x)x^2y'' + (4 + 10x)xy' - (4 + 12x)y = 0$	[[_3rd_order, _with_linear_symmetries]]	✗	0.006
6818	$x^3(x^2 + 1)y''' - (4x^2 + 2)x^2y'' + (10x^2 + 4)xy' - (12x^2 + 4)y = 0$	[[_3rd_order, _with_linear_symmetries]]	✗	0.006
6819	$2(2 - x)x^2y'' - (4 - x)xy' + (3 - x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.041

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
Continued from previous page

#	ODE	CAS classification	Solved?	time (sec)
6820	$(1-x)x^2y'' + (5x-4)xy' + (6-9x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.439
6821	$xy'' + (4x^2+1)y' + 4x(x^2+1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.722
6822	$x^2y'' + 4(x+a)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.999
6823	$xy'' + (x^3+1)y' + bxy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.767
6824	$(x-1)(-2+x)y'' + (4x-6)y' + 2y = 0$ i.c.	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.648
6825	$y'' - 2xy' + 8y = 0$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	0.503
6826	$y'' - 2xy' + 8y = 0$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	0.502
6827	$(-x^2+1)y'' - 2xy' + 12y = 0$ i.c.	[_Gegenbauer]	✓	0.608
6828	$y'' = (x-1)y$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	0.503
6829	$x(x+2)y'' + 2(x+1)y' - 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.811
6830	$xy'' + y = 0$	[[_Emden, _Fowler]]	✓	1.140
6831	$y'' + (e^x - 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.623
6832	$x(1-x)y'' - 3xy' - y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	1.242
6833	$2xy'' - y' + x^2y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)']]]	✓	0.722
6834	$\sin(x)y'' - 2\cos(x)y' - \sin(x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.045
6835	$y'' - x^2y = 0$	[[_Emden, _Fowler]]	✓	0.458

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

*Continued from previous page*

#	ODE	CAS classification	Solved?	time (sec)
6836	$x(x+2)y'' + (x+1)y' - 4y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓	0.910
6837	$xy'' + \left(\frac{1}{2} - x\right)y' - y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.834
6838	$x^2y'' + xy' + \left(x^2 + \frac{1}{4}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.799
6839	$x^2y'' + xy' + \left(x^2 + \frac{9}{4}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.740
6840	$x^2y'' + xy' + \left(x^2 + \frac{25}{4}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.678
6841	$(x-1)y'' - xy' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.486
6842	$y' + xy = \cos(x)$	[_linear]	✓	0.610
6843	$y' + xy = \frac{1}{x^3}$	[_linear]	✓	1.216
6844	$x^3y'' + y = \frac{1}{x^4}$	[[_2nd_order, _linear, _nonhomogeneous]]	✗	0.098
6845	$xy'' - 2y' + y = \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✗	1.282
6846	$y' - \frac{y}{x} = \cos(x)$	[_linear]	✗	0.401
6847	$y'' + y = 0$	[[_2nd_order, _missing_x]]	✓	0.343
6848	$y'' + 4xy = 0$	[[_Emden, _Fowler]]	✓	0.464
6849	$y'' - xy = 0$	[[_Emden, _Fowler]]	✓	0.576
6850	$y'' + x^2y = 0$	[[_Emden, _Fowler]]	✓	0.461
6851	$y' - xy = 0$	[_separable]	✓	0.500

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
Continued from previous page

#	ODE	CAS classification	Solved?	time (sec)
6852	$(-x^2 + 1)y'' - xy' + p^2y = 0$	[_Gegenbauer, _2nd_order, _linear, '_with_symmetry_[0,F(x)]']	✓	0.674
6853	$(x^2 + 1)y'' - 2xy' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.465
6854	$(x^2 + 1)y'' + y = 0$	[[_Emden, _Fowler]]	✓	0.586
6855	$xy'' + y = 0$	[[_Emden, _Fowler]]	✓	0.573
6856	$y'' + 2x^3y = 0$	[[_Emden, _Fowler]]	✓	0.473
6857	$y'' - xy = \frac{1}{1-x}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.552
6858	$x^2y'' - y = 0$	[[_Emden, _Fowler]]	✓	0.740
6859	$x^2y'' + xy' + y(x + 1) = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.862
6860	$x^2y'' - y = 0$	[[_Emden, _Fowler]]	✓	0.786
6861	$y'' + \frac{y'}{x} - xy = 0$	[[_Emden, _Fowler]]	✓	0.669
6862	$2xy'' + y' - x^2y = 0$	[[_Emden, _Fowler]]	✓	0.764
6863	$x^2y'' - xy' - y = 0$	[[_Emden, _Fowler]]	✓	0.756
6864	$x^2(x^2 + 1)y'' + xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.245
6865	$x^2y'' + y' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.162
6866	$xy'' + x^3y' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.234
6867	$xy'' + xy' - ye^x = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.364
6868	$x^2y'' + x^2y' + x^2y = 0$	[[_2nd_order, _missing_x]]	✓	0.472
6869	$y'' + y = 0$	[[_2nd_order, _missing_x]]	✓	0.312
6870	$x^3y'' + y(x + 1) = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.116

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
6871	$xy'' + x^5y' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.187
6872	$\sin(x)y'' - y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.421
6873	$\cos(x)y'' - \sin(x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.967
6874	$x^2y'' - y = 0$	[[_Emden, _Fowler]]	✓	0.720
6875	$x^2y'' + \left(x - \frac{3}{4}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.250
6876	$x^2y'' - xy' + y = 0$	[[_Emden, _Fowler]]	✓	0.642
6877	$(x^2 - 25)y'' + 2xy' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.608
6878	$(x^2 - 25)y'' + 2xy' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.726
6879	$(x^2 - 2x + 10)y'' + xy' - 4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.691
6880	$(x^2 - 2x + 10)y'' + xy' - 4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.705
6881	$y'' - xy = 0$	[[_Emden, _Fowler]]	✓	0.451
6882	$y'' + x^2y = 0$	[[_Emden, _Fowler]]	✓	0.461
6883	$y'' - 2xy' + y = 0$	[_Lienard]	✓	0.512
6884	$y'' - xy' + 2y = 0$	[_Hermite]	✓	0.485
6885	$y'' + x^2y' + xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.567
6886	$y'' + 2xy' + 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.567
6887	$(x - 1)y'' + y' = 0$	[[_2nd_order, _missing_y]]	✓	0.518
6888	$(x + 2)y'' + xy' - y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.516
6889	$y'' - (x + 1)y' - y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.557

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
6890	$(x^2 + 1)y'' - 6y = 0$	[[_Emden, _Fowler]]	✓	0.567
6891	$(x^2 + 2)y'' + 3xy' - y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.608
6892	$(x^2 - 1)y'' + xy' - y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.578
6893	i.c. $(x - 1)y'' - xy' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.503
6894	i.c. $(x + 1)y'' - (2 - x)y' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.611
6895	i.c. $y'' - 2xy' + 8y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.510
6896	i.c. $(x^2 + 1)y'' + 2xy' = 0$	[[_2nd_order, _missing_y]]	✓	0.574
6897	$y'' + \sin(x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.690
6898	$y'' + e^x y' - y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.744
6899	$y'' + xy' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.503
6900	$x^3 y'' + 4x^2 y' + 3y = 0$	[[_Emden, _Fowler]]	✗	0.121
6901	$x(x + 3)^2 y'' - y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.300
6902	$(x^2 - 9)^2 y'' + (x + 3)y' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.710
6903	$y'' - \frac{y'}{x} + \frac{y}{(x-1)^3} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.526
6904	$(x^3 + 4x)y'' - 2xy' + 6y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.347
6905	$x^2(x - 5)^2 y'' + 4xy' + (x^2 - 25)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.360
6906	$(x^2 + x - 6)y'' + (x + 3)y' + (-2 + x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.696
6907	$x(x^2 + 1)^2 y'' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.277

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
6908	$x^3(x^2 - 25)(-2 + x)^2 y'' + 3x(-2 + x)y' + 7(x + 5)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.155
6909	$(x^3 - 2x^2 + 3x)^2 y'' + x(x - 3)^2 y' - y(x + 1) = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.112
6910	$(x^2 - 1)y'' + 5(x + 1)y' + (x^2 - x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.693
6911	$xy'' + (x + 3)y' + 7x^2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.231
6912	$x^2y'' + \left(\frac{5}{3}x + x^2\right)y' - \frac{y}{3} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.876
6913	$xy'' + y' + 10y = 0$	[[_Emden, _Fowler]]	✓	0.760
6914	$2xy'' - y' + 2y = 0$	[[_Emden, _Fowler]]	✓	0.827
6915	$2xy'' + 5y' + xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.743
6916	$4xy'' + \frac{y'}{2} + y = 0$	[[_Emden, _Fowler]]	✓	0.821
6917	$2x^2y'' - xy' + (x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.861
6918	$3xy'' + (2 - x)y' - y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.813
6919	$x^2y'' - \left(x - \frac{2}{9}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.949
6920	$2xy'' - (2x + 3)y' + y = 0$	[_Laguerre]	✓	0.847
6921	$x^2y'' + xy' + \left(x^2 - \frac{4}{9}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.816
6922	$9x^2y'' + 9x^2y' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.960
6923	$2x^2y'' + 3xy' + (2x - 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.887
6924	$xy'' + 2y' - xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.763

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
6925	$x^2 y'' + xy' + \left(x^2 - \frac{1}{4}\right) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.841
6926	$xy'' - xy' + y = 0$	[_Laguerre, [_2nd_order, _linear, '_with_symmetry_[0,F(x)]]]	✓	1.181
6927	$y'' + \frac{3y'}{x} - 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.132
6928	$xy'' + (1 - x)y' - y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.738
6929	$xy'' + y' + y = 0$	[[_Emden, _Fowler]]	✓	0.727
6930	$xy'' + (x - 6)y' - 3y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.103
6931	$x(x - 1)y'' + 3y' - 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.853
6932	$x^4 y'' + \lambda y = 0$	[[_Emden, _Fowler]]	✗	0.135
6933	$x^3 y'' + y = 0$	[[_Emden, _Fowler]]	✗	0.113
6934	$x^2 y'' + (3x - 1)y' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✗	0.171
6935	$x^2 y'' + xy' + \left(x^2 - \frac{1}{9}\right) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.789
6936	$x^2 y'' + xy' + (x^2 - 1)y = 0$	[_Bessel]	✓	1.183
6937	$4x^2 y'' + 4xy' + (4x^2 - 25)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.888
6938	$16x^2 y'' + 16xy' + (16x^2 - 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.820
6939	$xy'' + y' + xy = 0$	[_Lienard]	✓	0.618
6940	$y' + xy'' + \left(x - \frac{4}{x}\right) y = 0$	[_Bessel]	✓	1.171
6941	$x^2 y'' + xy' + (9x^2 - 4)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.187
6942	$x^2 y'' + xy' + \left(36x^2 - \frac{1}{4}\right) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.827

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
6943	$x^2y'' + xy' + \left(25x^2 - \frac{4}{9}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.859
6944	$x^2y'' + xy' + (2x^2 - 64)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.797
6945	$xy'' + 2y' + 4y = 0$	[[_Emden, _Fowler]]	✓	1.196
6946	$xy'' + 3y' + xy = 0$	[_Lienard]	✓	1.131
6947	$xy'' - y' + xy = 0$	[_Lienard]	✓	1.152
6948	$xy'' - 5y' + xy = 0$	[_Lienard]	✓	1.196
6949	$x^2y'' + (x^2 - 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.808
6950	$4x^2y'' + (16x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.745
6951	$xy'' + 3y' + x^3y = 0$	[[_Emden, _Fowler]]	✓	0.736
6952	$9x^2y'' + 9xy' + (x^6 - 36)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.700
6953	$y'' - x^2y = 0$	[[_Emden, _Fowler]]	✓	0.460
6954	$xy'' + y' - 7x^3y = 0$	[[_Emden, _Fowler]]	✓	0.658
6955	$y'' + y = 0$	[[_2nd_order, _missing_x]]	✓	0.306
6956	$x^2y'' + 4xy' + (x^2 + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.835
6957	$16x^2y'' + 32xy' + (x^4 - 12)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.813
6958	$4x^2y'' - 4xy' + (16x^4 + 3)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.875
6959	$2xy'' + y' + y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)']]]	✓	0.812
6960	$y'' - xy' - y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.497
6961	$(x - 1)y'' + 3y = 0$	[[_Emden, _Fowler]]	✓	0.610

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
6962	$y'' - x^2y' + xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.501
6963	$xy'' - (x + 2)y' + 2y = 0$	[_Laguerre]	✓	0.881
6964	$\cos(x)y'' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.815
6965	i.c. $y'' + xy' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.504
6966	i.c. $(x + 2)y'' + 3y = 0$	[[_Emden, _Fowler]]	✓	0.596
6967	$(x + 1)y' = y$	[_separable]	✓	0.459
6968	$y' = -2xy$	[_separable]	✓	0.563
6969	$xy' - 3y = k$	[_separable]	✓	0.437
6970	$y'' + y = 0$	[[_2nd_order, _missing_x]]	✓	0.294
6971	$y'' - y' + xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.530
6972	$y'' - y' + x^2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.553
6973	$(-x^2 + 1)y'' - 2xy' + 2y = 0$	[_Gegenbauer]	✓	0.579
6974	$y'' + (x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.506
6975	$y'' - 4xy' + (4x^2 - 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.536
6976	i.c. $y' + 4y = 1$	[_quadrature]	✓	0.538
6977	i.c. $y'' + 3xy' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.556
6978	i.c. $(-x^2 + 1)y'' - 2xy' + 30y = 0$	[_Gegenbauer]	✓	0.613
6979	i.c. $(-2 + x)y' = xy$	[_separable]	✓	0.552
6980	$(-2 + x)^2y'' + (x + 2)y' - y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.632

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
6981	$xy'' + 2y' + xy = 0$	[_Lienard]	✓	0.747
6982	$xy'' + y = 0$	[[_Emden, _Fowler]]	✓	1.117
6983	$xy'' + (2x + 1)y' + y(x + 1) = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.805
6984	$xy'' + 2x^3y' + (x^2 - 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.339
6985	$y'' + (x - 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.554
6986	$xy'' + y' + xy = 0$	[_Lienard]	✓	0.673
6987	$2x(x - 1)y'' - (x + 1)y' + y = 0$	[_Jacobi]	✓	0.856
6988	$xy'' + 2y' + 4xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.770
6989	$xy'' + (2 - 2x)y' + (-2 + x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.904
6990	$x^2y'' + 6xy' + (4x^2 + 6)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.828
6991	$xy'' + (-2x + 1)y' + (x - 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.792
6992	$2x(1 - x)y'' - (1 + 6x)y' - 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.927
6993	$x(1 - x)y'' + \left(\frac{1}{2} + 2x\right)y' - 2y = 0$	[_Jacobi]	✓	0.911
6994	$4xy'' + y' + 8y = 0$	[[_Emden, _Fowler]]	✓	0.840
6995	$4(t^2 - 3t + 2)y'' - 2y' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.708
6996	$2(t^2 - 5t + 6)y'' + (2t - 3)y' - 8y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.693
6997	$3t(t + 1)y'' + ty' - y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.286
6998	$x^2y'' + xy' + \left(x^2 - \frac{4}{49}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.816
6999	$xy'' + y' + \frac{y}{4} = 0$	[[_Emden, _Fowler]]	✓	0.744

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
7000	$y'' + \left(e^{-2x} - \frac{1}{9}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.960
7001	$x^2y'' + \frac{(x + \frac{3}{4})y}{4} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.944
7002	$x^2y'' + xy' + \frac{(x^2 - 1)y}{4} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.888
7003	$(2x + 1)^2y'' + 2(2x + 1)y' + 16x(x + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.691
7004	$x^2y'' + xy' + (x^2 - 6)y = 0$	[_Bessel]	✓	0.839
7005	$xy'' + 5y' + xy = 0$	[_Lienard]	✓	1.152
7006	$9x^2y'' + 9xy' + (36x^4 - 16)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.787
7007	$y'' + xy = 0$	[[_Emden, _Fowler]]	✓	0.462
7008	$4xy'' + 4y' + y = 0$	[[_Emden, _Fowler]]	✓	0.759
7009	$xy'' + y' + 36y = 0$	[[_Emden, _Fowler]]	✓	0.740
7010	$y'' + k^2x^2y = 0$	[[_Emden, _Fowler]]	✓	0.520
7011	$y'' + k^2x^4y = 0$	[[_Emden, _Fowler]]	✓	0.522
7012	$xy'' - 5y' + xy = 0$	[_Lienard]	✓	1.180
7013	$y'' + 4y = 0$	[[_2nd_order, _missing_x]]	✓	0.524
7014	$xy'' + (-2x + 1)y' + (x - 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.802
7015	$(x - 1)^2y'' - (x - 1)y' - 35y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.641
7016	$16(x + 1)^2y'' + 3y = 0$	[[_Emden, _Fowler]]	✓	0.618
7017	$x^2y'' + xy' + (x^2 - 5)y = 0$	[_Bessel]	✓	0.905
7018	$x^2y'' + 2x^3y' + (x^2 - 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.908
7019	$xy'' - (x + 1)y' + y = 0$	[_Laguerre]	✓	0.881

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
7020	$xy'' + 3y' + 4x^3y = 0$	[[_Emden, _Fowler]]	✓	0.728
7021	$y'' + \frac{y}{4x} = 0$	[[_Emden, _Fowler]]	✓	1.138
7022	$xy'' + y' - xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.711
7023	$y' + \frac{26y}{5} = \frac{97 \sin(2t)}{5}$ i.c.	[[_linear, 'class A']]	✓	0.379
7024	$y' + 2y = 0$ i.c.	[_quadrature]	✓	0.278
7025	$y'' - y' - 6y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	0.275
7026	$y'' + 9y = 10e^{-t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	0.337
7027	$y'' - \frac{y}{4} = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	0.246
7028	$y'' - 6y' + 5y = 29 \cos(2t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.389
7029	$y'' + 7y' + 12y = 21e^{3t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	0.300
7030	$y'' - 4y' + 4y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	0.258
7031	$y'' - 4y' + 3y = 6t - 8$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	0.271
7032	$y'' + \frac{y}{25} = \frac{t^2}{50}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	0.224
7033	$y'' + 3y' + \frac{9y}{4} = 9t^3 + 64$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.285
7034	$y'' - 2y' - 3y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	0.423
7035	$y' - 6y = 0$ i.c.	[_quadrature]	✓	0.291
7036	$y'' + 2y' + 5y = 50t - 100$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	0.514

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
7037	$y'' + 3y' - 4y = 6e^{2t-3}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	0.352
7038	$9y'' - 6y' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	0.224
7039	$y'' + 6y' + 8y = e^{-3t} - e^{-5t}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.283
7040	$y'' + 10y' + 24y = 144t^2$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	0.236
7041	$y'' + 9y = \begin{cases} 8 \sin(t) & 0 < t < \pi \\ 0 & \pi < t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.695
7042	$y'' + 3y' + 2y = \begin{cases} 4t & 0 < t < 1 \\ 8 & 1 < t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	2.119
7043	$y'' + y' - 2y = \begin{cases} 3 \sin(t) - \cos(t) & 0 < t < 2\pi \\ 3 \sin(2t) - \cos(2t) & 2\pi < t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.088
7044	$y'' + 3y' + 2y = \begin{cases} 1 & 0 < t < 1 \\ 0 & 1 < t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.717
7045	$y'' + y = \begin{cases} t & 0 < t < 1 \\ 0 & 1 < t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.775
7046	$y'' + 2y' + 5y = \begin{cases} 10 \sin(t) & 0 < t < 2\pi \\ 0 & 2\pi < t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	2.780
7047	$y'' + 4y = \begin{cases} 8t^2 & 0 < t < 5 \\ 0 & 5 < t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.321
7048	$y'' + 4y = \delta(t - \pi)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.508
7049	$y'' + 16y = 4\delta(t - 3\pi)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.539

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
7050	$y'' + y = \delta(t - \pi) - \delta(t - 2\pi)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.526
7051	$y'' + 4y' + 5y = \delta(t - 1)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.801
7052	$4y'' + 24y' + 37y = 17e^{-t} + \delta\left(t - \frac{1}{2}\right)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.904
7053	$y'' + 3y' + 2y = 10 \sin(t) + 10\delta(t - 1)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.755
7054	$y'' + 4y' + 5y = (1 - \text{Heaviside}(t - 10))e^t - e^{10}\delta(t - 10)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	2.224
7055	$y'' + 5y' + 6y = \delta\left(t - \frac{\pi}{2}\right) + \cos(t) \text{Heaviside}(t - \pi)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.938
7056	$y'' + 5y' + 6y = \text{Heaviside}(t - 1) + \delta(t - 2)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.862
7057	$y'' + 2y' + 5y = 25t - 100\delta(t - \pi)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.648
7058	$y' = \frac{x^2}{y}$	[_separable]	✓	1.789
7059	$y' = \frac{x^2}{y(x^3 + 1)}$	[_separable]	✓	1.256
7060	$y' = \sin(x)y$	[_separable]	✓	1.391
7061	$xy' = \sqrt{1 - y^2}$	[_separable]	✓	2.099
7062	$y' = \frac{x^2}{1 + y^2}$	[_separable]	✓	1.030
7063	$xyy' = \sqrt{1 + y^2}$	[_separable]	✓	5.875
7064	$(x^2 - 1)y' + 2xy^2 = 0$ i.c.	[_separable]	✓	2.179

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
7065	<i>i.c.</i> $y' = 3y^{2/3}$	[_quadrature]	✓	1.593
7066	<i>i.c.</i> $xy' + y = y^2$	[_separable]	✓	2.047
7067	$2x^2yy' + y^2 = 2$	[_separable]	✓	2.132
7068	$y' - xy^2 = 2xy$	[_separable]	✓	1.836
7069	$(1 + z')e^{-z} = 1$	[_quadrature]	✓	1.082
7070	<i>i.c.</i> $y' = \frac{3x^2 + 4x + 2}{2y - 2}$	[_separable]	✓	2.139
7071	<i>i.c.</i> $e^x - (1 + e^x)yy' = 0$	[_separable]	✓	3.041
7072	$\frac{y}{x-1} + \frac{xy'}{1+y} = 0$	[_separable]	✓	2.530
7073	$x + 2x^3 + (y + 2y^3)y' = 0$	[_separable]	✓	1.896
7074	$\frac{1}{\sqrt{x}} + \frac{y'}{\sqrt{y}} = 0$	[_separable]	✓	15.310
7075	$\frac{1}{\sqrt{-x^2+1}} + \frac{y'}{\sqrt{1-y^2}} = 0$	[_separable]	✓	19.743
7076	$2x\sqrt{1-y^2} + yy' = 0$	[_separable]	✓	2.051
7077	$y' = (y-1)(x+1)$	[_separable]	✓	1.147
7078	$y' = e^{x-y}$	[_separable]	✓	1.489
7079	$y' = \frac{\sqrt{y}}{\sqrt{x}}$	[_separable]	✓	10.286
7080	$y' = \frac{\sqrt{y}}{x}$	[_separable]	✓	3.643
7081	$z' = 10^{x+z}$	[_separable]	✓	2.005
7082	$x' + t = 1$	[_quadrature]	✓	0.249
7083	$y' = \cos(x-y)$	[[_homogeneous, 'class C'], _dAlembert]	✓	2.398
7084	$y' - y = 2x - 3$	[[_linear, 'class A']]	✓	0.969

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
7085	<i>i.c.</i> $(x + 2y)y' = 1$	[[_homogeneous, 'class C'], [_Abel, '2nd type', 'class C'], _dAlembert]	✓	2.102
7086	$y' + y = 2x + 1$	[[_linear, 'class A']]	✓	0.946
7087	$y' = \cos(x - y - 1)$	[[_homogeneous, 'class C'], _dAlembert]	✓	2.579
7088	$y' + \sin(x + y)^2 = 0$	[[_homogeneous, 'class C'], _dAlembert]	✓	5.667
7089	$y' = 2\sqrt{2x + y + 1}$	[[_homogeneous, 'class C'], _dAlembert]	✓	1.953
7090	$y' = (x + y + 1)^2$	[[_homogeneous, 'class C'], _Riccati]	✓	4.171
7091	$y^2 + xy^2 + (x^2 - x^2y)y' = 0$	[_separable]	✓	1.566
7092	$(1 + y^2)(e^{2x} - e^y y') - (1 + y)y' = 0$	[_separable]	✓	2.029
7093	$x - y + (x + y)y' = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓	2.644
7094	$y - 2xy + x^2y' = 0$	[_separable]	✓	1.428
7095	$2xy' = y(2x^2 - y^2)$	[_rational, _Bernoulli]	✓	1.334
7096	$y^2 + x^2y' = xyy'$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓	37.118
7097	$(y^2 + x^2)y' = 2xy$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	4.756
7098	$-y + xy' = x \tan\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A'], _dAlembert]	✓	3.849
7099	$xy' = y - x e^{\frac{y}{x}}$	[[_homogeneous, 'class A'], _dAlembert]	✓	7.934
7100	$-y + xy' = (x + y) \ln\left(\frac{x + y}{x}\right)$	[[_homogeneous, 'class A'], _dAlembert]	✓	3.217
7101	$xy' = y \cos\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A'], _dAlembert]	✓	2.971

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
7102	$y + \sqrt{xy} - xy' = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	7.419
7103	$xy' - \sqrt{x^2 - y^2} - y = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	87.083
7104	$x + y - (x - y)y' = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓	2.644
7105	$x^2 + 2xy - y^2 + (y^2 + 2xy - x^2)y' = 0$ i.c.	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	7.629
7106	$-y + xy' = yy'$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓	2.422
7107	$y^2 + (x^2 - xy)y' = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓	37.053
7108	$y^2 + xy + x^2 = x^2y'$	[[_homogeneous, 'class A'], _rational, _Riccati]	✓	2.066
7109	$\frac{1}{x^2 - xy + y^2} = \frac{y'}{2y^2 - xy}$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	24.231
7110	$y' = \frac{2xy}{3x^2 - y^2}$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	3.793
7111	$y' = \frac{x}{y} + \frac{y}{x}$ i.c.	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓	4.249
7112	$xy' = y + \sqrt{y^2 - x^2}$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	4.185
7113	$y + (2\sqrt{xy} - x)y' = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓	91.224
7114	$xy' = y \ln\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A'], _dAlembert]	✓	2.943

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
7115	<i>i.c.</i> $y'(y' + y) = x(x + y)$	[_quadrature]	✓	1.476
7116	$(xy' + y)^2 = y^2y'$	[[_homogeneous, 'class A'], _dAlembert]	✓	150.530
7117	$x^2y'^2 - 3xyy' + 2y^2 = 0$	[_separable]	✓	2.687
7118	$-y + xy' = \sqrt{y^2 + x^2}$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	6.727
7119	$yy'^2 + 2xy' - y = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	1.880
7120	$y' + \frac{x + 2y}{x} = 0$	[_linear]	✓	1.928
7121	$y' = \frac{y}{x + y}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓	2.201
7122	<i>i.c.</i> $xy' = x + \frac{y}{2}$	[_linear]	✓	6.028
7123	$y' = \frac{x + y - 2}{y - 4 - x}$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	2.524
7124	$2x - 4y + 6 + (x + y - 2)y' = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	3.225
7125	$y' = \frac{2y - x + 5}{2x - y - 4}$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	3.194
7126	$y' = -\frac{4x + 3y + 15}{2x + y + 7}$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	4.576
7127	$y' = \frac{x + 3y - 5}{x - y - 1}$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	1.813
7128	$y' = \frac{2(y + 2)^2}{(x + y + 1)^2}$	[[_homogeneous, 'class C'], _rational]	✓	1.755

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
7129	$2x + y + 1 - (4x + 2y - 3)y' = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	1.381
7130	$x - y - 1 + (y - x + 2)y' = 0$	[[_homogeneous, 'class C'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓	1.422
7131	$(4y + x)y' = 2x + 3y - 5$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	2.714
7132	$y + 2 = (2x + y - 4)y'$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	2.936
7133	$(1 + y') \ln\left(\frac{x + y}{x + 3}\right) = \frac{x + y}{x + 3}$	[[_homogeneous, 'class C'], _exact, _dAlembert]	✓	7.069
7134	$y' = \frac{x - 2y + 5}{y - 2x - 4}$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	3.187
7135	$y' = \frac{3x - y + 1}{2x + y + 4}$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	5.474
7136	$2xy' + (x^2y^4 + 1)y = 0$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓	2.121
7137	$2xy'(x - y^2) + y^3 = 0$	[[_homogeneous, 'class G'], _rational]	✓	0.574
7138	$x^3(y' - x) = y^2$	[[_homogeneous, 'class G'], _rational, _Riccati]	✓	0.284
7139	$2x^2y' = y^3 + xy$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓	0.608
7140	$y + x(2xy + 1)y' = 0$	[[_homogeneous, 'class G'], _rational, [_Abel, '2nd type', 'class B']]	✓	0.435
7141	$2y' + x = 4\sqrt{y}$	[[_1st_order, _with_linear_symmetries], _Chini]	✓	1.102

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
7142	$y' = y^2 - \frac{2}{x^2}$	[[_homogeneous, 'class G', _rational, [_Riccati, _special]]	✓	0.561
7143	$2xy' + y = y^2\sqrt{x - y^2x^2}$	[[_homogeneous, 'class G']]	✓	10.380
7144	$\frac{2xyy'}{3} = \sqrt{x^6 - y^4} + y^2$	[[_homogeneous, 'class G']]	✓	3.840
7145	$2y + (x^2y + 1)xy' = 0$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]	✓	0.381
7146	$y(xy + 1) + (1 - xy)xy' = 0$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]	✓	0.431
7147	$y(1 + y^2x^2) + (y^2x^2 - 1)xy' = 0$	[[_homogeneous, 'class G', _rational]]	✓	0.582
7148	$(x^2 - y^4)y' - xy = 0$	[[_homogeneous, 'class G', _rational]]	✓	1.572
7149	$y(1 + \sqrt{x^2y^4 - 1}) + 2xy' = 0$	[[_homogeneous, 'class G']]	✓	0.845
7150	$x(2 - 9xy^2) + y(4y^2 - 6x^3)y' = 0$	[_exact, _rational]	✓	1.832
7151	$\frac{y}{x} + (y^3 + \ln(x))y' = 0$	[_exact, [_1st_order, '_with_symmetry_[F(x),G(y)']]	✓	1.384
7152	$2x + 3 + (2y - 2)y' = 0$	[_separable]	✓	2.520
7153	$2x + 4y + (2x - 2y)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓	5.141
7154	$y'' + 2y' - y = 0$	[[_2nd_order, _missing_x]]	✓	1.061
7155	$y'' + \frac{y'}{x} - \frac{y}{x^2} = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	1.231
7156	$(x^2 + 1)y'' + xy' + y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)']]	✓	2.506

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
7157	$y'' - \cot(x)y' + y \cos(x) = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	2.158
7158	$y'' + \frac{y'}{x} + x^2y = 0$	[[_Emden, _Fowler]]	✓	0.940
7159	$x^2(-x^2 + 1)y'' + 2x(-x^2 + 1)y' - 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.239
7160	$(-x^2 + 1)y'' - xy' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	1.898
7161	$y''' - 2xy'' + 4x^2y' + 8x^3y = 0$	[[_3rd_order, _with_linear_symmetries]]	✗	0.048
7162	$y'' + x(1 - x)y' + ye^x = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.308
7163	$x^2y'' + 2xy' + 4y = 0$	[[_Emden, _Fowler]]	✓	2.845
7164	$x^4y'''' - x^2y'' + y = 0$	[[_high_order, _with_linear_symmetries]]	✓	0.275
7165	$(x^2 + 1)y'' + xy' + y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓	2.515
7166	$y'' + xy' + y = 2xe^x - 1$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓	2.069
7167	$xy'' + xy' - y = x^2 + 2x$	[[_2nd_order, _with_linear_symmetries]]	✓	1.453
7168	$x^2y'' + xy' - y = x^2 + 2x$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓	2.270
7169	$x^3y'' + xy' - y = \cos\left(\frac{1}{x}\right)$	[[_2nd_order, _with_linear_symmetries]]	✓	2.279
7170	$x(x + 1)y'' + (x + 2)y' - y = x + \frac{1}{x}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓	1.766
7171	$2xy'' + (-2 + x)y' - y = x^2 - 1$	[[_2nd_order, _with_linear_symmetries]]	✓	1.399

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
7172	$x^2(x+1)y'' + x(4x+3)y' - y = x + \frac{1}{x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✗	1.904
7173	$x^2(\ln(x) - 1)y'' - xy' + y = x(1 - \ln(x))^2$	[[_2nd_order, _with_linear_symmetries]]	✓	0.820
7174	$xy'' + 2y' + xy = \sec(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	4.180
7175	$(-x^2 + 1)y'' - xy' + \frac{y}{4} = -\frac{x^2}{2} + \frac{1}{2}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.837
7176	$(\cos(x) + \sin(x))y'' - 2\cos(x)y' + (\cos(x) - \sin(x))y = (\cos(x) + \sin(x))^2 e^{2x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.746
7177	$(\cos(x) - \sin(x))y'' - 2\sin(x)y' + (\cos(x) + \sin(x))y = (\cos(x) - \sin(x))^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✗	2.543
7178	$y' = x^2(1 + y^2)$	[_separable]	✓	3.082
7179	$y' = \frac{x^2}{1 - y^2}$	[_separable]	✓	1.060
7180	$y' = \frac{3x^2 + 4x + 2}{2y - 2}$ i.c.	[_separable]	✓	2.156
7181	$xy' - 2\sqrt{xy} = y$	[[_homogeneous, 'class A', _dAlembert]]	✓	6.038
7182	$y' = \frac{y - 1 + x}{x - y + 3}$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓	1.795
7183	$e^x + y + (x - 2\sin(y))y' = 0$	[_exact]	✓	1.859
7184	$3x + \frac{6}{y} + \left(\frac{x^2}{y} + \frac{3y}{x}\right)y' = 0$	[_rational]	✓	1.362
7185	$y^2 - xy + x^2y' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓	1.771
7186	$x + y - (x - y)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓	2.658

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
7187	$y' = \frac{y}{2x} + \frac{x^2}{2y}$	[[ <code>_homogeneous</code> , <code>'class G'</code> ], <code>_rational</code> , <code>_Bernoulli</code> ]	✓	1.939
7188	$y' = -\frac{2}{t} + \frac{y}{t} + \frac{y^2}{t}$	[ <code>_separable</code> ]	✓	2.469
7189	$y' = -\frac{y}{t} - 1 - y^2$	[ <code>_rational</code> , <code>_Riccati</code> ]	✓	1.132
7190	$yy' + x = ay'^2$	[ <code>_dAlembert</code> ]	✗	364.723
7191	$y'^2 - a^2y^2 = 0$	[ <code>_quadrature</code> ]	✓	1.230
7192	$y'^2 = 4x^2$	[ <code>_quadrature</code> ]	✓	0.465
7193	$y'' - 2y' - 3y = 0$	[[ <code>_2nd_order</code> , <code>_miss-</code> <code>ing_x</code> ]]	✓	0.823
7194	<i>i.c.</i> $s'' + 2s' + s = 0$	[[ <code>_2nd_order</code> , <code>_miss-</code> <code>ing_x</code> ]]	✓	1.163
7195	$y'' - 2y' + 5y = 0$	[[ <code>_2nd_order</code> , <code>_miss-</code> <code>ing_x</code> ]]	✓	1.708
7196	$y'' - 2y' - 3y = 3x + 1$	[[ <code>_2nd_order</code> , <code>_with_lin-</code> <code>ear_symmetries</code> ]]	✓	1.053
7197	$y'' - 3y' + 2y = xe^{2x}$	[[ <code>_2nd_order</code> , <code>_linear</code> , <code>_nonhomogeneous</code> ]]	✓	1.122
7198	$y'' + y = 4 \sin(x)$	[[ <code>_2nd_order</code> , <code>_linear</code> , <code>_nonhomogeneous</code> ]]	✓	2.867
7199	$y'' + 2x^2y' + (x^4 + 2x - 1)y = 0$	[[ <code>_2nd_order</code> , <code>_with_lin-</code> <code>ear_symmetries</code> ]]	✓	1.152
7200	$px^2u'' + qxu' + ru = f(x)$	[[ <code>_2nd_order</code> , <code>_linear</code> , <code>_nonhomogeneous</code> ]]	✓	3.358
7201	$\sin(x)u'' + 2\cos(x)u' + \sin(x)u = 0$	[ <code>_Lienard</code> ]	✓	3.503

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
7202	$3y''^2 - y'y''' - y''y'^2 = 0$	[[_3rd_order, _missing_x], [_3rd_order, _missing_y], [_3rd_order, _with_exponential_symmetries], [_3rd_order, _with_linear_symmetries], [_3rd_order, _reducible, _mu_y2], [_3rd_order, _reducible, _mu_poly_yn]]	✓	0.507
7203	$y'' - \frac{xy'}{-x^2+1} + \frac{y}{-x^2+1} = 0$	[_Gegenbauer, [_2nd_order, _linear, '_with_symmetry_[0,F(x)']]	✓	1.679
7204	$x^2yy'' = x^2y'^2 - y^2$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _reducible, _mu_y_y1], [_2nd_order, _reducible, _mu_xy]]	✗	0.169
7205	$y''' - 3y'' + 3y' - y = 4e^t$	[[_3rd_order, _with_linear_symmetries]]	✓	0.133
7206	$y'''' + 2y'' + y = 3\sin(t) - 5\cos(t)$	[[_high_order, _linear, _nonhomogeneous]]	✓	1.345
7207	$y''' - y'' - y' + y = g(t)$	[[_3rd_order, _linear, _nonhomogeneous]]	✓	0.499
7208	$y^{(5)} - \frac{y''''}{t} = 0$	[[_high_order, _missing_y]]	✓	0.230
7209	$xx'' - x'^2 = 0$	[[_2nd_order, _missing_x], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓	0.251
7210	$y'''' + 4y''' + 3y'' - 4y' - 4y = f(x)$	[[_high_order, _linear, _nonhomogeneous]]	✓	0.637
7211	$u'' - (2x+1)u' + (x^2+x-1)u = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.970

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
7212	$y'' + 6y' + 9y = 50 e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.039
7213	$y'' - 4y' + 4y = 50 e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.042
7214	$y'' + 3y' + 2y = \cos(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.406
7215	$y''' + 6y'' + 11y' + 6y = 2 \sin(3x)$	[[_3rd_order, _linear, _nonhomogeneous]]	✓	0.164
7216	$y'' + 4y = x^2$	[[_2nd_order, _with_linear_symmetries]]	✓	2.891
7217	$y'' - 4y' + 3y = x^3$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.190
7218	$y'' + 2y' + \left(1 + \frac{2}{(3x+1)^2}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.919
7219	$y + \sqrt{y^2 + x^2} - xy' = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓	6.620
7220	$y'^2 = a^2 - y^2$	[_quadrature]	✓	0.666
7221	$x^2 y'' - 2xy' + (x^2 + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	2.637
7222	$y'' + \frac{2y'}{x} - \frac{2y}{(x+1)^2} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.885
7223	$y(1 + y^2 x^2) + (y^2 x^2 - 1)xy' = 0$	[[_homogeneous, 'class G', _rational]]	✓	1.889
7224	$2x^3 y^2 - y + (2x^2 y^3 - x)y' = 0$	[_rational]	✓	1.519
7225	$\frac{1}{y} + \sec\left(\frac{y}{x}\right) - \frac{xy'}{y^2} = 0$	[[_homogeneous, 'class D']]	✓	16.897
7226	$\phi' - \frac{\phi^2}{2} - \phi \cot(\theta) = 0$	[_Bernoulli]	✓	2.695
7227	$u'' - \cot(\theta)u' = 0$	[[_2nd_order, _missing_y]]	✓	0.744

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
7228	$\left(\phi' - \frac{\phi^2}{2}\right) \sin(\theta)^2 - \phi \sin(\theta) \cos(\theta) = \frac{\cos(2\theta)}{2} + 1$	[[_1st_order, '_with_symmetry_[F(x),G(x)]', _Riccati]	✓	4.588
7229	$ay''y''' = \sqrt{1 + y''^2}$	[[_3rd_order, _missing_x], [_3rd_order, _missing_y], [_3rd_order, _with_linear_symmetries], [_3rd_order, _reducible, _mu_y2]]	✓	2.363
7230	$a^2y'''' = y''$	[[_high_order, _missing_x]]	✓	0.077
7231	$y e^{xy} + x e^{xy} y' = 0$	[_separable]	✓	1.600
7232	$x - 2xy + e^y + (y - x^2 + x e^y) y' = 0$	[_exact]	✓	1.688
7233	$y'' - \frac{y'}{\sqrt{x}} + \frac{(x + \sqrt{x} - 8)y}{4x^2} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.299
7234	$(-x^2 + 1) z'' + (1 - 3x) z' + kz = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.911
7235	$(-x^2 + 1) \eta'' - (x + 1) \eta' + (k + 1) \eta = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.890
7236	$x^2 + y^2 - 2xyy' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓	7.536
7237	$x^2 - y^2 + 2xyy' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓	6.514
7238	$-y + xy' = y^2 + x^2$	[[_homogeneous, 'class D', _rational, _Riccati]	✓	1.379
7239	$-y + xy' = x\sqrt{x^2 - y^2} y'$	['y=_G(x,y)']	✗	4.372
7240	$x + yy' + y - xy' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓	2.654

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
7241	$yy'' - y'^2 - y^2y' = 0$	[[_2nd_order, _missing_x], [_2nd_order, _with_potential_symmetries], [_2nd_order, _reducible, _mu_xy]]	✓	0.415
7242	$\begin{bmatrix} x'_1 = 3x_1 - 18x_2 \\ x'_2 = 2x_1 - 9x_2 \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.502
7243	$\begin{bmatrix} x'_1 = x_1 + 3x_2 \\ x'_2 = 5x_1 + 3x_2 \end{bmatrix}$	system_of_ODEs	✓	0.333
7244	$\begin{bmatrix} x'_1 = -x_1 + 3x_2 \\ x'_2 = -3x_1 + 5x_2 \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.413
7245	$\begin{bmatrix} x'_1 = 4x_1 - x_2 \\ x'_2 = 5x_1 + 2x_2 \end{bmatrix}$	system_of_ODEs	✓	0.494
7246	$\begin{bmatrix} x'_1 = -2x_1 + x_2 \\ x'_2 = x_1 - 2x_2 \end{bmatrix}$	system_of_ODEs	✓	0.321
7247	$\begin{bmatrix} x'_1 = -2x_1 + x_2 + 2e^{-t} \\ x'_2 = x_1 - 2x_2 + 3t \end{bmatrix}$	system_of_ODEs	✓	0.503
7248	$\begin{bmatrix} x'_1 = 3x_1 - x_2 \\ x'_2 = 16x_1 - 5x_2 \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.499
7249	$\begin{bmatrix} x'_1 = x_1 - 2x_2 \\ x'_2 = 3x_1 - 4x_2 \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.454
7250	$\begin{bmatrix} x'_1 = 3x_1 - 18x_2 \\ x'_2 = 2x_1 - 9x_2 \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.444
7251	$\begin{bmatrix} x'_1 = -x_1 + 3x_2 \\ x'_2 = -3x_1 + 5x_2 \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.441

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
7252	$\begin{bmatrix} x'_1 = 3x_1 - 18x_2 \\ x'_2 = 2x_1 - 9x_2 \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.510
7253	$\begin{bmatrix} x'_1 = 3x_1 - x_2 \\ x'_2 = 4x_1 - 2x_2 \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.480
7254	$\begin{bmatrix} x'_1 = x_1 + x_2 - 8 \\ x'_2 = x_1 + x_2 + 3 \end{bmatrix}$	system_of_ODEs	✓	0.431
7255	$\begin{bmatrix} x'_1 = x_1 + x_2 - 8 \\ x'_2 = x_1 + x_2 + 3 \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.611
7256	$y' = e^{3x} + \sin(x)$	[_quadrature]	✓	0.378
7257	$y'' = x + 2$	[[_2nd_order, _quadrature]]	✓	1.265
7258	$y''' = x^2$	[[_3rd_order, _quadrature]]	✓	0.107
7259	$y' + y \cos(x) = 0$	[_separable]	✓	1.375
7260	$y' + y \cos(x) = \sin(x) \cos(x)$	[_linear]	✓	1.665
7261	$y'' - y = 0$	[[_2nd_order, _missing_x]]	✓	1.934
7262	$y'' + 4y = 0$	[[_2nd_order, _missing_x]]	✓	1.983
7263	$y'' + k^2y = 0$	[[_2nd_order, _missing_x]]	✓	1.642
7264	$y' + 5y = 2$	[_quadrature]	✓	1.040
7265	$y'' = 3x + 1$	[[_2nd_order, _quadrature]]	✓	1.238
7266	$y' = ky$	[_quadrature]	✓	0.704
7267	$y' - 2y = 1$	[_quadrature]	✓	0.923
7268	$y' + y = e^x$	[[_linear, 'class A']]	✓	1.008
7269	$y' - 2y = x^2 + x$	[[_linear, 'class A']]	✓	1.047

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
7270	$3y' + y = 2e^{-x}$	[[_linear, 'class A']]	✓	1.096
7271	$y' + 3y = e^{ix}$	[[_linear, 'class A']]	✓	0.858
7272	$y' + iy = x$	[[_linear, 'class A']]	✓	0.981
7273	$Ly' + Ry = E$	[_quadrature]	✓	0.760
7274	$Ly' + Ry = E \sin(\omega x)$ i.c.	[[_linear, 'class A']]	✓	1.512
7275	$Ly' + Ry = E e^{i\omega x}$ i.c.	[[_linear, 'class A']]	✓	1.145
7276	$y' + ay = b(x)$	[[_linear, 'class A']]	✓	1.203
7277	$y' + 2xy = x$	[_separable]	✓	1.098
7278	$xy' + y = 3x^3 - 1$	[_linear]	✓	0.994
7279	$y' + ye^x = 3e^x$	[_separable]	✓	1.235
7280	$y' - \tan(x)y = e^{\sin(x)}$	[_linear]	✓	1.579
7281	$y' + 2xy = xe^{-x^2}$	[_linear]	✓	2.187
7282	$y' + y \cos(x) = e^{-\sin(x)}$ i.c.	[_linear]	✓	1.713
7283	$x^2y' + 2xy = 1$	[_linear]	✓	1.208
7284	$y' + 2y = b(x)$	[[_linear, 'class A']]	✓	1.166
7285	$y' = 1 + y$ i.c.	[_quadrature]	✓	1.102
7286	$y' = 1 + y^2$ i.c.	[_quadrature]	✓	1.217
7287	$y' = 1 + y^2$ i.c.	[_quadrature]	✓	1.253
7288	$y'' - 4y = 0$	[[_2nd_order, __missing_x]]	✓	2.086
7289	$3y'' + 2y = 0$	[[_2nd_order, __missing_x]]	✓	1.990
7290	$y'' + 16y = 0$	[[_2nd_order, __missing_x]]	✓	1.997

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
7291	$y'' = 0$	[[_2nd_order, _quadrature]]	✓	1.320
7292	$y'' + 2iy' + y = 0$	[[_2nd_order, _missing_x]]	✓	1.071
7293	$y'' - 4y' + 5y = 0$	[[_2nd_order, _missing_x]]	✓	1.282
7294	$y'' + (-1 + 3i)y' - 3iy = 0$	[[_2nd_order, _missing_x]]	✓	0.805
7295	<i>i.c.</i> $y'' + y' - 6y = 0$	[[_2nd_order, _missing_x]]	✓	1.400
7296	<i>i.c.</i> $y'' + y' - 6y = 0$	[[_2nd_order, _missing_x]]	✓	1.425
7297	<i>i.c.</i> $y'' + y = 0$	[[_2nd_order, _missing_x]]	✓	1.950
7298	<i>i.c.</i> $y'' + y = 0$	[[_2nd_order, _missing_x]]	✓	1.602
7299	<i>i.c.</i> $y'' + y = 0$	[[_2nd_order, _missing_x]]	✓	1.590
7300	<i>i.c.</i> $y'' + y = 0$	[[_2nd_order, _missing_x]]	✓	1.597
7301	<i>i.c.</i> $y'' - 2y' - 3y = 0$	[[_2nd_order, _missing_x]]	✓	1.395
7302	<i>i.c.</i> $y'' + (1 + 4i)y' + y = 0$	[[_2nd_order, _missing_x]]	✓	1.551
7303	<i>i.c.</i> $y'' + (-1 + 3i)y' - 3iy = 0$	[[_2nd_order, _missing_x]]	✓	0.832
7304	<i>i.c.</i> $y'' + 10y = 0$	[[_2nd_order, _missing_x]]	✓	3.885
7305	$y'' + 4y = \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	2.656
7306	$y'' + 9y = \sin(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.605
7307	$y'' + y = \tan(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	2.994
7308	$y'' + 2iy' + y = x$	[[_2nd_order, _with_linear_symmetries]]	✓	1.775

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
7309	$y'' - 4y' + 5y = 3e^{-x} + 2x^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	13.131
7310	$y'' - 7y' + 6y = \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.374
7311	$y'' + y = 2\sin(x)\sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.372
7312	$y'' + y = \sec(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	2.704
7313	$4y'' - y = e^x$	[[_2nd_order, _with_linear_symmetries]]	✓	0.998
7314	$6y'' + 5y' - 6y = x$	[[_2nd_order, _with_linear_symmetries]]	✓	1.757
7315	<i>i.c.</i> $y'' + \omega^2 y = A \cos(\omega x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	2.036
7316	$y''' - 8y = 0$	[[_3rd_order, _missing_x]]	✓	0.077
7317	$y'''' + 16y = 0$	[[_high_order, _missing_x]]	✓	0.083
7318	$y''' - 5y'' + 6y' = 0$	[[_3rd_order, _missing_x]]	✓	0.063
7319	$y''' - iy'' + 4y' - 4iy = 0$	[[_3rd_order, _missing_x]]	✓	0.092
7320	$y'''' + 5y'' + 4y = 0$	[[_high_order, _missing_x]]	✓	0.079
7321	$y'''' - 16y = 0$	[[_high_order, _missing_x]]	✓	0.075
7322	$y''' - 3y' - 2y = 0$	[[_3rd_order, _missing_x]]	✓	0.070
7323	$y''' - 3iy'' - 3y' + iy = 0$	[[_3rd_order, _missing_x]]	✓	0.090
7324	<i>i.c.</i> $y''' - 4y' = 0$	[[_3rd_order, _missing_x]]	✓	0.132
7325	<i>i.c.</i> $y^{(5)} - y'''' - y' + y = 0$	[[_high_order, _missing_x]]	✓	0.096
7326	$y'' + y = 0$	[[_2nd_order, _missing_x]]	✓	1.840

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
7327	$y'' - y = 0$	[[_2nd_order, _missing_x]]	✓	1.915
7328	$y'''' - y = 0$	[[_high_order, _missing_x]]	✓	0.073
7329	$y^{(5)} + 2y = 0$	[[_high_order, _missing_x]]	✓	0.152
7330	$y'''' - 5y'' + 4y = 0$	[[_high_order, _missing_x]]	✓	0.072
7331	<i>i.c.</i> $y''' + y = 0$	[[_3rd_order, _missing_x]]	✓	0.148
7332	$y''' - iy'' + y' - iy = 0$	[[_3rd_order, _missing_x]]	✓	0.090
7333	$y'' - 2iy' - y = 0$	[[_2nd_order, _missing_x]]	✓	0.635
7334	<i>i.c.</i> $y'''' - k^4y = 0$	[[_high_order, _missing_x]]	✓	0.173
7335	$y''' - y = x$	[[_3rd_order, _with_linear_symmetries]]	✓	0.114
7336	$y''' - 8y = e^{ix}$	[[_3rd_order, _with_linear_symmetries]]	✓	0.500
7337	$y'''' + 16y = \cos(x)$	[[_high_order, _linear, _nonhomogeneous]]	✓	0.150
7338	$y'''' - 4y''' + 6y'' - 4y' + y = e^x$	[[_high_order, _with_linear_symmetries]]	✓	0.136
7339	$y'''' - y = \cos(x)$	[[_high_order, _linear, _nonhomogeneous]]	✓	0.773
7340	$y'' - 2iy' - y = e^{ix} - 2e^{-ix}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	2.401
7341	$y'' + 4y = \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	2.605
7342	$y'' + 4y = \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.624
7343	$y'' - 4y = 3e^{2x} + 4e^{-x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.302

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
7344	$y'' - y' - 2y = x^2 + \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.671
7345	$y'' + 9y = x^2 e^{3x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	2.683
7346	$y'' + y = x e^x \cos(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.383
7347	$y'' + iy' + 2y = 2 \cosh(2x) + e^{-2x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.337
7348	$y''' = x^2 + e^{-x} \sin(x)$	[[_3rd_order, _quadrature]]	✓	0.596
7349	$y''' + 3y'' + 3y' + y = x^2 e^{-x}$	[[_3rd_order, _linear, _nonhomogeneous]]	✓	0.141
7350	$y'' + \frac{y'}{x} - \frac{y}{x^2} = 0$ i.c.	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	2.168
7351	$y'' + \frac{y'}{x} - \frac{y}{x^2} = 0$ i.c.	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	1.871
7352	$(3x - 1)^2 y'' + (9x - 3)y' - 9y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	1.382
7353	$x^2 y'' - 7xy' + 15y = 0$	[[_Emden, _Fowler]]	✓	0.318
7354	$x^2 y'' - xy' + y = 0$	[[_Emden, _Fowler]]	✓	0.349
7355	$y'' - 4xy' + (4x^2 - 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.322
7356	$xy'' - (x + 1)y' + y = 0$	[_Laguerre]	✓	0.333
7357	$(-x^2 + 1)y'' - 2xy' + 2y = 0$	[_Gegenbauer]	✓	0.341
7358	$y'' - 2xy' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.334
7359	$x^3 y''' - 3x^2 y'' + 6xy' - 6y = 0$	[[_3rd_order, _with_linear_symmetries]]	✓	0.127
7360	$x^2 y'' - 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.313
7361	$x^2 y'' - xy' + y = 0$	[[_Emden, _Fowler]]	✓	0.318

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
7362	$x^2y'' + 4xy' + (x^2 + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	2.842
7363	$y'' - xy' + y = 0$	[_Hermite]	✓	0.487
7364	$y'' + 3x^2y' - xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.555
7365	$y'' - x^2y = 0$	[[_Emden, _Fowler]]	✓	0.458
7366	$y'' + x^3y' + x^2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.559
7367	$y'' + y = 0$	[[_2nd_order, _missing_x]]	✓	0.306
7368	<i>i.c.</i> $y'' + (x - 1)^2y' - (x - 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.540
7369	<i>i.c.</i> $(x^2 + 1)y'' + y = 0$	[[_Emden, _Fowler]]	✓	0.584
7370	<i>i.c.</i> $y'' + ye^x = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.625
7371	<i>i.c.</i> $y''' - xy = 0$	[[_3rd_order, _with_linear_symmetries]]	✗	0.047
7372	$(-x^2 + 1)y'' - 2xy' + \alpha(1 + \alpha)y = 0$	[_Gegenbauer]	✓	0.721
7373	$(-x^2 + 1)y'' - xy' + \alpha^2y = 0$	[_Gegenbauer, _2nd_order, _linear, ' _with_symmetry_[0,F(x)] ']	✓	1.613
7374	$y'' - 2xy' + 2\alpha y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.604
7375	$x^2y'' + 2xy' - 6y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, ' _with_symmetry_[0,F(x)] ']]	✓	1.026
7376	$2x^2y'' + xy' - y = 0$	[[_Emden, _Fowler]]	✓	1.182
7377	$x^2y'' + xy' - 4y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, ' _with_symmetry_[0,F(x)] ']]	✓	1.019

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
7378	$x^2y'' - 5xy' + 9y = x^2$	[[_2nd_order, _with_linear_symmetries]]	✓	1.615
7379	$x^3y''' + 2x^2y'' - xy' + y = 0$	[[_3rd_order, _exact, _linear, _homogeneous]]	✓	0.124
7380	$x^2y'' + xy' + 4y = 1$	[[_2nd_order, _with_linear_symmetries]]	✓	2.310
7381	$x^2y'' - 3xy' + 5y = 0$	[[_Emden, _Fowler]]	✓	2.026
7382	$x^2y'' + (-2 - i)xy' + 3iy = 0$	[[_Emden, _Fowler]]	✓	1.329
7383	$x^2y'' + xy' - 4\pi y = x$	[[_2nd_order, _with_linear_symmetries]]	✓	1.883
7384	$x^2y'' + (x^2 + x)y' - y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.073
7385	$3x^2y'' + x^6y' + 2xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.362
7386	$x^2y'' - 5y' + 3x^2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.161
7387	$xy'' + 4y = 0$	[[_Emden, _Fowler]]	✓	1.244
7388	$(-x^2 + 1)y'' - 2xy' + 2y = 0$	[_Gegenbauer]	✓	0.913
7389	$(x^2 + x - 2)^2 y'' + 3(x + 2)y' + (x - 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.421
7390	$x^2y'' + \sin(x)y' + y \cos(x) = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.917
7391	$x^2y'' + xy' + \left(x^2 - \frac{1}{4}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.977
7392	$4x^2y'' + (4x^4 - 5x)y' + (x^2 + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.088
7393	$x^2y'' + (-3x^2 + x)y' + ye^x = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.977
7394	$3x^2y'' + 5xy' + 3xy = 0$	[[_Emden, _Fowler]]	✓	1.038
7395	$x^2y'' + xy' + x^2y = 0$	[_Lienard]	✓	0.732
7396	$x^2y'' + xe^xy' + y = 0$	[[_Emden, _Fowler]]	✓	1.050

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
7397	$2x^2y'' + (x^2 + 5x)y' + (x^2 - 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.183
7398	$4x^2y'' - 4xe^xy' + 3y \cos(x) = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.980
7399	$(-x^2 + 1)x^2y'' + 3(x^2 + x)y' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.056
7400	$x^2y'' + 3xy' + y(x + 1) = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.933
7401	$x^2y'' + 2x^2y' - 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.086
7402	$x^2y'' + 5xy' + (-x^3 + 3)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.954
7403	$x^2y'' - 2x(x + 1)y' + 2y(x + 1) = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.066
7404	$x^2y'' + xy' + (x^2 - 1)y = 0$	[_Bessel]	✓	1.246
7405	$x^2y'' - 2x^2y' + (4x - 2)y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]]	✓	1.470
7406	$(-x^2 + 1)y'' - 2xy' + 2y = 0$	[_Gegenbauer]	✓	0.634
7407	$y' = x^2y$	[_separable]	✓	1.145
7408	$yy' = x$	[_separable]	✓	3.020
7409	$y' = \frac{x^2 + x}{y - y^2}$	[_separable]	✓	1.272
7410	$y' = \frac{e^{x-y}}{1 + e^x}$	[_separable]	✓	1.430
7411	$y' = y^2x^2 - 4x^2$	[_separable]	✓	3.371
7412	$y' = y^2$ i.c.	[_quadrature]	✓	1.002
7413	$y' = 2\sqrt{y}$ i.c.	[_quadrature]	✓	1.212
7414	$y' = 2\sqrt{y}$ i.c.	[_quadrature]	✓	0.976

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
7415	$y' = \frac{x+y}{x-y}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓	2.597
7416	$y' = \frac{y^2}{xy+x^2}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓	36.718
7417	$y' = \frac{y^2+xy+x^2}{x^2}$	[[_homogeneous, 'class A'], _rational, _Riccati]	✓	2.064
7418	$y' = \frac{y+x e^{-\frac{2y}{x}}}{x}$	[[_homogeneous, 'class A'], _dAlembert]	✓	17.124
7419	$y' = \frac{x-y+2}{y-1+x}$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	2.569
7420	$y' = \frac{2x+3y+1}{-2y-1+x}$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	3.076
7421	$y' = \frac{x+y+1}{2x+2y-1}$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	1.298
7422	$y' = \frac{(y-1+x)^2}{2(x+2)^2}$	[[_homogeneous, 'class C'], _rational, _Riccati]	✓	2.095
7423	$2xy + (x^2 + 3y^2) y' = 0$	[[_homogeneous, 'class A'], _exact, _rational, _dAlembert]	✓	0.235
7424	$x^2 + xy + (x+y) y' = 0$	[_quadrature]	✓	0.181
7425	$e^x + e^y(1+y) y' = 0$	[_separable]	✓	0.293
7426	$\cos(x) \cos(y)^2 - \sin(x) \sin(2y) y' = 0$	[_separable]	✓	0.403
7427	$x^2 y^3 - x^3 y^2 y' = 0$	[_separable]	✓	0.587
7428	$x + y + (x-y) y' = 0$	[[_homogeneous, 'class A'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓	0.311

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
7429	$2y e^{2x} + 2x \cos(y) + (e^{2x} - x^2 \sin(y)) y' = 0$	[_exact]	✓	0.293
7430	$3x^2 \ln(x) + x^2 + y + xy' = 0$	[_linear]	✓	0.198
7431	$2y^3 + 2 + 3xy^2 y' = 0$	[_separable]	✓	0.500
7432	$\cos(x) \cos(y) - 2 \sin(x) \sin(y) y' = 0$	[_separable]	✓	0.349
7433	$5x^3 y^2 + 2y + (3x^4 y + 2x) y' = 0$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]]	✓	0.333
7434	$e^y + x e^y + x e^y y' = 0$	[_quadrature]	✓	0.304
7435	$y'' + y' = 1$	[[_2nd_order, _missing_x]]	✓	1.408
7436	$y'' + e^x y' = e^x$	[[_2nd_order, _missing_y]]	✓	0.830
7437	$yy'' + 4y'^2 = 0$	[[_2nd_order, _missing_x], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓	0.192
7438	$y'' + k^2 y = 0$	[[_2nd_order, _missing_x]]	✓	1.639
7439	$y'' = yy'$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _non-linear], _Lagerstrom, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓	0.619
7440	$xy'' - 2y' = x^3$	[[_2nd_order, _missing_y]]	✓	1.138
7441	<i>i.c.</i> $y'' = 1 + y'^2$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_xy]]	✓	0.720

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
7442	$y'' = -\frac{1}{2y'^2}$ i.c.	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_poly_yn]]	✓	2.638
7443	$y'' + \sin(y) = 0$ i.c.	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓	346.226
7444	$y'' + \sin(y) = 0$ i.c.	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓	148.853
7445	$\begin{bmatrix} y'_1 = y_1 \\ y'_2 = y_1 + y_2 \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.408
7446	$\begin{bmatrix} y'_1 = y_2 \\ y'_2 = 6y_1 + y_2 \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.495
7447	$\begin{bmatrix} y'_1 = y_1 + y_2 \\ y'_2 = y_1 + y_2 + e^{3x} \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.556
7448	$\begin{bmatrix} y'_1 = 3y_1 + xy_3 \\ y'_2 = y_2 + x^3y_3 \\ y'_3 = 2xy_1 - y_2 + e^x y_3 \end{bmatrix}$	system_of_ODEs	✗	0.060
7449	$y' = 2x$	[_quadrature]	✓	0.263
7450	$xy' = 2y$	[_separable]	✓	1.576
7451	$yy' = e^{2x}$	[_separable]	✓	1.362
7452	$y' = ky$	[_quadrature]	✓	0.716
7453	$y'' + 4y = 0$	[[_2nd_order, _missing_x]]	✓	1.959
7454	$y'' - 4y = 0$	[[_2nd_order, _missing_x]]	✓	2.089
7455	$xy' + y = y'\sqrt{1 - y^2x^2}$	[_rational, [_1st_order, '_with_symmetry_[F(x),G(y)]]']	✓	4.122

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
7456	$xy' = y + x^2 + y^2$	[[_homogeneous, 'class D'], _rational, _Riccati]	✓	1.391
7457	$y' = \frac{xy}{y^2 + x^2}$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	2.820
7458	$2xyy' = y^2 + x^2$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓	7.406
7459	$xy' + y = x^4y'^2$	[[_homogeneous, 'class G'], _rational]	✓	1.918
7460	$y' = \frac{y^2}{xy - x^2}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓	4.066
7461	$(y \cos(y) - \sin(y) + x)y' = y$	[[_1st_order, _with_linear_symmetries]]	✓	1.609
7462	$1 + y^2 + y^2y' = 0$	[_quadrature]	✓	3.979
7463	$y' = e^{3x} - x$	[_quadrature]	✓	0.305
7464	$y' = x e^{x^2}$	[_quadrature]	✓	0.316
7465	$(x + 1)y' = x$	[_quadrature]	✓	0.340
7466	$(x^2 + 1)y' = x$	[_quadrature]	✓	0.347
7467	$(x^2 + 1)y' = \arctan(x)$	[_quadrature]	✓	0.402
7468	$xy' = 1$	[_quadrature]	✓	0.309
7469	$y' = \arcsin(x)$	[_quadrature]	✓	0.296
7470	$\sin(x)y' = 1$	[_quadrature]	✓	0.461
7471	$(x^3 + 1)y' = x$	[_quadrature]	✓	0.585
7472	$(x^2 - 3x + 2)y' = x$	[_quadrature]	✓	0.378
7473	$y' = x e^x$	[_quadrature]	✓	0.556
7474	$y' = 2 \sin(x) \cos(x)$	[_quadrature]	✓	0.543

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
7475	$y' = \ln(x)$ i.c.	[_quadrature]	✓	0.510
7476	$(x^2 - 1)y' = 1$ i.c.	[_quadrature]	✓	0.461
7477	$x(x^2 - 4)y' = 1$ i.c.	[_quadrature]	✓	0.618
7478	$(x + 1)(x^2 + 1)y' = 2x^2 + x$ i.c.	[_quadrature]	✓	1.095
7479	$y' = 2xy + 1$	[_linear]	✓	0.895
7480	$y'' - 5y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓	0.828
7481	$y' = \frac{2xy^2}{1 - x^2y}$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]]	✓	1.401
7482	$2y''' + y'' - 5y' + 2y = 0$	[[_3rd_order, _missing_x]]	✓	0.069
7483	$x^5y' + y^5 = 0$	[_separable]	✓	4.889
7484	$y' = 4xy$	[_separable]	✓	1.158
7485	$y' + \tan(x)y = 0$	[_separable]	✓	1.344
7486	$(x^2 + 1)y' + 1 + y^2 = 0$	[_separable]	✓	1.820
7487	$y \ln(y) - xy' = 0$	[_separable]	✓	1.617
7488	$xy' = (-4x^2 + 1) \tan(y)$	[_separable]	✓	2.049
7489	$y' \sin(y) = x^2$	[_separable]	✓	1.331
7490	$y' - \tan(x)y = 0$	[_separable]	✓	1.387
7491	$xyy' = y - 1$	[_separable]	✓	1.364
7492	$xy^2 - x^2y' = 0$	[_separable]	✓	1.192
7493	$yy' = x + 1$ i.c.	[_separable]	✓	2.991
7494	$x^2y' = y$ i.c.	[_separable]	✓	1.529

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
7495	$\frac{y'}{x^2 + 1} = \frac{x}{y}$ i.c.	[_separable]	✓	1.819
7496	$y^2 y' = x + 2$ i.c.	[_separable]	✓	2.516
7497	$y' = y^2 x^2$ i.c.	[_separable]	✓	2.085
7498	$(1 + y) y' = -x^2 + 1$ i.c.	[_separable]	✓	1.874
7499	$\frac{y''}{y'} = x^2$	[[_2nd_order, _missing_y]]	✓	0.620
7500	$y'' y' = x(x + 1)$	[[_2nd_order, _missing_y], [_2nd_order, _exact, _nonlinear], [_2nd_order, _reducible, _mu_y_y1], [_2nd_order, _reducible, _mu_poly_yn]]	✓	1.790
7501	$y' - xy = 0$	[_separable]	✓	0.154
7502	$y' + xy = x$	[_separable]	✓	0.354
7503	$y' + y = \frac{1}{1 + e^{2x}}$	[_linear]	✓	0.195
7504	$y' + y = 2x e^{-x} + x^2$	[[_linear, 'class A']]	✓	0.189
7505	$2y - x^3 = xy'$	[_linear]	✓	0.144
7506	$y' + 2xy = 0$	[_separable]	✓	0.150
7507	$xy' - 3y = x^4$	[_linear]	✓	0.138
7508	$(x^2 + 1) y' + 2xy = \cot(x)$	[_linear]	✓	0.180
7509	$y' + y \cot(x) = 2x \csc(x)$	[_linear]	✓	0.204
7510	$y - x + xy \cot(x) + xy' = 0$	[_linear]	✓	0.219
7511	$y' - xy = 0$ i.c.	[_separable]	✓	0.291
7512	$y' - 2xy = 6x e^{x^2}$ i.c.	[_linear]	✓	0.332

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
7513	$x \ln(x) y' + y = 3x^3$ i.c.	[_linear]	✗	0.237
7514	$y' - \frac{y}{x} = x^2$ i.c.	[_linear]	✓	0.274
7515	$y' + 4y = e^{-x}$ i.c.	[[_linear, 'class A']]	✓	0.306
7516	$x^2 y' + xy = 2x$ i.c.	[_separable]	✓	0.278
7517	$xy' + y = x^4 y^3$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓	2.277
7518	$xy^2 y' + y^3 = x \cos(x)$	[_Bernoulli]	✓	53.157
7519	$xy' + y = xy^2$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓	1.270
7520	$y' + xy = xy^4$	[_separable]	✓	2.426
7521	$(e^y - 2xy) y' = y^2$	[_exact, [_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓	1.125
7522	$y - xy' = y' y^2 e^y$	[[_1st_order, _with_linear_symmetries]]	✓	1.161
7523	$xy' + 2 = x^3(y - 1) y'$	[[_1st_order, '_with_symmetry_[F(x)*G(y),0]'], [_Abel, '2nd type', 'class C']]	✓	2.292
7524	$xy' = 2x^2 y + y \ln(x)$	[_separable]	✓	1.664
7525	$y' \sin(2x) = 2y + 2 \cos(x)$	[_linear]	✓	2.861
7526	$\left(x + \frac{2}{y}\right) y' + y = 0$	[[_homogeneous, 'class G'], _exact, _rational, [_Abel, '2nd type', 'class B']]	✓	1.378
7527	$\sin(x) \tan(y) + 1 + \cos(x) \sec(y)^2 y' = 0$	['y=_G(x,y)']	✓	40.201

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
7528	$y - x^3 + (x + y^3) y' = 0$	[_exact, _rational]	✓	1.179
7529	$2y^2 - 4x + 5 = (4 - 2y + 4xy) y'$	[_rational, [_Abel, '2nd type', 'class B']]	✗	1.443
7530	$y + y \cos(xy) + (x + x \cos(xy)) y' = 0$	[_separable]	✓	1.611
7531	$\cos(x) \cos(y)^2 + 2 \sin(x) \sin(y) \cos(y) y' = 0$	[_separable]	✓	2.606
7532	$\frac{(\sin(x) \sin(y) - x e^y) y'}{e^y + \cos(x) \cos(y)}$	[_exact]	✓	28.066
7533	$-\frac{\sin\left(\frac{x}{y}\right)}{y} + \frac{x \sin\left(\frac{x}{y}\right) y'}{y^2} = 0$	[_separable]	✓	0.270
7534	$1 + y + (1 - x) y' = 0$	[_separable]	✓	1.434
7535	$2xy^3 + y \cos(x) + (3y^2x^2 + \sin(x)) y' = 0$	[_exact, [_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]']]	✓	41.481
7536	$\frac{y}{1 - y^2x^2} + \frac{xy'}{1 - y^2x^2} = 1$	[_exact, _rational, _Riccati]	✓	1.375
7537	$2xy^4 + \sin(y) + (4x^2y^3 + x \cos(y)) y' = 0$	[_exact]	✓	2.545
7538	$\frac{xy' + y}{1 - y^2x^2} + x = 0$	[_exact, _rational, _Riccati]	✓	2.693
7539	$2x(1 + \sqrt{x^2 - y}) = \sqrt{x^2 - y} y'$	[_exact, [_1st_order, '_with_symmetry_[F(x),G(y)]']]	✓	4.754
7540	$x \ln(y) + xy + (y \ln(x) + xy) y' = 0$	[_separable]	✓	1.920
7541	$e^{y^2} - \csc(y) \csc(x)^2 + (2xy e^{y^2} - \csc(y) \cot(y) \cot(x)) y' = 0$	[_exact]	✓	49.583
7542	$1 + y^2 \sin(2x) - 2y \cos(x)^2 y' = 0$	[_exact, _Bernoulli]	✓	0.445
7543	$\frac{x}{(y^2 + x^2)^{3/2}} + \frac{yy'}{(y^2 + x^2)^{3/2}} = 0$	[_separable]	✓	1.817

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
7544	$3x^2(1 + \ln(y)) + \left(\frac{x^3}{y} - 2y\right)y' = 0$	[_exact, [_1st_order, ‘_with_symmetry_[F(x)*G(y),0]’]]	✓	1.601
7545	$\frac{y - xy'}{(x + y)^2} + y' = 1$	[[_1st_order, _with_linear_symmetries], _exact, _rational]	✓	2.902
7546	$\frac{4y^2 - 2x^2}{4xy^2 - x^3} + \frac{(8y^2 - x^2)y'}{4y^3 - x^2y} = 0$	[[_homogeneous, ‘class A’], _exact, _rational, _dAlembert]	✓	0.612
7547	$x^2 - 2y^2 + xyy' = 0$	[[_homogeneous, ‘class A’], _rational, _Bernoulli]	✓	70.046
7548	$x^2y' - 3xy - 2y^2 = 0$	[[_homogeneous, ‘class A’], _rational, _Bernoulli]	✓	2.335
7549	$x^2y' = 3(y^2 + x^2) \arctan\left(\frac{y}{x}\right) + xy$	[[_homogeneous, ‘class A’], _dAlembert]	✓	14.376
7550	$x \sin\left(\frac{y}{x}\right)y' = y \sin\left(\frac{y}{x}\right) + x$	[[_homogeneous, ‘class A’], _dAlembert]	✓	4.688
7551	$xy' = y + 2x e^{-\frac{y}{x}}$	[[_homogeneous, ‘class A’], _dAlembert]	✓	15.103
7552	$x - y - (x + y)y' = 0$	[[_homogeneous, ‘class A’], _exact, _rational, [_Abel, ‘2nd type’, ‘class A’]]	✓	3.625
7553	$xy' = 2x - 6y$	[_linear]	✓	1.942
7554	$xy' = \sqrt{y^2 + x^2}$	[[_homogeneous, ‘class A’], _rational, _dAlembert]	✓	8.991
7555	$x^2y' = y^2 + 2xy$	[[_homogeneous, ‘class A’], _rational, _Bernoulli]	✓	2.162
7556	$x^3 + y^3 - xy^2y' = 0$	[[_homogeneous, ‘class A’], _rational, _Bernoulli]	✓	7.765

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
7557	$y' = \frac{x + y + 4}{x - y - 6}$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	1.827
7558	$y' = \frac{x + y + 4}{x + y - 6}$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	1.256
7559	$2x - 2y + (y - 1)y' = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	1.882
7560	$y' = \frac{y - 1 + x}{x + 4y + 2}$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	9.070
7561	$2x + 3y - 1 - 4(x + 1)y' = 0$	[_linear]	✓	1.642
7562	$y' = \frac{1 - xy^2}{2x^2y}$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓	1.676
7563	$y' = \frac{2 + 3xy^2}{4x^2y}$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓	2.278
7564	$y' = \frac{y - xy^2}{x + x^2y}$	[[_homogeneous, 'class G'], _rational, [_Abel, '2nd type', 'class B']]	✓	1.528
7565	$y' = \sin\left(\frac{y}{x}\right) - \cos\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A'], _dAlembert]	✓	3.925
7566	$e^{\frac{x}{y}} - \frac{yy'}{x} = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓	3.232
7567	$y' = \frac{x^2 - xy}{y^2 \cos\left(\frac{x}{y}\right)}$	[[_homogeneous, 'class A'], _dAlembert]	✓	6.187
7568	$y' = \frac{y \tan\left(\frac{y}{x}\right)}{x}$	[[_homogeneous, 'class A'], _dAlembert]	✓	4.138
7569	$(3x^2 - y^2)y' - 2xy = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	0.302

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
7570	$xy - 1 + (x^2 - xy) y' = 0$	[_rational, [_1st_order, '_with_symmetry_[F(x),G(x)]'], [_Abel, '2nd type', 'class B']]	✓	0.375
7571	$xy' + y + 3x^3y^4y' = 0$	[[_homogeneous, 'class G'], _rational]	✓	3.144
7572	$e^x + (e^x \cot(y) + 2y \csc(y)) y' = 0$	[[_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓	0.345
7573	$(x + 2) \sin(y) + x \cos(y) y' = 0$	[_separable]	✓	0.363
7574	$y + (x - 2x^2y^3) y' = 0$	[[_homogeneous, 'class G'], _rational]	✓	0.326
7575	$x + 3y^2 + 2xyy' = 0$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓	0.372
7576	$y + (2x - ye^y) y' = 0$	[[_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓	0.301
7577	$y \ln(y) - 2xy + (x + y) y' = 0$	['y=_G(x,y)']	✓	0.345
7578	$y^2 + xy + 1 + (x^2 + xy + 1) y' = 0$	[_rational, [_Abel, '2nd type', 'class B']]	✓	0.329
7579	$x^3 + xy^3 + 3y^2y' = 0$	[_rational, _Bernoulli]	✓	0.334
7580	$y' = \frac{2y}{x} + \frac{x^3}{y} + x \tan\left(\frac{y}{x^2}\right)$	[[_homogeneous, 'class G']]	✓	5.049
7581	$yy'' + y'^2 = 0$	[[_2nd_order, __missing_x], [_2nd_order, _exact, _nonlinear], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓	0.401
7582	$xyy'' = y' + y'^3$	[NONE]	✗	0.095
7583	$y'' - k^2y = 0$	[[_2nd_order, __missing_x]]	✓	3.302

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
7584	$x^2 y'' = 2xy' + y'^2$	[[_2nd_order, _missing_y]]	✓	0.519
7585	$2yy'' = 1 + y'^2$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓	1.118
7586	$yy'' - y'^2 = 0$	[[_2nd_order, _missing_x], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓	0.247
7587	$xy'' + y' = 4x$	[[_2nd_order, _missing_y]]	✓	1.106
7588	i.c. $(x^2 + 2y') y'' + 2xy' = 0$	[[_2nd_order, _missing_y], [_2nd_order, _exact, _nonlinear], [_2nd_order, _reducible, _mu_poly_yn]]	✓	1.426
7589	i.c. $yy'' = y^2 y' + y'^2$	[[_2nd_order, _missing_x], [_2nd_order, _with_potential_symmetries], [_2nd_order, _reducible, _mu_xy]]	✓	0.630
7590	i.c. $y'' = e^y y'$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], [_2nd_order, _reducible, _mu_xy]]	✓	1.552
7591	$y'' = 1 + y'^2$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_xy]]	✓	0.380
7592	$y'' + y'^2 = 1$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_xy]]	✓	0.239
7593	$xy' + y = x$	[_linear]	✓	1.813
7594	$x^2 y' + y = x^2$	[_linear]	✓	0.956
7595	$x^2 y' = y$	[_separable]	✓	1.348
7596	$\sec(x) y' = \sec(y)$	[_separable]	✓	2.109

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
7597	$y' = \frac{y^2 + x^2}{x^2 - y^2}$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	7.237
7598	$y' = \frac{x + 2y}{2x - y}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓	2.658
7599	$x^2 y' + 2xy = 0$	[_separable]	✓	1.609
7600	$-\sin(x) \sin(y) + \cos(x) \cos(y) y' = 0$	[_separable]	✓	2.483
7601	$-y + xy' = 2x$ i.c.	[_linear]	✓	1.556
7602	$x^2 y' - 2y = 3x^2$ i.c.	[_linear]	✓	1.326
7603	$y^2 y' = x$ i.c.	[_separable]	✓	3.317
7604	$\csc(x) y' = \csc(y)$ i.c.	[_separable]	✓	2.822
7605	$y' = \frac{x + y}{x - y}$ i.c.	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓	8.604
7606	$y' = \frac{x^2 + 2y^2}{x^2 - 2y^2}$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	6.501
7607	$2x \cos(y) - x^2 \sin(y) y' = 0$ i.c.	[_separable]	✓	4.974
7608	$\frac{1}{y} - \frac{xy'}{y^2} = 0$	[_separable]	✓	1.330
7609	$yy'' - y'^2 = 0$	[[_2nd_order, _missing_x], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓	0.248
7610	$xy'' = y' - 2y^3$	[[_2nd_order, _missing_y], [_2nd_order, _reducible, _mu_y_y1]]	✓	0.686

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
7611	$yy'' + y' = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓	0.310
7612	$xy'' - 3y' = 5x$	[[_2nd_order, _missing_y]]	✓	1.182
7613	$y'' + y' - 6y = 0$	[[_2nd_order, _missing_x]]	✓	0.834
7614	$y'' + 2y' + y = 0$	[[_2nd_order, _missing_x]]	✓	0.847
7615	$y'' + 8y = 0$	[[_2nd_order, _missing_x]]	✓	2.036
7616	$2y'' - 4y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓	1.263
7617	$y'' - 4y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓	0.850
7618	$y'' - 9y' + 20y = 0$	[[_2nd_order, _missing_x]]	✓	0.823
7619	$2y'' + 2y' + 3y = 0$	[[_2nd_order, _missing_x]]	✓	2.083
7620	$4y'' - 12y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓	0.868
7621	$y'' + y = 0$	[[_2nd_order, _missing_x]]	✓	1.845
7622	$y'' - 6y' + 25y = 0$	[[_2nd_order, _missing_x]]	✓	1.838
7623	$4y'' + 20y' + 25y = 0$	[[_2nd_order, _missing_x]]	✓	0.875
7624	$y'' + 2y' + 3y = 0$	[[_2nd_order, _missing_x]]	✓	1.895
7625	$y'' = 4y$	[[_2nd_order, _missing_x]]	✓	2.081
7626	$4y'' - 8y' + 7y = 0$	[[_2nd_order, _missing_x]]	✓	2.157
7627	$2y'' + y' - y = 0$	[[_2nd_order, _missing_x]]	✓	0.832

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
7628	$y'' + 4y' + 5y = 0$	[[_2nd_order, _missing_x]]	✓	1.274
7629	$y'' + 4y' + 5y = 0$	[[_2nd_order, _missing_x]]	✓	1.273
7630	$y'' + 4y' - 5y = 0$	[[_2nd_order, _missing_x]]	✓	0.821
7631	i.c. $y'' - 5y' + 6y = 0$	[[_2nd_order, _missing_x]]	✓	1.100
7632	i.c. $y'' - 6y' + 5y = 0$	[[_2nd_order, _missing_x]]	✓	1.402
7633	i.c. $y'' - 6y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓	1.138
7634	i.c. $y'' + 4y' + 5y = 0$	[[_2nd_order, _missing_x]]	✓	2.128
7635	i.c. $y'' + 4y' + 2y = 0$	[[_2nd_order, _missing_x]]	✓	1.523
7636	i.c. $y'' + 8y' - 9y = 0$	[[_2nd_order, _missing_x]]	✓	1.457
7637	$x^2y'' + 3xy' + 10y = 0$	[[_Emden, _Fowler]]	✓	2.618
7638	$2x^2y'' + 10xy' + 8y = 0$	[[_Emden, _Fowler]]	✓	1.135
7639	$x^2y'' + 2xy' - 12y = 0$	[[_Emden, _Fowler]]	✓	0.971
7640	$4x^2y'' - 3y = 0$	[[_Emden, _Fowler]]	✓	0.744
7641	$x^2y'' - 3xy' + 4y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓	1.158
7642	$x^2y'' + 2xy' - 6y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓	1.025
7643	$x^2y'' + 2xy' + 3y = 0$	[[_Emden, _Fowler]]	✓	2.840
7644	$x^2y'' + xy' - 2y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓	1.198

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
7645	$x^2 y'' + xy' - 16y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)']]]	✓	0.964
7646	$y'' + 3y' - 10y = 6e^{4x}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.115
7647	$y'' + 4y = 3\sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	2.587
7648	$y'' + 10y' + 25y = 14e^{-5x}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.042
7649	$y'' - 2y' + 5y = 25x^2 + 12$	[[_2nd_order, _with_linear_symmetries]]	✓	15.478
7650	$y'' - y' - 6y = 20e^{-2x}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.139
7651	$y'' - 3y' + 2y = 14\sin(2x) - 18\cos(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.457
7652	$y'' + y = 2\cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	2.855
7653	$y'' - 2y' = 12x - 10$	[[_2nd_order, _missing_y]]	✓	1.618
7654	$y'' - 2y' + y = 6e^x$	[[_2nd_order, _with_linear_symmetries]]	✓	1.037
7655	$y'' - 2y' + 2y = e^x \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	5.128
7656	$y'' + y' = 10x^4 + 2$	[[_2nd_order, _missing_y]]	✓	1.585
7657	$y'' + 4y = 4\cos(2x) + 6\cos(x) + 8x^2 - 4x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	5.367
7658	$y'' + 9y = 2\sin(3x) + 4\sin(x) - 26e^{-2x} + 27x^3$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	7.786
7659	$y'' - 3y = e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.191
7660	$y''' + y' = \sin(x)$	[[_3rd_order, _missing_y]]	✓	0.627
7661	$y'' + 4y = \tan(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	5.972

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
7662	$y'' + 2y' + y = e^{-x} \ln(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.159
7663	$y'' - 2y' - 3y = 64x e^{-x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.110
7664	$y'' + 2y' + 5y = e^{-x} \sec(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	10.250
7665	$2y'' + 3y' + y = e^{-3x}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.005
7666	$y'' - 3y' + 2y = \frac{1}{1 + e^{-x}}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.043
7667	$y'' + y = \sec(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	2.754
7668	$y'' + y = \cot(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	2.427
7669	$y'' + y = \cot(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	4.627
7670	$y'' + y = x \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.358
7671	$y'' + y = \tan(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	2.935
7672	$y'' + y = \sec(x) \tan(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.496
7673	$y'' + y = \sec(x) \csc(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.224
7674	$y'' - 2y' + y = 2x$	[[_2nd_order, _with_linear_symmetries]]	✓	1.014
7675	$y'' - y' - 6y = e^{-x}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.028
7676	$(x^2 - 1)y'' - 2xy' + 2y = (x^2 - 1)^2$	[[_2nd_order, _with_linear_symmetries]]	✓	1.454
7677	$(x^2 + x)y'' + (-x^2 + 2)y' - (x + 2)y = x(x + 1)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.539
7678	$(1 - x)y'' + xy' - y = (1 - x)^2$	[[_2nd_order, _with_linear_symmetries]]	✓	1.625

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
7679	$xy'' - (x + 1)y' + y = x^2 e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.319
7680	$x^2 y'' - 2xy' + 2y = x e^{-x}$	[[_2nd_order, _with_linear_symmetries]]	✓	2.383
7681	$y'' + y = 0$	[[_2nd_order, _missing_x]]	✓	0.453
7682	$y'' - y = 0$	[[_2nd_order, _missing_x]]	✓	0.386
7683	$xy'' + 3y' = 0$	[[_2nd_order, _missing_y]]	✓	0.307
7684	$x^2 y'' + xy' - 4y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)']]]	✓	0.317
7685	$(-x^2 + 1)y'' - 2xy' + 2y = 0$	[_Gegenbauer]	✓	0.342
7686	$x^2 y'' + xy' + \left(x^2 - \frac{1}{4}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.388
7687	$y'' - \frac{xy'}{x-1} + \frac{y}{x-1} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.338
7688	$x^2 y'' + 2xy' - 2y = 0$	[[_Emden, _Fowler]]	✓	0.309
7689	$x^2 y'' - x(x+2)y' + (x+2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.335
7690	$y'' - xf(x)y' + f(x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.656
7691	$xy'' - (2x+1)y' + y(x+1) = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.367
7692	$y''' - 3y'' + 2y' = 0$	[[_3rd_order, _missing_x]]	✓	0.066
7693	$y''' - 3y'' + 4y' - 2y = 0$	[[_3rd_order, _missing_x]]	✓	0.074
7694	$y''' - y = 0$	[[_3rd_order, _missing_x]]	✓	0.074
7695	$y''' + y = 0$	[[_3rd_order, _missing_x]]	✓	0.072

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
7696	$y''' + 3y'' + 3y' + y = 0$	[[_3rd_order, _missing_x]]	✓	0.068
7697	$y'''' + 4y''' + 6y'' + 4y' + y = 0$	[[_high_order, _missing_x]]	✓	0.073
7698	$y'''' - y = 0$	[[_high_order, _missing_x]]	✓	0.074
7699	$y'''' + 5y'' + 4y = 0$	[[_high_order, _missing_x]]	✓	0.082
7700	$y'''' - 2a^2y'' + a^4y = 0$	[[_high_order, _missing_x]]	✓	0.079
7701	$y'''' + 2a^2y'' + a^4y = 0$	[[_high_order, _missing_x]]	✓	0.092
7702	$y'''' + 2y''' + 2y'' + 2y' + y = 0$	[[_high_order, _missing_x]]	✓	0.076
7703	$y'''' + 2y''' - 2y'' - 6y' + 5y = 0$	[[_high_order, _missing_x]]	✓	0.077
7704	$y''' - 6y'' + 11y' - 6y = 0$	[[_3rd_order, _missing_x]]	✓	0.068
7705	$y'''' + y''' - 3y'' - 5y' - 2y = 0$	[[_high_order, _missing_x]]	✓	0.073
7706	$y^{(5)} - 6y'''' - 8y''' + 48y'' + 16y' - 96y = 0$	[[_high_order, _missing_x]]	✓	0.079
7707	$y'''' = 0$	[[_high_order, _quadrature]]	✓	0.037
7708	$y'''' = \sin(x) + 24$	[[_high_order, _quadrature]]	✓	0.148
7709	$y''' - 3y'' + 2y' = 10 + 42e^{3x}$	[[_3rd_order, _missing_y]]	✓	0.127
7710	<i>i.c.</i> $y''' - y' = 1$	[[_3rd_order, _missing_x]]	✓	0.158
7711	$x^3y''' + 3x^2y'' = 0$	[[_3rd_order, _missing_y]]	✓	0.119
7712	$x^3y''' + x^2y'' - 2xy' + 2y = 0$	[[_3rd_order, _exact, _linear, _homogeneous]]	✓	0.124
7713	$x^3y''' + 2x^2y'' + xy' - y = 0$	[[_3rd_order, _with_linear_symmetries]]	✓	0.125

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
7714	$x^3 y'''' + 8x^2 y''' + 8xy'' - 8y' = 0$	[[_high_order, _missing_y]]	✓	0.184
7715	$y'' - 3y' + y = 0$	[[_2nd_order, _missing_x]]	✓	1.070
7716	$y'' + y' + y = 0$	[[_2nd_order, _missing_x]]	✓	2.077
7717	$y'' + 6y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓	0.826
7718	$y'' - y' + 6y = 0$	[[_2nd_order, _missing_x]]	✓	2.199
7719	$y'' - 2y' - 5y = x$	[[_2nd_order, _with_linear_symmetries]]	✓	1.655
7720	$y'' + y = e^x$	[[_2nd_order, _with_linear_symmetries]]	✓	1.867
7721	$y'' + y' + y = \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	43.375
7722	$y'' - y = e^{3x}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.076
7723	<i>i.c.</i> $y'' + 9y = 0$	[[_2nd_order, _missing_x]]	✓	3.163
7724	<i>i.c.</i> $y'' - y' + 4y = x$	[[_2nd_order, _with_linear_symmetries]]	✓	20.288
7725	<i>i.c.</i> $y'' + 2y' + 5y = e^x$	[[_2nd_order, _with_linear_symmetries]]	✓	11.091
7726	<i>i.c.</i> $y'' + 3y' + 4y = \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	74.007
7727	<i>i.c.</i> $y'' + y = e^{-x}$	[[_2nd_order, _with_linear_symmetries]]	✓	2.340
7728	<i>i.c.</i> $y'' - y = \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.471
7729	<i>i.c.</i> $y'' = \tan(x)$	[[_2nd_order, _quadrature]]	✓	19.046
7730	<i>i.c.</i> $y'' - 2y' = \ln(x)$	[[_2nd_order, _missing_y]]	✓	2.906
7731	$y'' + 3y' + 2y = 2x - 1$	[[_2nd_order, _with_linear_symmetries]]	✓	1.081

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
7732	$y'' - 3y' + 2y = e^{-x}$	[[_2nd_order, _with_linear_symmetries]]	✓	0.977
7733	$y'' - y' - 2y = \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.336
7734	$y'' + 2y' - y = x e^x \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	2.539
7735	$y'' + 9y = \sec(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	27.511
7736	$y'' + 4y' + 4y = x \ln(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.522
7737	$x^2 y'' + 3xy' + y = \frac{2}{x}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓	1.802
7738	$y'' + 4y = \tan(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	4.764
7739	$y'' - y = 3e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓	0.532
7740	$y'' + y = -8 \sin(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.735
7741	$y'' + y' + y = x^2 + 2x + 2$	[[_2nd_order, _with_linear_symmetries]]	✓	0.746
7742	$y'' + y' = \frac{x-1}{x}$	[[_2nd_order, _missing_y]]	✓	0.788
7743	<i>i.c.</i> $x^2 y'' - 2xy' + 2y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]]']]	✓	1.426
7744	$y'' + 9y = -3 \cos(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.545
7745	$y' + y = \cos(x)$	[[_linear, 'class A']]	✓	1.191
7746	<i>i.c.</i> $y'' = -3y$	[[_2nd_order, _missing_x]]	✓	97.530
7747	$y'' + \sin(y) = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓	1.805
7748	$y' = 2xy$	[_separable]	✓	0.615

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
7749	$y' = 2xy$	[_separable]	✓	1.156
7750	$y' + y = 1$	[_quadrature]	✓	0.311
7751	$y' + y = 1$	[_quadrature]	✓	0.906
7752	$y' - y = 2$	[_quadrature]	✓	0.526
7753	$y' - y = 2$	[_quadrature]	✓	1.028
7754	$y' + y = 0$	[_quadrature]	✓	0.308
7755	$y' + y = 0$	[_quadrature]	✓	1.022
7756	$y' - y = 0$	[_quadrature]	✓	0.533
7757	$y' - y = 0$	[_quadrature]	✓	1.032
7758	$y' - y = x^2$	[[_linear, 'class A']]	✓	0.553
7759	$y' - y = x^2$	[[_linear, 'class A']]	✓	1.038
7760	$xy' = y$	[_separable]	✓	0.457
7761	$xy' = y$	[_separable]	✓	1.336
7762	$x^2y' = y$	[_separable]	✗	0.090
7763	$x^2y' = y$	[_separable]	✓	1.347
7764	$y' - \frac{y}{x} = x^2$	[_linear]	✓	0.493
7765	$y' - \frac{y}{x} = x^2$	[_linear]	✓	1.291
7766	$y' + \frac{y}{x} = x$	[_linear]	✓	1.228
7767	$y' = \frac{1}{\sqrt{-x^2 + 1}}$	[_quadrature]	✓	0.356
7768	$y' = 1 + y$	[_quadrature]	✓	0.309
7769	$y' = x - y$	[[_linear, 'class A']]	✓	0.568
	<i>i.c.</i>			
7770	$y' = x - y$	[[_linear, 'class A']]	✓	1.235
	<i>i.c.</i>			

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
7771	$y'' + xy' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.605
7772	$y'' - y' + xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.651
7773	$y'' + 2xy' - y = x$	[[_2nd_order, _with_linear_symmetries]]	✓	0.644
7774	$y'' + y' - x^2y = 1$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.670
7775	$(x^2 + 1)y'' + xy' + y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]]	✓	0.677
7776	$y'' + (x + 1)y' - y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.646
7777	$(x^2 + 1)y'' + 2xy' - 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.627
7778	$y'' + xy' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.610
7779	<i>i.c.</i> $y'' + y' - xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.573
7780	<i>i.c.</i> $y'' + y' - xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.572
7781	$y'' + \left(p + \frac{1}{2} - \frac{x^2}{4}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.713
7782	$y'' + xy = 0$	[[_Emden, _Fowler]]	✓	0.503
7783	$(-x^2 + 1)y'' - xy' + p^2y = 0$	[_Gegenbauer, [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]]	✓	0.890
7784	$y'' - 2xy' + 2py = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.700
7785	$x^3(x - 1)y'' - 2(x - 1)y' + 3xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.131
7786	$x^2(x^2 - 1)y'' - x(1 - x)y' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.461

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
7787	$x^2 y'' + (2 - x) y' = 0$	[[_2nd_order, _missing_y]]	✗	0.161
7788	$(3x + 1) xy'' - (x + 1) y' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.562
7789	$y'' + \sin(x) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.824
7790	$xy'' + \sin(x) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.879
7791	$x^2 y'' + \sin(x) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.308
7792	$x^3 y'' + \sin(x) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.894
7793	$x^4 y'' + \sin(x) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.176
7794	$x^3 y'' + (\cos(2x) - 1) y' + 2xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.044
7795	$4x^2 y'' + (2x^4 - 5x) y' + (3x^2 + 2) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.089
7796	$x^2 y'' + 3xy' + 4xy = 0$	[[_Emden, _Fowler]]	✓	1.305
7797	$x^3 y'' - 4x^2 y' + 3xy = 0$	[[_Emden, _Fowler]]	✓	0.868
7798	$4xy'' + 3y' + y = 0$	[[_Emden, _Fowler]]	✓	1.051
7799	$2xy'' + (3 - x) y' - y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	1.017
7800	$2xy'' + (x + 1) y' + 3y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.082
7801	$2x^2 y'' + xy' - y(x + 1) = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.231
7802	$x^2 y'' + xy' + x^2 y = 0$	[_Lienard]	✓	0.731
7803	$y'' + \frac{y'}{x^2} - \frac{y}{x^3} = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, ' _with_symmetry_[0,F(x)]']]	✗	0.122
7804	$x^2 y'' + (3x - 1) y' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✗	0.173

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
7805	$x^2 y'' - 3xy' + (4x + 4)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.934
7806	$4x^2 y'' - 8x^2 y' + (4x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.085
7807	$xy'' + 2y' + xy = 0$	[_Lienard]	✓	0.848
7808	$x^2 y'' - x^2 y' + (x^2 - 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.122
7809	$xy'' - y' + 4x^3 y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓	0.787
7810	$(x - 1)^2 y'' - 3(x - 1)y' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.835
7811	$3(x + 1)^2 y'' - (x + 1)y' - y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.814
7812	$x^2 y'' + xy' + (x^2 - 1)y = 0$	[_Bessel]	✓	1.243
7813	$x^2 y'' + xy' + \left(x^2 - \frac{1}{4}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.977
7814	$x(1 - x)y'' + \left(\frac{3}{2} - 2x\right)y' + 2y = 0$	[_Jacobi]	✓	1.102
7815	$(2x^2 + 2x)y'' + (1 + 5x)y' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.878
7816	$(x^2 - 1)y'' + (5x + 4)y' + 4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.148
7817	$(x^2 - x - 6)y'' + (5 + 3x)y' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	1.232
7818	$(-x^2 + 1)y'' - xy' + p^2 y = 0$	[_Gegenbauer, [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓	1.575
7819	$(1 - e^x)y'' + \frac{y'}{2} + ye^x = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	1.235
7820	$y'' + 2xy = x^2$	[[_2nd_order, _with_linear_symmetries]]	✓	0.539

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
7821	$y'' - xy' + y = x$	[[_2nd_order, _with_linear_symmetries]]	✓	0.614
7822	$y'' + y' + y = x^3 - x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.442
7823	$2y'' + xy' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.611
7824	$(x^2 + 4)y'' - y' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.742
7825	$(x^2 + 1)y'' - xy' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.616
7826	$y'' - (x + 1)y' - xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.685
7827	$(x - 1)y'' + (x + 1)y' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.711
7828	$(x^2 + 1)x^2y'' - xy' + (x + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.986
7829	$x^2y'' + xy' + y(x + 1) = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.950
7830	$xy'' - 4y' + xy = 0$	[_Lienard]	✓	0.897
7831	$4x^2y'' + 4x^2y' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.934
7832	$2xy'' + (1 - x)y' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.052
7833	$xy'' - (x - 1)y' + 2y = 0$	[_Laguerre]	✓	0.873
7834	$x^2y'' + x(1 - x)y' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.976
7835	$xy'' + (x + 1)y' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.829
7836	$x^3y''' + 2x^2y'' + (x^2 + x)y' + xy = 0$	[[_3rd_order, _with_linear_symmetries]]	✗	0.006
7837	$x^3y''' + x^2y'' - 3xy' + (x - 1)y = 0$	[[_3rd_order, _with_linear_symmetries]]	✗	0.007
7838	$x^3y''' - 2x^2y'' + (x^2 + 2x)y' - xy = 0$	[[_3rd_order, _with_linear_symmetries]]	✗	0.006

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
7839	$x^3 y''' + (2x^3 - x^2) y'' - xy' + y = 0$	[[_3rd_order, _with_linear_symmetries]]	✗	0.007
7840	$x^3 y'' + x^2 y' + y = 0$	[[_Emden, _Fowler]]	✓	0.873
7841	$9(-2 + x)^2 (x - 3) y'' + 6x(-2 + x) y' + 16y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.388
7842	$(-x^2 + 1) y'' - 2xy' + p(p + 1) y = 0$	[_Gegenbauer]	✓	1.310
7843	i.c. $y'' + 5y' + 6y = 5e^{3t}$	[[_2nd_order, _with_linear_symmetries]]	✓	0.306
7844	i.c. $y'' + y' - 6y = t$	[[_2nd_order, _with_linear_symmetries]]	✓	0.284
7845	i.c. $y'' - y = t^2$	[[_2nd_order, _with_linear_symmetries]]	✓	0.296
7846	i.c. $Li' + Ri = E_0 \text{Heaviside}(t)$	[[_linear, 'class A']]	✓	0.197
7847	i.c. $Li' + Ri = E_0 \delta(t)$	[[_linear, 'class A']]	✓	0.117
7848	i.c. $Li' + Ri = E_0 \sin(\omega t)$	[[_linear, 'class A']]	✓	0.279
7849	i.c. $y'' + 3y' - 5y = 1$	[[_2nd_order, _missing_x]]	✓	0.365
7850	i.c. $y'' + 3y' - 2y = -6e^{-t+\pi}$	[[_2nd_order, _with_linear_symmetries]]	✓	0.793
7851	i.c. $y'' + 2y' - y = te^{-t}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.347
7852	i.c. $y'' - y' + y = 3e^{-t}$	[[_2nd_order, _with_linear_symmetries]]	✓	0.503
7853	$y'' - 5y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓	0.204
7854	$y'' + 3y' + 3y = 2$	[[_2nd_order, _missing_x]]	✓	0.306
7855	$y'' + y' + 2y = t$	[[_2nd_order, _with_linear_symmetries]]	✓	0.302
7856	$y'' - 7y' + 12y = te^{2t}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.217

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
7857	$i'' + 2i' + 3i = \begin{cases} 30 & 0 < t < 2\pi \\ 0 & 2\pi \leq t \leq 5\pi \\ 10 & 5\pi < t < \infty \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	29.316
7858	$\begin{bmatrix} x' = x + 3y \\ y' = 3x + y \end{bmatrix}$	system_of_ODEs	✓	0.322
7859	$\begin{bmatrix} x' = x + 3y \\ y' = 3x + y \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.489
7860	$\begin{bmatrix} x' = x + 2y \\ y' = 3x + 2y \end{bmatrix}$	system_of_ODEs	✓	0.322
7861	$\begin{bmatrix} x' = x + 2y + t - 1 \\ y' = 3x + 2y - 5t - 2 \end{bmatrix}$	system_of_ODEs	✓	0.516
7862	$\begin{bmatrix} x' = x + y \\ y' = y \end{bmatrix}$	system_of_ODEs	✓	0.267
7863	$\begin{bmatrix} x' = x \\ y' = y \end{bmatrix}$	system_of_ODEs	✓	0.222
7864	$\begin{bmatrix} x' = -3x + 4y \\ y' = -2x + 3y \end{bmatrix}$	system_of_ODEs	✓	0.311
7865	$\begin{bmatrix} x' = 4x - 2y \\ y' = 5x + 2y \end{bmatrix}$	system_of_ODEs	✓	0.427
7866	$\begin{bmatrix} x' = 5x + 4y \\ y' = y - x \end{bmatrix}$	system_of_ODEs	✓	0.289
7867	$\begin{bmatrix} x' = 4x - 3y \\ y' = 8x - 6y \end{bmatrix}$	system_of_ODEs	✓	0.308
7868	$\begin{bmatrix} x' = 2x \\ y' = 3y \end{bmatrix}$	system_of_ODEs	✓	0.270
7869	$\begin{bmatrix} x' = -4x - y \\ y' = x - 2y \end{bmatrix}$	system_of_ODEs	✓	0.292

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
7870	$\begin{bmatrix} x' = 7x + 6y \\ y' = 2x + 6y \end{bmatrix}$	system_of_ODEs	✓	0.335
7871	$\begin{bmatrix} x' = x - 2y \\ y' = 4x + 5y \end{bmatrix}$	system_of_ODEs	✓	0.472
7872	$\begin{bmatrix} x' = x + y - 5t + 2 \\ y' = 4x - 2y - 8t - 8 \end{bmatrix}$	system_of_ODEs	✓	0.533
7873	$\begin{bmatrix} x' = 3x - 4y \\ y' = 4x - 7y \end{bmatrix}$	system_of_ODEs	✓	0.326
7874	$\begin{bmatrix} x' = x + y \\ y' = 4x + y \end{bmatrix}$	system_of_ODEs	✓	0.320
7875	$\begin{bmatrix} x' = -3x + \sqrt{2}y \\ y' = \sqrt{2}x - 2y \end{bmatrix}$	system_of_ODEs	✓	0.380
7876	$\begin{bmatrix} x' = 5x + 3y \\ y' = -6x - 4y \end{bmatrix}$	system_of_ODEs	✓	0.313
7877	$\begin{bmatrix} x' = 3x + 2y \\ y' = -2x - y \end{bmatrix}$	system_of_ODEs	✓	0.295
7878	$\begin{bmatrix} x' = x + y \\ y' = y - x \end{bmatrix}$	system_of_ODEs	✓	0.339
7879	$\begin{bmatrix} x' = 3x - 5y \\ y' = -x + 2y \end{bmatrix}$	system_of_ODEs	✓	0.528
7880	$\begin{bmatrix} x' = x + 2y \\ y' = -4x + y \end{bmatrix}$	system_of_ODEs	✓	0.524
7881	$\begin{bmatrix} x' = 3x + 2y + z \\ y' = -2x - y + 3z \\ z' = x + y + z \end{bmatrix}$	system_of_ODEs	✓	0.503
7882	$\begin{bmatrix} x' = -x + y - z \\ y' = 2x - y - 4z \\ z' = 3x - y + z \end{bmatrix}$	system_of_ODEs	✓	8.153

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
7883	$\begin{bmatrix} x' = x + 2y - 4t + 1 \\ y' = -x + 2y + 3t + 4 \end{bmatrix}$	system_of_ODEs	✓	1.229
7884	$\begin{bmatrix} x' = -2x + y - t + 3 \\ y' = x + 4y + t - 2 \end{bmatrix}$	system_of_ODEs	✓	0.881
7885	$\begin{bmatrix} x' = -4x + y - t + 3 \\ y' = -x - 5y + t + 1 \end{bmatrix}$	system_of_ODEs	✓	1.184
7886	$\begin{bmatrix} x' = xy + 1 \\ y' = y - x \end{bmatrix}$ i.c.	system_of_ODEs	✗	0.053
7887	$\begin{bmatrix} x' = ty + 1 \\ y' = -xt + y \end{bmatrix}$ i.c.	system_of_ODEs	✗	0.052
7888	$y' = y^2 - x$ i.c.	[[_Riccati, _special]]	✓	0.270
7889	$y' = y^2 - x$ i.c.	[[_Riccati, _special]]	✓	1.832
7890	$y' - 2y = x^2$ i.c.	[[_linear, 'class A']]	✓	0.609
7891	$y' - 2y = x^2$ i.c.	[[_linear, 'class A']]	✓	1.362
7892	$y' = y + x e^y$ i.c.	['y=_G(x,y)']	✓	0.573
7893	$y' = y + x e^y$ i.c.	['y=_G(x,y)']	✗	1.013
7894	$y'' + y = 0$	[[_2nd_order, _missing_x]]	✓	0.343
7895	$y'' + y = 0$	[[_2nd_order, _missing_x]]	✓	1.821
7896	$y'' - y = 0$	[[_2nd_order, _missing_x]]	✓	0.539
7897	$y'' - y = 0$	[[_2nd_order, _missing_x]]	✓	1.921
7898	$y'' - y' = 0$	[[_2nd_order, _missing_x]]	✓	0.573

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
7899	$y'' - y' = 0$	[[_2nd_order, __missing_x]]	✓	1.176
7900	$y'' + 2y' = 0$	[[_2nd_order, __missing_x]]	✓	0.583
7901	$y'' + 2y' = 0$	[[_2nd_order, __missing_x]]	✓	1.385
7902	$y'' - xy = 0$	[[_Emden, _Fowler]]	✓	0.500
7903	$y'' + x^2y = 0$	[[_Emden, _Fowler]]	✓	0.509
7904	$y'' - 2xy' + y = 0$	[_Lienard]	✓	0.615
7905	$y'' - xy' + 2y = 0$	[_Hermite]	✓	0.584
7906	$y'' + x^2y' + xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.623
7907	$y'' + 2xy' + 2y = 0$	[[_2nd_order, __exact, _linear, _homogeneous]]	✓	0.618
7908	$(x - 1)y'' + y' = 0$	[[_2nd_order, __missing_y]]	✓	0.561
7909	$(x + 2)y'' + xy' - y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.616
7910	$y'' - (x + 1)y' - y = 0$	[[_2nd_order, __exact, _linear, _homogeneous]]	✓	0.665
7911	$(x^2 + 1)y'' - 6y = 0$	[[_Emden, _Fowler]]	✓	0.629
7912	$(x^2 + 2)y'' + 3xy' - y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.710
7913	$(x^2 - 1)y'' + xy' - y = 0$	[[_2nd_order, __exact, _linear, _homogeneous]]	✓	0.626
7914	$(x - 1)y'' - xy' + y = 0$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	0.536
7915	$(x + 1)y'' - (2 - x)y' + y = 0$ i.c.	[[_2nd_order, __exact, _linear, _homogeneous]]	✓	0.659
7916	$y'' - 2xy' + 8y = 0$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	0.593
7917	$(x^2 + 1)y'' + 2xy' = 0$ i.c.	[[_2nd_order, __missing_y]]	✓	0.618

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
7918	$y'' + \sin(x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.827
7919	$y'' + e^x y' - y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.937
7920	$\cos(x)y'' + y' + 5y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	2.414
7921	$\cos(x)y'' + y' + 5y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	5.455
7922	$y'' - xy = 1$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.519
7923	$y'' - 4xy' - 4y = e^x$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓	0.702
7924	$xy'' + \sin(x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.807
7925	$y'' + 5xy' + \sqrt{x}y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.144
7926	$y'' + xy' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.611
7927	<i>i.c.</i> $y'' + y \cos(x) = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.818
7928	$x^3 y'' + 4x^2 y' + 3y = 0$	[[_Emden, _Fowler]]	✗	0.120
7929	$x(x+3)^2 y'' - y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.529
7930	$(x^2 - 9)^2 y'' + (x+3)y' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.880
7931	$y'' - \frac{y'}{x} + \frac{y}{(x-1)^3} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.655
7932	$(x^3 + 4x)y'' - 2xy' + 6y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.526
7933	$x^2(x-5)^2 y'' + 4xy' + (x^2 - 25)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.773
7934	$(x^2 + x - 6)y'' + (x+3)y' + (-2+x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.805

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
7935	$x(x^2 + 1)^2 y'' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.395
7936	$x^3(x^2 - 25)(-2 + x)^2 y'' + 3x(-2 + x)y' + 7(x + 5)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.151
7937	$(x^3 - 2x^2 + 3x)^2 y'' + x(x - 3)^2 y' - y(x + 1) = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.454
7938	$(x^2 - 1)y'' + 5(x + 1)y' + (x^2 - x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.875
7939	$xy'' + (x + 3)y' + 7x^2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.369
7940	$x^2y'' + \left(\frac{5}{3}x + x^2\right)y' - \frac{y}{3} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.133
7941	$xy'' + y' + 10y = 0$	[[_Emden, _Fowler]]	✓	0.829
7942	$2xy'' - y' + 2y = 0$	[[_Emden, _Fowler]]	✓	1.064
7943	$2xy'' + 5y' + xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.832
7944	$4xy'' + \frac{y'}{2} + y = 0$	[[_Emden, _Fowler]]	✓	1.044
7945	$2x^2y'' - xy' + (x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.954
7946	$3xy'' + (2 - x)y' - y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	1.020
7947	$x^2y'' - \left(x - \frac{2}{9}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.088
7948	$2xy'' - (2x + 3)y' + y = 0$	[_Laguerre]	✓	1.046
7949	$x^2y'' + xy' + \left(x^2 - \frac{4}{9}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.948
7950	$9x^2y'' + 9x^2y' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.145
7951	$2x^2y'' + 3xy' + (2x - 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.203

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
7952	$xy'' + 2y' - xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.848
7953	$x^2y'' + xy' + \left(x^2 - \frac{1}{4}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.973
7954	$xy'' - xy' + y = 0$	[_Laguerre, [_2nd_order, _linear, '_with_symmetry_[0,F(x)']]]	✓	1.262
7955	$y'' + \frac{3y'}{x} - 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.181
7956	$xy'' + (1 - x)y' - y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.839
7957	$xy'' + y' + y = 0$	[[_Emden, _Fowler]]	✓	0.837
7958	$xy'' + (x - 6)y' - 3y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.118
7959	$x(x - 1)y'' + 3y' - 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.977
7960	$y'' + \frac{2y'}{t} + \lambda y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.919
7961	$x^3y'' + y = 0$	[[_Emden, _Fowler]]	✗	0.110
7962	$x^2y'' + (3x - 1)y' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✗	0.171
7963	$x^2y'' + xy' + \left(x^2 - \frac{1}{9}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	2.038
7964	$x^2y'' + xy' + (x^2 - 1)y = 0$	[_Bessel]	✓	1.936
7965	$4x^2y'' + 4xy' + (4x^2 - 25)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	3.077
7966	$16x^2y'' + 16xy' + (16x^2 - 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	2.006
7967	$xy'' + y' + xy = 0$	[_Lienard]	✓	0.859
7968	$y' + xy'' + \left(x - \frac{4}{x}\right)y = 0$	[_Bessel]	✓	1.019
7969	$x^2y'' + xy' + (9x^2 - 4)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	2.128

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
7970	$x^2y'' + xy' + \left(36x^2 - \frac{1}{4}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	3.807
7971	$x^2y'' + xy' + \left(25x^2 - \frac{4}{9}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	2.001
7972	$x^2y'' + xy' + (2x^2 - 64)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	3.970
7973	$xy'' + 2y' + 4y = 0$	[[_Emden, _Fowler]]	✓	0.862
7974	$xy'' + 3y' + xy = 0$	[_Lienard]	✓	0.877
7975	$xy'' - y' + xy = 0$	[_Lienard]	✓	0.860
7976	$xy'' - 5y' + xy = 0$	[_Lienard]	✓	0.969
7977	$x^2y'' + (x^2 - 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.697
7978	$4x^2y'' + (16x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.895
7979	$xy'' + 3y' + x^3y = 0$	[[_Emden, _Fowler]]	✓	1.730
7980	$9x^2y'' + 9xy' + (x^6 - 36)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	2.106
7981	$y'' - x^2y = 0$	[[_Emden, _Fowler]]	✓	0.925
7982	$xy'' + y' - 7x^3y = 0$	[[_Emden, _Fowler]]	✓	1.089
7983	$y'' + y = 0$	[[_2nd_order, _missing_x]]	✓	1.839
7984	$x^2y'' + 4xy' + (x^2 + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	2.849
7985	$16x^2y'' + 32xy' + (x^4 - 12)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	2.802
7986	$4x^2y'' - 4xy' + (16x^2 + 3)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	4.149
7987	$2xy'' + y' + y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, 'with_symmetry_[0,F(x)]']]	✓	1.058
7988	$y'' - xy' - y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.618

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
7989	$(x - 1)y'' + 3y = 0$	[[_Emden, _Fowler]]	✓	0.684
7990	$y'' - x^2y' + xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.567
7991	$xy'' - (x + 2)y' + 2y = 0$	[_Laguerre]	✓	1.020
7992	$\cos(x)y'' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.158
7993	<i>i.c.</i> $y'' + xy' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.606
7994	<i>i.c.</i> $(x + 2)y'' + 3y = 0$	[[_Emden, _Fowler]]	✓	0.663
7995	$(1 - 2\sin(x))y'' + xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	4.057
7996	<i>i.c.</i> $y'' + xy' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.671
7997	$xy'' + (1 - \cos(x))y' + x^2y = 0$	[[_Emden, _Fowler]]	✓	2.890
7998	$(e^x - 1 - x)y'' + xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.889
7999	$y'' + x^2y' + 2xy = 10x^3 - 2x + 5$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓	0.691
8000	<i>i.c.</i> $y' - y = 1$	[_quadrature]	✓	0.293
8001	<i>i.c.</i> $2y' + y = 0$	[_quadrature]	✓	0.305
8002	<i>i.c.</i> $y' + 6y = e^{4t}$	[[_linear, 'class A']]	✓	0.335
8003	<i>i.c.</i> $y' - y = 2\cos(5t)$	[[_linear, 'class A']]	✓	0.426
8004	<i>i.c.</i> $y'' + 5y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓	0.261
8005	<i>i.c.</i> $y'' - 4y' = 6e^{3t} - 3e^{-t}$	[[_2nd_order, _missing_y]]	✓	0.289
8006	<i>i.c.</i> $y'' + y = \sqrt{2}\sin(\sqrt{2}t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.477

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
8007	$y'' + 9y = e^t$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	0.373
8008	$2y''' + 3y'' - 3y' - 2y = e^{-t}$ i.c.	[[_3rd_order, _with_linear_symmetries]]	✓	0.329
8009	$y''' + 2y'' - y' - 2y = \sin(3t)$ i.c.	[[_3rd_order, _linear, _nonhomogeneous]]	✓	0.462
8010	$y' + y = e^{-3t} \cos(2t)$ i.c.	[[_linear, 'class A']]	✓	0.412
8011	$y'' - 2y' + 5y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	0.318
8012	$y' + 4y = e^{-4t}$ i.c.	[[_linear, 'class A']]	✓	0.323
8013	$y' - y = 1 + te^t$ i.c.	[[_linear, 'class A']]	✓	0.300
8014	$y'' + 2y' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	0.244
8015	$y'' - 4y' + 4y = t^3 e^{2t}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.248
8016	$y'' - 6y' + 9y = t$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	0.282
8017	$y'' - 4y' + 4y = t^3$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.288
8018	$y'' - 6y' + 13y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	0.298
8019	$2y'' + 20y' + 51y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	0.465
8020	$y'' - y = e^t \cos(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.343
8021	$y'' - 2y' + 5y = t + 1$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	0.350
8022	$y'' + 2y' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	0.291
8023	$y'' + 8y' + 20y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	0.203

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
8024	$y' + y = \begin{cases} 0 & 0 \leq t < 1 \\ 5 & 1 \leq t \end{cases}$ i.c.	[[_linear, 'class A']]	✓	0.486
8025	$y' + y = \begin{cases} 1 & 0 \leq t < 1 \\ -1 & 1 \leq t \end{cases}$ i.c.	[[_linear, 'class A']]	✓	0.543
8026	$y' + y = \begin{cases} t & 0 \leq t < 1 \\ 0 & 1 \leq t \end{cases}$ i.c.	[[_linear, 'class A']]	✓	0.571
8027	$y'' + 4y = \begin{cases} 1 & 0 \leq t < 1 \\ 0 & 1 \leq t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.889
8028	$y'' + 4y = \sin(t) \text{Heaviside}(t - 2\pi)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.645
8029	$y'' - 5y' + 6y = \text{Heaviside}(t - 1)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.566
8030	$y'' + y = \begin{cases} 0 & 0 \leq t < \pi \\ 1 & \pi \leq t < 2\pi \\ 0 & 2\pi \leq t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.691
8031	$y'' + 4y' + 3y = 1 - \text{Heaviside}(t - 2) - \text{Heaviside}(-4 + t) + \text{Heaviside}(t - 6)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.245
8032	$y' + y = t \sin(t)$ i.c.	[[_linear, 'class A']]	✓	0.389
8033	$y' - y = t e^t \sin(t)$ i.c.	[[_linear, 'class A']]	✓	0.416
8034	$y'' + 9y = \cos(3t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.363
8035	$y'' + y = \sin(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.325
8036	$y'' + 16y = \begin{cases} \cos(4t) & 0 \leq t < \pi \\ 0 & \pi \leq t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.651

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
8037	$y'' + y = \begin{cases} 1 & 0 \leq t < \frac{\pi}{2} \\ \sin(t) & \frac{\pi}{2} \leq t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.592
8038	$ty'' - y' = 2t^2$ i.c.	[[_2nd_order, _missing_y]]	✓	1.185
8039	$2y'' + ty' - 2y = 10$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	1.088
8040	$y'' + y = \sin(t) + t \sin(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.366
8041	$y' - 3y = \delta(t - 2)$ i.c.	[[_linear, 'class A']]	✓	0.388
8042	$y' + y = \delta(t - 1)$ i.c.	[[_linear, 'class A']]	✓	0.394
8043	$y'' + y = \delta(t - 2\pi)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.478
8044	$y'' + 16y = \delta(t - 2\pi)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.356
8045	$y'' + y = \delta\left(t - \frac{\pi}{2}\right) + \delta\left(t - \frac{3\pi}{2}\right)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.500
8046	$y'' + y = \delta(t - 2\pi) + \delta(t - 4\pi)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.604
8047	$y'' + 2y' = \delta(t - 1)$ i.c.	[[_2nd_order, _missing_y]]	✓	0.538
8048	$y'' - 2y' = 1 + \delta(t - 2)$ i.c.	[[_2nd_order, _missing_y]]	✓	0.506
8049	$y'' + 4y' + 5y = \delta(t - 2\pi)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.486
8050	$y'' + 2y' + y = \delta(t - 1)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.342
8051	$y'' + 4y' + 13y = \delta(t - \pi) + \delta(t - 3\pi)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.847
8052	$y'' - 7y' + 6y = e^t + \delta(t - 2) + \delta(-4 + t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.930

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
8053	<i>i.c.</i> $y'' + 2y' + 10y = 0$	[[_2nd_order, __missing_x]]	✓	0.300
8054	$y'' + 2y' + 10y = \delta(t)$	[[_2nd_order, __linear, __nonhomogeneous]]	✓	0.284
8055	$\begin{bmatrix} x' = 3x - 5y \\ y' = 4x + 8y \end{bmatrix}$	system_of_ODEs	✓	0.646
8056	$\begin{bmatrix} x' = 4x - 7y \\ y' = 5x \end{bmatrix}$	system_of_ODEs	✓	0.627
8057	$\begin{bmatrix} x' = -3x + 4y - 9z \\ y' = 6x - y \\ z' = 10x + 4y + 3z \end{bmatrix}$	system_of_ODEs	✓	8.915
8058	$\begin{bmatrix} x' = x - y \\ y' = x + 2z \\ z' = z - x \end{bmatrix}$	system_of_ODEs	✓	7.394
8059	$\begin{bmatrix} x' = x - y + z + t - 1 \\ y' = 2x + y - z - 3t^2 \\ z' = x + y + z + t^2 - t + 2 \end{bmatrix}$	system_of_ODEs	✓	3.100
8060	$\begin{bmatrix} x' = -3x + 4y + e^{-t} \sin(2t) \\ y' = 5x + 9z + 4e^{-t} \cos(2t) \\ z' = y + 6z - e^{-t} \end{bmatrix}$	system_of_ODEs	✓	185.581
8061	$\begin{bmatrix} x' = 4x + 2y + e^t \\ y' = -x + 3y - e^t \end{bmatrix}$	system_of_ODEs	✓	1.179
8062	$\begin{bmatrix} x' = 7x + 5y - 9z - 8e^{-2t} \\ y' = 4x + y + z + 2e^{5t} \\ z' = -2y + 3z + e^{5t} - 3e^{-2t} \end{bmatrix}$	system_of_ODEs	✓	38.418
8063	$\begin{bmatrix} x' = x - y + 2z + e^{-t} - 3t \\ y' = 3x - 4y + z + 2e^{-t} + t \\ z' = -2x + 5y + 6z + 2e^{-t} - t \end{bmatrix}$	system_of_ODEs	✓	186.508
8064	$\begin{bmatrix} x' = 3x - 7y + 4 \sin(t) + (-4 + t)e^{4t} \\ y' = x + y + 8 \sin(t) + (2t + 1)e^{4t} \end{bmatrix}$	system_of_ODEs	✓	4.274

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
8065	$\begin{bmatrix} x' = 3x - 4y \\ y' = 4x - 7y \end{bmatrix}$	system_of_ODEs	✓	0.344
8066	$\begin{bmatrix} x' = -2x + 5y \\ y' = -2x + 4y \end{bmatrix}$	system_of_ODEs	✓	0.459
8067	$\begin{bmatrix} x' = -x + \frac{y}{4} \\ y' = x - y \end{bmatrix}$	system_of_ODEs	✓	0.333
8068	$\begin{bmatrix} x' = 2x + y \\ y' = -x \end{bmatrix}$	system_of_ODEs	✓	0.290
8069	$\begin{bmatrix} x' = x + 2y + z \\ y' = 6x - y \\ z' = -x - 2y - z \end{bmatrix}$	system_of_ODEs	✓	0.536
8070	$\begin{bmatrix} x' = x + z \\ y' = x + y \\ z' = -2x - z \end{bmatrix}$	system_of_ODEs	✓	0.562
8071	$\begin{bmatrix} x' = x + 2y \\ y' = 4x + 3y \end{bmatrix}$	system_of_ODEs	✓	0.325
8072	$\begin{bmatrix} x' = 2x + 2y \\ y' = x + 3y \end{bmatrix}$	system_of_ODEs	✓	0.318
8073	$\begin{bmatrix} x' = -4x + 2y \\ y' = -\frac{5x}{2} + 2y \end{bmatrix}$	system_of_ODEs	✓	0.339
8074	$\begin{bmatrix} x' = -\frac{5x}{2} + 2y \\ y' = \frac{3x}{4} - 2y \end{bmatrix}$	system_of_ODEs	✓	0.339
8075	$\begin{bmatrix} x' = 10x - 5y \\ y' = 8x - 12y \end{bmatrix}$	system_of_ODEs	✓	0.346
8076	$\begin{bmatrix} x' = -6x + 2y \\ y' = -3x + y \end{bmatrix}$	system_of_ODEs	✓	0.311
8077	$\begin{bmatrix} x' = x + y - z \\ y' = 2y \\ z' = y - z \end{bmatrix}$	system_of_ODEs	✓	0.380

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
8078	$\begin{bmatrix} x' = 2x - 7y \\ y' = 5x + 10y + 4z \\ z' = 5y + 2z \end{bmatrix}$	system_of_ODEs	✓	0.497
8079	$\begin{bmatrix} x' = y - x \\ y' = x + 2y + z \\ z' = 3y - z \end{bmatrix}$	system_of_ODEs	✓	0.490
8080	$\begin{bmatrix} x' = x + z \\ y' = y \\ z' = x + z \end{bmatrix}$	system_of_ODEs	✓	0.322
8081	$\begin{bmatrix} x' = -x - y \\ y' = \frac{3x}{4} - \frac{3y}{2} + 3z \\ z' = \frac{x}{8} + \frac{y}{4} - \frac{z}{2} \end{bmatrix}$	system_of_ODEs	✓	0.494
8082	$\begin{bmatrix} x' = -x - y \\ y' = \frac{3x}{4} - \frac{3y}{2} + 3z \\ z' = \frac{x}{8} + \frac{y}{4} - \frac{z}{2} \end{bmatrix}$	system_of_ODEs	✓	0.515
8083	$\begin{bmatrix} x' = -x + 4y + 2z \\ y' = 4x - y - 2z \\ z' = 6z \end{bmatrix}$	system_of_ODEs	✓	0.479
8084	$\begin{bmatrix} x' = \frac{x}{2} \\ y' = x - \frac{y}{2} \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.420
8085	$\begin{bmatrix} x' = x + y + 4z \\ y' = 2y \\ z' = x + y + z \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.475
8086	$\begin{bmatrix} x' = \frac{9x}{10} + \frac{21y}{10} + \frac{16z}{5} \\ y' = \frac{7x}{10} + \frac{13y}{2} + \frac{21z}{5} \\ z' = \frac{11x}{10} + \frac{17y}{10} + \frac{17z}{5} \end{bmatrix}$	system_of_ODEs	✓	75.411

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
8087	$\begin{bmatrix} x'_1 = x_1 + 2x_3 - \frac{9x_4}{5} \\ x'_2 = \frac{51x_2}{10} - x_4 + 3x_5 \\ x'_3 = x_1 + 2x_2 - 3x_3 \\ x'_4 = x_2 - \frac{31x_3}{10} + 4x_4 \\ x'_5 = -\frac{14x_1}{5} + \frac{3x_4}{2} - x_5 \end{bmatrix}$	system_of_ODEs	✓	84.113
8088	$\begin{bmatrix} x' = 3x - y \\ y' = 9x - 3y \end{bmatrix}$	system_of_ODEs	✓	0.262
8089	$\begin{bmatrix} x' = -6x + 5y \\ y' = -5x + 4y \end{bmatrix}$	system_of_ODEs	✓	0.296
8090	$\begin{bmatrix} x' = -x + 3y \\ y' = -3x + 5y \end{bmatrix}$	system_of_ODEs	✓	0.298
8091	$\begin{bmatrix} x' = 12x - 9y \\ y' = 4x \end{bmatrix}$	system_of_ODEs	✓	0.309
8092	$\begin{bmatrix} x' = 3x - y - z \\ y' = x + y - z \\ z' = x - y + z \end{bmatrix}$	system_of_ODEs	✓	0.345
8093	$\begin{bmatrix} x' = 3x + 2y + 4z \\ y' = 2x + 2z \\ z' = 4x + 2y + 3z \end{bmatrix}$	system_of_ODEs	✓	0.437
8094	$\begin{bmatrix} x' = 5x - 4y \\ y' = x + 2z \\ z' = 2y + 5z \end{bmatrix}$	system_of_ODEs	✓	0.444
8095	$\begin{bmatrix} x' = x \\ y' = 3y + z \\ z' = z - y \end{bmatrix}$	system_of_ODEs	✓	0.335
8096	$\begin{bmatrix} x' = x \\ y' = 2x + 2y - z \\ z' = y \end{bmatrix}$	system_of_ODEs	✓	0.317
8097	$\begin{bmatrix} x' = 4x + y \\ y' = 4y + z \\ z' = 4z \end{bmatrix}$	system_of_ODEs	✓	0.285

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
8098	$\begin{bmatrix} x' = 2x + 4y \\ y' = -x + 6y \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.430
8099	$\begin{bmatrix} x' = z \\ y' = y \\ z' = x \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.318
8100	$\begin{bmatrix} x' = 6x - y \\ y' = 5x + 2y \end{bmatrix}$	system_of_ODEs	✓	0.412
8101	$\begin{bmatrix} x' = x + y \\ y' = -2x - y \end{bmatrix}$	system_of_ODEs	✓	0.376
8102	$\begin{bmatrix} x' = 5x + y \\ y' = -2x + 3y \end{bmatrix}$	system_of_ODEs	✓	0.416
8103	$\begin{bmatrix} x' = 4x + 5y \\ y' = -2x + 6y \end{bmatrix}$	system_of_ODEs	✓	0.430
8104	$\begin{bmatrix} x' = 4x - 5y \\ y' = 5x - 4y \end{bmatrix}$	system_of_ODEs	✓	0.406
8105	$\begin{bmatrix} x' = x - 8y \\ y' = x - 3y \end{bmatrix}$	system_of_ODEs	✓	0.417
8106	$\begin{bmatrix} x' = z \\ y' = -z \\ z' = y \end{bmatrix}$	system_of_ODEs	✓	0.373
8107	$\begin{bmatrix} x' = 2x + y + 2z \\ y' = 3x + 6z \\ z' = -4x - 3z \end{bmatrix}$	system_of_ODEs	✓	0.836
8108	$\begin{bmatrix} x' = x - 12y - 14z \\ y' = x + 2y - 3z \\ z' = x + y - 2z \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.636
8109	$\begin{bmatrix} x' = 2x + 3y - 7 \\ y' = -x - 2y + 5 \end{bmatrix}$	system_of_ODEs	✓	0.519

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
8110	$\begin{bmatrix} x' = 5x + 9y + 2 \\ y' = -x + 11y + 6 \end{bmatrix}$	system_of_ODEs	✓	0.515
8111	$x^2y'^2 - y^2 = 0$	[_separable]	✓	2.688
8112	$xy'^2 - (2x + 3y)y' + 6y = 0$	[_quadrature]	✓	2.030
8113	$x^2y'^2 - 5xyy' + 6y^2 = 0$	[_separable]	✓	3.199
8114	$x^2y'^2 + xy' - y^2 - y = 0$	[_separable]	✓	2.664
8115	$xy'^2 + (1 - x^2y)y' - xy = 0$	[_quadrature]	✓	1.525
8116	$y'^2 - (x^2y + 3)y' + 3x^2y = 0$	[_quadrature]	✓	1.544
8117	$xy'^2 - (xy + 1)y' + y = 0$	[_quadrature]	✓	1.237
8118	$y'^2 - y^2x^2 = 0$	[_separable]	✓	2.450
8119	$(x + y)^2 y'^2 = y^2$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓	5.920
8120	$yy'^2 + (x - y^2)y' - xy = 0$	[_quadrature]	✓	3.782
8121	$y'^2 - xy(x + y)y' + x^3y^3 = 0$	[_separable]	✓	2.567
8122	$(4x - y)y'^2 + 6(x - y)y' + 2x - 5y = 0$	[_quadrature]	✓	3.862
8123	$(x - y)^2 y'^2 = y^2$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓	5.927
8124	$xyy'^2 + (-1 + xy^2)y' - y = 0$	[_quadrature]	✓	2.228
8125	$(y^2 + x^2)^2 y'^2 = 4y^2x^2$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	8.564
8126	$(x + y)^2 y'^2 + (2y^2 + xy - x^2)y' + (y - x)y = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓	6.825
8127	$xy(y^2 + x^2)(-1 + y'^2) = y'(x^4 + y^2x^2 + y^4)$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓	9.868

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

*Continued from previous page*

#	ODE	CAS classification	Solved?	time (sec)
8128	$xy'^3 - (x^2 + x + y)y'^2 + (x^2 + xy + y)y' - xy = 0$	[_quadrature]	✓	1.766
8129	$xyy'^2 + (x + y)y' + 1 = 0$	[_quadrature]	✓	1.555
8130	$xy'^2 - 2yy' + 4x = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	1.623
8131	$3x^4y'^2 - xy' - y = 0$	[[_homogeneous, 'class G'], _rational]	✓	1.976
8132	$y'^2 - xy' - y = 0$	[[_1st_order, _with_linear_symmetries], _dAlembert]	✓	0.457
8133	$y'^2 - xy' + y = 0$	[[_1st_order, _with_linear_symmetries], _Clairaut]	✓	0.355
8134	$y'^2 + 4x^5y' - 12x^4y = 0$	[[_1st_order, _with_linear_symmetries]]	✓	2.412
8135	$4y^3y'^2 - 4xy' + y = 0$	[[_1st_order, _with_linear_symmetries], _rational]	✓	3.478
8136	$4y^3y'^2 + 4xy' + y = 0$	[[_1st_order, _with_linear_symmetries], _rational]	✓	3.291
8137	$y'^3 + xy'^2 - y = 0$	[_dAlembert]	✓	2.937
8138	$y^4y'^3 - 6xy' + 2y = 0$	[[_1st_order, _with_linear_symmetries]]	✓	108.488
8139	$y'^2 + x^3y' - 2x^2y = 0$	[[_1st_order, _with_linear_symmetries]]	✓	2.531
8140	$y'^2 + 4x^5y' - 12x^4y = 0$	[[_1st_order, _with_linear_symmetries]]	✓	2.377
8141	$2xy'^3 - 6yy'^2 + x^4 = 0$	[[_1st_order, _with_linear_symmetries]]	✓	117.715
8142	$y'^2 - xy' + y = 0$	[[_1st_order, _with_linear_symmetries], _Clairaut]	✓	0.346

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
8143	$y = xy' + ky'^2$	[[_1st_order, _with_linear_symmetries], _Clairaut]	✓	0.377
8144	$x^8y'^2 + 3xy' + 9y = 0$	[[_homogeneous, 'class G']]	✓	2.368
8145	$x^4y'^2 + 2x^3yy' - 4 = 0$	[[_homogeneous, 'class G'], _rational]	✓	2.167
8146	$xy'^2 - 2yy' + 4x = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	1.609
8147	$3x^4y'^2 - xy' - y = 0$	[[_homogeneous, 'class G'], _rational]	✓	2.023
8148	$xy'^2 + (x - y)y' + 1 - y = 0$	[[_1st_order, _with_linear_symmetries], _rational, _dAlembert]	✓	0.547
8149	$y'(xy' - y + k) + a = 0$	[[_1st_order, _with_linear_symmetries], _rational, _Clairaut]	✓	0.511
8150	$x^6y'^3 - 3xy' - 3y = 0$	[[_1st_order, _with_linear_symmetries]]	✓	9.785
8151	$y = x^6y'^3 - xy'$	[[_1st_order, _with_linear_symmetries]]	✓	11.859
8152	$xy'^4 - 2yy'^3 + 12x^3 = 0$	[[_1st_order, _with_linear_symmetries]]	✓	2.962
8153	$xy'^3 - yy'^2 + 1 = 0$	[[_1st_order, _with_linear_symmetries], _Clairaut]	✓	0.636
8154	$y'^2 - xy' - y = 0$	[[_1st_order, _with_linear_symmetries], _dAlembert]	✓	0.467
8155	$2y'^3 + xy' - 2y = 0$	[[_1st_order, _with_linear_symmetries], _dAlembert]	✓	0.536
8156	$2y'^2 + xy' - 2y = 0$	[[_1st_order, _with_linear_symmetries], _dAlembert]	✓	0.551

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
8157	$y'^3 + 2xy' - y = 0$	[[_1st_order, _with_linear_symmetries], _dAlembert]	✓	0.555
8158	$4xy'^2 - 3yy' + 3 = 0$	[[_homogeneous, 'class G'], _rational, _dAlembert]	✓	0.514
8159	$y'^3 - xy' + 2y = 0$	[[_1st_order, _with_linear_symmetries], _dAlembert]	✓	0.531
8160	$5y'^2 + 6xy' - 2y = 0$	[[_1st_order, _with_linear_symmetries], _dAlembert]	✓	0.477
8161	$2xy'^2 + (2x - y)y' + 1 - y = 0$	[_rational, _dAlembert]	✓	1.149
8162	$5y'^2 + 3xy' - y = 0$	[[_1st_order, _with_linear_symmetries], _dAlembert]	✓	0.484
8163	$y'^2 + 3xy' - y = 0$	[[_1st_order, _with_linear_symmetries], _dAlembert]	✓	0.483
8164	$y = xy' + x^3y'^2$	[[_homogeneous, 'class G'], _rational]	✓	2.012
8165	$y'' = xy'^3$	[[_2nd_order, _missing_y], [_2nd_order, _reducible, _mu_y_y1]]	✓	0.727
8166	<i>i.c.</i> $x^2y'' + y'^2 - 2xy' = 0$	[[_2nd_order, _missing_y]]	✓	0.603
8167	<i>i.c.</i> $x^2y'' + y'^2 - 2xy' = 0$	[[_2nd_order, _missing_y]]	✓	0.602
8168	$yy'' + y'^2 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓	0.398

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
8169	$y^2 y'' + y'^3 = 0$	[[_2nd_order, __missing_x], [_2nd_order, _reducible, __mu_x_y1], [_2nd_order, _reducible, __mu_y_y1]]	✓	0.351
8170	$(1 + y) y'' = y'^2$	[[_2nd_order, __missing_x], __Liouville, [_2nd_order, _reducible, __mu_x_y1], [_2nd_order, _reducible, __mu_xy]]	✓	0.257
8171	$2ay'' + y'^3 = 0$	[[_2nd_order, __missing_x], [_2nd_order, _reducible, __mu_y_y1]]	✓	0.405
8172	<i>i.c.</i> $xy'' = y' + x^5$	[[_2nd_order, __missing_y]]	✓	1.526
8173	<i>i.c.</i> $xy'' + y' + x = 0$	[[_2nd_order, __missing_y]]	✓	1.590
8174	$y'' = 2yy'^3$	[[_2nd_order, __missing_x], [_2nd_order, _reducible, __mu_x_y1], [_2nd_order, _reducible, __mu_y_y1]]	✓	0.274
8175	$yy'' + y'^3 - y'^2 = 0$	[[_2nd_order, __missing_x], [_2nd_order, _reducible, __mu_x_y1], [_2nd_order, _reducible, __mu_y_y1]]	✓	0.613
8176	$y'' + \beta^2 y = 0$	[[_2nd_order, __missing_x]]	✓	1.648
8177	$yy'' + y'^3 = 0$	[[_2nd_order, __missing_x], [_2nd_order, _reducible, __mu_x_y1], [_2nd_order, _reducible, __mu_y_y1]]	✓	0.526
8178	$\cos(x) y'' = y'$	[[_2nd_order, __missing_y]]	✓	1.900
8179	<i>i.c.</i> $y'' = xy'^2$	[[_2nd_order, __missing_y], [_2nd_order, _reducible, __mu_y_y1]]	✓	0.359

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
8180	<i>i.c.</i> $y'' = xy'^2$	[[_2nd_order, _missing_y], [_2nd_order, _reducible, _mu_y_y1]]	✓	0.306
8181	<i>i.c.</i> $y'' = -e^{-2y}$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓	21.572
8182	<i>i.c.</i> $y'' = -e^{-2y}$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓	24.141
8183	<i>i.c.</i> $2y'' = \sin(2y)$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓	2.805
8184	<i>i.c.</i> $2y'' = \sin(2y)$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓	2.870
8185	$x^3y'' - x^2y' = -x^2 + 3$	[[_2nd_order, _missing_y]]	✓	0.981
8186	$y'' = y'^2$	[[_2nd_order, _missing_x], _Liouville, [_2nd_order, _reducible, _mu_xy]]	✓	0.188
8187	$y'' = e^x y'^2$	[[_2nd_order, _missing_y]]	✓	0.230
8188	$2y'' = y'^3 \sin(2x)$	[[_2nd_order, _missing_y], [_2nd_order, _reducible, _mu_y_y1]]	✓	1.038
8189	$x^2y'' + y'^2 = 0$	[[_2nd_order, _missing_y], [_2nd_order, _reducible, _mu_y_y1]]	✓	0.244
8190	$y'' = 1 + y'^2$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_xy]]	✓	0.380
8191	$y'' = (1 + y'^2)^{3/2}$	[[_2nd_order, _missing_x]]	✓	0.504
8192	$yy'' = y'^2(1 - y' \sin(y) - yy' \cos(y))$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_y_y1]]	✓	1.142

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
8193	$(1 + y^2)y'' + y'^3 + y' = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓	2.089
8194	$(yy'' + 1 + y'^2)^2 = (1 + y'^2)^3$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓	13.167
8195	<i>i.c.</i> $x^2y'' = y'(2x - y')$	[[_2nd_order, _missing_y]]	✓	0.676
8196	$x^2y'' = y'(3x - 2y')$	[[_2nd_order, _missing_y]]	✓	0.444
8197	$xy'' = y'(2 - 3xy')$	[[_2nd_order, _missing_y], _Liouville, [_2nd_order, _reducible, _mu_xy]]	✓	0.520
8198	<i>i.c.</i> $x^4y'' = y'(y' + x^3)$	[[_2nd_order, _missing_y]]	✓	0.775
8199	$y'' = 2x + (x^2 - y')^2$	[[_2nd_order, _missing_y], [_2nd_order, _reducible, _mu_xy]]	✓	0.664
8200	<i>i.c.</i> $y''^2 - 2y'' + y'^2 - 2xy' + x^2 = 0$	[[_2nd_order, _missing_y]]	✗	6.299
8201	$y''^2 - xy'' + y' = 0$	[[_2nd_order, _missing_y]]	✓	0.367
8202	$y''^3 = 12y'(xy'' - 2y')$	[[_2nd_order, _missing_y]]	✓	8.104
8203	$3yy'y'' = y'^3 - 1$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓	4.646
8204	$4yy'^2y'' = y'^4 + 3$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓	3.549
8205	$y'' + y = -\cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	2.978
8206	$y'' - 6y' + 9y = e^x$	[[_2nd_order, _with_linear_symmetries]]	✓	1.049
8207	$y'' + 3y' + 2y = 12x^2$	[[_2nd_order, _with_linear_symmetries]]	✓	1.111

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
8208	$y'' + 3y' + 2y = x^2 + 2x + 1$	[[_2nd_order, _with_linear_symmetries]]	✓	1.069
8209	$x^3y'^2 + x^2yy' + 4 = 0$	[[_homogeneous, 'class G']]	✓	4.847
8210	$6xy'^2 - (3x + 2y)y' + y = 0$	[_quadrature]	✓	2.054
8211	$9y'^2 + 3xy^4y' + y^5 = 0$	[[_1st_order, _with_linear_symmetries]]	✓	80.571
8212	$4y^3y'^2 - 4xy' + y = 0$	[[_1st_order, _with_linear_symmetries], _rational]	✓	3.520
8213	$x^6y'^2 - 2xy' - 4y = 0$	[[_homogeneous, 'class G'], _rational]	✓	2.263
8214	$5y'^2 + 6xy' - 2y = 0$	[[_1st_order, _with_linear_symmetries], _dAlembert]	✓	0.480
8215	$y^2y'^2 - y(x + 1)y' + x = 0$	[_quadrature]	✓	4.117
8216	$4x^5y'^2 + 12x^4yy' + 9 = 0$	[[_homogeneous, 'class G']]	✓	5.934
8217	$4y^2y'^3 - 2xy' + y = 0$	[[_1st_order, _with_linear_symmetries]]	✓	105.388
8218	$y'^4 + xy' - 3y = 0$	[[_1st_order, _with_linear_symmetries], _dAlembert]	✓	2.277
8219	$x^2y'^3 - 2xyy'^2 + y^2y' + 1 = 0$	[[_1st_order, _with_linear_symmetries], _Clairaut]	✓	2.296
8220	$16xy'^2 + 8yy' + y^6 = 0$	[[_homogeneous, 'class G']]	✓	3.481
8221	$xy'^2 - (x^2 + 1)y' + x = 0$	[_quadrature]	✓	0.522
8222	$y'^3 - 2xy' - y = 0$	[[_1st_order, _with_linear_symmetries], _dAlembert]	✓	0.204
8223	$9xy^4y'^2 - 3y^5y' - 1 = 0$	[[_homogeneous, 'class G'], _rational]	✓	23.071

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
8224	$x^2y'^2 - (2xy + 1)y' + y^2 + 1 = 0$	[[_1st_order, _with_linear_symmetries], _rational, _Clairaut]	✓	0.650
8225	$x^6y'^2 = 16y + 8xy'$	[[_homogeneous, 'class G']]	✓	2.173
8226	$x^2y'^2 = (x - y)^2$	[_linear]	✓	2.949
8227	$(1 + y')^2 (y - xy') = 1$	[[_1st_order, _with_linear_symmetries], _dAlembert]	✓	1.001
8228	$y'^3 - y'^2 + xy' - y = 0$	[[_1st_order, _with_linear_symmetries], _Clairaut]	✓	0.688
8229	$xy'^2 + y(1 - x)y' - y^2 = 0$	[_quadrature]	✓	2.470
8230	$yy'^2 - (x + y)y' + y = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	1.900
8231	$xy'^2 + (k - x - y)y' + y = 0$	[[_1st_order, _with_linear_symmetries], _rational, _dAlembert]	✓	0.589
8232	$xy'^3 - 2yy'^2 + 4x^2 = 0$	[[_1st_order, _with_linear_symmetries]]	✓	131.250
8233	$y'' + y = 0$	[[_2nd_order, _missing_x]]	✓	0.344
8234	$y'' - 9y = 0$	[[_2nd_order, _missing_x]]	✓	0.566
8235	$y'' + 3xy' + 3y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.621
8236	$(4x^2 + 1)y'' - 8y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.619
8237	$(-4x^2 + 1)y'' + 8y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.649
8238	$(x^2 + 1)y'' - 4xy' + 6y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.507
8239	$(x^2 + 1)y'' + 10xy' + 20y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.680

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
8240	$(x^2 + 4)y'' + 2xy' - 12y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.660
8241	$(x^2 - 9)y'' + 3xy' - 3y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.631
8242	$y'' + 2xy' + 5y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.618
8243	$(x^2 + 4)y'' + 6xy' + 4y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.686
8244	$(2x^2 + 1)y'' - 5xy' + 3y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.661
8245	$y'' + x^2y = 0$	[[_Emden, _Fowler]]	✓	0.510
8246	$(-4x^2 + 1)y'' + 6xy' - 4y = 0$	[_Gegenbauer]	✓	0.691
8247	$(2x^2 + 1)y'' + 3xy' - 3y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.630
8248	$y''' + x^2y'' + 5xy' + 3y = 0$	[[_3rd_order, _exact, _linear, _homogeneous]]	✗	0.079
8249	$y'' + xy' + 3y = x^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.651
8250	$y'' + 2xy' + 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.622
8251	$y'' + 3xy' + 7y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.630
8252	$2y'' + 9xy' - 36y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.617
8253	$(x^2 + 4)y'' + xy' - 9y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, _with_symmetry_[0,F(x)]]]	✓	0.650
8254	$(x^2 + 4)y'' + 3xy' - 8y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.648
8255	$(9x^2 + 1)y'' - 18y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.635
8256	$(3x^2 + 1)y'' + 13xy' + 7y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.689

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
8257	$(2x^2 + 1)y'' + 11xy' + 9y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.697
8258	$y'' - 2(x + 3)y' - 3y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.659
8259	$y'' + (-2 + x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.543
8260	$(x^2 - 2x + 2)y'' - 4(x - 1)y' + 6y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.534
8261	$2x(x + 1)y'' + 3(x + 1)y' - y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	1.016
8262	$4x^2y'' + 4xy' + (4x^2 - 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.987
8263	$4x^2y'' + 4xy' - (4x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.931
8264	$4xy'' + 3y' + 3y = 0$	[[_Emden, _Fowler]]	✓	1.063
8265	$2x^2(1 - x)y'' - x(1 + 7x)y' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.135
8266	$2xy'' + 5(-2x + 1)y' - 5y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.083
8267	$8x^2y'' + 10xy' - y(x + 1) = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.122
8268	$2xy'' + (2 - x)y' - 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.875
8269	$2x(x + 3)y'' - 3(x + 1)y' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.053
8270	$2xy'' + (-2x^2 + 1)y' - 4xy = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.906
8271	$x(4 - x)y'' + (2 - x)y' + 4y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, _with_symmetry_[0,F(x)]]	✓	1.132
8272	$3x^2y'' + xy' - y(x + 1) = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.109
8273	$2xy'' + (2x + 1)y' + 4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.049

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
8274	$2xy'' + (2x + 1)y' - 5y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.113
8275	$2x^2y'' - 3x(1 - x)y' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.127
8276	$2x^2y'' + x(4x - 1)y' + 2(3x - 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.086
8277	$2xy'' - (2x^2 + 1)y' - xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.843
8278	$2x^2y'' + xy' - y = 0$	[[_Emden, _Fowler]]	✓	0.789
8279	$2x^2y'' - 3xy' + 2y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)']]]	✓	0.798
8280	$9x^2y'' + 2y = 0$	[[_Emden, _Fowler]]	✓	0.784
8281	$2x^2y'' + 5xy' - 2y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)']]]	✓	0.807
8282	$2x^2y'' + xy' - y = 0$	[[_Emden, _Fowler]]	✓	1.150
8283	$2x^2y'' - 3xy' + 2y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)']]]	✓	1.175
8284	$9x^2y'' + 2y = 0$	[[_Emden, _Fowler]]	✓	0.719
8285	$2x^2y'' + 5xy' - 2y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)']]]	✓	1.064
8286	$x^2y'' + 2xy' - 12y = 0$	[[_Emden, _Fowler]]	✓	0.976
8287	$x^2y'' + xy' - 9y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)']]]	✓	0.960
8288	$x^2y'' - 3xy' + 4y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)']]]	✓	1.142

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
8289	$x^2y'' - 5xy' + 9y = 0$	[[_Emden, _Fowler]]	✓	1.151
8290	$x^2y'' + 5xy' + 5y = 0$	[[_Emden, _Fowler]]	✓	1.971
8291	$x^3y''' + 4x^2y'' - 8xy' + 8y = 0$	[[_3rd_order, _with_linear_symmetries]]	✓	0.127
8292	$x^2y'' - x(x+1)y' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.949
8293	$4x^2y'' + (-2x+1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.965
8294	$x^2y'' + x(x-3)y' + 4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.919
8295	$x^2y'' + 3xy' + (4x^2+1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.880
8296	$x(x+1)y'' + (1+5x)y' + 3y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.861
8297	$x^2y'' - x(3x+1)y' + (1-6x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.968
8298	$x^2y'' + x(x-1)y' + (1-x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.934
8299	$x(-2+x)y'' + 2(x-1)y' - 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.880
8300	$x(-2+x)y'' + 2(x-1)y' - 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.900
8301	$4(x-4)^2y'' + (x-4)(x-8)y' + xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.980
8302	$xy'' + y' - xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.894
8303	$xy'' + y' - xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.720
8304	$xy'' + (-x^2+1)y' - xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.770
8305	$x^2y'' + x(2x+3)y' + (3x+1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.079
8306	$4x^2y'' + 8x(x+1)y' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.991

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
8307	$x^2y'' + 3x(x+1)y' + (1-3x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.963
8308	$xy'' + (1-x)y' - y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.842
8309	$x^2y'' + 2x(-2+x)y' + 2(2-3x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.095
8310	$x^2(2x+1)y'' + 2x(1+6x)y' - 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.230
8311	$x^2y'' + x(2+3x)y' - 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.085
8312	$xy'' - (x+3)y' + 2y = 0$	[_Laguerre]	✓	1.056
8313	$x(x+1)y'' + (x+5)y' - 4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.117
8314	$x(x+1)y'' + (x+5)y' - 4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.113
8315	$x^2y'' + x^2y' - 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.085
8316	$x(1-x)y'' - 3y' + 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.989
8317	$x(1-x)y'' - 3y' + 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	1.109
8318	$xy'' + (3x+4)y' + 3y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	1.016
8319	$xy'' - 2(x+2)y' + 4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.083
8320	$xy'' + (2x+3)y' + 4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.056
8321	$x(x+3)y'' - 9y' - 6y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.023
8322	$x(-2x+1)y'' - 2(x+2)y' + 8y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.100
8323	$xy'' + (x^3-1)y' + x^2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.837
8324	$x^2(4x-1)y'' + x(1+5x)y' + 3y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.320

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
8325	$xy'' + y = 0$	[[_Emden, _Fowler]]	✓	1.218
8326	$x^2y'' - 3xy' + (3 + 4x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.388
8327	$2xy'' + 6y' + y = 0$	[[_Emden, _Fowler]]	✓	1.310
8328	$4x^2y'' + 2x(2 - x)y' - (3x + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.489
8329	$x^2y'' - x(6 + x)y' + 10y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.463
8330	$xy'' + (2x + 3)y' + 8y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.373
8331	$x(1 - x)y'' + 2(1 - x)y' + 2y = 0$	[_Jacobi]	✓	1.355
8332	$x(1 - x)y'' + 2(1 - x)y' + 2y = 0$	[_Jacobi]	✓	1.356
8333	$x^2y'' + xy' + (x^2 - 1)y = 0$	[_Bessel]	✓	1.941
8334	$x^2y'' + xy' + (x^2 - 1)y = 0$	[_Bessel]	✓	1.239
8335	$x^2y'' - 5xy' + (8 + 5x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.379
8336	$xy'' + (3 - x)y' - 5y = 0$	[_Laguerre]	✓	1.376
8337	$9x^2y'' - 15xy' + 7y(x + 1) = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.437
8338	$x^2y'' + x(-2x + 1)y' - y(x + 1) = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.444
8339	$x^2y'' + 3xy' + (x^3 + x + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.983
8340	$2x(1 - x)y'' + (-2x + 1)y' + (x + 2)y = 0$	[_Jacobi]	✓	1.283
8341	$xy'' + y' + x(x + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.815
8342	$x^2y'' + x(x + 1)y' - (6x^2 - 3x + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.132
8343	$xy'' + xy' + (x^4 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.312

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
8344	$x(-2+x)^2 y'' - 2(-2+x)y' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.050
8345	$x(-2+x)^2 y'' - 2(-2+x)y' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.937
8346	$2xy'' + (1-x)y' - y(x+1) = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.104
8347	$xy'' - (x+2)y' - y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	1.325
8348	$xy'' - (x+2)y' - 2y = 0$	[_Laguerre]	✓	1.352
8349	$x^2 y'' + 2x^2 y' - 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.096
8350	$2x^2 y'' - x(2x+7)y' + 2(x+5)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.092
8351	$x^2(x^2+1)y'' + 2x(x^2+3)y' + 6y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.030
8352	$(-x^2+1)y'' - 10xy' - 18y = 0$	[_Gegenbauer]	✓	0.713
8353	$2xy'' + (2x+1)y' - 3y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.092
8354	$y'' + 2xy' - 8y = 0$	[_erf]	✓	0.606
8355	$x(-x^2+1)y'' - (x^2+7)y' + 4xy = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	1.018
8356	$2x^2 y'' - x(2x+1)y' + (1+4x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.248
8357	$4x^2 y'' - 2x(x+2)y' + (x+3)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.099
8358	$x^2 y'' - x(x^2+1)y' + (-x^2+1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.885
8359	$2xy'' + y' + y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, ' _with_symmetry_[0,F(x)]']]	✓	1.060
8360	$x^2 y'' + x(x^2-3)y' + 4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.816
8361	$4x^2 y'' - x^2 y' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.964

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
8362	$(x^2 + 1)y'' - 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.610
8363	$2x^2y'' - x(2x + 1)y' + (3x + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.129
8364	$4x^2y'' + 3x^2y' + (3x + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.064
8365	$xy'' + (-x^2 + 1)y' + 2xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.776
8366	$4x^2y'' + 2x^2y' - (x + 3)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.086
8367	$x(-x^2 + 1)y'' + 5(-x^2 + 1)y' - 4xy = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.893
8368	$x^2y'' + x(x + 3)y' + (2x + 1)y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.920
8369	$x^2y'' + xy' - (x^2 + 4)y = 0$	[[_Bessel, _modified]]	✓	1.265
8370	$x(-2x + 1)y'' - 2(x + 2)y' + 18y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.099
8371	$xy'' + (2 - x)y' - y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	1.018
8372	$x^2y'' - 3xy' + 4y(x + 1) = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.980
8373	$y' = \frac{y}{x \ln(x)}$	[_separable]	✓	1.350
8374	$(x^2 + 1)y' + y^2 = -1$ i.c.	[_separable]	✓	2.494
8375	$y' + \frac{2y}{x} = 5x^2$	[_linear]	✓	1.404
8376	$tx' + 2x = 4e^t$	[_linear]	✓	1.148
8377	$y' = \frac{2x - y}{4y + x}$ i.c.	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓	5.159
8378	$y' + \frac{2y}{x} = 6y^2x^4$	[[_homogeneous, 'class G', _rational, _Bernoulli]]	✓	1.888

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
8379	$y^2 + \cos(x) + (2xy + \sin(y))y' = 0$	[_exact]	✓	0.277
8380	$xy - 1 + x^2y' = 0$	[_linear]	✓	0.226
8381	$y'' - y' - 2y = 5e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.118
8382	$y'' + 16y = 4\cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.352
8383	<i>i.c.</i> $y'' - 4y' + 3y = 9x^2 + 4$	[[_2nd_order, _with_linear_symmetries]]	✓	1.308
8384	$y'' + y = \tan(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.398
8385	<i>i.c.</i> $\begin{bmatrix} x' = -2x + 3y \\ y' = -2x + 5y \end{bmatrix}$	system_of_ODEs	✓	0.449
8386	<i>i.c.</i> $\begin{bmatrix} x' = -x + 4y \\ y' = 2x - 3y \end{bmatrix}$	system_of_ODEs	✓	0.464
8387	$\begin{bmatrix} x' = 2x - y \\ y' = -x + 2y + 4e^t \end{bmatrix}$	system_of_ODEs	✓	0.473
8388	$\begin{bmatrix} x' = 6x - 7y + 10 \\ y' = x - 2y - 2e^t \end{bmatrix}$	system_of_ODEs	✓	0.520
8389	$y' = \frac{\cos(y)\sec(x)}{x}$	[_separable]	✓	2.435
8390	$y' = x(\cos(y) + y)$	[_separable]	✓	1.586
8391	$y' = \frac{\sec(x)(\sin(y) + y)}{x}$	[_separable]	✓	3.129
8392	$y' = \left(5 + \frac{\sec(x)}{x}\right)(\sin(y) + y)$	[_separable]	✓	12.628
8393	$y' = 1 + y$	[_quadrature]	✓	0.916
8394	$y' = x + 1$	[_quadrature]	✓	0.262
8395	$y' = x$	[_quadrature]	✓	0.257
8396	$y' = y$	[_quadrature]	✓	0.998

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
8397	$y' = 0$	[_quadrature]	✓	0.444
8398	$y' = 1 + \frac{\sec(x)}{x}$	[_quadrature]	✓	0.850
8399	$y' = x + \frac{\sec(x)y}{x}$	[_linear]	✓	7.174
8400	$y' = \frac{2y}{x}$ i.c.	[_separable]	✓	2.192
8401	$y' = \frac{2y}{x}$	[_separable]	✓	1.605
8402	$y' = \frac{\ln(1+y^2)}{\ln(x^2+1)}$	[_separable]	✓	1.681
8403	$y' = \frac{1}{x}$	[_quadrature]	✓	0.280
8404	$y' = \frac{-xy-1}{4x^3y-2x^2}$	[[_homogeneous, 'class G'], _rational, [_Abel, '2nd type', 'class B']]	✓	2.600
8405	$\frac{y'^2}{4} - xy' + y = 0$	[[_1st_order, _with_linear_symmetries], _Clairaut]	✓	0.356
8406	$y' = \sqrt{\frac{1+y}{y^2}}$ i.c.	[_quadrature]	✓	1454.228
8407	$y' = \sqrt{1-x^2-y^2}$	['y=_G(x,y)']	✗	1.552
8408	$y' + \frac{y}{3} = \frac{(-2x+1)y^4}{3}$	[_Bernoulli]	✓	2.000
8409	$y' = \sqrt{y} + x$	[[_1st_order, _with_linear_symmetries], _Chini]	✓	4.833
8410	$x^2y' + y^2 = xyy'$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓	6.785
8411	$y = xy' + x^2y'^2$	[_separable]	✓	0.930
8412	$(x+y)y' = 0$	[_quadrature]	✓	0.385

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
8413	$xy' = 0$	[_quadrature]	✓	0.382
8414	$\frac{y'}{x+y} = 0$	[_quadrature]	✓	0.375
8415	$\frac{y'}{x} = 0$	[_quadrature]	✓	0.381
8416	$y' = 0$	[_quadrature]	✓	0.372
8417	$y = xy'^2 + y^2$	[[_homogeneous, 'class C'], _rational, _dAlembert]	✓	0.487
8418	$y' = \frac{5x^2 - xy + y^2}{x^2}$	[[_homogeneous, 'class A'], _rational, _Riccati]	✓	2.282
8419	$2t + 3x + (x + 2)x' = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	2.351
8420	$y' = \frac{1}{1-y}$ i.c.	[_quadrature]	✓	1.563
8421	$p' = ap - bp^2$ i.c.	[_quadrature]	✓	1.928
8422	$y^2 + \frac{2}{x} + 2xyy' = 0$	[[_homogeneous, 'class G'], _exact, _rational, _Bernoulli]	✓	1.653
8423	$f'x - f = \frac{f'^2(1 - f'^\lambda)^2}{\lambda^2}$	[_Clairaut]	✓	3.533
8424	$xy' - 2y + by^2 = cx^4$	[_rational, _Riccati]	✓	1.505
8425	$xy' - y + y^2 = x^{2/3}$	[_rational, _Riccati]	✓	11.432
8426	$u' + u^2 = \frac{1}{x^{4/5}}$	[_rational, _Riccati]	✓	0.335
8427	$yy' - y = x$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓	3.852
8428	$y'' + 2y' + y = 0$	[[_2nd_order, _missing_x]]	✓	0.839

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
8429	<i>i.c.</i> $5y'' + 2y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓	2.703
8430	$y'' + y' + 4y = 1$	[[_2nd_order, _missing_x]]	✓	13.559
8431	$y'' + y' + 4y = \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	73.062
8432	$y = xy'^2$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	1.390
8433	$yy' = 1 - xy'^3$	[_dAlembert]	✓	0.233
8434	$f' = \frac{1}{f}$	[_quadrature]	✓	1.254
8435	$ty'' + 4y' = t^2$	[[_2nd_order, _missing_y]]	✓	1.158
8436	<i>i.c.</i> $(t^2 + 9)y'' + 2ty' = 0$	[[_2nd_order, _missing_y]]	✓	1.333
8437	$t^2y'' - 3ty' + 5y = 0$	[[_Emden, _Fowler]]	✓	2.006
8438	$ty'' + y' = 0$	[[_2nd_order, _missing_y]]	✓	0.867
8439	$t^2y'' - 2y' = 0$	[[_2nd_order, _missing_y]]	✓	0.956
8440	$y'' + \frac{(t^2 - 1)y'}{t} + \frac{t^2y}{(1 + e^{\frac{t^2}{2}})^2} = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.959
8441	$ty'' - y' + 4t^3y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)']]]	✓	1.356
8442	$y'' = 0$	[[_2nd_order, _quadrature]]	✓	1.305
8443	$y'' = 1$	[[_2nd_order, _quadrature]]	✓	1.712
8444	$y'' = f(t)$	[[_2nd_order, _quadrature]]	✓	0.654
8445	$y'' = k$	[[_2nd_order, _quadrature]]	✓	1.780

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
8446	$y' = -4 \sin(x - y) - 4$	[[_homogeneous, 'class C'], _dAlembert]	✓	73.531
8447	$y' + \sin(x - y) = 0$	[[_homogeneous, 'class C'], _dAlembert]	✓	2.389
8448	$y'' = 4 \sin(x) - 4$	[[_2nd_order, _quadrature]]	✓	1.639
8449	$yy'' = 0$	[[_2nd_order, _quadrature]]	✓	0.142
8450	$yy'' = 1$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓	0.530
8451	$yy'' = x$	[[_Emden, _Fowler], [_2nd_order, _with_linear_symmetries]]	✗	0.080
8452	$y^2y'' = x$	[[_Emden, _Fowler], [_2nd_order, _with_linear_symmetries]]	✗	0.124
8453	$y^2y'' = 0$	[[_2nd_order, _quadrature]]	✓	0.147
8454	$3yy'' = \sin(x)$	[NONE]	✗	0.145
8455	$3yy'' + y = 5$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓	483.769
8456	$ayy'' + by = c$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓	2.091
8457	$ay^2y'' + by^2 = c$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓	1.484
8458	$ayy'' + by = 0$	[[_2nd_order, _quadrature]]	✓	0.615
8459	$\begin{bmatrix} x' = 9x + 4y \\ y' = -6x - y \\ z' = 6x + 4y + 3z \end{bmatrix}$	system_of_ODEs	✓	0.364
8460	$\begin{bmatrix} x' = x - 3y \\ y' = 3x + 7y \end{bmatrix}$	system_of_ODEs	✓	0.304

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
8461	$\begin{bmatrix} x' = x - 2y \\ y' = 2x + 5y \end{bmatrix}$	system_of_ODEs	✓	0.303
8462	$\begin{bmatrix} x' = 7x + y \\ y' = -4x + 3y \end{bmatrix}$	system_of_ODEs	✓	0.314
8463	$\begin{bmatrix} x' = x + y \\ y' = y \\ z' = z \end{bmatrix}$	system_of_ODEs	✓	0.280
8464	$\begin{bmatrix} x' = 2x + y - z \\ y' = -x + 2z \\ z' = -x - 2y + 4z \end{bmatrix}$	system_of_ODEs	✓	0.355
8465	$x' = 4Ak\left(\frac{x}{A}\right)^{3/4} - 3kx$	[_quadrature]	✓	5.292
8466	$\frac{y'y}{1 + \frac{\sqrt{1+y'^2}}{2}} = -x$	[[_homogeneous, 'class A'], _dAlembert]	✓	1.343
8467	$\frac{y'y}{1 + \frac{\sqrt{1+y'^2}}{2}} = -x$ i.c.	[[_homogeneous, 'class A'], _dAlembert]	✓	1.300
8468	$y' = \frac{y\left(1 + \frac{a^2x}{\sqrt{a^2(x^2+1)}}\right)}{\sqrt{a^2(x^2+1)}}$	[_separable]	✓	114.593
8469	$y' = y^2 + x^2$	[[_Riccati, _special]]	✓	1.019
8470	$y' = 2\sqrt{y}$ i.c.	[_quadrature]	✓	1.283
8471	$z'' + 3z' + 2z = 24e^{-3t} - 24e^{-4t}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.067
8472	$y' = \sqrt{1 - y^2}$	[_quadrature]	✓	39.146
8473	$y' = -1 + x^2 + y^2$	[_Riccati]	✓	1.810
8474	$y' = 2y(x\sqrt{y} - 1)$ i.c.	[_Bernoulli]	✓	1.373

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
8475	$y'' = \frac{1}{y} - \frac{xy'}{y^2}$	[[_2nd_order, _exact, _nonlinear], [_2nd_order, _with_linear_symmetries], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_y_y1], [_2nd_order, _reducible, _mu_xy]]	✓	68.440
8476	i.c. $y'' + y' + y = 0$	[[_2nd_order, _missing_x]]	✓	2.141
8477	i.c. $y'' + y' + y = 0$	[[_2nd_order, _missing_x]]	✓	2.141
8478	i.c. $y'' + y' + y = 0$	[[_2nd_order, _missing_x]]	✓	3.018
8479	$y'' - yy' = 2x$	[[_2nd_order, _exact, _nonlinear], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_y_y1], [_2nd_order, _reducible, _mu_xy]]	✗	5.912
8480	$y' - y^2 - x - x^2 = 0$	[_Riccati]	✓	4.816
8481	$y'' - xy' - xy - x = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	2.984
8482	$y'' - xy' - xy - 2x = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	2.986
8483	$y'' - xy' - xy - 3x = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	2.996
8484	$y'' - xy' - xy - x^2 - x = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.559
8485	$y'' - xy' - xy - x^3 + 2 = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.697
8486	$y'' - xy' - xy - x^4 - 6 = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.726
8487	$y'' - xy' - xy - x^5 + 24 = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.688

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
8488	$y'' - xy' - xy - x = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	2.983
8489	$y'' - xy' - xy - x^2 = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.470
8490	$y'' - xy' - xy - x^3 = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.570
8491	$y'' - axy' - bxy - cx = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.656
8492	$y'' - axy' - bxy - cx^2 = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.627
8493	$y'' - axy' - bxy - cx^3 = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✗	0.606
8494	$y'' - y' - xy - x = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.257
8495	$y'' - y' - xy - x^2 = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.258
8496	$y'' - y' - xy - x^2 - 1 = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.356
8497	$y'' - y' - xy - x^2 - 1 = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.359
8498	$y'' - 2y' - xy - x^2 - 2 = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.360
8499	$y'' - 4y' - xy - x^2 - 4 = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.353
8500	$y'' - y' - xy - x^3 + 1 = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.306
8501	$y'' - 2y' - xy - x^3 - x^2 = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.357
8502	$y'' - y' - xy - x^3 + 2 = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.368
8503	$y'' - 2y' - xy - x^3 + 2 = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.359
8504	$y'' - 4y' - xy - x^3 + 2 = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.363
8505	$y'' - 6y' - xy - x^3 + 2 = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.366

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
8506	$y'' - 8y' - xy - x^3 + 2 = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.366
8507	$y'' - y' - xy - x^4 + 3 = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.368
8508	$y'' - y' - xy - x^3 = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.275
8509	$y'' - xy - x^3 + 2 = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.012
8510	$y'' - xy - x^6 + 64 = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	7.501
8511	$y'' - xy - x = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.547
8512	$y'' - xy - x^2 = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	5.865
8513	$y'' - xy - x^3 = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	4.214
8514	$y'' - xy - x^6 - x^3 + 42 = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	8.288
8515	$y'' - x^2y - x^2 = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	2.935
8516	$y'' - x^2y - x^3 = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	63.403
8517	$y'' - x^2y - x^4 = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.930
8518	$y'' - x^2y - x^4 + 2 = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	8.122
8519	$y'' - 2x^2y - x^4 + 1 = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	9.755
8520	$y'' - x^3y - x^3 = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	15.593
8521	$y'' - x^3y - x^4 = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	297.633
8522	$y'' - x^2y' - x^2y - x^2 = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.677
8523	$y'' - x^3y' - x^3y - x^3 = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.578

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
8524	$y'' - xy' - xy - x = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	2.985
8525	$y'' - x^2y' - xy - x^2 = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.845
8526	$y'' - x^2y' - x^2y - x^3 - x^2 = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.685
8527	$y'' - x^2y' - x^3y - x^4 - x^2 = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.713
8528	$y'' - \frac{y'}{x} - xy - x^2 - \frac{1}{x} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	193.839
8529	$y'' - \frac{y'}{x} - x^2y - x^3 - \frac{1}{x} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	4.777
8530	$y'' - \frac{y'}{x} - x^3y - x^4 - \frac{1}{x} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	421.055
8531	$y'' - x^3y' - xy - x^3 - x^2 = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.579
8532	$y'' - x^3y' - x^2y - x^3 = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.791
8533	$y'' - x^3y' - x^3y - x^4 - x^3 = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.584
8534	$y''' - x^3y' - x^2y - x^3 = 0$	[[_3rd_order, _with_linear_symmetries]]	✗	0.056
8535	$y'' + cy' + ky = 0$	[[_2nd_order, _missing_x]]	✓	1.092
8536	$w' = -\frac{1}{2} - \frac{\sqrt{1-12w}}{2}$ i.c.	[_quadrature]	✓	9.250
8537	$y'' + y = \sin(x)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	2.873
8538	$y'' + y = \sin(x)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	2.937
8539	$y'' + y = \sin(x)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.168
8540	$y'' + y = \sin(x)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	2.932

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
8541	<i>i.c.</i> $y'' + y = \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	2.960
8542	<i>i.c.</i> $y'' + y = \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	2.995
8543	<i>i.c.</i> $y'' + y = \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.112
8544	<i>i.c.</i> $y'' + y = \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	2.929
8545	<i>i.c.</i> $y'' + y' + y = \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	44.620
8546	<i>i.c.</i> $y'' + y' + y = \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	41.816
8547	<i>i.c.</i> $y'' + y' + y = \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	49.402
8548	<i>i.c.</i> $y''' + y' + y = x$	[[_3rd_order, _with_linear_symmetries]]	✓	0.526
8549	$x^4 y'' + x^3 y' - 4x^2 y = 1$	[[_2nd_order, _with_linear_symmetries]]	✓	1.713
8550	$x^4 y'' + x^3 y' - 4x^2 y = x$	[[_2nd_order, _with_linear_symmetries]]	✓	1.662
8551	$x^2 y'' + x y' - 4y = x$	[[_2nd_order, _with_linear_symmetries]]	✓	1.388
8552	$x^4 y''' + x^3 y'' + x^2 y' + x y = 0$	[[_3rd_order, _with_linear_symmetries]]	✓	0.182
8553	$x^4 y''' + x^3 y'' + x^2 y' + x y = x$	[[_3rd_order, _with_linear_symmetries]]	✓	3.385
8554	$5x^5 y'''' + 4x^4 y''' + x^2 y' + x y = 0$	[[_high_order, _with_linear_symmetries]]	✓	0.286
8555	$(x^2 + 1) y'' + 1 + y'^2 = 0$	[[_2nd_order, _missing_y], [_2nd_order, _reducible, _mu_y_y1]]	✓	0.725
8556	$(x^2 + 1) y'' + 1 + y'^2 = x$	[[_2nd_order, _missing_y]]	✗	1121.960

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
8557	$(x^2 + 1)y'' + 1 + xy'^2 = 1$	[[_2nd_order, _missing_y], [_2nd_order, _reducible, _mu_y_y1]]	✓	0.763
8558	$(x^2 + 1)y'' + yy'^2 = 0$	[NONE]	✗	0.093
8559	$(x^2 + 1)y'' + y'^2 = 0$	[[_2nd_order, _missing_y], [_2nd_order, _reducible, _mu_y_y1]]	✓	0.548
8560	$y'' + \sin(y)y'^2 = 0$	[[_2nd_order, _missing_x], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓	0.362
8561	$(x^2 + 1)y'' + y'^3 = 0$	[[_2nd_order, _missing_y], [_2nd_order, _reducible, _mu_y_y1]]	✓	1.047
8562	$y' = e^{-\frac{y}{x}}$	[[_homogeneous, 'class A'], _dAlembert]	✓	1.757
8563	$y' = 2x^2 \sin\left(\frac{y}{x}\right)^2 + \frac{y}{x}$	[[_homogeneous, 'class D']]	✓	3.070
8564	$4x^2y'' + y = 8\sqrt{x}(\ln(x) + 1)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.897
8565	$vv' = \frac{2v^2}{r^3} + \frac{\lambda r}{3}$	[_rational, _Bernoulli]	✓	1.536
8566	$2x^2y'' - xy' + (-x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.815
8567	$2x^2y'' - xy' + (-x^2 + 1)y = 1$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.882
8568	$2x^2y'' - xy' + (-x^2 + 1)y = x + 1$	[[_2nd_order, _linear, _nonhomogeneous]]	✗	0.874
8569	$2x^2y'' - xy' + (-x^2 + 1)y = x$	[[_2nd_order, _linear, _nonhomogeneous]]	✗	0.830
8570	$2x^2y'' - xy' + (-x^2 + 1)y = x^2 + x + 1$	[[_2nd_order, _linear, _nonhomogeneous]]	✗	0.957
8571	$2x^2y'' - xy' + (-x^2 + 1)y = x^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.876

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
8572	$2x^2y'' - xy' + (-x^2 + 1)y = x^2 + 1$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.928
8573	$2x^2y'' - xy' + (-x^2 + 1)y = x^4$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.926
8574	$2x^2y'' - xy' + (-x^2 + 1)y = \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✗	0.915
8575	$2x^2y'' - xy' + (-x^2 + 1)y = \sin(x) + 1$	[[_2nd_order, _linear, _nonhomogeneous]]	✗	0.970
8576	$2x^2y'' - xy' + (-x^2 + 1)y = x \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.007
8577	$2x^2y'' - xy' + (-x^2 + 1)y = \sin(x) + \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✗	0.973
8578	$x^2y'' + (\cos(x) - 1)y' + ye^x = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.122
8579	$(-2 + x)y'' + \frac{y'}{x} + y(x + 1) = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.877
8580	$(-2 + x)y'' + \frac{y'}{x} + y(x + 1) = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.949
8581	$(x + 1)(3x - 1)y'' + \cos(x)y' - 3xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	2.105
8582	$xy'' + 2y' + xy = 0$ i.c.	[_Lienard]	✓	0.752
8583	$2x^2y'' + 3xy' - xy = x^2 + 2x$	[[_2nd_order, _with_linear_symmetries]]	✓	1.039
8584	$2x^2y'' - xy' + (-x^2 + 1)y = 1$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.874
8585	$2x^2y'' + 2xy' - xy = 1$	[[_2nd_order, _linear, _nonhomogeneous]]	✗	0.763
8586	$y'' + (x - 6)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.517
8587	$x^2y'' + (3x^2 + 2x)y' - 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.945
8588	$2x^2y'' - xy' + (-x^2 + 1)y = x^2 + \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.064

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
Continued from previous page

#	ODE	CAS classification	Solved?	time (sec)
8589	$2x^2y'' - xy' + (-x^2 + 1)y = \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.048
8590	$2x^2y'' - xy' + (-x^2 + 1)y = x^3 + \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.125
8591	$2x^2y'' - xy' + (-x^2 + 1)y = x^3 \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.006
8592	$2x^2y'' - xy' + (-x^2 + 1)y = x^3 \cos(x) + \sin(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.115
8593	$2x^2y'' - xy' + (-x^2 + 1)y = \ln(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.800
8594	$2x^2(x^2 + x + 1)y'' + x(11x^2 + 11x + 9)y' + (7x^2 + 10x + 6)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.023
8595	$x^2(x + 3)y'' + 5x(x + 1)y' - (1 - 4x)y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.936
8596	$x^2(-x^2 + 2)y'' - x(4x^2 + 3)y' + (-2x^2 + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.933
8597	$y'^2 + y^2 = \sec(x)^4$	['y=_G(x,y)']	✓	33.003
8598	$(y - 2xy')^2 = y'^3$	[[_1st_order, _with_linear_symmetries], _dAlembert]	✗	267.458
8599	$x^2y'' + y = 0$	[[_Emden, _Fowler]]	✓	0.651
8600	$xy'' + y' - y = 0$	[[_Emden, _Fowler]]	✓	0.746
8601	$4xy'' + 2y' + y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)']]]	✓	0.888
8602	$xy'' + y' - y = 0$	[[_Emden, _Fowler]]	✓	0.732
8603	$xy'' + (x + 1)y' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.758
8604	$x(x - 1)y'' + 3xy' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	1.232

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
8605	$x^2(x^2 - 2x + 1)y'' - x(x + 3)y' + (4 + x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.934
8606	$2x^2(x + 2)y'' + 5x^2y' + y(x + 1) = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.898
8607	$2x^2y'' + xy' + (x - 5)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.083
8608	$2x^2y'' + 2xy' - xy = \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.991
8609	$2x^2y'' + 2xy' - xy = x \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.952
8610	$2x^2y'' + 2xy' - xy = \cos(x) \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.000
8611	$2x^2y'' + 2xy' - xy = x^3 + x \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.005
8612	$\cos(x)y'' + 2xy' - xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.771
8613	$x^2y'' + 4xy' + (x^2 + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.819
8614	$x^2y'' + xy' - xy = 0$	[[_Emden, _Fowler]]	✓	0.735
8615	$x^2y'' + xy' + \left(x^2 - \frac{1}{4}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.822
8616	$(x^2 - x)y'' - xy' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.226
8617	$x^2y'' + (x^2 + 6x)y' + xy = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓	0.840
8618	$x^2y'' - xy' + (x^2 - 8)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.250
8619	$x^2y'' - 9xy' + 25y = 0$	[[_Emden, _Fowler]]	✓	0.713
8620	$x^2y'' - xy' - \left(x^2 + \frac{5}{4}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.830

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
8621	$x^2 y'' + xy' + \left(x^2 - \frac{1}{4}\right) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.886
8622	$xy'' + (2 - x)y' - y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.872
8623	$2x^2 y'' + 3xy' - y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.799
8624	$2x^2 y'' + 5xy' + 4y = 0$	[[_Emden, _Fowler]]	✓	0.624
8625	$x^2 y'' + 3xy' + 4x^4 y = 0$	[[_Emden, _Fowler]]	✓	0.734
8626	$x^2 y'' - xy = 0$	[[_Emden, _Fowler]]	✓	1.115
8627	$(-x^2 + 1)y'' + y' + y = x e^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.713
8628	$y' = y(1 - y^2)$	[_quadrature]	✓	3.555
8629	$\frac{xy''}{1-x} + y = \frac{1}{1-x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✗	0.439
8630	$\frac{xy''}{1-x} + xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.929
8631	$\frac{xy''}{1-x} + y = \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✗	0.750
8632	$\frac{xy''}{-x^2 + 1} + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.246
8633	$y'' = (x^2 + 3)y$	[[_2nd_order, _with_linear_symmetries]]	✓	1.206
8634	$y'' + (x - 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.507
8635	$\begin{bmatrix} x' = x + 2y + 2t + 1 \\ y' = 5x + y + 3t - 1 \end{bmatrix}$	system_of_ODEs	✓	0.761
8636	$y'' + 20y' + 500y = 100000 \cos(100x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	97.388
8637	$y'' \sin(2x)^2 + y' \sin(4x) - 4y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)']]]	✓	2.595

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
8638	$y'' = Ay^{2/3}$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓	163.740
8639	$y'' + 2xy' + (x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.754
8640	$y'' + 2 \cot(x)y' - y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.230
8641	$x^2y'' + xy' + \left(x^2 - \frac{1}{4}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	2.764
8642	$4x^2y'' + (-8x^2 + 4x)y' + (4x^2 - 4x - 1)y = 4\sqrt{x}e^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.198
8643	$xy'' - (2x + 2)y' + (x + 2)y = 6x^3e^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.999
8644	$y' + y = \frac{1}{x}$	[[_linear, 'class A']]	✗	0.223
8645	$y' + y = \frac{1}{x^2}$	[[_linear, 'class A']]	✗	0.259
8646	$xy' + y = 0$	[_separable]	✓	0.434
8647	$y' = \frac{1}{x}$	[_quadrature]	✗	0.141
8648	$y'' = \frac{1}{x}$	[[_2nd_order, _quadrature]]	✗	0.061
8649	$y'' + y' = \frac{1}{x}$	[[_2nd_order, _missing_y]]	✗	0.067
8650	$y'' + y = \frac{1}{x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✗	0.066
8651	$y'' + y' + y = \frac{1}{x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✗	0.070
8652	$h^2 + \frac{2ah}{\sqrt{1+h'^2}} = b^2$	[_quadrature]	✓	18.867
8653	$y'' + 2y' - 24y = 16 - (x + 2)e^{4x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.743
8654	<i>i.c.</i> $y'' + 3y' - 4y = 6e^{2t-2}$	[[_2nd_order, _with_linear_symmetries]]	✓	0.340

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
8655	$y'' + y = e^{a \cos(x)}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.928
8656	$y' = \frac{y}{2y \ln(y) + y - x}$	[[_1st_order, _with_linear_symmetries]]	✓	1.395
8657	$xy'' - (2x + 1)y' + y(x + 1) = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.872
8658	$x^2y' + e^{-y} = 0$	[_separable]	✓	1.179
8659	$y'' + e^y = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓	14.495
8660	$y' = \frac{xy + 3x - 2y + 6}{xy - 3x - 2y + 6}$	[_rational, [_Abel, '2nd type', 'class B']]	✗	1.258
8661	$y' = 0$	[_quadrature]	✓	0.381
8662	$y' = a$	[_quadrature]	✓	0.347
8663	$y' = x$	[_quadrature]	✓	0.250
8664	$y' = 1$	[_quadrature]	✓	0.464
8665	$y' = ax$	[_quadrature]	✓	0.176
8666	$y' = axy$	[_separable]	✓	0.822
8667	$y' = ax + y$	[[_linear, 'class A']]	✓	0.685
8668	$y' = ax + by$	[[_linear, 'class A']]	✓	0.791
8669	$y' = y$	[_quadrature]	✓	0.944
8670	$y' = by$	[_quadrature]	✓	0.691
8671	$y' = ax + by^2$	[[_Riccati, _special]]	✓	1.037
8672	$cy' = 0$	[_quadrature]	✓	0.389
8673	$cy' = a$	[_quadrature]	✓	0.349
8674	$cy' = ax$	[_quadrature]	✓	0.197
8675	$cy' = ax + y$	[[_linear, 'class A']]	✓	0.773
8676	$cy' = ax + by$	[[_linear, 'class A']]	✓	0.802

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
8677	$cy' = y$	[_quadrature]	✓	0.785
8678	$cy' = by$	[_quadrature]	✓	0.853
8679	$cy' = ax + by^2$	[[_Riccati, _special]]	✓	1.104
8680	$cy' = \frac{ax + by^2}{r}$	[[_Riccati, _special]]	✓	1.198
8681	$cy' = \frac{ax + by^2}{rx}$	[_rational, _Riccati]	✓	3.966
8682	$cy' = \frac{ax + by^2}{rx^2}$	[_rational, _Riccati]	✓	5.901
8683	$cy' = \frac{ax + by^2}{y}$	[_rational, _Bernoulli]	✓	1.513
8684	$a \sin(x) yxy' = 0$	[_quadrature]	✓	0.389
8685	$f(x) \sin(x) yxy'\pi = 0$	[_quadrature]	✓	0.401
8686	$y' = \sin(x) + y$	[[_linear, 'class A']]	✓	1.196
8687	$y' = \sin(x) + y^2$	[_Riccati]	✓	2.431
8688	$y' = \cos(x) + \frac{y}{x}$	[_linear]	✓	1.137
8689	$y' = \cos(x) + \frac{y^2}{x}$	[_Riccati]	✗	4.404
8690	$y' = x + y + by^2$	[_Riccati]	✓	1.191
8691	$xy' = 0$	[_quadrature]	✓	0.392
8692	$5y' = 0$	[_quadrature]	✓	0.388
8693	$ey' = 0$	[_quadrature]	✓	0.404
8694	$\pi y' = 0$	[_quadrature]	✓	0.413
8695	$\sin(x) y' = 0$	[_quadrature]	✓	0.427
8696	$f(x) y' = 0$	[_quadrature]	✓	0.424
8697	$xy' = 1$	[_quadrature]	✓	0.293
8698	$xy' = \sin(x)$	[_quadrature]	✓	0.362

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
8699	$(x - 1)y' = 0$	[_quadrature]	✓	0.381
8700	$yy' = 0$	[_quadrature]	✓	0.382
8701	$xyy' = 0$	[_quadrature]	✓	0.369
8702	$xy \sin(x)y' = 0$	[_quadrature]	✓	0.380
8703	$\pi y \sin(x)y' = 0$	[_quadrature]	✓	0.386
8704	$x \sin(x)y' = 0$	[_quadrature]	✓	0.446
8705	$x \sin(x)y'^2 = 0$	[_quadrature]	✓	0.158
8706	$yy'^2 = 0$	[_quadrature]	✓	0.147
8707	$y'^m = 0$	[_quadrature]	✓	0.503
8708	$xy'^m = 0$	[_quadrature]	✓	0.396
8709	$y'^2 = x$	[_quadrature]	✓	0.204
8710	$y'^2 = x + y$	[[_homogeneous, 'class C'], _dAlembert]	✓	0.487
8711	$y'^2 = \frac{y}{x}$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	1.412
8712	$y'^2 = \frac{y^2}{x}$	[_separable]	✓	1.201
8713	$y'^2 = \frac{y^3}{x}$	[[_homogeneous, 'class G']]	✓	0.777
8714	$y'^3 = \frac{y^2}{x}$	[[_homogeneous, 'class G'], _rational]	✓	1.247
8715	$y'^2 = \frac{1}{xy}$	[[_homogeneous, 'class G']]	✓	0.638
8716	$y'^2 = \frac{1}{xy^3}$	[[_homogeneous, 'class G']]	✓	0.681
8717	$y'^2 = \frac{1}{x^2y^3}$	[_separable]	✓	0.707

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
8718	$y'^4 = \frac{1}{xy^3}$	[[_homogeneous, 'class G', _rational]	✓	1.060
8719	$y'^2 = \frac{1}{x^3y^4}$	[_separable]	✓	0.907
8720	$y' = \sqrt{1 + 6x + y}$	[[_homogeneous, 'class C', _dAlembert]	✓	2.407
8721	$y' = (1 + 6x + y)^{1/3}$	[[_homogeneous, 'class C', _dAlembert]	✓	1.757
8722	$y' = (1 + 6x + y)^{1/4}$	[[_homogeneous, 'class C', _dAlembert]	✓	1.666
8723	$y' = (a + bx + y)^4$	[[_homogeneous, 'class C', _dAlembert]	✓	160.026
8724	$y' = (\pi + x + 7y)^{7/2}$	[[_homogeneous, 'class C', _dAlembert]	✓	16.673
8725	$y' = (a + bx + cy)^6$	[[_homogeneous, 'class C', _dAlembert]	✓	5.939
8726	$y' = e^{x+y}$	[_separable]	✓	1.889
8727	$y' = 10 + e^{x+y}$	[[_homogeneous, 'class C', _dAlembert]	✓	1.898
8728	$y' = 10e^{x+y} + x^2$	[[_1st_order, '_with_symmetry_[F(x),G(x)]']]	✓	1.608
8729	$y' = xe^{x+y} + \sin(x)$	[[_1st_order, '_with_symmetry_[F(x),G(x)]']]	✓	2.144
8730	$y' = 5e^{x^2+20y} + \sin(x)$	[[_1st_order, '_with_symmetry_[F(x),G(x)]']]	✓	2.219
8731	$\begin{bmatrix} x' + y' - x = y + t \\ x' + y' = 2x + 3y + e^t \end{bmatrix}$	system_of_ODEs	✓	0.164
8732	$\begin{bmatrix} 2x' + y' - x = y + t \\ x' + y' = 2x + 3y + e^t \end{bmatrix}$	system_of_ODEs	✓	0.891
8733	$\begin{bmatrix} x' + y' - x = y + t + \sin(t) + \cos(t) \\ x' + y' = 2x + 3y + e^t \end{bmatrix}$	system_of_ODEs	✓	0.276

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
8734	<i>i.c.</i> $ty' + y = t$	[_linear]	✓	0.281
8735	<i>i.c.</i> $y' - ty = 0$	[_separable]	✓	0.533
8736	<i>i.c.</i> $ty' + y = 0$	[_separable]	✓	0.279
8737	<i>i.c.</i> $ty' + y = 0$	[_separable]	✓	0.250
8738	<i>i.c.</i> $ty' + y = 0$	[_separable]	✓	0.320
8739	$ty' + y = 0$	[_separable]	✓	0.250
8740	<i>i.c.</i> $ty' + y = 0$	[_separable]	✓	0.388
8741	<i>i.c.</i> $ty' + y = \sin(t)$	[_linear]	✗	0.575
8742	<i>i.c.</i> $ty' + y = t$	[_linear]	✓	0.440
8743	<i>i.c.</i> $ty' + y = t$	[_linear]	✓	0.429
8744	<i>i.c.</i> $y' + t^2y = 0$	[_separable]	✓	0.329
8745	<i>i.c.</i> $(at + 1)y' + y = t$	[_linear]	✓	0.369
8746	<i>i.c.</i> $y' + (at + tb)y = 0$	[_separable]	✓	0.274
8747	<i>i.c.</i> $y' + (at + tb)y = 0$	[_separable]	✓	0.304
8748	$y'' = 0$	[[_2nd_order, _quadrature]]	✓	1.325
8749	$y''^2 = 0$	[[_2nd_order, _quadrature]]	✓	0.193
8750	$y''' = 0$	[[_2nd_order, _quadrature]]	✓	0.139
8751	$ay'' = 0$	[[_2nd_order, _quadrature]]	✓	1.329

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
8752	$ay''^2 = 0$	[[_2nd_order, _quadrature]]	✓	0.234
8753	$ay''^n = 0$	[[_2nd_order, _quadrature]]	✓	0.158
8754	$y'' = 1$	[[_2nd_order, _quadrature]]	✓	1.631
8755	$y''^2 = 1$	[[_2nd_order, _quadrature]]	✓	0.258
8756	$y'' = x$	[[_2nd_order, _quadrature]]	✓	1.251
8757	$y''^2 = x$	[[_2nd_order, _quadrature]]	✓	0.352
8758	$y''^3 = 0$	[[_2nd_order, _quadrature]]	✓	0.226
8759	$y'' + y' = 0$	[[_2nd_order, _missing_x]]	✓	1.302
8760	$y''^2 + y' = 0$	[[_2nd_order, _missing_x]]	✓	0.674
8761	$y'' + y'^2 = 0$	[[_2nd_order, _missing_x], _Liouville, [_2nd_order, _reducible, _mu_xy]]	✓	0.138
8762	$y'' + y' = 1$	[[_2nd_order, _missing_x]]	✓	1.454
8763	$y''^2 + y' = 1$	[[_2nd_order, _missing_x]]	✓	0.661
8764	$y'' + y'^2 = 1$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_xy]]	✓	0.242
8765	$y'' + y' = x$	[[_2nd_order, _missing_y]]	✓	1.462
8766	$y''^2 + y' = x$	[[_2nd_order, _missing_y]]	✓	0.625
8767	$y'' + y'^2 = x$	[[_2nd_order, _missing_y], [_2nd_order, _reducible, _mu_xy]]	✓	0.789

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
8768	$y'' + y' + y = 0$	[[_2nd_order, _missing_x]]	✓	2.064
8769	$y''^2 + y' + y = 0$	[[_2nd_order, _missing_x]]	✗	0.047
8770	$y'' + y'^2 + y = 0$	[[_2nd_order, _missing_x]]	✓	0.892
8771	$y'' + y' + y = 1$	[[_2nd_order, _missing_x]]	✓	20.199
8772	$y'' + y' + y = x$	[[_2nd_order, _with_linear_symmetries]]	✓	17.460
8773	$y'' + y' + y = x + 1$	[[_2nd_order, _with_linear_symmetries]]	✓	22.740
8774	$y'' + y' + y = x^2 + x + 1$	[[_2nd_order, _with_linear_symmetries]]	✓	32.719
8775	$y'' + y' + y = x^3 + x^2 + x + 1$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	32.816
8776	$y'' + y' + y = \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	41.273
8777	$y'' + y' + y = \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	72.489
8778	$y'' + y' = 1$	[[_2nd_order, _missing_x]]	✓	1.460
8779	$y'' + y' = x$	[[_2nd_order, _missing_y]]	✓	1.480
8780	$y'' + y' = x + 1$	[[_2nd_order, _missing_y]]	✓	1.485
8781	$y'' + y' = x^2 + x + 1$	[[_2nd_order, _missing_y]]	✓	1.558
8782	$y'' + y' = x^3 + x^2 + x + 1$	[[_2nd_order, _missing_y]]	✓	1.639
8783	$y'' + y' = \sin(x)$	[[_2nd_order, _missing_y]]	✓	1.772
8784	$y'' + y' = \cos(x)$	[[_2nd_order, _missing_y]]	✓	1.753
8785	$y'' + y = 1$	[[_2nd_order, _missing_x]]	✓	2.105

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
8786	$y'' + y = x$	[[_2nd_order, _with_linear_symmetries]]	✓	1.830
8787	$y'' + y = x + 1$	[[_2nd_order, _with_linear_symmetries]]	✓	1.892
8788	$y'' + y = x^2 + x + 1$	[[_2nd_order, _with_linear_symmetries]]	✓	2.001
8789	$y'' + y = x^3 + x^2 + x + 1$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	2.033
8790	$y'' + y = \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	2.856
8791	$y'' + y = \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	2.844
8792	$yy''^2 + y' = 0$	[[_2nd_order, _missing_x]]	✓	11.357
8793	$yy''^2 + y'^3 = 0$	[[_2nd_order, _missing_x]]	✓	2.290
8794	$y^2y''^2 + y' = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓	5.412
8795	$yy''^4 + y'^2 = 0$	[[_2nd_order, _missing_x]]	✓	56.838
8796	$y^3y''^2 + yy' = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓	0.388
8797	$yy'' + y'^3 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_y_y1]]	✓	0.526
8798	$yy''^3 + y^3y' = 0$	[[_2nd_order, _missing_x]]	✓	0.459
8799	$yy''^3 + y^3y'^5 = 0$	[[_2nd_order, _missing_x]]	✓	0.213
8800	$y'' + xy' + yy'^2 = 0$	[_Liouville, [_2nd_order, _reducible, _mu_xy]]	✓	0.298
8801	$y'' + \sin(x)y' + yy'^2 = 0$	[_Liouville, [_2nd_order, _reducible, _mu_xy]]	✓	0.402

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
8802	$y'' + (1 - x)y' + y^2y'^2 = 0$	[_Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✗	0.140
8803	$y'' + (\sin(x) + 2x)y' + \cos(y)yy'^2 = 0$	[_Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✗	0.590
8804	$y''y' + y^2 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓	1.718
8805	$y''y' + y^n = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓	3.084
8806	$y' = (x + y)^4$	[[_homogeneous, 'class C'], _dAlembert]	✓	148.632
8807	$y'' + (x + 3)y' + (y^2 + 3)y'^2 = 0$	[_Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✗	0.140
8808	$y'' + xy' + yy'^2 = 0$	[_Liouville, [_2nd_order, _reducible, _mu_xy]]	✓	0.305
8809	$y'' + \sin(x)y' + y'^2 = 0$	[[_2nd_order, _missing_y], _Liouville, [_2nd_order, _reducible, _mu_xy]]	✓	1.115
8810	$3y'' + \cos(x)y' + \sin(y)y'^2 = 0$	[_Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓	0.582
8811	$10y'' + x^2y' + \frac{3y'^2}{y} = 0$	[_Liouville, [_2nd_order, _with_linear_symmetries], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓	0.307

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
8812	$10y'' + (e^x + 3x)y' + \frac{3e^y y'^2}{\sin(y)} = 0$	[_Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✗	0.921
8813	$y'' - \frac{2y}{x^2} = x e^{-\sqrt{x}}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.130
8814	$y'' - \frac{y'}{\sqrt{x}} + \frac{(x + \sqrt{x} - 8)y}{4x^2} = x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.695
8815	$y'' + \frac{2y'}{x} + \frac{a^2 y}{x^4} = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓	1.324
8816	$(-x^2 + 1)y'' - xy' - c^2 y = 0$	[_Gegenbauer, [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓	2.046
8817	$x^6 y'' + 3x^5 y' + a^2 y = \frac{1}{x^2}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	4.172
8818	$x^2 y'' - 3xy' + 3y = 2x^3 - x^2$	[[_2nd_order, _with_linear_symmetries]]	✓	1.960
8819	$y'' + \cot(x)y' + 4y \csc(x)^2 = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓	8.423
8820	$(x^2 + 1)y'' + (x + 1)y' + y = 4 \cos(\ln(x + 1))$	[[_2nd_order, _linear, _nonhomogeneous]]	✗	1.417
8821	$y'' + \tan(x)y' + \cos(x)^2 y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	2.922
8822	$xy'' - y' + 4x^3 y = 8x^3 \sin(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	27.496
8823	$xy'' - y' + 4x^3 y = x^5$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.608
8824	$\cos(x)y'' + \sin(x)y' - 2y \cos(x)^3 = 2 \cos(x)^5$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.705

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
8825	$y'' + \left(1 - \frac{1}{x}\right) y' + 4x^2 y e^{-2x} = 4(x^3 + x^2) e^{-3x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	2.757
8826	$y'' - x^2 y' + xy = x^{m+1}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.931
8827	$y'' - \frac{y'}{\sqrt{x}} + \frac{(x + \sqrt{x} - 8) y}{4x^2} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.281
8828	$\cos(x)^2 y'' - 2 \cos(x) \sin(x) y' + \cos(x)^2 y = 0$	[_Lienard]	✓	3.157
8829	$y'' - 4xy' + (4x^2 - 1) y = -3 e^{x^2} \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	5.694
8830	$y'' - 2bxy' + b^2 x^2 y = x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.674
8831	$y'' - 4xy' + (4x^2 - 3) y = e^{x^2}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.262
8832	$y'' - 2 \tan(x) y' + 5y = e^{x^2} \sec(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	15.432
8833	$x^2 y'' - 2xy' + 2(x^2 + 1) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	4.253
8834	$4x^2 y'' + 4x^5 y' + (x^8 + 6x^4 + 4) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.553
8835	$x^2 y'' + (-y + xy')^2 = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.148
8836	$xy'' + 2y' - xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.177
8837	$xy'' + 2y' + xy = 0$	[_Lienard]	✓	1.521
8838	$y' + y \cot(x) = 2 \cos(x)$	[_linear]	✓	1.677
8839	$2xy^2 - y + (y^2 + x + y) y' = 0$	[_rational]	✓	1.369
8840	$y' = x - y^2$	[[_Riccati, _special]]	✓	0.925
8841	$y'''' - y''' - 3y'' + 5y' - 2y = x e^x + 3 e^{-2x}$	[[_high_order, _linear, _nonhomogeneous]]	✓	0.194
8842	$x^2 y'' - x(x + 6) y' + 10y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.383

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
8843	$x^2 y'' + xy' + (x^2 - 5)y = 0$	[_Bessel]	✓	0.844
8844	$x^2 y'' + xy' + (x^2 - 5)y = 0$	[_Bessel]	✓	2.165
8845	$x^2 y'' - 4xy' + 6y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)']]]	✓	1.173
8846	$y''' - xy = 0$	[[_3rd_order, _with_linear_symmetries]]	✗	0.041
8847	$y' = y^{1/3}$ i.c.	[_quadrature]	✓	1.676
8848	$\begin{bmatrix} x' = 3x + y \\ y' = y - x \end{bmatrix}$	system_of_ODEs	✓	0.284
8849	$(x^2 - 1)y'' - 2xy' + 2y = 0$	[_Gegenbauer]	✓	0.256
8850	$(x^2 - 1)y'' - 6xy' + 12y = 0$	[_Gegenbauer]	✓	0.266
8851	$(x^2 + 3)y'' - 7xy' + 16y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.480
8852	$(x^2 - 1)y'' + 8xy' + 12y = 0$	[_Gegenbauer]	✓	0.237
8853	$3y'' + xy' - 4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.282
8854	$5y'' - 2xy' + 10y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.319
8855	$y'' - x^2 y' - 3xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.310
8856	$(x^2 + 1)y'' + 2xy' - 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.341
8857	$y'' + xy' - 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.273
8858	$(x^2 - 6x + 10)y'' - 4(x - 3)y' + 6y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.349
8859	$(x^2 + 6x)y'' + (3x + 9)y' - 3y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.276
8860	$ty'' + (t^2 - 1)y' + t^2 y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.381

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
8861	$t^2 y'' - t(t+2)y' + (t+2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.133
8862	$ty'' - (t+1)y' + y = 0$	[_Laguerre]	✓	0.275
8863	$(-t+1)y'' + ty' - y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.295
8864	$x^2 y'' + xy' + \left(x^2 - \frac{1}{4}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.201
8865	$ty'' - (t+1)y' + y = 0$	[_Laguerre]	✓	0.313
8866	$(-t+1)y'' + ty' - y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.329
8867	$y'' + xy' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.280
8868	$(x^2 + 1)y'' - 4xy' + 6y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.313
8869	$(1-x)y'' + xy' - y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.280
8870	$2y'' + xy' + 3y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.287
8871	$y'' + xy' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.279
8872	$(1-x)y'' + xy' - y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.291
8873	$y'' + xy' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.280
8874	$(-x^2 + 4)y'' + xy' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.066
8875	$4x^2 y'' - 4xy' + (-16x^2 + 3)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.145
8876	$(x-1)y'' - xy' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.299
8877	$x^2 y'' - 2xy' + (x^2 + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.187
8878	$(x^2 - 2x)y'' + (-x^2 + 2)y' + (2x - 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.381

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
8879	$4x^2y'' + (-8x^2 + 4x)y' + (4x^2 - 4x - 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.153
8880	$y'' + 4xy' + (4x^2 + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.116
8881	$(2x + 1)y'' - 2y' - (2x + 3)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.281
8882	$xy'' - (2x + 2)y' + (x + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.186
8883	$x^2y'' - 2xy' + (x^2 + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.188
8884	$4x^2y'' - 4xy' + (-16x^2 + 3)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.145
8885	$4x^2y'' - 4xy' + (4x^2 + 3)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.203
8886	$x^2y'' - 2xy' - (x^2 - 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.121
8887	$x^2y'' - 2x(x + 1)y' + (x^2 + 2x + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.127
8888	$x^2y'' - 2x(x + 2)y' + (x^2 + 4x + 6)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.132
8889	$x^2y'' - 4xy' + (x^2 + 6)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.195
8890	$(x - 1)y'' - xy' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.290
8891	$4x^2y'' - 4x(x + 1)y' + (2x + 3)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.155
8892	$(3x - 1)y'' - (2 + 3x)y' - (6x - 8)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.304
8893	$(x + 2)y'' + xy' + 3y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.359
8894	$x^2(1 - x)y'' + x(4 + x)y' + (2 - x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.298
8895	$x^2(x + 1)y'' + x(2x + 1)y' - (4 + 6x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.301

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
8896	$x^2(2x^2 + 1)y'' + x(2x^2 + 4)y' + 2(-x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.421
8897	$x^2(x^2 + 2)y'' + 2x(x^2 + 5)y' + 2(-x^2 + 3)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.535
8898	$(x^2 + 1)y'' + 6xy' + 6y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.332
8899	$(x^2 + 1)y'' + 2xy' - 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.346
8900	$(x^2 + 1)y'' - 8xy' + 20y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.336
8901	$(-x^2 + 1)y'' - 8xy' - 12y = 0$	[_Gegenbauer]	✓	0.247
8902	$(2x^2 + 1)y'' + 7xy' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.401
8903	$(-x^2 + 1)y'' - 5xy' - 4y = 0$	[_Gegenbauer]	✓	0.311
8904	$(x^2 + 1)y'' - 10xy' + 28y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.398
8905	$y'' + xy' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.269
8906	$(2x^2 + 1)y'' - 9xy' - 6y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.523
8907	$(2x^2 - 8x + 11)y'' - 16(-2 + x)y' + 36y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.658
8908	$y'' + (x - 3)y' + 3y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.349
8909	$(x^2 - 8x + 14)y'' - 8(x - 4)y' + 20y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.306
8910	$(2x^2 + 4x + 5)y'' - 20(x + 1)y' + 60y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.643
8911	$(x^3 + 1)y'' + 7x^2y' + 9xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.466
8912	$(2x^5 + 1)y'' + 14x^4y' + 10x^3y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.077

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
8913	$y'' + x^6 y' + 7x^5 y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.464
8914	$(x^8 + 1) y'' - 16x^7 y' + 72x^6 y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	438.619
8915	$y'' + x^5 y' + 6x^4 y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.491
8916	$(3x + 1) y'' + xy' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	30.168
8917	$(3x^2 + x + 1) y'' + (2 + 15x) y' + 12y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.820
8918	$(x + 2) y'' + (x + 1) y' + 3y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.363
8919	$(4 + x) y'' + (x + 2) y' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.346
8920	$(2x^2 + 3x) y'' + 10(x + 1) y' + 8y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.355
8921	$x^2 y'' - (6 - 7x) y' + 8y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.330
8922	$(2x^2 + x + 1) y'' + (1 + 7x) y' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.042
8923	$(x + 3) y'' + (2x + 1) y' - (2 - x) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.230
8924	$y'' + 3xy' + (2x^2 + 4) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.303
8925	$(2 + 4x) y'' - 4y' - (6 + 4x) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.289
8926	$y'' - 3xy' + (2x^2 + 5) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.303
8927	$2y'' + 5xy' + (2x^2 + 4) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.246
8928	$y'' + 4xy' + (4x^2 + 2) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.154
8929	$y'' + 4xy' + (4x^2 + 2) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.119

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
Continued from previous page

#	ODE	CAS classification	Solved?	time (sec)
8930	$2x^2(x^2 + x + 1)y'' + x(11x^2 + 11x + 9)y' + (7x^2 + 10x + 6)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.107
8931	$3x^2y'' + 2x(-2x^2 + x + 1)y' + (-8x^2 + 2x)y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, ' _with_symmetry_[0,F(x)]']]	✓	0.471
8932	$12x^2(x + 1)y'' + x(3x^2 + 35x + 11)y' - (-5x^2 - 10x + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.461
8933	$x^2(10x^2 + x + 5)y'' + x(48x^2 + 3x + 4)y' + (36x^2 + x)y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, ' _with_symmetry_[0,F(x)]']]	✓	1.076
8934	$18x^2(x + 1)y'' + 3x(x^2 + 11x + 5)y' - (-5x^2 - 2x + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.398
8935	$2x^2y'' + x(2x + 3)y' - (1 - x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.309
8936	$2x^2y'' + x(x + 5)y' - (2 - 3x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.335
8937	$3x^2y'' + x(x + 1)y' - y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.479
8938	$2x^2y'' - xy' + (-2x + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.220
8939	$3x^2y'' + x(x + 1)y' - (3x + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.612
8940	$2x^2(x + 3)y'' + x(1 + 5x)y' + y(x + 1) = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.337
8941	$x^2(4 + x)y'' - x(1 - 3x)y' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.556
8942	$2x^2y'' + 5xy' + y(x + 1) = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.284

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
Continued from previous page

#	ODE	CAS classification	Solved?	time (sec)
8943	$6x^2y'' + x(10 - x)y' - (x + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.375
8944	$x^2(3 + 4x)y'' + x(11 + 4x)y' - (3 + 4x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.367
8945	$2x^2(2 + 3x)y'' + x(4 + 11x)y' - (1 - x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.236
8946	$x^2(x + 2)y'' + 5x(1 - x)y' - (2 - 8x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.867
8947	$8x^2(-x^2 + 1)y'' + 2x(-13x^2 + 1)y' + (-9x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.402
8948	$x^2(x^2 + 1)y'' - 2x(-x^2 + 2)y' + 4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.398
8949	$x(x^2 + 3)y'' + (-x^2 + 2)y' - 8xy = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.340
8950	$4x^2(-x^2 + 1)y'' + x(-19x^2 + 7)y' - (14x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.392
8951	$3x^2(-x^2 + 2)y'' + x(-11x^2 + 1)y' + (-5x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.481
8952	$2x^2(x^2 + 2)y'' - x(-7x^2 + 12)y' + (3x^2 + 7)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.407
8953	$2x^2(x^2 + 2)y'' + x(7x^2 + 4)y' - (-3x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.377
8954	$2x^2(2x^2 + 1)y'' + 5x(6x^2 + 1)y' - (-40x^2 + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.590
8955	$x(x^2 + 1)y'' + (7x^2 + 4)y' + 8xy = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.341
8956	$2x^2(x^2 + 1)y'' + x(8x^2 + 3)y' - (-4x^2 + 3)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.393

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
8957	$9x^2y'' + 3x(x^2 + 3)y' - (-5x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.355
8958	$6x^2y'' + x(6x^2 + 1)y' + (9x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.406
8959	$9x^2(x^2 + 1)y'' + 3x(13x^2 + 3)y' - (-25x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.394
8960	$4x^2(x^2 + 1)y'' + 4x(6x^2 + 1)y' - (-25x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.347
8961	$8x^2(2x^2 + 1)y'' + 2x(34x^2 + 5)y' - (-30x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.559
8962	$2x^2(x + 1)y'' - x(1 - 3x)y' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.221
8963	$6x^2(2x^2 + 1)y'' + x(50x^2 + 1)y' + (30x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.233
8964	$28x^2(1 - 3x)y'' - 7x(5 + 9x)y' + 7(2 + 9x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.229
8965	$8x^2(-x^2 + 2)y'' + 2x(-21x^2 + 10)y' - (35x^2 + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.231
8966	$4x^2(x^2 + 3x + 1)y'' - 4x(-3x^2 - 3x + 1)y' + 3(x^2 - x + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.171
8967	$3x^2(x + 1)^2y'' - x(-11x^2 - 10x + 1)y' + (5x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.224
8968	$4x^2(x^2 + 2x + 3)y'' - x(-15x^2 - 14x + 3)y' + (7x^2 + 3)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.239
8969	$x^2(x^2 - 2x + 1)y'' - x(x + 3)y' + (4 + x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.372
8970	$2x^2(x + 2)y'' + 5x^2y' + y(x + 1) = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.266

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
8971	$x^2(-x^2 + 2)y'' - 2x(2x^2 + 1)y' + (-2x^2 + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.442
8972	$x^2y'' - x(5 - x)y' + (9 - 4x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.487
8973	$4x^2(x^2 + x + 1)y'' + 12x^2(x + 1)y' + (3x^2 + 3x + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.829
8974	$x^2(x^2 + x + 1)y'' - x(-2x^2 - 4x + 1)y' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.876
8975	$9x^2y'' + 3x(-2x^2 + 3x + 5)y' + (-14x^2 + 12x + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.542
8976	$x^2(2x + 1)y'' + x(3x^2 + 14x + 5)y' + (12x^2 + 18x + 4)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.611
8977	$16x^2y'' + 4x(2x^2 + x + 6)y' + (18x^2 + 5x + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.527
8978	$9x^2(x + 1)y'' + 3x(-x^2 + 11x + 5)y' + (-7x^2 + 16x + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.406
8979	$36x^2(-2x + 1)y'' + 24x(1 - 9x)y' + (1 - 70x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.380
8980	$x^2(x + 1)y'' - x(3 - x)y' + 4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.296
8981	$x^2(-2x + 1)y'' - x(5 - 4x)y' + (9 - 4x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.282
8982	$2x^2(x + 2)y'' + x^2y' + (1 - x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.269
8983	$2x^2(x + 1)y'' - x(6 - x)y' + (8 - x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.273
8984	$x^2(2x + 1)y'' + x(5 + 9x)y' + (3x + 4)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.292
8985	$x^2(-2x + 1)y'' - x(5 + 4x)y' + (9 + 4x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.324

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
8986	$x^2(1-x)y'' + x(7+x)y' + (9-x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.333
8987	$x^2y'' - x(-x^2+1)y' + (x^2+1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.322
8988	$x^2(x^2+1)y'' - 3x(-x^2+1)y' + 4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.406
8989	$4x^2y'' + 2x^3y' + (3x^2+1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.312
8990	$x^2(x^2+1)y'' - x(-2x^2+1)y' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.312
8991	$2x^2(x^2+2)y'' + 7x^3y' + (3x^2+1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.385
8992	$x^2(x^2+1)y'' - x(-4x^2+1)y' + (2x^2+1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.338
8993	$4x^2(x^2+4)y'' + 3x(3x^2+8)y' + (-9x^2+1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.412
8994	$3x^2(x^2+3)y'' + x(11x^2+3)y' + (5x^2+1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.393
8995	$9x^2y'' - 3x(-2x^2+7)y' + (2x^2+25)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.345
8996	$x^2y'' - x(-x^2+1)y' + (x^2+1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.320
8997	$x^2(-2x+1)y'' + 3xy' + (1+4x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.291
8998	$x(x+1)y'' + (1-x)y' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.286
8999	$x^2(1-x)y'' - x(3-5x)y' + (4-5x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.292
9000	$x^2(x^2+1)y'' - x(9x^2+1)y' + (25x^2+1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.386
9001	$9x^2y'' + 3x(-x^2+1)y' + (7x^2+1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.179

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
9002	$x(x^2 + 1)y'' + (-x^2 + 1)y' - 8xy = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.426
9003	$4x^2y'' + 2x(-x^2 + 4)y' + (7x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.742
9004	$4x^2(x + 1)y'' + 8x^2y' + y(x + 1) = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.216
9005	$9x^2(x + 3)y'' + 3x(3 + 7x)y' + (3 + 4x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.283
9006	$x^2(-x^2 + 2)y'' - x(3x^2 + 2)y' + (-x^2 + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.239
9007	$16x^2(x^2 + 1)y'' + 8x(9x^2 + 1)y' + (49x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.288
9008	$x^2(3x + 4)y'' - x(4 - 3x)y' + 4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.231
9009	$4x^2(x^2 + 3x + 1)y'' + 8x^2(2x + 3)y' + (9x^2 + 3x + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.230
9010	$x^2(1 - x)^2y'' - x(-3x^2 + 2x + 1)y' + (x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.237
9011	$9x^2(x^2 + x + 1)y'' + 3x(13x^2 + 7x + 1)y' + (25x^2 + 4x + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.339
9012	$2x^2(x + 2)y'' - x(4 - 7x)y' - (5 - 3x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.297
9013	$x^2(-2x + 1)y'' + x(8 - 9x)y' + (6 - 3x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.284
9014	$x^2(x^2 + 1)y'' + x(10x^2 + 3)y' - (-14x^2 + 15)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.401
9015	$x^2(-2x^2 + 1)y'' + x(-13x^2 + 7)y' - 14x^2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.372

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
9016	$4x^2(x+1)y'' + 4x(2x+1)y' - (3x+1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.271
9017	$2x^2(2+3x)y'' + x(4+21x)y' - (1-9x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.273
9018	$x^2y'' + x(x+2)y' - (2-3x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.304
9019	$4x^2(x+1)y'' + 4x(3+8x)y' - (5-49x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.290
9020	$x^2(x+1)y'' - x(3+10x)y' + 30xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.316
9021	$x^2y'' + x(x+1)y' - 3(x+3)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.350
9022	$x^2(2x+1)y'' + x(9+13x)y' + (7+5x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.298
9023	$4x^2(2x+1)y'' - 2x(4-x)y' - (7+5x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.265
9024	$3x^2(x+3)y'' - x(15+x)y' - 20y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.289
9025	$x^2(x+1)y'' + x(1-10x)y' - (9-10x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.314
9026	$x^2(x+1)y'' + 3x^2y' - (6-x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.275
9027	$x^2(2x+1)y'' - 2x(3+14x)y' + (6+100x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.266
9028	$x^2(x+1)y'' - x(6+11x)y' + (6+32x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.295
9029	$4x^2(x+1)y'' + 4x(1+4x)y' - (49+27x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.292
9030	$x^2(x^2+1)y'' - x(-2x^2+7)y' + 12y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.357
9031	$x^2y'' - x(-x^2+7)y' + 12y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.335

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
9032	$x^2 y'' + x(2x^2 + 1) y' - (-10x^2 + 1) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.408
9033	$x^2 y'' + x(-2x^2 + 1) y' - 4(2x^2 + 1) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.331
9034	$x^2 y'' + x(-3x^2 + 1) y' - 4(-3x^2 + 1) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.643
9035	$x^2(x^2 + 1) y'' + x(11x^2 + 5) y' + 24x^2 y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.458
9036	$4x^2(x^2 + 1) y'' + 8xy' - (-x^2 + 35) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.414
9037	$x^2(x^2 + 1) y'' - x(-x^2 + 5) y' - (25x^2 + 7) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.425
9038	$x^2(x^2 + 1) y'' + x(2x^2 + 5) y' - 21y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.391
9039	$4x^2(x^2 + 1) y'' + 4x(x^2 + 2) y' - (x^2 + 15) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.332
9040	$y'' - \frac{2(t+1)y'}{t^2+2t-1} + \frac{2y}{t^2+2t-1} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.335
9041	$y'' - 4ty' + (4t^2 - 2) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.121
9042	$(-t^2 + 1) y'' - 2ty' + 2y = 0$	[_Gegenbauer]	✓	0.344
9043	$(t^2 + 1) y'' - 2ty' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.337
9044	$(-t^2 + 1) y'' - 2ty' + 6y = 0$	[_Gegenbauer]	✓	0.335
9045	$(2t + 1) y'' - 4(t + 1) y' + 4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.295
9046	$t^2 y'' + ty' + \left(t^2 - \frac{1}{4}\right) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.202
9047	$y'' - \frac{2ty'}{t^2+1} + \frac{2y}{t^2+1} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.328

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
9048	$y'' + (t^2 + 2t + 1)y' - (4 + 4t)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.321
9049	$2ty'' + (1 - 2t)y' - y = 0$	[_Laguerre]	✓	0.295
9050	$2ty'' + (t + 1)y' - 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.519
9051	$2t^2y'' - ty' + (t + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.280
9052	$2t^2y'' + (t^2 - t)y' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.305
9053	$t^2y'' + (-t^2 + t)y' - y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.273
9054	$ty'' - (t^2 + 2)y' + ty = 0$	[_Lienard]	✓	0.332
9055	$t^2y'' + t(t + 1)y' - y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.280
9056	$ty'' - (t + 4)y' + 2y = 0$	[_Laguerre]	✓	0.315
9057	$t^2y'' + (t^2 - 3t)y' + 3y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.308
9058	$ty'' + ty' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.292
9059	$ty'' + (-t^2 + 1)y' + 4ty = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.672
9060	$t^2y'' - t(t + 1)y' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.296
9061	$y'' + 4xy' + (4x^2 + 6)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.217
9062	$(-z^2 + 1)y'' - 3zy' + \lambda y = 0$	[_Gegenbauer]	✓	0.473
9063	$4zy'' + 2(1 - z)y' - y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.299
9064	$f'' + 2(z - 1)f' + 4f = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.299
9065	$zy'' - 2y' + yz = 0$	[_Lienard]	✓	0.329
9066	$zy'' + (2z - 3)y' + \frac{4y}{z} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.332

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
9067	$y'' + 2xy' + 4y = 0$	[_erf]	✓	0.254
9068	$y'' + xy' + 3y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.336
9069	$y'' - x^2y' - 3xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.316
9070	$(-4x^2 + 1)y'' - 20xy' - 16y = 0$	[_Gegenbauer]	✓	0.296
9071	$(x^2 - 1)y'' - 6xy' + 12y = 0$	[_Gegenbauer]	✓	0.267
9072	$y'' + xy' + (x + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.332
9073	$(2x^2 + 1)y'' + 7xy' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.403
9074	$4y'' + xy' + 4y = 0$	[_Lienard]	✓	0.310
9075	$y'' + xy' - 4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.275
9076	$4xy'' - xy' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.281
9077	$6x^2y'' + x(1 + 18x)y' + (1 + 12x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.345
9078	$3x^2y'' - x(8 + x)y' + 6y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	3.648
9079	$2x^2y'' - x(2x + 1)y' + 2(4x - 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.735
9080	$4x^2y'' - 4x^2y' + (2x + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.284
9081	$x^2y'' + x(3 - 2x)y' + (-2x + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.324
9082	$x^2y'' - x(x + 3)y' + (4 - x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.352
9083	$x^2y'' + x(3 - x)y' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.349
9084	$x^2y'' - (2\sqrt{5} - 1)xy' + \left(\frac{19}{4} - 3x^2\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.227

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
9085	$x^2y'' + x(x-3)y' + (4-x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.304
9086	$x^2y'' + x^2y' - (x+2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.259
9087	$x^2y'' + 2x^2y' + \left(x - \frac{3}{4}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.266
9088	$x^2(x+1)y'' + x^2y' - 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.250
9089	$x^2y'' + x(x^2+6)y' + 6y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.403
9090	$x^2y'' + x(1-x)y' - y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.281
9091	$x^2y'' - x(x+3)y' + 4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.332
9092	$x^2y'' - x^2y' - 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.295
9093	$x^2y'' - x^2y' - (2+3x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.325
9094	$x^2y'' + x(5-x)y' + 4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.462
9095	$4x^2y'' + 4x(1-x)y' + (2x-9)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.293
9096	$x^2y'' + 2x(x+2)y' + 2y(x+1) = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.314
9097	$x^2y'' - x(1-x)y' + (1-x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.316
9098	$4x^2y'' + 4x(2x+1)y' + (4x-1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.155
9099	$x^2y'' + x(4+x)y' + (x+2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.306
9100	$x^2y'' + xy' + \left(x^2 - \frac{9}{4}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.339
9101	$xy'' + 2y' + xy = 0$	[_Lienard]	✓	0.184
9102	$2xy'' + 5(-2x+1)y' - 5y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.481

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
9103	$x^2 y'' + xy' + \left(x^2 - \frac{1}{4}\right) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.202
9104	$xy'' + (x + n)y' + (n + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.485
9105	$x^4 y'' + xy' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.395
9106	$x^2 y'' + (2x^2 + x)y' - 4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.309
9107	$(4x^3 - 14x^2 - 2x)y'' - (6x^2 - 7x + 1)y' + (6x - 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.514
9108	$x^2 y'' + x^2 y' + (-2 + x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.270
9109	$x^2 y'' - x^2 y' + (-2 + x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.270
9110	$x^2(1 - 4x)y'' - \frac{xy'}{2} - \frac{3xy}{4} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.361
9111	$x^2 y'' + (x^2 + x)y' + (x - 9)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.321
9112	$x^2 y'' + x(x + 1)y' + (3x - 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.335
9113	$x^2 y'' - (x^2 + 4x)y' + 4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.307
9114	$2x^2 y'' - (2 + 3x)y' + \frac{(2x - 1)y}{x} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.544
9115	$x(1 - x)y'' + \left(\frac{3}{2} - 2x\right)y' - \frac{y}{4} = 0$	[_Jacobi]	✓	0.297
9116	$2x(1 - x)y'' + xy' - y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.286
9117	$2x(1 - x)y'' + (1 - 11x)y' - 10y = 0$	[_Jacobi]	✓	0.280
9118	$x(1 - x)y'' + \frac{(-2x + 1)y'}{3} + \frac{20y}{9} = 0$	[_Jacobi]	✓	0.299
9119	$4y'' + \frac{3(-x^2 + 2)y}{(-x^2 + 1)^2} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.245

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
9120	$u'' - \frac{2u'}{x} - a^2u = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.352
9121	$u'' + \frac{2u'}{x} - a^2u = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.162
9122	$u'' + \frac{2u'}{x} + a^2u = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.174
9123	$u'' + \frac{4u'}{x} - a^2u = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.333
9124	$u'' + \frac{4u'}{x} + a^2u = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.374
9125	$y'' - a^2y = \frac{6y}{x^2}$	[[_2nd_order, _with_linear_symmetries]]	✓	0.365
9126	$y'' + n^2y = \frac{6y}{x^2}$	[[_2nd_order, _with_linear_symmetries]]	✓	0.414
9127	$x^2y'' + xy' - \left(x^2 + \frac{1}{4}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.144
9128	$x^2y'' + xy' + \frac{(-9a^2 + 4x^2)y}{4a^2} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.444
9129	$x^2y'' + xy' + \left(x^2 - \frac{25}{4}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.405
9130	$y'' + qy' = \frac{2y}{x^2}$	[[_2nd_order, _with_linear_symmetries]]	✓	0.349
9131	$xy'' + 3y' + 4x^3y = 0$	[[_Emden, _Fowler]]	✓	0.341
9132	$(x^2 + 2x)y'' - 2(x + 1)y' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.280
9133	$(x^2 + 2x)y'' - 2(x + 1)y' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.279
9134	$(x^2 + 1)y'' - 2xy' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.337
9135	$(x^2 + 1)y'' - 2xy' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.337

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
9136	$y'' - 4xy' + (4x^2 - 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.115
9137	$y'' - 4xy' + (4x^2 - 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.113
9138	$(2x - 3)y'' - xy' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.415
9139	$y'' - xy' - 3y = 0$	[_Hermite]	✓	0.282
9140	$(x^2 + 1)y'' - xy' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.309
9141	$y'' - xy' + 2y = 0$	[_Hermite]	✓	0.296
9142	$(-x^2 + 1)y'' - y' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.731
9143	$x(x + 1)^2 y'' + (-x^2 + 1)y' + (x - 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.229
9144	$2xy'' - y' + 2y = 0$	[[_Emden, _Fowler]]	✓	0.257
9145	$xy'' + xy' - 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.280
9146	$x(x - 1)^2 y'' - 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.214
9147	$y'' - 2xy' + x^2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.205
9148	$x(-x^2 + 2)y'' - (x^2 + 4x + 2)((1 - x)y' + y) = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.567
9149	$x^2(x + 1)y'' - (2x + 1)(-y + xy') = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.281
9150	$2(2 - x)x^2y'' - x(4 - x)y' + (3 - x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.229
9151	$x^2(1 - x)y'' + (5x - 4)xy' + (6 - 9x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.254
9152	$xy'' + (4x^2 + 1)y' + 4x(x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.228
9153	$y'' - 2xy' + 8y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.284

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
9154	$(-x^2 + 1)y'' - 2xy' + 12y = 0$	[_Gegenbauer]	✓	0.349
9155	$x(x + 2)y'' + 2(x + 1)y' - 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.288
9156	$x(x + 2)y'' + (x + 1)y' - 4y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)']]]	✓	0.279
9157	$(x - 1)y'' - xy' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.293
9158	$(x^2 + 1)y'' - 2xy' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.331
9159	$(x^2 - 2x + 10)y'' + xy' - 4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.425
9160	$(x^2 - 2x + 10)y'' + xy' - 4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.497
9161	$y'' - xy' + 2y = 0$	[_Hermite]	✓	0.294
9162	$(x + 2)y'' + xy' - y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.309
9163	$(x^2 + 1)y'' - 6y = 0$	[[_Emden, _Fowler]]	✓	0.285
9164	$(x^2 + 2)y'' + 3xy' - y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.421
9165	$(x - 1)y'' - xy' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.292
9166	$x^2y'' + \left(\frac{5}{3}x + x^2\right)y' - \frac{y}{3} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.411
9167	$2xy'' - y' + 2y = 0$	[[_Emden, _Fowler]]	✓	0.256
9168	$2xy'' - (2x + 3)y' + y = 0$	[_Laguerre]	✓	0.381
9169	$2x^2y'' + 3xy' + (2x - 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.266
9170	$xy'' + 2y' - xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.115
9171	$x^2y'' + xy' + \left(x^2 - \frac{1}{4}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.204

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
9172	$xy'' + (x - 6)y' - 3y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.360
9173	$x^4y'' + \lambda y = 0$	[[_Emden, _Fowler]]	✓	0.302
9174	$4x^2y'' + 4xy' + (4x^2 - 25)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.357
9175	$x^2y'' + xy' + \left(36x^2 - \frac{1}{4}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.216
9176	$x^2y'' + (x^2 - 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.339
9177	$xy'' + 3y' + x^3y = 0$	[[_Emden, _Fowler]]	✓	0.327
9178	$x^2y'' + 4xy' + (x^2 + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.191
9179	$16x^2y'' + 32xy' + (x^4 - 12)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.343
9180	$y'' - x^2y' + xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.421
9181	$xy'' - (x + 2)y' + 2y = 0$	[_Laguerre]	✓	0.276
9182	$y'' + xy' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.316
9183	$(-x^2 + 1)y'' - 2xy' + 2y = 0$	[_Gegenbauer]	✓	0.315
9184	$y'' - 4xy' + (4x^2 - 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.115
9185	$(-x^2 + 1)y'' - 2xy' + 30y = 0$	[_Gegenbauer]	✓	0.371
9186	$xy'' + 2y' + xy = 0$	[_Lienard]	✓	0.184
9187	$xy'' + (2x + 1)y' + y(x + 1) = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.212
9188	$2x(x - 1)y'' - (x + 1)y' + y = 0$	[_Jacobi]	✓	0.248
9189	$xy'' + 2y' + 4xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.195
9190	$xy'' + (2 - 2x)y' + (-2 + x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.125

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
9191	$x^2y'' + 6xy' + (4x^2 + 6)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.197
9192	$xy'' + (-2x + 1)y' + (x - 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.217
9193	$x(1 - x)y'' + \left(\frac{1}{2} + 2x\right)y' - 2y = 0$	[_Jacobi]	✓	0.317
9194	$4(t^2 - 3t + 2)y'' - 2y' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.318
9195	$2(t^2 - 5t + 6)y'' + (2t - 3)y' - 8y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.312
9196	$3t(t + 1)y'' + ty' - y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.349
9197	$x^2y'' + \frac{(x + \frac{3}{4})y}{4} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.259
9198	$x^2y'' + xy' + \frac{(x^2 - 1)y}{4} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.213
9199	$xy'' + (-2x + 1)y' + (x - 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.222
9200	$xy'' - (x + 1)y' + y = 0$	[_Laguerre]	✓	0.279
9201	$xy'' + 3y' + 4x^3y = 0$	[[_Emden, _Fowler]]	✓	0.336
9202	$x^2(-x^2 + 1)y'' + 2x(-x^2 + 1)y' - 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.276
9203	$2xy'' + (-2 + x)y' - y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.285
9204	$xy'' + 2y' + xy = 0$	[_Lienard]	✓	0.180
9205	$y'' + 2x^2y' + (x^4 + 2x - 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.158
9206	$u'' + \frac{u}{x^2} = 0$	[[_Emden, _Fowler]]	✓	0.277
9207	$u'' - (2x + 1)u' + (x^2 + x - 1)u = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.129
9208	$y'' + 2y' + \left(1 + \frac{2}{(3x + 1)^2}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.190

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

*Continued from previous page*

#	ODE	CAS classification	Solved?	time (sec)
9209	$x^2 y'' - 2xy' + (x^2 + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.188
9210	$y'' + \frac{2y'}{x} - \frac{2y}{(x+1)^2} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.185
9211	$y'' + \frac{y}{2x^4} = 0$	[[_Emden, _Fowler]]	✓	0.292
9212	$y'' - xy' - xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.291
9213	$y'' - xy' - xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.284
9214	$y'' - xy' - xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.282
9215	$y'' - xy' - xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.287
9216	$y'' - xy' - xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.297
9217	$y'' - xy' - xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.290
9218	$y'' - xy' - xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.282
9219	$y'' - xy' - xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.329
9220	$y'' - xy' - xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.294
9221	$y'' - xy' - xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.292
9222	$y'' - xy' - xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.293
9223	$xy'' + 2y' + xy = 0$	[_Lienard]	✓	0.184
9224	$2x^2 y'' + 3xy' - xy = 0$	[[_Emden, _Fowler]]	✓	0.237
9225	$x^2 y'' + (3x^2 + 2x)y' - 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.285
9226	$2x^2(x^2 + x + 1)y'' + x(11x^2 + 11x + 9)y' + (7x^2 + 10x + 6)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.107

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
Continued from previous page

#	ODE	CAS classification	Solved?	time (sec)
9227	$xy'' + (x + 1)y' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.322
9228	$x^2(x^2 - 2x + 1)y'' - x(x + 3)y' + (4 + x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.373
9229	$2x^2(x + 2)y'' + 5x^2y' + y(x + 1) = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.268
9230	$x^2y'' + 4xy' + (x^2 + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.189
9231	$x^2y'' + xy' + \left(x^2 - \frac{1}{4}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.204
9232	$x^2y'' - xy' - \left(x^2 + \frac{5}{4}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.300
9233	$x^2y'' + xy' + \left(x^2 - \frac{1}{4}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.203
9234	$x^2y'' + 3xy' + 4x^4y = 0$	[[_Emden, _Fowler]]	✓	0.333
9235	$y'' = (x^2 + 3)y$	[[_2nd_order, _with_linear_symmetries]]	✓	0.263
9236	$y'' + 2xy' + (x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.120
9237	$x^3y'' + y' - \frac{y}{x} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.273
9238	$x^2y'' + xy' + \left(x^2 - \frac{1}{4}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.204
9239	$4x^2y'' + (-8x^2 + 4x)y' + (4x^2 - 4x - 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.155
9240	$y'' - y' + y = 0$	[[_2nd_order, _missing_x]]	✓	0.323
9241	$(x^2 - 1)y'' - 2xy' + 2y = 0$	[_Gegenbauer]	✓	0.271
9242	$x^2y'' - x(x + 2)y' + (x + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.132
9243	$(x + 1)y'' - (x + 2)y' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.288

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
9244	$(-x^2 + 1)y'' + 2xy' - 2y = 0$	[_Gegenbauer]	✓	0.266
9245	$(-x^2 + 1)y'' - 2xy' + 2y = 0$	[_Gegenbauer]	✓	0.319
9246	$x^2y'' + xy' + \left(x^2 - \frac{1}{4}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.205
9247	$(x^2 - 1)y'' - 6xy' + 12y = 0$	[_Gegenbauer]	✓	0.271
9248	$(x^2 + 3)y'' - 7xy' + 16y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.482
9249	$(x^2 - 1)y'' + 8xy' + 12y = 0$	[_Gegenbauer]	✓	0.228
9250	$3y'' + xy' - 4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.284
9251	$5y'' - 2xy' + 10y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.315
9252	$y'' - x^2y' - 3xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.314
9253	$(x^2 + 1)y'' + 2xy' - 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.341
9254	$y'' + xy' - 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.271
9255	$(x^2 - 6x + 10)y'' - 4(x - 3)y' + 6y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.347
9256	$(x^2 + 6x)y'' + (3x + 9)y' - 3y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.276
9257	$ty'' + (t^2 - 1)y' + t^3y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.477
9258	$t^2y'' - t(t + 2)y' + (t + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.133
9259	$(x - 1)y'' - xy' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.289
9260	$x^2y'' - \left(x - \frac{3}{16}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.210
9261	$x^2y'' + xy' + \left(x^2 - \frac{1}{4}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.198

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
Continued from previous page

#	ODE	CAS classification	Solved?	time (sec)
9262	$t^2 y'' - t(t+2)y' + (t+2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.127
9263	$ty'' - (t+1)y' + y = 0$	[_Laguerre]	✓	0.272
9264	$(-t+1)y'' + ty' - y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.295
9265	$x^2 y'' + xy' + \left(x^2 - \frac{1}{4}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.199
9266	$ty'' - (t+1)y' + y = 0$	[_Laguerre]	✓	0.279
9267	$(-t+1)y'' + ty' - y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.295
9268	$y'' + xy' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.279
9269	$(x^2 + 1)y'' - 4xy' + 6y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.325
9270	$(1-x)y'' + xy' - y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.292
9271	$2y'' + xy' + 3y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.293
9272	$y'' + xy' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.279
9273	$(1-x)y'' + xy' - y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.332
9274	$y'' + xy' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.277
9275	$(-x^2 + 4)y'' + xy' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.075
9276	$4x^2 y'' - 4xy' + (-16x^2 + 3)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.150
9277	$(x-1)y'' - xy' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.293
9278	$x^2 y'' - 2xy' + (x^2 + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.190
9279	$(x^2 - 2x)y'' + (-x^2 + 2)y' + (2x - 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.373

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
Continued from previous page

#	ODE	CAS classification	Solved?	time (sec)
9280	$(2x + 1)y'' - 2y' - (2x + 3)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.291
9281	$4x^2y'' + (-8x^2 + 4x)y' + (4x^2 - 4x - 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.148
9282	$y'' + 4xy' + (4x^2 + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.113
9283	$x^2y'' + 2x(x - 1)y' + (x^2 - 2x + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.132
9284	$x^2y'' - x(2x - 1)y' + (x^2 - x - 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.211
9285	$(-2x + 1)y'' + 2y' + (2x - 3)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.287
9286	$2xy'' + (1 + 4x)y' + (2x + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.206
9287	$xy'' - (2x + 1)y' + y(x + 1) = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.215
9288	$4x^2y'' - 4x(x + 1)y' + (2x + 3)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.156
9289	$xy'' + (2 - 2x)y' + (-2 + x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.123
9290	$x^2y'' - 2xy' + 2y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]]]	✓	0.105
9291	$xy'' - (2x + 2)y' + (x + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.188
9292	$x^2y'' - 2xy' + (x^2 + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.181
9293	$xy'' - (1 + 4x)y' + (2 + 4x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.211
9294	$4x^2y'' - 4xy' + (-16x^2 + 3)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.150
9295	$(2x + 1)xy'' - 2(2x^2 - 1)y' - 4y(x + 1) = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.303

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
9296	$(x^2 - 2x)y'' + (-x^2 + 2)y' + (2x - 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.381
9297	$xy'' - (1 + 4x)y' + (2 + 4x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.214
9298	$(3x - 1)y'' - (2 + 3x)y' - (6x - 8)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.307
9299	$(x + 1)^2 y'' - 2(x + 1)y' - (x^2 + 2x - 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.134
9300	$4x^2 y'' + (-8x^2 + 4x)y' + (4x^2 - 4x - 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.149
9301	$y'' + 4xy' + (4x^2 + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.118
9302	$(2x + 1)y'' - 2y' - (2x + 3)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.289
9303	$xy'' - (2x + 2)y' + (x + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.187
9304	$x^2 y'' - 2xy' + (x^2 + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.187
9305	$4x^2 y'' - 4xy' + (-16x^2 + 3)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.147
9306	$4x^2 y'' - 4xy' + (4x^2 + 3)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.207
9307	$x^2 y'' - 2xy' - (x^2 - 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.122
9308	$x^2 y'' - 2x(x + 1)y' + (x^2 + 2x + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.129
9309	$x^2 y'' - 2x(x + 2)y' + (x^2 + 4x + 6)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.128
9310	$x^2 y'' - 4xy' + (x^2 + 6)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.185
9311	$(x - 1)y'' - xy' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.284
9312	$4x^2 y'' - 4x(x + 1)y' + (2x + 3)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.159

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
9313	$(3x-1)y'' - (2+3x)y' - (6x-8)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.307
9314	$(x+2)y'' + xy' + 3y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.359
9315	$x^2(1-x)y'' + x(4+x)y' + (2-x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.290
9316	$x^2(x+1)y'' + x(2x+1)y' - (4+6x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.298
9317	$x^2(2x^2+1)y'' + x(2x^2+4)y' + 2(-x^2+1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.502
9318	$x^2(x^2+2)y'' + 2x(x^2+5)y' + 2(-x^2+3)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.539
9319	$(x^2+1)y'' + 6xy' + 6y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.325
9320	$(x^2+1)y'' + 2xy' - 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.333
9321	$(x^2+1)y'' - 8xy' + 20y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.331
9322	$(-x^2+1)y'' - 8xy' - 12y = 0$	[_Gegenbauer]	✓	0.238
9323	$(2x^2+1)y'' + 7xy' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.398
9324	$(-x^2+1)y'' - 5xy' - 4y = 0$	[_Gegenbauer]	✓	0.325
9325	$(x^2+1)y'' - 10xy' + 28y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.380
9326	$y'' + xy' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.270
9327	$(2x^2 - 8x + 11)y'' - 16(-2 + x)y' + 36y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.646
9328	$y'' + (x-3)y' + 3y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.339
9329	$(x^2 - 8x + 14)y'' - 8(x-4)y' + 20y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.323

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
9330	$(2x^2 + 4x + 5)y'' - 20(x + 1)y' + 60y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.599
9331	$(x^3 + 1)y'' + 7x^2y' + 9xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.501
9332	$(2x^5 + 1)y'' + 14x^4y' + 10x^3y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.075
9333	$y'' + x^6y' + 7x^5y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.472
9334	$(x^8 + 1)y'' - 16x^7y' + 72x^6y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	440.036
9335	$y'' + x^5y' + 6x^4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.503
9336	$(3x + 1)y'' + xy' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	30.424
9337	$(3x^2 + x + 1)y'' + (2 + 15x)y' + 12y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.846
9338	$(x + 2)y'' + (x + 1)y' + 3y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.412
9339	$(4 + x)y'' + (x + 2)y' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.352
9340	$(2x^2 + 3x)y'' + 10(x + 1)y' + 8y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.360
9341	$x^2y'' - (6 - 7x)y' + 8y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.343
9342	$(2x^2 + x + 1)y'' + (1 + 7x)y' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.067
9343	$(x + 3)y'' + (2x + 1)y' - (2 - x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.238
9344	$y'' + 3xy' + (2x^2 + 4)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.335
9345	$(2 + 4x)y'' - 4y' - (6 + 4x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.279
9346	$y'' - 3xy' + (2x^2 + 5)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.293

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
9347	$2y'' + 5xy' + (2x^2 + 4)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.252
9348	$y'' + 4xy' + (4x^2 + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.117
9349	$y'' + 4xy' + (4x^2 + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.119
9350	$2x^2(x^2 + x + 1)y'' + x(11x^2 + 11x + 9)y' + (7x^2 + 10x + 6)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.120
9351	$3x^2y'' + 2x(-2x^2 + x + 1)y' + (-8x^2 + 2x)y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)']]]	✓	0.485
9352	$12x^2(x + 1)y'' + x(3x^2 + 35x + 11)y' - (-5x^2 - 10x + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.451
9353	$y'' + 3y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓	0.322
9354	$18x^2(x + 1)y'' + 3x(x^2 + 11x + 5)y' - (-5x^2 - 2x + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.404
9355	$2x^2y'' + x(2x + 3)y' - (1 - x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.302
9356	$2x^2y'' + x(x + 5)y' - (2 - 3x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.328
9357	$3x^2y'' + x(x + 1)y' - y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.487
9358	$2x^2y'' - xy' + (-2x + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.252
9359	$3x^2y'' + x(x + 1)y' - (3x + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.628
9360	$2x^2(x + 3)y'' + x(1 + 5x)y' + y(x + 1) = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.346

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
9361	$x^2(4+x)y'' - x(1-3x)y' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.556
9362	$2x^2y'' + 5xy' + y(x+1) = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.293
9363	$6x^2y'' + x(10-x)y' - (x+2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.409
9364	$x^2(3+4x)y'' + x(11+4x)y' - (3+4x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.395
9365	$2x^2(2+3x)y'' + x(4+11x)y' - (1-x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.243
9366	$x^2(x+2)y'' + 5x(1-x)y' - (2-8x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.867
9367	$8x^2(-x^2+1)y'' + 2x(-13x^2+1)y' + (-9x^2+1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.420
9368	$x^2(x^2+1)y'' - 2x(-x^2+2)y' + 4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.412
9369	$x(x^2+3)y'' + (-x^2+2)y' - 8xy = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.345
9370	$4x^2(-x^2+1)y'' + x(-19x^2+7)y' - (14x^2+1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.405
9371	$3x^2(-x^2+2)y'' + x(-11x^2+1)y' + (-5x^2+1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.455
9372	$2x^2(x^2+2)y'' - x(-7x^2+12)y' + (3x^2+7)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.405
9373	$2x^2(x^2+2)y'' + x(7x^2+4)y' - (-3x^2+1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.386
9374	$2x^2(2x^2+1)y'' + 5x(6x^2+1)y' - (-40x^2+2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.586
9375	$x(x^2+1)y'' + (7x^2+4)y' + 8xy = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.342

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
9376	$2x^2(x^2 + 1)y'' + x(8x^2 + 3)y' - (-4x^2 + 3)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.384
9377	$9x^2y'' + 3x(x^2 + 3)y' - (-5x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.355
9378	$6x^2y'' + x(6x^2 + 1)y' + (9x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.412
9379	$9x^2(x^2 + 1)y'' + 3x(13x^2 + 3)y' - (-25x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.390
9380	$4x^2(x^2 + 1)y'' + 4x(6x^2 + 1)y' - (-25x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.346
9381	$8x^2(2x^2 + 1)y'' + 2x(34x^2 + 5)y' - (-30x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.601
9382	$2x^2(x + 1)y'' - x(1 - 3x)y' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.218
9383	$6x^2(2x^2 + 1)y'' + x(50x^2 + 1)y' + (30x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.226
9384	$28x^2(1 - 3x)y'' - 7x(5 + 9x)y' + 7(2 + 9x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.229
9385	$8x^2(-x^2 + 2)y'' + 2x(-21x^2 + 10)y' - (35x^2 + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.230
9386	$4x^2(x^2 + 3x + 1)y'' - 4x(-3x^2 - 3x + 1)y' + 3(x^2 - x + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.176
9387	$3x^2(x + 1)^2y'' - x(-11x^2 - 10x + 1)y' + (5x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.227
9388	$4x^2(x^2 + 2x + 3)y'' - x(-15x^2 - 14x + 3)y' + (7x^2 + 3)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.241
9389	$x^2(x^2 - 2x + 1)y'' - x(x + 3)y' + (4 + x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.374

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
9390	$2x^2(x+2)y'' + 5x^2y' + y(x+1) = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.268
9391	$x^2(-x^2+2)y'' - 2x(2x^2+1)y' + (-2x^2+2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.440
9392	$x^2y'' - x(5-x)y' + (9-4x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.447
9393	$4x^2(x^2+x+1)y'' + 12x^2(x+1)y' + (3x^2+3x+1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.822
9394	$x^2(x^2+x+1)y'' - x(-2x^2-4x+1)y' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.935
9395	$9x^2y'' + 3x(-2x^2+3x+5)y' + (-14x^2+12x+1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.548
9396	$x^2(2x+1)y'' + x(3x^2+14x+5)y' + (12x^2+18x+4)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.605
9397	$16x^2y'' + 4x(2x^2+x+6)y' + (18x^2+5x+1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.533
9398	$9x^2(x+1)y'' + 3x(-x^2+11x+5)y' + (-7x^2+16x+1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.484
9399	$36x^2(-2x+1)y'' + 24x(1-9x)y' + (1-70x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.388
9400	$x^2(x+1)y'' - x(3-x)y' + 4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.287
9401	$x^2(-2x+1)y'' - x(5-4x)y' + (9-4x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.291
9402	$2x^2(x+2)y'' + x^2y' + (1-x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.273
9403	$2x^2(x+1)y'' - x(6-x)y' + (8-x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.264
9404	$x^2(2x+1)y'' + x(5+9x)y' + (3x+4)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.289

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
9405	$x^2(-2x+1)y'' - x(5+4x)y' + (9+4x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.322
9406	$x^2(1-x)y'' + x(7+x)y' + (9-x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.331
9407	$x^2y'' - x(-x^2+1)y' + (x^2+1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.319
9408	$x^2(x^2+1)y'' - 3x(-x^2+1)y' + 4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.411
9409	$4x^2y'' + 2x^3y' + (3x^2+1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.325
9410	$x^2(x^2+1)y'' - x(-2x^2+1)y' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.307
9411	$2x^2(x^2+2)y'' + 7x^3y' + (3x^2+1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.384
9412	$x^2(x^2+1)y'' - x(-4x^2+1)y' + (2x^2+1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.352
9413	$4x^2(x^2+4)y'' + 3x(3x^2+8)y' + (-9x^2+1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.414
9414	$3x^2(x^2+3)y'' + x(11x^2+3)y' + (5x^2+1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.387
9415	$9x^2y'' - 3x(-2x^2+7)y' + (2x^2+25)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.343
9416	$x^2y'' - x(-x^2+1)y' + (x^2+1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.323
9417	$x^2(-2x+1)y'' + 3xy' + (1+4x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.288
9418	$x(x+1)y'' + (1-x)y' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.285
9419	$x^2(1-x)y'' - x(3-5x)y' + (4-5x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.299
9420	$x^2(x^2+1)y'' - x(9x^2+1)y' + (25x^2+1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.440

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
9421	$9x^2y'' + 3x(-x^2 + 1)y' + (7x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.122
9422	$x(x^2 + 1)y'' + (-x^2 + 1)y' - 8xy = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.428
9423	$4x^2y'' + 2x(-x^2 + 4)y' + (7x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.768
9424	$4x^2(x + 1)y'' + 8x^2y' + y(x + 1) = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.218
9425	$9x^2(x + 3)y'' + 3x(3 + 7x)y' + (3 + 4x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.273
9426	$x^2(-x^2 + 2)y'' - x(3x^2 + 2)y' + (-x^2 + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.231
9427	$16x^2(x^2 + 1)y'' + 8x(9x^2 + 1)y' + (49x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.287
9428	$x^2(3x + 4)y'' - x(4 - 3x)y' + 4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.223
9429	$4x^2(x^2 + 3x + 1)y'' + 8x^2(2x + 3)y' + (9x^2 + 3x + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.228
9430	$x^2(1 - x)^2y'' - x(-3x^2 + 2x + 1)y' + (x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.234
9431	$9x^2(x^2 + x + 1)y'' + 3x(13x^2 + 7x + 1)y' + (25x^2 + 4x + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.342
9432	$2x^2(x + 2)y'' - x(4 - 7x)y' - (5 - 3x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.293
9433	$x^2(-2x + 1)y'' + x(8 - 9x)y' + (6 - 3x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.283
9434	$x^2(x^2 + 1)y'' + x(10x^2 + 3)y' - (-14x^2 + 15)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.405

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
9435	$x^2(-2x^2 + 1)y'' + x(-13x^2 + 7)y' - 14x^2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.370
9436	$4x^2(x + 1)y'' + 4x(2x + 1)y' - (3x + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.284
9437	$2x^2(2 + 3x)y'' + x(4 + 21x)y' - (1 - 9x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.285
9438	$x^2y'' + x(x + 2)y' - (2 - 3x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.324
9439	$4x^2(x + 1)y'' + 4x(3 + 8x)y' - (5 - 49x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.293
9440	$x^2(x + 1)y'' - x(3 + 10x)y' + 30xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.316
9441	$x^2y'' + x(x + 1)y' - 3(x + 3)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.363
9442	$x^2(2x + 1)y'' + x(9 + 13x)y' + (7 + 5x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.309
9443	$4x^2(2x + 1)y'' - 2x(4 - x)y' - (7 + 5x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.273
9444	$3x^2(x + 3)y'' - x(15 + x)y' - 20y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.293
9445	$x^2(x + 1)y'' + x(1 - 10x)y' - (9 - 10x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.317
9446	$x^2(x + 1)y'' + 3x^2y' - (6 - x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.272
9447	$x^2(2x + 1)y'' - 2x(3 + 14x)y' + (6 + 100x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.271
9448	$x^2(x + 1)y'' - x(6 + 11x)y' + (6 + 32x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.295
9449	$4x^2(x + 1)y'' + 4x(1 + 4x)y' - (49 + 27x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.291
9450	$x^2(x^2 + 1)y'' - x(-2x^2 + 7)y' + 12y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.367

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
9451	$x^2 y'' - x(-x^2 + 7) y' + 12y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.340
9452	$x^2 y'' + x(2x^2 + 1) y' - (-10x^2 + 1) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.404
9453	$x^2 y'' + x(-2x^2 + 1) y' - 4(2x^2 + 1) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.336
9454	$x^2 y'' + x(-3x^2 + 1) y' - 4(-3x^2 + 1) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.645
9455	$x^2(x^2 + 1) y'' + x(11x^2 + 5) y' + 24x^2 y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.463
9456	$4x^2(x^2 + 1) y'' + 8xy' - (-x^2 + 35) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.434
9457	$x^2(x^2 + 1) y'' - x(-x^2 + 5) y' - (25x^2 + 7) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.426
9458	$x^2(x^2 + 1) y'' + x(2x^2 + 5) y' - 21y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.438
9459	$4x^2(x^2 + 1) y'' + 4x(x^2 + 2) y' - (x^2 + 15) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.336
9460	$y'' - \frac{2(t+1)y'}{t^2+2t-1} + \frac{2y}{t^2+2t-1} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.333
9461	$y'' - 4ty' + (4t^2 - 2) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.114
9462	$(-t^2 + 1) y'' - 2ty' + 2y = 0$	[_Gegenbauer]	✓	0.317
9463	$(t^2 + 1) y'' - 2ty' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.335
9464	$(-t^2 + 1) y'' - 2ty' + 6y = 0$	[_Gegenbauer]	✓	0.337
9465	$(2t + 1) y'' - 4(t + 1) y' + 4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.287
9466	$t^2 y'' + ty' + \left(t^2 - \frac{1}{4}\right) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.201

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
9467	$y'' - \frac{2ty'}{t^2 + 1} + \frac{2y}{t^2 + 1} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.327
9468	$y'' + (t^2 + 2t + 1)y' - (4 + 4t)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.327
9469	$2ty'' + (1 - 2t)y' - y = 0$	[_Laguerre]	✓	0.288
9470	$2ty'' + (t + 1)y' - 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.527
9471	$2t^2y'' - ty' + (t + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.282
9472	$2t^2y'' + (t^2 - t)y' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.305
9473	$t^2y'' + (-t^2 + t)y' - y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.279
9474	$ty'' - (t^2 + 2)y' + ty = 0$	[_Lienard]	✓	0.336
9475	$t^2y'' + t(t + 1)y' - y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.275
9476	$ty'' - (t + 4)y' + 2y = 0$	[_Laguerre]	✓	0.316
9477	$t^2y'' + (t^2 - 3t)y' + 3y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.306
9478	$ty'' + ty' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.290
9479	$ty'' + (-t^2 + 1)y' + 4ty = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.738
9480	$t^2y'' - t(t + 1)y' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.300
9481	$y'' + 4xy' + (4x^2 + 6)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.219
9482	$(-z^2 + 1)y'' - 3zy' + y = 0$	[_Gegenbauer]	✓	0.436
9483	$4zy'' + 2(1 - z)y' - y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.302
9484	$f'' + 2(z - 1)f' + 4f = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.302
9485	$zy'' - 2y' + yz = 0$	[_Lienard]	✓	0.340

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
9486	$zy'' + (2z - 3)y' + \frac{4y}{z} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.345
9487	$xy'' + (-2x + 1)y' + (x - 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.211
9488	$x^2y'' - 2xy' + (x^2 + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.186
9489	$(-x^2 + 1)y'' - 2xy' + 2y = 0$	[_Gegenbauer]	✓	0.319
9490	$4x^2y'' + 4xy' + (4x^2 - 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.209
9491	$xy'' - (2x + 1)y' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.277
9492	$y'' + 2xy' + 4y = 0$	[_erf]	✓	0.245
9493	$y'' + xy' + 3y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.293
9494	$y'' - x^2y' - 3xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.317
9495	$(-4x^2 + 1)y'' - 20xy' - 16y = 0$	[_Gegenbauer]	✓	0.300
9496	$(x^2 - 1)y'' - 6xy' + 12y = 0$	[_Gegenbauer]	✓	0.274
9497	$y'' + xy' + (x + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.331
9498	$(2x^2 + 1)y'' + 7xy' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.419
9499	$4y'' + xy' + 4y = 0$	[_Lienard]	✓	0.314
9500	$y'' + xy' - 4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.276
9501	$4xy'' - xy' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.290
9502	$6x^2y'' + x(1 + 18x)y' + (1 + 12x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.346
9503	$3x^2y'' - x(8 + x)y' + 6y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	3.589
9504	$2x^2y'' - x(2x + 1)y' + 2(4x - 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.753

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
9505	$4x^2y'' - 4x^2y' + (2x + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.307
9506	$x^2y'' + x(3 - 2x)y' + (-2x + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.362
9507	$x^2y'' - x(x + 3)y' + (4 - x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.365
9508	$x^2y'' + x(3 - x)y' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.358
9509	$x^2y'' - (2\sqrt{5} - 1)xy' + \left(\frac{19}{4} - 3x^2\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.224
9510	$x^2y'' + x(x - 3)y' + (4 - x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.326
9511	$x^2y'' + x^2y' - (x + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.272
9512	$x^2y'' + 2x^2y' + \left(x - \frac{3}{4}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.270
9513	$x^2(x + 1)y'' + x^2y' - 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.267
9514	$x^2y'' + x(x^2 + 6)y' + 6y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.456
9515	$x^2y'' + x(1 - x)y' - y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.290
9516	$x^2y'' - x(x + 3)y' + 4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.322
9517	$x^2y'' - x^2y' - 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.299
9518	$x^2y'' - x^2y' - (2 + 3x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.362
9519	$x^2y'' + x(5 - x)y' + 4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.462
9520	$4x^2y'' + 4x(1 - x)y' + (2x - 9)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.306
9521	$x^2y'' + 2x(x + 2)y' + 2y(x + 1) = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.319

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
9522	$x^2 y'' - x(1-x)y' + (1-x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.315
9523	$4x^2 y'' + 4x(2x+1)y' + (4x-1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.164
9524	$x^2 y'' + x(4+x)y' + (x+2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.317
9525	$x^2 y'' + xy' + \left(x^2 - \frac{9}{4}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.339
9526	$xy'' + 2y' + xy = 0$	[_Lienard]	✓	0.182
9527	$2xy'' + 5(-2x+1)y' - 5y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.475
9528	$x^2 y'' + xy' + \left(x^2 - \frac{1}{4}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.201
9529	$xy'' + (x+n)y' + (n+1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.486
9530	$x^4 y'' + xy' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.394
9531	$x^2 y'' + (2x^2 + x)y' - 4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.322
9532	$(4x^3 - 14x^2 - 2x)y'' - (6x^2 - 7x + 1)y' + (6x - 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.531
9533	$x^2 y'' + x^2 y' + (-2+x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.270
9534	$x^2 y'' - x^2 y' + (-2+x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.275
9535	$x^2(1-4x)y'' + \left(-\frac{1}{4}x - x^2\right)y' - \frac{5xy}{16} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.420
9536	$x^2 y'' + (x^2 + x)y' + (x-9)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.329
9537	$x^2 y'' + x(x+1)y' + (3x-1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.331
9538	$x^2 y'' - (x^2 + 4x)y' + 4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.316

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
9539	$2x^2y'' - (2 + 3x)y' + \frac{(2x - 1)y}{x} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.533
9540	$x(1 - x)y'' + \left(\frac{3}{2} - 2x\right)y' - \frac{y}{4} = 0$	[_Jacobi]	✓	0.287
9541	$2x(1 - x)y'' + xy' - y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.285
9542	$2x(1 - x)y'' + (1 - 11x)y' - 10y = 0$	[_Jacobi]	✓	0.285
9543	$x(1 - x)y'' + \frac{(-2x + 1)y'}{3} + \frac{20y}{9} = 0$	[_Jacobi]	✓	0.296
9544	$4y'' + \frac{3(-x^2 + 2)y}{(-x^2 + 1)^2} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.258
9545	$u'' - \frac{2u'}{x} - a^2u = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.342
9546	$u'' + \frac{2u'}{x} - a^2u = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.168
9547	$u'' + \frac{2u'}{x} + a^2u = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.180
9548	$u'' + \frac{4u'}{x} - a^2u = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.352
9549	$u'' + \frac{4u'}{x} + a^2u = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.380
9550	$y'' - a^2y = \frac{6y}{x^2}$	[[_2nd_order, _with_linear_symmetries]]	✓	0.422
9551	$y'' + n^2y = \frac{6y}{x^2}$	[[_2nd_order, _with_linear_symmetries]]	✓	0.466
9552	$x^2y'' + xy' - \left(x^2 + \frac{1}{4}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.145
9553	$x^2y'' + xy' + \frac{(-9a^2 + 4x^2)y}{4a^2} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.389
9554	$x^2y'' + xy' + \left(x^2 - \frac{25}{4}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.354

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
9555	$y'' + qy' = \frac{2y}{x^2}$	[[_2nd_order, _with_linear_symmetries]]	✓	0.337
9556	$xy'' + 3y' + 4x^3y = 0$	[[_Emden, _Fowler]]	✓	0.345
9557	$(2 - x)x^2y'' + 2xy' - 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.270
9558	$(x^2 + 1)y'' - 2xy' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.336
9559	$xy'' - 2(x + 1)y' + (x + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.191
9560	$3xy'' - 2(3x - 1)y' + (3x - 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.191
9561	$x(x + 1)y'' - (x - 1)y' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.281
9562	$(x^2 + 2x)y'' - 2(x + 1)y' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.285
9563	$(x^2 + 2x)y'' - 2(x + 1)y' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.273
9564	$(x^2 + 1)y'' - 2xy' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.330
9565	$(x^2 + 1)y'' - 2xy' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.328
9566	$y'' - 4xy' + (4x^2 - 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.117
9567	$y'' - 4xy' + (4x^2 - 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.117
9568	$(2x - 3)y'' - xy' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.415
9569	$y'' - xy' - 3y = 0$	[_Hermite]	✓	0.288
9570	$(x^2 + 1)y'' - xy' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.316
9571	$y'' - xy' + 2y = 0$	[_Hermite]	✓	0.286
9572	$(-x^2 + 1)y'' - y' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.738

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
9573	$x(x+1)^2 y'' + (-x^2+1) y' + (x-1) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.239
9574	$2xy'' - y' + 2y = 0$	[[_Emden, _Fowler]]	✓	0.271
9575	$xy'' + xy' - 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.292
9576	$x(x-1)^2 y'' - 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.210
9577	$y'' - 2xy' + x^2 y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.208
9578	$x(-x^2+2) y'' - (x^2+4x+2) ((1-x) y' + y) = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.641
9579	$x^2(x+1) y'' - (2x+1) (-y + xy') = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.278
9580	$2(2-x) x^2 y'' - x(4-x) y' + (3-x) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.280
9581	$x^2(1-x) y'' + (5x-4) xy' + (6-9x) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.248
9582	$xy'' + (4x^2+1) y' + 4x(x^2+1) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.225
9583	$(-x^2+1) y'' - 2xy' + 12y = 0$	[_Gegenbauer]	✓	0.375
9584	$x(x+2) y'' + 2(x+1) y' - 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.311
9585	$x(x+2) y'' + (x+1) y' - 4y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, 'with_symmetry_[0,F(x)]']	✓	0.295
9586	$(x-1) y'' - xy' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.300
9587	$(x^2+1) y'' - 2xy' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.341
9588	$(x^2-2x+10) y'' + xy' - 4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.446

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
9589	$(x^2 - 2x + 10)y'' + xy' - 4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.432
9590	$y'' - xy' + 2y = 0$	[_Hermite]	✓	0.303
9591	$(x + 2)y'' + xy' - y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.305
9592	$(x^2 + 1)y'' - 6y = 0$	[[_Emden, _Fowler]]	✓	0.290
9593	$(x^2 + 2)y'' + 3xy' - y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.418
9594	$(x - 1)y'' - xy' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.297
9595	$x^2y'' + \left(\frac{5}{3}x + x^2\right)y' - \frac{y}{3} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.479
9596	$2xy'' - y' + 2y = 0$	[[_Emden, _Fowler]]	✓	0.264
9597	$2xy'' - (2x + 3)y' + y = 0$	[_Laguerre]	✓	0.384
9598	$2x^2y'' + 3xy' + (2x - 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.269
9599	$xy'' + 2y' - xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.114
9600	$x^2y'' + xy' + \left(x^2 - \frac{1}{4}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.204
9601	$xy'' + (x - 6)y' - 3y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.339
9602	$x^4y'' + \lambda y = 0$	[[_Emden, _Fowler]]	✓	0.297
9603	$4x^2y'' + 4xy' + (4x^2 - 25)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.371
9604	$x^2y'' + xy' + \left(36x^2 - \frac{1}{4}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.217
9605	$x^2y'' + (x^2 - 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.365
9606	$xy'' + 3y' + x^3y = 0$	[[_Emden, _Fowler]]	✓	0.346
9607	$x^2y'' + 4xy' + (x^2 + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.214

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
9608	$16x^2y'' + 32xy' + (x^4 - 12)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.355
9609	$y'' - x^2y' + xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.431
9610	$xy'' - (x + 2)y' + 2y = 0$	[_Laguerre]	✓	0.281
9611	$y'' + xy' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.280
9612	$(-x^2 + 1)y'' - 2xy' + 2y = 0$	[_Gegenbauer]	✓	0.316
9613	$y'' - 4xy' + (4x^2 - 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.115
9614	$(-x^2 + 1)y'' - 2xy' + 30y = 0$	[_Gegenbauer]	✓	0.379
9615	$xy'' + 2y' + xy = 0$	[_Lienard]	✓	0.188
9616	$xy'' + (2x + 1)y' + y(x + 1) = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.224
9617	$2x(x - 1)y'' - (x + 1)y' + y = 0$	[_Jacobi]	✓	0.264
9618	$xy'' + 2y' + 4xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.194
9619	$xy'' + (2 - 2x)y' + (-2 + x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.124
9620	$x^2y'' + 6xy' + (4x^2 + 6)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.208
9621	$xy'' + (-2x + 1)y' + (x - 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.227
9622	$x(1 - x)y'' + \left(\frac{1}{2} + 2x\right)y' - 2y = 0$	[_Jacobi]	✓	0.360
9623	$4(t^2 - 3t + 2)y'' - 2y' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.328
9624	$2(t^2 - 5t + 6)y'' + (2t - 3)y' - 8y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.312
9625	$3t(t + 1)y'' + ty' - y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.353
9626	$x^2y'' + \frac{(x + \frac{3}{4})y}{4} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.286

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
9627	$x^2y'' + xy' + \frac{(x^2 - 1)y}{4} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.217
9628	$xy'' + (-2x + 1)y' + (x - 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.237
9629	$xy'' - (x + 1)y' + y = 0$	[_Laguerre]	✓	0.285
9630	$xy'' + 3y' + 4x^3y = 0$	[[_Emden, _Fowler]]	✓	0.346
9631	$x^2(-x^2 + 1)y'' + 2x(-x^2 + 1)y' - 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.275
9632	$2xy'' + (-2 + x)y' - y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.286
9633	$xy'' + 2y' + xy = 0$	[_Lienard]	✓	0.184
9634	$y'' + 2x^2y' + (x^4 + 2x - 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.161
9635	$u'' + 2u' + u = 0$	[[_2nd_order, _missing_x]]	✓	0.191
9636	$u'' - (2x + 1)u' + (x^2 + x - 1)u = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.132
9637	$y'' + 2y' + \left(1 + \frac{2}{(3x + 1)^2}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.195
9638	$x^2y'' - 2xy' + (x^2 + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.184
9639	$y'' + \frac{2y'}{x} - \frac{2y}{(x + 1)^2} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.175
9640	$y'' - xy' - xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.293
9641	$y'' - xy' - xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.302
9642	$y'' - xy' - xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.286
9643	$y'' - xy' - xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.301
9644	$y'' - xy' - xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.292

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
9645	$y'' - xy' - xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.294
9646	$y'' - xy' - xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.294
9647	$y'' - xy' - xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.299
9648	$y'' - xy' - xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.296
9649	$y'' - xy' - xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.293
9650	$y'' - xy' - xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.297
9651	$xy'' + 2y' + xy = 0$	[_Lienard]	✓	0.177
9652	$2x^2y'' + 3xy' - xy = 0$	[[_Emden, _Fowler]]	✓	0.237
9653	$x^2y'' + (3x^2 + 2x)y' - 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.287
9654	$2x^2(x^2 + x + 1)y'' + x(11x^2 + 11x + 9)y' + (7x^2 + 10x + 6)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.114
9655	$xy'' + (x + 1)y' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.329
9656	$x^2(x^2 - 2x + 1)y'' - x(x + 3)y' + (4 + x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.378
9657	$2x^2(x + 2)y'' + 5x^2y' + y(x + 1) = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.275
9658	$x^2y'' + 4xy' + (x^2 + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.198
9659	$x^2y'' + xy' + \left(x^2 - \frac{1}{4}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.208
9660	$x^2y'' - xy' - \left(x^2 + \frac{5}{4}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.302
9661	$x^2y'' + xy' + \left(x^2 - \frac{1}{4}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.221

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
9662	$x^2y'' + 3xy' + 4x^4y = 0$	[[_Emden, _Fowler]]	✓	0.343
9663	$y'' = (x^2 + 3)y$	[[_2nd_order, _with_linear_symmetries]]	✓	0.270
9664	$y'' + 2xy' + (x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.131
9665	$x^2y'' + xy' + \left(x^2 - \frac{1}{4}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.217
9666	$4x^2y'' + (-8x^2 + 4x)y' + (4x^2 - 4x - 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.156
9667	$y'' = 0$	[[_2nd_order, _quadrature]]	✓	0.177
9668	$y'' = \frac{2y}{x^2}$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]]	✓	0.162
9669	$y'' = \frac{6y}{x^2}$	[[_Emden, _Fowler]]	✓	0.166
9670	$y'' = \left(-\frac{3}{16x^2} - \frac{2}{9(x-1)^2} + \frac{3}{16x(x-1)}\right)y$	[[_2nd_order, _with_linear_symmetries]]	✓	1.117
9671	$y'' = \frac{20y}{x^2}$	[[_Emden, _Fowler]]	✓	0.178
9672	$y'' = \frac{12y}{x^2}$	[[_Emden, _Fowler]]	✓	0.164
9673	$y'' - \frac{y}{4x^2} = 0$	[[_Emden, _Fowler]]	✓	0.250
9674	$xy'' - (2x + 2)y' + (x + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.199
9675	$y'' + \frac{y}{x^2} = 0$	[[_Emden, _Fowler]]	✓	0.299
9676	$(-x^2 + 1)y'' + y' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.710
9677	$(x^2 - x)y'' - xy' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.270

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
9678	$x^2(-x^2 + 2)y'' - x(4x^2 + 3)y' + (-2x^2 + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.666
9679	$y'' = \frac{(4x^6 - 8x^5 + 12x^4 + 4x^3 + 7x^2 - 20x + 4)y}{4x^4}$	[[_2nd_order, _with_linear_symmetries]]	✓	0.625
9680	$y'' = \left(\frac{6}{x^2} - 1\right)y$	[[_2nd_order, _with_linear_symmetries]]	✓	0.356
9681	$y'' = \left(\frac{x^2}{4} - \frac{11}{2}\right)y$	[[_2nd_order, _with_linear_symmetries]]	✓	0.381
9682	$y'' = \left(\frac{1}{x} - \frac{3}{16x^2}\right)y$	[[_2nd_order, _with_linear_symmetries]]	✓	0.243
9683	$y'' = \left(-\frac{3}{16x^2} - \frac{2}{9(x-1)^2} + \frac{3}{16x(x-1)}\right)y$	[[_2nd_order, _with_linear_symmetries]]	✓	1.116
9684	$y'' = -\frac{(5x^2 + 27)y}{36(x^2 - 1)^2}$	[[_2nd_order, _with_linear_symmetries]]	✓	108.812
9685	$y'' = -\frac{y}{4x^2}$	[[_Emden, _Fowler]]	✓	0.192
9686	$y'' = (x^2 + 3)y$	[[_2nd_order, _with_linear_symmetries]]	✓	0.273
9687	$x^2y'' = 2y$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.163
9688	$y'' + 4xy' + (4x^2 + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.121
9689	$x^2y'' - 2xy' + (x^2 + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.193
9690	$(-2 + x)^2y'' - (-2 + x)y' - 3y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.197
9691	$y' - \frac{1}{\sqrt{a_4x^4 + a_3x^3 + a_2x^2 + a_1x + a_0}} = 0$	[_quadrature]	✓	4.320
9692	$y' + ay - ce^{bx} = 0$	[[_linear, 'class A']]	✓	0.965

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
9693	$y' + ay - b \sin(cx) = 0$	[[_linear, 'class A']]	✓	1.285
9694	$y' + 2xy - x e^{-x^2} = 0$	[_linear]	✓	2.263
9695	$y' + y \cos(x) - e^{2x} = 0$	[_linear]	✓	1.903
9696	$y' + y \cos(x) - \frac{\sin(2x)}{2} = 0$	[_linear]	✓	2.085
9697	$y' + y \cos(x) - e^{-\sin(x)} = 0$	[_linear]	✓	1.501
9698	$y' + y \tan(x) - \sin(2x) = 0$	[_linear]	✓	1.656
9699	$y' - (\sin(\ln(x)) + \cos(\ln(x)) + a)y = 0$	[_separable]	✓	1.658
9700	$y' + f'(x)y - f(x)f'(x) = 0$	[_linear]	✓	0.565
9701	$y' + f(x)y - g(x) = 0$	[_linear]	✓	1.449
9702	$y' + y^2 - 1 = 0$	[_quadrature]	✓	0.941
9703	$y' + y^2 - ax - b = 0$	[_Riccati]	✓	1.183
9704	$y' + y^2 + ax^m = 0$	[[_Riccati, _special]]	✓	1.463
9705	$y' + y^2 - 2x^2y + x^4 - 2x - 1 = 0$	[[_1st_order, _with_linear_symmetries], _Riccati]	✓	1.766
9706	$y' + y^2 + (xy - 1)f(x) = 0$	[_Riccati]	✓	1.819
9707	$y' - y^2 - 3y + 4 = 0$	[_quadrature]	✓	1.394
9708	$y' - y^2 - xy - x + 1 = 0$	[_Riccati]	✓	1.347
9709	$y' - (x + y)^2 = 0$	[[_homogeneous, 'class C'], _Riccati]	✓	1.496
9710	$y' - y^2 + (x^2 + 1)y - 2x = 0$	[_Riccati]	✓	1.745
9711	$y' - y^2 + y \sin(x) - \cos(x) = 0$	[_Riccati]	✓	2.804
9712	$y' - y^2 - y \sin(2x) - \cos(2x) = 0$	[_Riccati]	✓	4.901
9713	$y' + y^2a - b = 0$	[_quadrature]	✓	0.757
9714	$y' + y^2a - bx^\nu = 0$	[[_Riccati, _special]]	✓	1.610

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
Continued from previous page

#	ODE	CAS classification	Solved?	time (sec)
9715	$y' + y^2 a - b x^{2\nu} - c x^{\nu-1} = 0$	[_Riccati]	✓	2.902
9716	$y' - (Ay - a)(By - b) = 0$	[_quadrature]	✓	2.010
9717	$y' + ay(y - x) - 1 = 0$	[_Riccati]	✓	1.325
9718	$y' + xy^2 - x^3y - 2x = 0$	[_Riccati]	✓	1.974
9719	$y' - xy^2 - 3xy = 0$	[_separable]	✓	1.848
9720	$y' + x^{-a-1}y^2 - x^a = 0$	[_Riccati]	✓	2.120
9721	$y' - a x^n(1 + y^2) = 0$	[_separable]	✓	1.907
9722	$y' + y^2 \sin(x) - \frac{2 \sin(x)}{\cos(x)^2} = 0$	[_Riccati]	✓	4.479
9723	$y' - \frac{y^2 f'(x)}{g(x)} + \frac{g'(x)}{f(x)} = 0$	[_Riccati]	✗	2.986
9724	$y' + f(x)y^2 + g(x)y = 0$	[_Bernoulli]	✓	1.559
9725	$y' + f(x)(y^2 + 2ay + b) = 0$	[_separable]	✓	3.114
9726	$y' + y^3 + axy^2 = 0$	[_Abel]	✗	0.875
9727	$y' - y^3 - a e^x y^2 = 0$	[_Abel]	✗	1.362
9728	$y' - ay^3 - \frac{b}{x^{3/2}} = 0$	[[_homogeneous, 'class G'], _rational, _Abel]	✓	8.058
9729	$y' - a_3 y^3 - a_2 y^2 - a_1 y - a_0 = 0$	[_quadrature]	✓	1.465
9730	$y' + 3ay^3 + 6axy^2 = 0$	[_Abel]	✗	0.902
9731	$y' + axy^3 + by^2 = 0$	[[_homogeneous, 'class G'], _Abel]	✓	2.118
9732	$y' - x(x+2)y^3 - (x+3)y^2 = 0$	[_Abel]	✗	1.380
9733	$y' + (4a^2x + 3x^2a + b)y^3 + 3xy^2 = 0$	[_Abel]	✗	1.839
9734	$y' + 2a x^3 y^3 + 2xy = 0$	[_Bernoulli]	✓	1.195
9735	$y' + 2(a^2x^3 - b^2x)y^3 + 3by^2 = 0$	[_Abel]	✗	1.664
9736	$y' - x^a y^3 + 3y^2 - x^{-a} y - x^{-2a} + a x^{-a-1} = 0$	[_Abel]	✓	3.961

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
9737	$y' - a(x^n - x)y^3 - y^2 = 0$	[_Abel]	✗	2.000
9738	$y' - (ax^n + bx)y^3 - cy^2 = 0$	[_Abel]	✗	2.096
9739	$y' + a\phi'(x)y^3 + 6a\phi(x)y^2 + \frac{(2a+1)y\phi''(x)}{\phi'(x)} + 2a + 2 = 0$	[_Abel]	✗	1.277
9740	$y' - f_3(x)y^3 - f_2(x)y^2 - f_1(x)y - f_0(x) = 0$	[_Abel]	✗	4.319
9741	$y' - (y - f(x))(y - g(x)) \left( y - \frac{af(x) + bg(x)}{a + b} \right) h(x) - \frac{f'(x)(y - g(x))}{f(x) - g(x)} - \frac{g'(x)(y - f(x))}{g(x) - f(x)} = 0$	[_Abel]	✗	32.975
9742	$y' - ay^n - bx^{\frac{n}{1-n}} = 0$	[[_homogeneous, 'class G'], _Chini]	✓	1.929
9743	$y' - f(x)^{1-n}g'(x)y^n(ag(x) + b)^{-n} - \frac{f'(x)y}{f(x)} - f(x)g'(x) = 0$	[_Chini, [_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]]']	✗	476.536
9744	$y' - a^n f(x)^{1-n} g'(x) y^n - \frac{f'(x)y}{f(x)} - f(x)g'(x) = 0$	[_Chini, [_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]]']	✗	6.521
9745	$y' - f(x)y^n - g(x)y - h(x) = 0$	[_Chini]	✗	2.494
9746	$y' - f(x)y^a - g(x)y^b = 0$	[NONE]	✗	1.719
9747	$y' - \sqrt{ y } = 0$	[_quadrature]	✓	1.451
9748	$y' - a\sqrt{y} - bx = 0$	[[_homogeneous, 'class G'], _Chini]	✓	3.647
9749	$y' - a\sqrt{1 + y^2} - b = 0$	[_quadrature]	✓	3.388
9750	$y' - \frac{\sqrt{y^2 - 1}}{\sqrt{x^2 - 1}} = 0$	[_separable]	✓	14.828
9751	$y' - \frac{\sqrt{x^2 - 1}}{\sqrt{y^2 - 1}} = 0$	[_separable]	✓	1.878

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
9752	$y' - \frac{y - x^2\sqrt{x^2 - y^2}}{xy\sqrt{x^2 - y^2} + x} = 0$	[NONE]	<b>X</b>	48.809
9753	$y' - \frac{1 + y^2}{ y + \sqrt{1 + y} (x + 1)^{3/2}} = 0$	[_separable]	<b>✓</b>	49.794
9754	$y' - \sqrt{\frac{y^2a + by + c}{x^2a + bx + c}} = 0$	[[_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)][']]	<b>✓</b>	171.092
9755	$y' - \sqrt{\frac{y^3 + 1}{x^3 + 1}} = 0$	[[_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)][']]	<b>✓</b>	3.711
9756	$y' - \frac{\sqrt{ y(y-1)(-1+ay) }}{\sqrt{ x(x-1)(ax-1) }} = 0$	[_separable]	<b>✓</b>	44.720
9757	$y' - \frac{\sqrt{1-y^4}}{\sqrt{-x^4+1}} = 0$	[_separable]	<b>✓</b>	3.268
9758	$y' - \sqrt{\frac{ay^4 + by^2 + 1}{ax^4 + bx^2 + 1}} = 0$	[[_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)][']]	<b>✓</b>	20.781
9759	$y' - \sqrt{\frac{b_4y^4 + b_3y^3 + b_2y^2 + b_1y + b_0}{a_4x^4 + a_3x^3 + a_2x^2 + a_1x + a_0}} = 0$	[[_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)][']]	<b>✓</b>	12.588
9760	$y' - \sqrt{\frac{a_4x^4 + a_3x^3 + a_2x^2 + a_1x + a_0}{b_4y^4 + b_3y^3 + b_2y^2 + b_1y + b_0}} = 0$	[[_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)][']]	<b>✓</b>	7.685
9761	$y' - \sqrt{\frac{b_4y^4 + b_3y^3 + b_2y^2 + b_1y + b_0}{a_4x^4 + a_3x^3 + a_2x^2 + a_1x + a_0}} = 0$	[[_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)][']]	<b>✓</b>	6.724
9762	$y' - R1(x, \sqrt{a_4x^4 + a_3x^3 + a_2x^2 + a_1x + a_0}) R2(y, \sqrt{b_4y^4 + b_3y^3 + b_2y^2 + b_1y + b_0}) = 0$	[_separable]	<b>✓</b>	1.910
9763	$y' - \left(\frac{a_3x^3 + a_2x^2 + a_1x + a_0}{a_3y^3 + a_2y^2 + a_1y + a_0}\right)^{2/3} = 0$	[[_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)][']]	<b>✓</b>	3.219

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
9764	$y' - f(x) \frac{y}{-g(x) \sqrt{(y-a)(y-b)}} = 0$	['y=_G(x,y)']	✗	4.974
9765	$y' - e^{x-y} + e^x = 0$	[_separable]	✓	1.472
9766	$y' - a \cos(y) + b = 0$	[_quadrature]	✓	1.090
9767	$y' - \cos(bx + ay) = 0$	[[_homogeneous, 'class C'], _dAlembert]	✓	48.589
9768	$y' + a \sin(\alpha y + \beta x) + b = 0$	[[_homogeneous, 'class C'], _dAlembert]	✓	1.043
9769	$y' + f(x) \cos(ay) + g(x) \sin(ay) + h(x) = 0$	['y=_G(x,y)']	✗	5.708
9770	$y' + f(x) \sin(y) + (1 - f'(x)) \cos(y) - f'(x) - 1 = 0$	['y=_G(x,y)']	✗	5.142
9771	$y' + 2 \tan(y) \tan(x) - 1 = 0$	['y=_G(x,y)']	✗	3.884
9772	$y' - a(1 + \tan(y)^2) + \tan(y) \tan(x) = 0$	['y=_G(x,y)']	✗	6.480
9773	$y' - \tan(xy) = 0$	['y=_G(x,y)']	✗	1.308
9774	$y' - f(ax + by) = 0$	[[_homogeneous, 'class C'], _dAlembert]	✓	1.055
9775	$y' - x^{a-1} y^{1-b} f\left(\frac{x^a}{a} + \frac{y^b}{b}\right) = 0$	[[_1st_order, '_with_symmetry_[F(x),G(y)]]']	✗	3.253
9776	$y' - \frac{y - xf(x^2 + y^2a)}{x + ayf(x^2 + y^2a)} = 0$	[[_1st_order, _with_linear_symmetries]]	✓	1.508
9777	$y' - \frac{yaf(x^cy) + cx^ay^b}{xbf(x^cy) - x^ay^b} = 0$	[NONE]	✗	4.913
9778	$2y' - 3y^2 - 4ay - b - ce^{-2ax} = 0$	[_Riccati]	✓	2.154
9779	$xy' - \sqrt{a^2 - x^2} = 0$	[_quadrature]	✓	0.528
9780	$xy' + y - x \sin(x) = 0$	[_linear]	✓	1.192
9781	$xy' - y - \frac{x}{\ln(x)} = 0$	[_linear]	✓	1.083

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
9782	$xy' - y - x^2 \sin(x) = 0$	[_linear]	✓	1.228
9783	$xy' - y - \frac{x \cos(\ln(\ln(x)))}{\ln(x)} = 0$	[_linear]	✓	2.438
9784	$xy' + ay + bx^n = 0$	[_linear]	✓	1.047
9785	$xy' + y^2 + x^2 = 0$	[_rational, _Riccati]	✓	1.046
9786	$xy' - y^2 + 1 = 0$	[_separable]	✓	1.471
9787	$xy' + y^2 a - y + bx^2 = 0$	[[_homogeneous, 'class D'], _rational, _Riccati]	✓	1.371
9788	$xy' + y^2 a - by + cx^{2b} = 0$	[_rational, _Riccati]	✓	1.891
9789	$xy' + y^2 a - by - cx^\beta = 0$	[_rational, _Riccati]	✓	2.121
9790	$xy' + xy^2 + a = 0$	[_rational, [_Riccati, _special]]	✓	0.993
9791	$xy' + xy^2 - y = 0$	[[_homogeneous, 'class D'], _rational, _Bernoulli]	✓	1.764
9792	$xy' + xy^2 - y - ax^3 = 0$	[[_homogeneous, 'class D'], _rational, _Riccati]	✓	2.267
9793	$xy' + xy^2 - (2x^2 + 1)y - x^3 = 0$	[[_homogeneous, 'class D'], _rational, _Riccati]	✓	3.090
9794	$xy' + axy^2 + 2y + bx = 0$	[_rational, [_1st_order, '_with_symmetry_[F(x),G(x)']], _Riccati]	✓	1.377
9795	$xy' + axy^2 + by + cx + d = 0$	[_rational, _Riccati]	✓	6.453
9796	$xy' + x^a y^2 + \frac{(-b+a)y}{2} + x^b = 0$	[_rational, _Riccati]	✓	2.232
9797	$xy' + ax^\alpha y^2 + by - cx^\beta = 0$	[_rational, _Riccati]	✓	3.063
9798	$xy' - y^2 \ln(x) + y = 0$	[_Bernoulli]	✓	1.914
9799	$xy' - y(2y \ln(x) - 1) = 0$	[_Bernoulli]	✓	2.022
9800	$xy' + f(x)(y^2 - x^2) - y = 0$	[[_homogeneous, 'class D'], _Riccati]	✓	2.207

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
9801	$xy' + y^3 + 3xy^2 = 0$	[_rational, _Abel]	✗	0.833
9802	$xy' - \sqrt{y^2 + x^2} - y = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	6.522
9803	$xy' + a\sqrt{y^2 + x^2} - y = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓	11.084
9804	$xy' - x\sqrt{y^2 + x^2} - y = 0$	[[_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]']]	✗	3.964
9805	$xy' - x(y - x)\sqrt{y^2 + x^2} - y = 0$	[[_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]']]	✗	5.346
9806	$xy' - x e^{\frac{y}{x}} - y - x = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓	9.428
9807	$xy' - y \ln(y) = 0$	[_separable]	✓	1.618
9808	$xy' - y(\ln(xy) - 1) = 0$	[[_homogeneous, 'class G']]	✓	1.749
9809	$xy' - y\left(x \ln\left(\frac{x^2}{y}\right) + 2\right) = 0$	[[_1st_order, '_with_symmetry_[F(x),G(y)]']]	✗	2.562
9810	$xy' - \sin(x - y) = 0$	['y=_G(x,y)']	✗	3.688
9811	$xy' + (\sin(y) - 3x^2 \cos(y)) \cos(y) = 0$	['y=_G(x,y)']	✓	2.467
9812	$xy' - x \sin\left(\frac{y}{x}\right) - y = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓	3.353
9813	$xy' + x \cos\left(\frac{y}{x}\right) - y + x = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓	2.910
9814	$xy' + x \tan\left(\frac{y}{x}\right) - y = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓	3.430
9815	$xy' - yf(xy) = 0$	[[_homogeneous, 'class G']]	✓	0.934
9816	$xy' - yf(x^a y^b) = 0$	[[_homogeneous, 'class G']]	✓	1.270

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
9817	$xy' + ay - f(x)g(x^a y) = 0$	[[_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]']]	✗	3.110
9818	$(x + 1)y' + (y - x)y = 0$	[_rational, _Bernoulli]	✓	1.132
9819	$2xy' - y - 2x^3 = 0$	[_linear]	✓	1.832
9820	$(2x + 1)y' - 4e^{-y} + 2 = 0$	[_separable]	✓	1.599
9821	$3xy' - 3x \ln(x)y^4 - y = 0$	[_Bernoulli]	✓	3.076
9822	$x^2y' + y - x = 0$	[_linear]	✓	0.993
9823	$x^2y' - y + x^2e^{x-\frac{1}{x}} = 0$	[_linear]	✓	1.342
9824	$x^2y' - (x - 1)y = 0$	[_separable]	✓	1.384
9825	$x^2y' + y^2 + xy + x^2 = 0$	[[_homogeneous, 'class A'], _rational, _Riccati]	✓	1.758
9826	$x^2y' - y^2 - xy = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓	1.800
9827	$x^2y' - y^2 - xy - x^2 = 0$	[[_homogeneous, 'class A'], _rational, _Riccati]	✓	2.191
9828	$x^2(y' + y^2) + ax^k - b(b - 1) = 0$	[_rational, _Riccati]	✓	2.105
9829	$x^2(y' + y^2) + 4xy + 2 = 0$	[[_homogeneous, 'class G'], _rational, _Riccati]	✓	1.658
9830	$x^2(y' + y^2) + axy + b = 0$	[[_homogeneous, 'class G'], _rational, _Riccati]	✓	1.566
9831	$x^2(y' - y^2) - ax^2y + ax + 2 = 0$	[_rational, _Riccati]	✓	1.676
9832	$x^2(y' + y^2a) - b = 0$	[[_homogeneous, 'class G'], _rational, [_Riccati, _special]]	✓	1.475
9833	$x^2(y' + y^2a) + bx^\alpha + c = 0$	[_rational, _Riccati]	✓	2.296
9834	$x^2y' + ay^3 - ax^2y^2 = 0$	[_rational, _Abel]	✗	0.902
9835	$x^2y' + xy^3 + y^2a = 0$	[_rational, _Abel]	✗	0.924
9836	$x^2y' + ax^2y^3 + by^2 = 0$	[_rational, _Abel]	✗	0.983

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
9837	$(x^2 + 1)y' + xy - 1 = 0$	[_linear]	✓	1.107
9838	$(x^2 + 1)y' + xy - x(x^2 + 1) = 0$	[_linear]	✓	3.237
9839	$(x^2 + 1)y' + 2xy - 2x^2 = 0$	[_linear]	✓	1.087
9840	$(x^2 + 1)y' + (1 + y^2)(2xy - 1) = 0$	[_rational, _Abel]	✗	1.303
9841	$(x^2 + 1)y' + x \sin(y) \cos(y) - x(x^2 + 1) \cos(y)^2 = 0$	['y=_G(x,y)']	✗	15.073
9842	$(x^2 - 1)y' - xy + a = 0$	[_linear]	✓	2.082
9843	$(x^2 - 1)y' + 2xy - \cos(x) = 0$	[_linear]	✓	2.432
9844	$(x^2 - 1)y' + y^2 - 2xy + 1 = 0$	[_rational, [_1st_order, '_with_symmetry_[F(x),G(x)]'], _Riccati]	✓	1.670
9845	$(x^2 - 1)y' - (y - x)y = 0$	[_rational, _Bernoulli]	✓	2.405
9846	$(x^2 - 1)y' + a(y^2 - 2xy + 1) = 0$	[_rational, _Riccati]	✗	6.478
9847	$(x^2 - 1)y' + axy^2 + xy = 0$	[_separable]	✓	2.129
9848	$(x^2 - 1)y' - 2xy \ln(y) = 0$	[_separable]	✓	2.517
9849	$(x^2 - 4)y' + (x + 2)y^2 - 4y = 0$	[_rational, _Bernoulli]	✓	1.401
9850	$(x^2 - 5x + 6)y' + 3xy - 8y + x^2 = 0$	[_linear]	✓	1.464
9851	$(x - a)(x - b)y' + y^2 + k(y + x - a)(y + x - b) = 0$	[_rational, [_1st_order, '_with_symmetry_[F(x),G(x)]'], _Riccati]	✓	2.909
9852	$2x^2y' - 2y^2 - xy + 2a^2x = 0$	[_rational, _Riccati]	✓	1.494
9853	$2x^2y' - 2y^2 - 3xy + 2a^2x = 0$	[_rational, _Riccati]	✓	1.692
9854	$x(2x - 1)y' + y^2 - (1 + 4x)y + 4x = 0$	[_rational, [_1st_order, '_with_symmetry_[F(x),G(x)]'], _Riccati]	✓	2.354
9855	$2x(x - 1)y' + (x - 1)y^2 - x = 0$	[_rational, _Riccati]	✓	2.170

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
9856	$3x^2y' - 7y^2 - 3xy - x^2 = 0$	[[_homogeneous, 'class A'], _rational, _Riccati]	✓	2.477
9857	$3(x^2 - 4)y' + y^2 - xy - 3 = 0$	[_rational, _Riccati]	✓	150.731
9858	$(ax + b)^2 y' + (ax + b)y^3 + cy^2 = 0$	[_rational, _Abel]	✗	1.949
9859	$x^3y' - y^2 - x^4 = 0$	[[_homogeneous, 'class G'], _rational, _Riccati]	✓	1.176
9860	$x^3y' - y^2 - x^2y = 0$	[[_homogeneous, 'class D'], _rational, _Bernoulli]	✓	1.742
9861	$x^3y' - x^4y^2 + x^2y + 20 = 0$	[[_homogeneous, 'class G'], _rational, _Riccati]	✓	1.888
9862	$x^3y' - x^6y^2 - (2x - 3)x^2y + 3 = 0$	[_rational, _Riccati]	✓	1.757
9863	$x(x^2 + 1)y' + x^2y = 0$	[_separable]	✓	1.314
9864	$x(x^2 - 1)y' - (2x^2 - 1)y + ax^3 = 0$	[_linear]	✓	1.142
9865	$x(x^2 - 1)y' + (x^2 - 1)y^2 - x^2 = 0$	[_rational, _Riccati]	✓	106.964
9866	$x^2(x - 1)y' - y^2 - x(-2 + x)y = 0$	[[_homogeneous, 'class D'], _rational, _Bernoulli]	✓	2.039
9867	$2x(x^2 - 1)y' + 2(x^2 - 1)y^2 - (3x^2 - 5)y + x^2 - 3 = 0$	[_rational, _Riccati]	✓	1.961
9868	$3x(x^2 - 1)y' + xy^2 - (x^2 + 1)y - 3x = 0$	[_rational, _Riccati]	✓	45.882
9869	$(x^2a + bx + c)(-y + xy') - y^2 + x^2 = 0$	[[_homogeneous, 'class D'], _rational, _Riccati]	✓	2.743
9870	$x^4(y' + y^2) + a = 0$	[_rational, [_Riccati, _special]]	✓	1.307
9871	$x(x^3 - 1)y' - 2xy^2 + y + x^2 = 0$	[_rational, _Riccati]	✓	1.699
9872	$(2x^4 - x)y' - 2(x^3 - 1)y = 0$	[_separable]	✓	1.510
9873	$(x^2a + bx + c)^2(y' + y^2) + A = 0$	[_rational, _Riccati]	✓	3.727
9874	$x^7y' + 2(x^2 + 1)y^3 + 5x^3y^2 = 0$	[_rational, _Abel]	✗	1.246

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
9875	$x^n y' + y^2 - (n-1)x^{n-1}y + x^{-2+2n} = 0$	[[_homogeneous, G'], _Riccati]	✓	2.281
9876	$x^n y' - y^2 a - b x^{-2+2n} = 0$	[[_homogeneous, G'], _Riccati]	✓	3.932
9877	$x^{2n+1} y' - a y^3 - b x^{3n} = 0$	[[_homogeneous, G'], _Abel]	✓	7.609
9878	$x^{m(n-1)+n} y' - a y^n - b x^{n(m+1)} = 0$	[[_homogeneous, G']]	✓	2.538
9879	$\sqrt{x^2 - 1} y' - \sqrt{y^2 - 1} = 0$	[_separable]	✓	8.359
9880	$\sqrt{-x^2 + 1} y' - y \sqrt{y^2 - 1} = 0$	[_separable]	✓	10.082
9881	$\sqrt{a^2 + x^2} y' + y - \sqrt{a^2 + x^2} + x = 0$	[_linear]	✓	1.524
9882	$xy' \ln(x) + y - ax(\ln(x) + 1) = 0$	[_linear]	✓	1.311
9883	$xy' \ln(x) - y^2 \ln(x) - (2 \ln(x)^2 + 1)y - \ln(x)^3 = 0$	[_Riccati]	✓	2.434
9884	$\sin(x) y' - y^2 \sin(x)^2 + (\cos(x) - 3 \sin(x))y + 4 = 0$	[_Riccati]	✓	9.084
9885	$\cos(x) y' + y + (\sin(x) + 1) \cos(x) = 0$	[_linear]	✓	2.701
9886	$\cos(x) y' - y^4 - y \sin(x) = 0$	[_Bernoulli]	✓	6.188
9887	$\sin(x) \cos(x) y' - y - \sin(x)^3 = 0$	[_linear]	✓	3.875
9888	$\sin(2x) y' + \sin(2y) = 0$	[_separable]	✓	20.085
9889	$(a \sin(x)^2 + b) y' + ay \sin(2x) + Ax(a \sin(x)^2 + c) = 0$	[_linear]	✓	13.364
9890	$2f(x) y' + 2f(x) y^2 - f'(x) y - 2f(x)^2 = 0$	[_Riccati]	✓	1.035
9891	$f(x) y' + g(x) s(y) + h(x) = 0$	[NONE]	✗	1.260
9892	$yy' + y + x^3 = 0$	[_rational, [_Abel, '2nd type', 'class A']]	✗	0.659
9893	$yy' + ay + x = 0$	[[_homogeneous, A'], _rational, [_Abel, '2nd type', 'class A']]	✓	9.513

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
9894	$yy' + ay + \frac{(a^2 - 1)x}{4} + bx^n = 0$	[_rational, [_Abel, '2nd type', 'class A']]	✗	2.049
9895	$yy' + ay + be^x - 2a = 0$	[[_Abel, '2nd type', 'class A']]	✗	1.402
9896	$yy' + y^2 + 4x(x + 1) = 0$	[[_homogeneous, 'class D', _rational, _Bernoulli]]	✓	1.829
9897	$yy' + y^2a - b \cos(x + c) = 0$	[_Bernoulli]	✓	2.809
9898	$yy' - \sqrt{y^2a + b} = 0$	[_quadrature]	✓	8.276
9899	$yy' + xy^2 - 4x = 0$	[_separable]	✓	1.706
9900	$yy' - xe^{\frac{x}{y}} = 0$	[[_homogeneous, 'class A', _dAlembert]]	✓	3.276
9901	$yy' + f(y^2 + x^2)g(x) + x = 0$	[NONE]	✗	2.920
9902	$(1 + y)y' - y - x = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓	5.153
9903	$(y - 1 + x)y' - y + 2x + 3 = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓	3.527
9904	$(y + 2x - 2)y' - y + x + 1 = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓	3.002
9905	$(y - 2x + 1)y' + y + x = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓	2.996
9906	$(y - x^2)y' - x = 0$	[_rational, [_1st_order, '_with_symmetry_[F(x)*G(y),0]', [_Abel, '2nd type', 'class C']]	✓	0.981
9907	$(y - x^2)y' + 4xy = 0$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class A']]	✓	2.037
9908	$(y + g(x))y' - f_2(x)y^2 - f_1(x)y - f_0(x) = 0$	[[_Abel, '2nd type', 'class A']]	✗	7.852

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
9909	$2yy' - xy^2 - x^3 = 0$	[_rational, _Bernoulli]	✓	1.387
9910	$(2y + x + 1)y' - 2y - x + 1 = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	1.325
9911	$(2y + x + 7)y' - y + 2x + 4 = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	1.861
9912	$(2y - x)y' - y - 2x = 0$	[[_homogeneous, 'class A'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓	3.272
9913	$(2y - 6x)y' - y + 3x + 2 = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	1.407
9914	$(4y + 2x + 3)y' - 2y - x - 1 = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	1.346
9915	$(4y - 2x - 3)y' + 2y - x - 1 = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	1.349
9916	$(4y - 3x - 5)y' - 3y + 7x + 2 = 0$	[[_homogeneous, 'class C'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓	2.723
9917	$(4y + 11x - 11)y' - 25y - 8x + 62 = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	8.500
9918	$(12y - 5x - 8)y' - 5y + 2x + 3 = 0$	[[_homogeneous, 'class C'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓	2.833
9919	$ayy' + by^2 + f(x) = 0$	[_Bernoulli]	✓	2.134
9920	$(ay + bx + c)y' + \alpha y + \beta x + \gamma = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	7.550
9921	$xyy' + y^2 + x^2 = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓	4.616

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
9922	$xyy' - y^2 + ax^3 \cos(x) = 0$	[[_homogeneous, 'class D'], _Bernoulli]	✓	3.384
9923	$xyy' - y^2 + xy + x^3 - 2x^2 = 0$	[_rational, [_Abel, '2nd type', 'class B']]	✗	1.138
9924	$(xy + a)y' + by = 0$	[[_1st_order, _with_exponential_symmetries], _rational, [_Abel, '2nd type', 'class B']]	✓	0.960
9925	$x(y + 4)y' - y^2 - 2y - 2x = 0$	[_rational, [_Abel, '2nd type', 'class B']]	✓	4.562
9926	$x(a + y)y' + by + cx = 0$	[_rational, [_Abel, '2nd type', 'class B']]	✗	0.861
9927	$(x(x + y) + a)y' - y(x + y) - b = 0$	[[_1st_order, _with_linear_symmetries], _rational, [_Abel, '2nd type', 'class B']]	✓	1.434
9928	$(xy - x^2)y' + y^2 - 3xy - 2x^2 = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓	4.438
9929	$2xyy' - y^2 + ax = 0$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓	1.225
9930	$2xyy' - y^2 + x^2a = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓	4.194
9931	$2xyy' + 2y^2 + 1 = 0$	[_separable]	✓	2.089
9932	$x(2y + x - 1)y' - y(2x + y + 1) = 0$	[_rational, [_Abel, '2nd type', 'class B']]	✓	1.393
9933	$x(2y - x - 1)y' + y(2x - y - 1) = 0$	[_rational, [_Abel, '2nd type', 'class B']]	✓	1.398
9934	$(2xy + 4x^3)y' + y^2 + 112x^2y = 0$	[[_homogeneous, 'class G'], _rational, [_Abel, '2nd type', 'class B']]	✓	2.135
9935	$x(3y + 2x)y' + 3(x + y)^2 = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓	7.334

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
9936	$(2 + 3x)(y - 2x - 1)y' - y^2 + xy - 7x^2 - 9x - 3 = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class B']]	✓	3.531
9937	$(6xy + x^2 + 3)y' + 3y^2 + 2xy + 2x = 0$	[_exact, _rational, [_Abel, '2nd type', 'class B']]	✓	1.338
9938	$(axy + bx^n)y' + \alpha y^3 + \beta y^2 = 0$	[_rational, [_1st_order, '_with_symmetry_[F(x)*G(y),0]'], [_Abel, '2nd type', 'class C']]	✓	5.079
9939	$(Bxy + Ax^2 + ax + by + c)y' - Bg(x)^2 + Axy + \alpha x + \beta y + \gamma = 0$	[[_Abel, '2nd type', 'class B']]	✗	7.591
9940	$(x^2y - 1)y' + xy^2 - 1 = 0$	[_exact, _rational, [_Abel, '2nd type', 'class B']]	✓	1.226
9941	$(x^2y - 1)y' + 1 - xy^2 = 0$	[_rational, [_Abel, '2nd type', 'class B']]	✗	1.848
9942	$(x^2y - 1)y' - 8 + 8xy^2 = 0$	[_rational, [_Abel, '2nd type', 'class B']]	✗	1.043
9943	$x(xy - 2)y' + x^2y^3 + xy^2 - 2y = 0$	[[_homogeneous, 'class G'], _rational, [_Abel, '2nd type', 'class C']]	✓	2.460
9944	$x(xy - 3)y' + xy^2 - y = 0$	[[_homogeneous, 'class G'], _rational, [_Abel, '2nd type', 'class B']]	✓	1.894
9945	$x^2(y - 1)y' + (x - 1)y = 0$	[_separable]	✓	1.441
9946	$x(xy + x^4 - 1)y' - y(xy - x^4 - 1) = 0$	[_rational, [_Abel, '2nd type', 'class B']]	✗	1.295
9947	$2x^2yy' + y^2 - 2x^3 - x^2 = 0$	[[_homogeneous, 'class D'], _rational, _Bernoulli]	✓	2.082
9948	$2x^2yy' - y^2 - x^2e^{x-\frac{1}{x}} = 0$	[_Bernoulli]	✓	2.052
9949	$(2x^2y + x)y' - x^2y^3 + 2xy^2 + y = 0$	[[_homogeneous, 'class G'], _rational, [_Abel, '2nd type', 'class C']]	✓	2.390

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
Continued from previous page

#	ODE	CAS classification	Solved?	time (sec)
9950	$(2x^2y - x)y' - 2xy^2 - y = 0$	[[_homogeneous, 'class G'], _rational, [_Abel, '2nd type', 'class B']]	✓	1.718
9951	$(2x^2y - x^3)y' + y^3 - 4xy^2 + 2x^3 = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class C'], _dAlembert]	✓	32.902
9952	$2x^3 + yy' + 3y^2x^2 + 7 = 0$	[_rational, _Bernoulli]	✓	2.328
9953	$2x(x^3y + 1)y' + (3x^3y - 1)y = 0$	[[_homogeneous, 'class G'], _rational, [_Abel, '2nd type', 'class B']]	✓	2.143
9954	$(x^{n(n+1)}y - 1)y' + 2(n+1)^2x^{n-1}(x^{n^2}y^2 - 1) = 0$	[_rational, [_Abel, '2nd type', 'class B']]	✗	5.015
9955	$(y - x)\sqrt{x^2 + 1}y' - a\sqrt{(1 + y^2)^3} = 0$	['x=_G(y,y)']	✗	569.649
9956	$yy' \sin(x)^2 + y^2 \cos(x) \sin(x) - 1 = 0$	[_exact, _Bernoulli]	✓	5.648
9957	$f(x)yy' + g(x)y^2 + h(x) = 0$	[_Bernoulli]	✓	2.144
9958	$(g_1(x)y + g_0(x))y' - f_1(x)y - f_2(x)y^2 - f_3(x)y^3 - f_0(x) = 0$	[[_Abel, '2nd type', 'class C']]	✗	110.206
9959	$(y^2 - x)y' - y + x^2 = 0$	[_exact, _rational]	✓	1.145
9960	$(y^2 + x^2)y' + 2x(2x + y) = 0$	[[_homogeneous, 'class A'], _exact, _rational, _dAlembert]	✓	4.234
9961	$(y^2 + x^2)y' - y^2 = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	4.896
9962	$(y^2 + x^2 + a)y' + 2xy = 0$	[_exact, _rational, [_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓	1.028
9963	$(y^2 + x^2 + a)y' + 2xy + x^2 + b = 0$	[_exact, _rational]	✓	1.231
9964	$(y^2 + x^2 + x)y' - y = 0$	[_rational]	✓	1.123

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
9965	$(y^2 - x^2) y' + 2xy = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	4.405
9966	$(y^2 + x^4) y' - 4x^3y = 0$	[[_homogeneous, 'class G'], _rational]	✓	2.234
9967	$(y^2 + 4 \sin(x)) y' - \cos(x) = 0$	[[_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓	1.878
9968	$(y^2 + 2y + x) y' + (x + y)^2 y^2 + y(1 + y) = 0$	[_rational]	✗	3.807
9969	$(x + y)^2 y' - a^2 = 0$	[[_homogeneous, 'class C'], _dAlembert]	✓	3.353
9970	$(y^2 + 2xy - x^2) y' - y^2 + 2xy + x^2 = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	5.714
9971	$(y + 3x - 1)^2 y' - (2y - 1)(4y + 6x - 3) = 0$	[[_homogeneous, 'class C'], _rational]	✓	3.207
9972	$3(y^2 - x^2) y' + 2y^3 - 6x(x + 1)y - 3e^x = 0$	['y=_G(x,y)']	✓	1.984
9973	$(4y^2 + x^2) y' - xy = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	3.045
9974	$(4y^2 + 2xy + 3x^2) y' + y^2 + 6xy + 2x^2 = 0$	[[_homogeneous, 'class A'], _exact, _rational, _dAlembert]	✓	7.824
9975	$(2y - 3x + 1)^2 y' - (3y - 2x - 4)^2 = 0$	[[_homogeneous, 'class C'], _rational]	✓	36.395
9976	$(2y - 4x + 1)^2 y' - (y - 2x)^2 = 0$	[[_homogeneous, 'class C'], _rational, _dAlembert]	✓	2.028
9977	$(6y^2 - 3x^2y + 1) y' - 3xy^2 + x = 0$	[_exact, _rational, [_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓	1.398

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
9978	$(6y - x)^2 y' - 6y^2 + 2xy + a = 0$	[_exact, _rational, [_1st_order, '_with_symmetry_[F(x),G(x)]]']	✓	1.403
9979	$(y^2 a + 2bxy + cx^2) y' + by^2 + 2cxy + dx^2 = 0$	[[_homogeneous, 'class A'], _exact, _rational, _dAlembert]	✓	374.393
9980	$(b(\beta y + \alpha x)^2 - \beta(ax + by)) y' + a(\beta y + \alpha x)^2 - \alpha(ax + by) = 0$	[[_1st_order, _with_linear_symmetries], _rational]	✓	1.753
9981	$(ay + bx + c)^2 y' + (\alpha y + \beta x + \gamma)^2 = 0$	[[_homogeneous, 'class C'], _rational]	✓	3.431
9982	$x(y^2 - 3x) y' + 2y^3 - 5xy = 0$	[[_homogeneous, 'class G'], _rational]	✓	5.007
9983	$x(y^2 + x^2 - a) y' - y(y^2 + x^2 + a) = 0$	[_rational, [_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]]']	✓	4.236
9984	$x(y^2 + xy - x^2) y' - y^3 + xy^2 + x^2 y = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	84.797
9985	$x(y^2 + x^2 y + x^2) y' - 2y^3 - 2y^2 x^2 + x^4 = 0$	[_rational, [_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]]']	✓	2.958
9986	$2x(y^2 + 5x^2) y' + y^3 - x^2 y = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	22.463
9987	$3xy^2 y' + y^3 - 2x = 0$	[[_homogeneous, 'class G'], _exact, _rational, _Bernoulli]	✓	2.280
9988	$(3xy^2 - x^2) y' + y^3 - 2xy = 0$	[[_homogeneous, 'class G'], _exact, _rational]	✓	2.027
9989	$6xy^2 y' + 2y^3 + x = 0$	[[_homogeneous, 'class G'], _exact, _rational, _Bernoulli]	✓	2.383
9990	$(6xy^2 + x^2) y' - y(3y^2 - x) = 0$	[[_homogeneous, 'class G'], _rational]	✓	1.897

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
9991	$(y^2x^2 + x)y' + y = 0$	[[_homogeneous, 'class G'], _rational]	✓	3.622
9992	$(xy - 1)^2 xy' + (y^2x^2 + 1)y = 0$	[[_homogeneous, 'class G'], _rational]	✓	1.831
9993	$(10x^3y^2 + x^2y + 2x)y' + 5x^2y^3 + xy^2 = 0$	[[_homogeneous, 'class G'], _rational]	✓	2.824
9994	$(y^3 - 3x)y' - 3y + x^2 = 0$	[_exact, _rational]	✓	1.175
9995	$(y^3 - x^3)y' - x^2y = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	10.316
9996	$(y^2 + x^2 + a)yy' + (y^2 + x^2 - a)x = 0$	[_exact, _rational]	✓	1.608
9997	$2y^3y' + xy^2 = 0$	[_separable]	✓	2.629
9998	$(2y^3 + y)y' - 2x^3 - x = 0$	[_separable]	✓	2.023
9999	$(2y^3 + 5x^2y)y' + 5xy^2 + x^3 = 0$	[[_homogeneous, 'class A'], _exact, _rational, _dAlembert]	✓	111.785
10000	$(20y^3 - 3xy^2 + 6x^2y + 3x^3)y' - y^3 + 6xy^2 + 9x^2y + 4x^3 = 0$	[[_homogeneous, 'class A'], _exact, _rational, _dAlembert]	✓	111.174
10001	$\left(\frac{y^2}{b} + \frac{x^2}{a}\right)(yy' + x) + \frac{(-b + a)(yy' - x)}{a + b} = 0$	[_rational]	✗	4.194
10002	$(2ay^3 + 3axy^2 - bx^3 + cx^2)y' - ay^3 + cy^2 + 3bx^2y + 2bx^3 = 0$	[_rational]	✗	3.644
10003	$xy^3y' + y^4 - x \sin(x) = 0$	[_Bernoulli]	✓	34.188
10004	$(2xy^3 - x^4)y' - y^4 + 2x^3y = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	6.329
10005	$(2xy^3 + y)y' + 2y^2 = 0$	[_rational, [_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓	1.055
10006	$(2xy^3 + xy + x^2)y' + y^2 - xy = 0$	[_rational]	✓	1.524

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
10007	$(3xy^3 - 4xy + y)y' + y^2(y^2 - 2) = 0$	[_rational, [_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓	1.606
10008	$(7xy^3 + y - 5x)y' + y^4 - 5y = 0$	[_rational, [_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓	2.079
10009	$(x^2y^3 + xy)y' - 1 = 0$	[[_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓	1.813
10010	$(2x^2y^3 + y^2x^2 - 2x)y' - 2y - 1 = 0$	[_rational, [_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓	2.589
10011	$(10x^2y^3 - 3y^2 - 2)y' + 5xy^4 + x = 0$	[_exact, _rational, [_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓	1.487
10012	$(axy^3 + c)xy' + (bx^3y + c)y = 0$	[_rational]	✓	1.672
10013	$(2x^3y^3 - x)y' + 2x^3y^3 - y = 0$	[_rational]	✓	1.437
10014	$y(y^3 - 2x^3)y' + (2y^3 - x^3)x = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	77.862
10015	$y((bx + ay)^3 + bx^3)y' + x((bx + ay)^3 + ay^3) = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	51.198
10016	$(xy^4 + 2x^2y^3 + 2y + x)y' + y^5 + y = 0$	[_rational]	✓	989.707
10017	$ax^2y^n y' - 2xy' + y = 0$	[[_homogeneous, 'class G'], _rational]	✓	1.395
10018	$y^m x^n (axy' + by) + \alpha xy' + \beta y = 0$	[[_homogeneous, 'class G'], _rational]	✓	2.325
10019	$(f(x + y) + 1)y' + f(x + y) = 0$	[[_homogeneous, 'class C'], _exact, _dAlembert]	✓	1.858
10020	$\frac{y' f_\nu(x) (-y + y^{p+1})}{y - 1} - \frac{g_\nu(x) (-y + y^{q+1})}{y - 1} = 0$	[_separable]	✓	3.299

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
10021	$(\sqrt{xy} - 1)xy' - (\sqrt{xy} + 1)y = 0$	[[_homogeneous, 'class G']]	✓	4.335
10022	$(2x^{5/2}y^{3/2} + x^2y - x)y' - x^{3/2}y^{5/2} + xy^2 - y = 0$	[[_homogeneous, 'class G'], _rational]	✓	48.202
10023	$(\sqrt{x+y} + 1)y' + 1 = 0$	[[_homogeneous, 'class C'], _dAlembert]	✓	1.658
10024	$\sqrt{y^2 - 1}y' - \sqrt{x^2 - 1} = 0$	[_separable]	✓	1.882
10025	$(\sqrt{1 + y^2 + ax})y' + \sqrt{x^2 + 1} + ay = 0$	[_exact]	✓	33.735
10026	$(\sqrt{y^2 + x^2} + x)y' - y = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	5.171
10027	$(y\sqrt{y^2 + x^2} + (y^2 - x^2)\sin(\alpha) - 2xy\cos(\alpha))y' + x\sqrt{y^2 + x^2} + 2xy\sin(\alpha) + (y^2 - x^2)\cos(\alpha) = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓	158.204
10028	$(x\sqrt{1 + x^2 + y^2} - y(y^2 + x^2))y' - y\sqrt{1 + x^2 + y^2} - x(y^2 + x^2) = 0$	[[_1st_order, _with_linear_symmetries]]	✓	2.568
10029	$\left(\frac{e1(x+a)}{(y^2 + (x+a)^2)^{3/2}} + \frac{e2(x-a)}{((x-a)^2 + y^2)^{3/2}}\right)y' - y\left(\frac{e1}{(y^2 + (x+a)^2)^{3/2}} + \frac{e2}{((x-a)^2 + y^2)^{3/2}}\right) = 0$	unknown	✓	218.000
10030	$(xe^y + e^x)y' + e^y + ye^x = 0$	[_exact]	✓	1.496
10031	$x(3e^{xy} + 2e^{-xy})(xy' + y) + 1 = 0$	[[_homogeneous, 'class G']]	✓	318.156
10032	$(\ln(y) + x)y' - 1 = 0$	[[_1st_order, _with_exponential_symmetries]]	✓	1.127
10033	$(\ln(y) + 2x - 1)y' - 2y = 0$	[[_1st_order, _with_linear_symmetries]]	✓	1.349

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
10034	$x(2x^2y \ln(y) + 1)y' - 2y = 0$	[[_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓	1.452
10035	$x(y \ln(xy) + y - ax)y' - y(ax \ln(xy) - y + ax) = 0$	['y=_G(x,y)']	✓	1.704
10036	$y'(\sin(x) + 1)\sin(y) + \cos(x)(\cos(y) - 1) = 0$	[_separable]	✓	4.261
10037	$(x \cos(y) + \sin(x))y' + y \cos(x) + \sin(y) = 0$	[_exact]	✓	8.635
10038	$xy' \cot\left(\frac{y}{x}\right) + 2x \sin\left(\frac{y}{x}\right) - y \cot\left(\frac{y}{x}\right) = 0$	[[_homogeneous, 'class A']]	✓	4.388
10039	$y' \cos(y) - \cos(x) \sin(y)^2 - \sin(y) = 0$	unknown	✗	44.190
10040	$y' \cos(y) + x \sin(y) \cos(y)^2 - \sin(y)^3 = 0$	['y=_G(x,y)']	✗	48.267
10041	$y'(\cos(y) - \sin(\alpha) \sin(x)) \cos(y) + (\cos(x) - \sin(\alpha) \sin(y)) \cos(x) = 0$	unknown	✓	39.490
10042	$xy' \cos(y) + \sin(y) = 0$	[_separable]	✓	3.539
10043	$(x \sin(y) - 1)y' + \cos(y) = 0$	[[_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓	4.644
10044	$(x \cos(y) + \cos(x))y' - y \sin(x) + \sin(y) = 0$	[_exact]	✓	24.993
10045	$(x^2 \cos(y) + 2y \sin(x))y' + 2x \sin(y) + y^2 \cos(x) = 0$	[_exact]	✓	37.523
10046	$xy' \ln(x) \sin(y) + \cos(y)(1 - x \cos(y)) = 0$	['y=_G(x,y)']	✗	48.655
10047	$y' \sin(y) \cos(x) + \cos(y) \sin(x) = 0$	[_separable]	✓	2.481
10048	$3y' \sin(x) \sin(y) + 5 \cos(x)^4 y = 0$	[_separable]	✓	4.671

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
10049	$y' \cos(ay) - b(1 - c \cos(ay)) \sqrt{\cos(ay)^2 - 1 + c \cos(ay)} = 0$	[_quadrature]	✓	50.704
10050	$(x \sin(xy) + \cos(x+y) - \sin(y))y' + y \sin(xy) + \cos(x+y) + \cos(x) = 0$	[_exact]	✓	39.067
10051	$(x^2y \sin(xy) - 4x)y' + xy^2 \sin(xy) - y = 0$	[[_homogeneous, 'class G']]	✓	38.568
10052	$(-y + xy') \cos\left(\frac{y}{x}\right)^2 + x = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓	6.773
10053	$\left(y \sin\left(\frac{y}{x}\right) - x \cos\left(\frac{y}{x}\right)\right)xy' - \left(x \cos\left(\frac{y}{x}\right) + y \sin\left(\frac{y}{x}\right)\right)y = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓	6.525
10054	$(yf(y^2 + x^2) - x)y' + y + xf(y^2 + x^2) = 0$	[[_1st_order, _with_linear_symmetries]]	✓	2.325
10055	$f(x^2 + y^2a)(ayy' + x) - y - xy' = 0$	[_exact]	✗	8.967
10056	$f(x^cy)(bxy' - a) - x^ay^b(xy' + cy) = 0$	[NONE]	✗	4.300
10057	$y'^2 + ay + bx^2 = 0$	[[_homogeneous, 'class G']]	✓	2.273
10058	$y'^2 + y^2 - a^2 = 0$	[_quadrature]	✓	0.700
10059	$y'^2 + y^2 - f(x)^2 = 0$	['y=_G(x,y)']	✓	3.565
10060	$y'^2 - y^3 + y^2 = 0$	[_quadrature]	✓	4.105
10061	$y'^2 - 4y^3 + ay + b = 0$	[_quadrature]	✓	2.415
10062	$y'^2 + a^2y^2(\ln(y)^2 - 1) = 0$	[_quadrature]	✓	3.207
10063	$y'^2 - 2y' - y^2 = 0$	[_quadrature]	✓	0.379
10064	$y'^2 + ay' + bx = 0$	[_quadrature]	✓	0.229
10065	$y'^2 + ay' + by = 0$	[_quadrature]	✓	0.802
10066	$y'^2 + (-2 + x)y' - y + 1 = 0$	[[_1st_order, _with_linear_symmetries], _Clairaut]	✓	0.483

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
10067	$y'^2 + (x + a)y' - y = 0$	[[_1st_order, _with_linear_symmetries], _Clairaut]	✓	0.473
10068	$y'^2 - (x + 1)y' + y = 0$	[[_1st_order, _with_linear_symmetries], _Clairaut]	✓	0.380
10069	$y'^2 + 2xy' - y = 0$	[[_1st_order, _with_linear_symmetries], _dAlembert]	✓	0.375
10070	$y'^2 - 2xy' + y = 0$	[[_1st_order, _with_linear_symmetries], _dAlembert]	✓	0.365
10071	$y'^2 + axy' - bx^2 - c = 0$	[_quadrature]	✓	0.486
10072	$y'^2 + axy' + by + cx^2 = 0$	[[_homogeneous, 'class G']]	✓	3.641
10073	$y'^2 + (ax + b)y' - ay + c = 0$	[[_1st_order, _with_linear_symmetries], _Clairaut]	✓	0.532
10074	$y'^2 - 2x^2y' + 2xy = 0$	[[_homogeneous, 'class G']]	✓	2.463
10075	$y'^2 + ax^3y' - 2ax^2y = 0$	[[_1st_order, _with_linear_symmetries]]	✓	3.224
10076	$y'^2 + (y' - y)e^x = 0$	[[_1st_order, _with_linear_symmetries]]	✓	3.677
10077	$y'^2 - 2yy' - 2x = 0$	[_dAlembert]	✓	45.059
10078	$y'^2 - (4y + 1)y' + (4y + 1)y = 0$	[_quadrature]	✓	1.127
10079	$y'^2 + ayy' - bx - c = 0$	[_dAlembert]	✓	1.209
10080	$y'^2 + (bx + ay)y' + abxy = 0$	[_quadrature]	✓	0.844
10081	$y'^2 - xyy' + y^2 \ln(ay) = 0$	[[_1st_order, '_with_symmetry_[F(x),G(y)]']]	✓	4.383
10082	$y'^2 + 2yy' \cot(x) - y^2 = 0$	[_separable]	✓	1.104
10083	$y'^2 + 2f(x)yy' + g(x)y^2 + h(x) = 0$	['y=_G(x,y)']	✓	19.570

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
10084	$y'^2 + y(y-x)y' - xy^3 = 0$	[_separable]	✓	1.888
10085	$y'^2 - 2x^3y^2y' - 4x^2y^3 = 0$	[[_1st_order, _with_linear_symmetries]]	✓	2.641
10086	$y'^2 - 3xy^{2/3}y' + 9y^{5/3} = 0$	[[_1st_order, _with_linear_symmetries]]	✓	4.359
10087	$2y'^2 + (x-1)y' - y = 0$	[[_1st_order, _with_linear_symmetries], _Clairaut]	✓	0.456
10088	$2y'^2 - 2x^2y' + 3xy = 0$	[[_homogeneous, 'class G']]	✓	2.617
10089	$3y'^2 - 2xy' + y = 0$	[[_1st_order, _with_linear_symmetries], _dAlembert]	✓	0.433
10090	$3y'^2 + 4xy' - y + x^2 = 0$	[[_homogeneous, 'class G']]	✓	2.538
10091	$ay'^2 + by' - y = 0$	[_quadrature]	✓	0.622
10092	$ay'^2 + bx^2y' + cxy = 0$	[[_homogeneous, 'class G']]	✓	3.433
10093	$ay'^2 + yy' - x = 0$	[_dAlembert]	✗	703.282
10094	$ay'^2 - yy' - x = 0$	[_dAlembert]	✗	368.971
10095	$xy'^2 - y = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	1.417
10096	$xy'^2 - 2y + x = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	1.859
10097	$xy'^2 - 2y' - y = 0$	[_rational, _dAlembert]	✓	0.897
10098	$xy'^2 + 4y' - 2y = 0$	[_rational, _dAlembert]	✓	1.021
10099	$xy'^2 + xy' - y = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	1.800
10100	$xy'^2 + yy' + a = 0$	[[_homogeneous, 'class G'], _rational, _dAlembert]	✓	0.484

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
10101	$xy'^2 + yy' - x^2 = 0$	[[_homogeneous, 'class G'], _rational]	✓	2.625
10102	$xy'^2 + yy' + x^3 = 0$	[[_homogeneous, 'class G']]	✓	3.509
10103	$xy'^2 + yy' - y^4 = 0$	[[_homogeneous, 'class G']]	✓	16.259
10104	$xy'^2 + (y - 3x)y' + y = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓	3.682
10105	$xy'^2 - yy' + a = 0$	[[_homogeneous, 'class G'], _rational, _Clairaut]	✓	0.438
10106	$xy'^2 - yy' + ay = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	4.836
10107	$xy'^2 + 2yy' - x = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	1.638
10108	$xy'^2 - 2yy' + a = 0$	[[_homogeneous, 'class G'], _rational, _dAlembert]	✓	0.512
10109	$xy'^2 - 2yy' - x = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓	1.399
10110	$xy'^2 - 2yy' + 4x = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	1.529
10111	$xy'^2 - 2yy' + 2y + x = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	1.726
10112	$xy'^2 + ayy' + bx = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓	2.043
10113	$(x + 1)y'^2 - (x + y)y' + y = 0$	[[_1st_order, _with_linear_symmetries], _rational, _dAlembert]	✓	0.572
10114	$(3x + 1)y'^2 - 3(y + 2)y' + 9 = 0$	[[_1st_order, _with_linear_symmetries], _Clairaut]	✓	0.562
10115	$(3x + 5)y'^2 - (3y + x)y' + y = 0$	[[_1st_order, _with_linear_symmetries], _rational, _dAlembert]	✓	0.613

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
10116	$axy'^2 + (bx - ay + c)y' - by = 0$	[[_1st_order, _with_linear_symmetries], _rational, _dAlembert]	✓	0.681
10117	$axy'^2 - (ay + bx - a - b)y' + by = 0$	[[_1st_order, _with_linear_symmetries], _rational, _dAlembert]	✓	0.734
10118	$(a_2x + c_2)y'^2 + (a_1x + b_1y + c_1)y' + a_0x + b_0y + c_0 = 0$	[_rational, _dAlembert]	✗	2.105
10119	$x^2y'^2 - y^4 + y^2 = 0$	[_separable]	✓	2.224
10120	$(xy' + a)^2 - 2ay + x^2 = 0$	[_rational]	✓	86.158
10121	$(xy' + y + 2x)^2 - 4xy - 4x^2 - 4a = 0$	[[_1st_order, '_with_symmetry_[F(x),G(y)]']]	✓	4.301
10122	$y' - 1 = 0$	[_quadrature]	✓	0.464
10123	$x^2y'^2 - 2xyy' + y(1 + y) - x = 0$	[[_1st_order, _with_linear_symmetries], _rational]	✓	3.458
10124	$x^2y'^2 - 2xyy' + y^2(-x^2 + 1) - x^4 = 0$	[_rational, [_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]']]	✓	9.166
10125	$x^2y'^2 - (2xy + a)y' + y^2 = 0$	[[_homogeneous, 'class G'], _rational, _Clairaut]	✓	0.682
10126	$x^2y'^2 + 3xyy' + 2y^2 = 0$	[_separable]	✓	3.073
10127	$x^2y'^2 + 3xyy' + 3y^2 = 0$	[_separable]	✓	0.410
10128	$x^2y'^2 + 4xyy' - 5y^2 = 0$	[_separable]	✓	2.727
10129	$x^2y'^2 - 4x(y + 2)y' + 4y(y + 2) = 0$	[_separable]	✓	0.740
10130	$x^2y'^2 + (x^2y - 2xy + x^3)y' + (y^2 - x^2y)(1 - x) = 0$	[_linear]	✓	2.193
10131	$x^2y'^2 - y(y - 2x)y' + y^2 = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓	150.385
10132	$x^2y'^2 + (ax^2y^3 + b)y' + aby^3 = 0$	[_quadrature]	✓	1.040

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
10133	$(x^2 + 1)y'^2 - 2xyy' + y^2 - 1 = 0$	[[_1st_order, _with_linear_symmetries], _rational, _Clairaut]	✓	0.580
10134	$(x^2 - 1)y'^2 - 1 = 0$	[_quadrature]	✓	0.303
10135	$(x^2 - 1)y'^2 - y^2 + 1 = 0$	[_rational, [_1st_order, ' _with_symmetry_[F(x),G(x)*y+H(x)]']]	✓	1.016
10136	$(-a^2 + x^2)y'^2 + 2xyy' + y^2 = 0$	[_separable]	✓	2.084
10137	$(-a^2 + x^2)y'^2 - 2xyy' - x^2 = 0$	[[_1st_order, ' _with_symmetry_[F(x),G(y)]']]	✓	27.272
10138	$(x^2 + a)y'^2 - 2xyy' + y^2 + b = 0$	[[_1st_order, _with_linear_symmetries], _rational, _Clairaut]	✓	0.982
10139	$(2x^2 + 1)y'^2 + (y^2 + 2xy + x^2 + 2)y' + 2y^2 + 1 = 0$	[_rational]	✓	69.406
10140	$(a^2 - 1)x^2y'^2 + 2xyy' - y^2 + a^2x^2 = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓	73.875
10141	$a x^2y'^2 - 2axy y' + y^2 - a(a - 1)x^2 = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	4.248
10142	$x^3y'^2 + x^2yy' + a = 0$	[[_homogeneous, 'class G']]	✓	5.615
10143	$x(x^2 - 1)y'^2 + 2(-x^2 + 1)yy' + xy^2 - x = 0$	[_rational, [_1st_order, ' _with_symmetry_[F(x),G(x)*y+H(x)]']]	✓	11.103
10144	$x^4y'^2 - xy' - y = 0$	[[_homogeneous, 'class G'], _rational]	✓	1.932
10145	$x^2(-a^2 + x^2)y'^2 - 1 = 0$	[_quadrature]	✓	0.569
10146	$e^{-2x}y'^2 - (y' - 1)^2 + e^{-2y} = 0$	[[_1st_order, ' _with_symmetry_[F(x),G(x)*y+H(x)]']]	✓	15.749
10147	$(y'^2 + y^2) \cos(x)^4 - a^2 = 0$	['y=_G(x,y)']	✓	25.607

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
10148	$d_0(x)y'^2 + 2b_0(x)yy' + c_0(x)y^2 + 2d_0(x)y' + 2e_0(x)y + f_0(x) = 0$	['y=_G(x,y)']	✓	262.454
10149	$yy'^2 - 1 = 0$	[_quadrature]	✓	0.677
10150	$yy'^2 - e^{2x} = 0$	[[_1st_order, _with_linear_symmetries]]	✓	1.345
10151	$yy'^2 + 2xy' - y = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	2.075
10152	$yy'^2 + 2xy' - 9y = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	2.126
10153	$yy'^2 - 2xy' + y = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	1.978
10154	$yy'^2 - 4xy' + y = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	2.592
10155	$yy'^2 - 4a^2xy' + a^2y = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓	5.150
10156	$yy'^2 + axy' + by = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	1.786
10157	$yy'^2 + x^3y' - x^2y = 0$	[[_1st_order, _with_linear_symmetries]]	✓	3.039
10158	$yy'^2 - (y - x)y' - x = 0$	[_quadrature]	✓	3.297
10159	$(x + y)y'^2 + 2xy' - y = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	1.947
10160	$(y - 2x)y'^2 - 2(x - 1)y' + y - 2 = 0$	[[_homogeneous, 'class C'], _dAlembert]	✓	0.977
10161	$2yy'^2 - (4x - 5)y' + 2y = 0$	[[_homogeneous, 'class C'], _rational, _dAlembert]	✓	0.970
10162	$4yy'^2 + 2xy' - y = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	1.854

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
10163	$9yy'^2 + 4x^3y' - 4x^2y = 0$	[[_1st_order, _with_linear_symmetries]]	✓	3.152
10164	$ayy'^2 + (2x - b)y' - y = 0$	[[_homogeneous, 'class C'], _rational, _dAlembert]	✓	0.971
10165	$(ay + b)(1 + y'^2) - c = 0$	[_quadrature]	✓	0.961
10166	$(b_2y + a_2x + c_2)y'^2 + (a_1x + b_1y + c_1)y' + a_0x + b_0y + c_0 = 0$	[_rational, _dAlembert]	✓	419.532
10167	$(ay - x^2)y'^2 + 2xyy'^2 - y^2 = 0$	[_rational]	✓	3.354
10168	$xyy'^2 + (y^2 + x^2)y' + xy = 0$	[_separable]	✓	4.256
10169	$xyy'^2 + (x^{22} - y^2 + a)y' - xy = 0$	[_rational]	✓	19.291
10170	$(2xy - x^2)y'^2 + 2xyy' + 2xy - y^2 = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	4.469
10171	$(2xy - x^2)y'^2 - 6xyy' - y^2 + 2xy = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓	72.466
10172	$axy y'^2 - (y^2a + bx^2 + c)y' + bxy = 0$	[_rational]	✓	1794.732
10173	$y^2y'^2 + y^2 - a^2 = 0$	[_quadrature]	✓	4.722
10174	$y^2y'^2 - 6x^3y' + 4x^2y = 0$	[[_1st_order, _with_linear_symmetries]]	✓	3.204
10175	$y^2y'^2 - 4ayy' + y^2 - 4ax + 4a^2 = 0$	[_rational, [_1st_order, 'with_symmetry_[F(x),G(y)]']]	✓	75.586
10176	$y^2y'^2 + 2xyy' + y^2a + bx + c = 0$	[_rational]	✓	8.560
10177	$y^2y'^2 - 2xyy' + 2y^2 - x^2 + a = 0$	[_rational, [_1st_order, 'with_symmetry_[F(x),G(y)]']]	✓	78.765
10178	$y^2y'^2 + 2axy y' + (-a + 1)y^2 + x^2a + (a - 1)b = 0$	[_rational, [_1st_order, 'with_symmetry_[F(x),G(y)]']]	✓	9.908
10179	$(y^2 - a^2)y'^2 + y^2 = 0$	[_quadrature]	✓	0.936

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
10180	$(y^2 - 2ax + a^2) y'^2 + 2ayy' + y^2 = 0$	['y=_G(x,y)']	✓	88.875
10181	$(y^2 - a^2x^2) y'^2 + 2xyy' + (-a^2 + 1) x^2 = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓	2.964
10182	$(y^2 + (-a + 1) x^2) y'^2 + 2axy' + (-a + 1) y^2 + x^2 = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	317.210
10183	$(y - x)^2 (1 + y'^2) - a^2(y' + 1)^2 = 0$	[[_homogeneous, 'class C'], _dAlembert]	✓	21.971
10184	$3y^2y'^2 - 2xyy' + 4y^2 - x^2 = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓	2.704
10185	$(3y - 2) y'^2 - 4 + 4y = 0$	[_quadrature]	✓	0.625
10186	$(-a^2 + 1) y^2y'^2 - 2a^2xyy' + y^2 - a^2x^2 = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	5.181
10187	$(-b + a) y^2y'^2 - 2bxyy' + y^2a - bx^2 - ab = 0$	[_rational, [_1st_order, '_with_symmetry_[F(x),G(y)']]	✓	10.973
10188	$(y^2a + bx + c) y'^2 - byy' + dy^2 = 0$	['y=_G(x,y)']	✓	88.784
10189	$(ay - bx)^2 (a^2y'^2 + b^2) - c^2(ay' + b)^2 = 0$	[[_homogeneous, 'class C'], _dAlembert]	✓	31.773
10190	$(b_2y + a_2x + c_2)^2 y'^2 + (a_1x + b_1y + c_1) y' + b_0y + a_0 + c_0 = 0$	['y=_G(x,y)']	✓	466.747
10191	$xy^2y'^2 - (y^3 + x^3 - a) y' + x^2y = 0$	[_rational]	✓	14.830
10192	$xy^2y'^2 - 2y^3y' + 2xy^2 - x^3 = 0$	[_separable]	✓	74.629
10193	$x^2(-1 + xy^2) y'^2 + 2x^2y^2(y - x) y' - y^2(x^2y - 1) = 0$	['y=_G(x,y)']	✓	28.098
10194	$(y^4 - a^2x^2) y'^2 + 2a^2xyy' + y^2(y^2 - a^2) = 0$	['y=_G(x,y)']	✓	25.556
10195	$(y^4 + y^2x^2 - x^2) y'^2 + 2xyy' - y^2 = 0$	['y=_G(x,y)']	✓	11.970

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
10196	$9y^4(x^2 - 1)y'^2 - 6xy^5y' - 4x^2 = 0$	[[_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]]]	✓	14.901
10197	$x^2(x^2y^4 - 1)y'^2 + 2x^3y^3(y^2 - x^2)y' - y^2(x^4y^2 - 1) = 0$	['y=_G(x,y)']	✓	30.517
10198	$(a^2\sqrt{y^2 + x^2} - x^2)y'^2 + 2xyy' + a^2\sqrt{y^2 + x^2} - y^2 = 0$	[[_1st_order, _with_linear_symmetries]]	✓	150.368
10199	$(a(y^2 + x^2)^{3/2} - x^2)y'^2 + 2xyy' + a(y^2 + x^2)^{3/2} - y^2 = 0$	[[_1st_order, _with_linear_symmetries]]	✓	44.255
10200	$\sin(y)y'^2 + 2xy'\cos(y)^3 - \sin(y)\cos(y)^4 = 0$	['y=_G(x,y)']	✓	145.789
10201	$y'^2(a\cos(y) + b) - c\cos(y) + d = 0$	[_quadrature]	✓	7.217
10202	$f(y^2 + x^2)(1 + y'^2) - (-y + xy')^2 = 0$	[[_1st_order, _with_linear_symmetries]]	✓	11.793
10203	$(y^2 + x^2)f\left(\frac{x}{\sqrt{y^2 + x^2}}\right)(1 + y'^2) - (-y + xy')^2 = 0$	[[_homogeneous, 'class A']]	✓	4.652
10204	$(y^2 + x^2)f\left(\frac{y}{\sqrt{y^2 + x^2}}\right)(1 + y'^2) - (-y + xy')^2 = 0$	[[_homogeneous, 'class A']]	✓	4.597
10205	$y'^3 - (y - a)^2(y - b)^2 = 0$	[_quadrature]	✓	1.132
10206	$y'^3 - f(x)(y^2a + by + c)^2 = 0$	[[_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]]]	✓	1.797
10207	$y'^3 + y' - y = 0$	[_quadrature]	✓	0.759
10208	$y'^3 + xy' - y = 0$	[[_1st_order, _with_linear_symmetries], _Clairaut]	✓	0.509
10209	$y'^3 - (x + 5)y' + y = 0$	[[_1st_order, _with_linear_symmetries], _Clairaut]	✓	0.560

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
10210	$y'^3 - axy' + x^3 = 0$	[_quadrature]	✓	0.644
10211	$y'^3 - 2yy' + y^2 = 0$	[_quadrature]	✓	1.891
10212	$y'^2 - axyy' + 2y^2a = 0$	[_separable]	✓	0.769
10213	$y'^3 - (y^2 + xy + x^2) y'^2 + (xy^3 + y^2x^2 + x^3y) y' - x^3y^3 = 0$	[_quadrature]	✓	2.175
10214	$y'^3 - xy^4y' - y^5 = 0$	[[_1st_order, _with_linear_symmetries]]	✓	10.570
10215	$y'^3 + ay'^2 + by + abx = 0$	[[_homogeneous, 'class C'], _dAlembert]	✓	1.006
10216	$y'^3 + xy'^2 - y = 0$	[_dAlembert]	✓	2.957
10217	$y'^3 - yy'^2 + y^2 = 0$	[_quadrature]	✓	2.377
10218	$y'^2 - (y^4 + xy^2 + x^2) y'^2 + (xy^6 + x^2y^4 + x^3y^2) y' - x^3y^6 = 0$	['y=_G(x,y)']	✓	38.651
10219	$ay'^3 + by'^2 + cy' - y - d = 0$	[_quadrature]	✓	11.899
10220	$xy'^3 - yy'^2 + a = 0$	[[_1st_order, _with_linear_symmetries], _Clairaut]	✓	0.754
10221	$4xy'^3 - 6yy'^2 + 3y - x = 0$	[[_1st_order, _with_linear_symmetries], _dAlembert]	✓	0.971
10222	$8xy'^3 - 12yy'^2 + 9y = 0$	[[_1st_order, _with_linear_symmetries], _dAlembert]	✓	0.951
10223	$(-a^2 + x^2) y'^3 + bx(-a^2 + x^2) y'^2 + y' + bx = 0$	[_quadrature]	✓	0.602
10224	$x^3y'^3 - 3x^2yy'^2 + (3xy^2 + x^6) y' - y^3 - 2x^5y = 0$	[[_1st_order, _with_linear_symmetries]]	✓	11.024
10225	$2(xy' + y)^3 - yy' = 0$	[[_homogeneous, 'class G']]	✓	12.170

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
10226	$y'^3 \sin(x) - (y \sin(x) - \cos(x)^2) y'^2 - (y \cos(x)^2 + \sin(x)) y' + y \sin(x) = 0$	[_quadrature]	✓	1.460
10227	$2yy'^3 - yy'^2 + 2xy' - x = 0$	[_quadrature]	✓	2.933
10228	$y^2 y'^3 + 2xy' - y = 0$	[[_1st_order, _with_linear_symmetries]]	✓	108.102
10229	$16y^2 y'^3 + 2xy' - y = 0$	[[_1st_order, _with_linear_symmetries]]	✓	107.875
10230	$xy^2 y'^3 - y^3 y'^2 + x(x^2 + 1) y' - x^2 y = 0$	['y=_G(x,y)']	✓	240.425
10231	$x^7 y^2 y'^3 - (3x^6 y^3 - 1) y'^2 + 3x^5 y^4 y' - x^4 y^5 = 0$	[[_homogeneous, 'class G']]	✓	115.912
10232	$y'^4 - (y - a)^3 (y - b)^2 = 0$	[_quadrature]	✓	1.016
10233	$y'^4 + 3(x - 1) y'^2 - 3(2y - 1) y' + 3x = 0$	unknown	✓	35.375
10234	$y'^4 - 4y(xy' - 2y)^2 = 0$	[[_homogeneous, 'class G']]	✓	0.734
10235	$y'^6 - (y - a)^4 (y - b)^3 = 0$	[_quadrature]	✓	1.520
10236	$x^2 (1 + y'^2)^3 - a^2 = 0$	[_quadrature]	✓	2.112
10237	$y'^r - ay^s - bx^{\frac{rs}{r-s}} = 0$	[[_homogeneous, 'class G']]	✓	7.684
10238	$y'^n - f(x)^n (y - a)^{n+1} (y - b)^{n-1} = 0$	[_separable]	✓	14.188
10239	$y'^m - f(x)g(y) = 0$	[[_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)']]]	✓	2.411
10240	$ay'^m + by'^n - y = 0$	[_quadrature]	✓	1.790
10241	$x^{n-1} y'^n - nxy' + y = 0$	['y=_G(x,y)']	✓	1.808
10242	$\sqrt{1 + y'^2} + xy' - y = 0$	[[_1st_order, _with_linear_symmetries], _rational, _Clairaut]	✓	1.469
10243	$\sqrt{1 + y'^2} + xy'^2 + y = 0$	[_dAlembert]	✓	46.306

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

*Continued from previous page*

#	ODE	CAS classification	Solved?	time (sec)
10244	$x\left(\sqrt{1+y'^2}+y'\right)-y=0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓	35.556
10245	$ax\sqrt{1+y'^2}+xy'-y=0$	[[_homogeneous, 'class A', _dAlembert]	✓	45.781
10246	$y\sqrt{1+y'^2}-ayy'-ax=0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓	14.077
10247	$ay\sqrt{1+y'^2}-2xyy'+y^2-x^2=0$	[_rational]	✓	20.806
10248	$f(y^2+x^2)\sqrt{1+y'^2}-xy'+y=0$	[[_1st_order, _with_linear_symmetries]]	✓	13.212
10249	$a(y^3+1)^{1/3}+bxy'-y=0$	[_dAlembert]	✓	970.635
10250	$\ln(y')+xy'+ay+b=0$	[[_1st_order, _with_linear_symmetries], _dAlembert]	✓	3.146
10251	$\ln(y')+a(-y+xy')=0$	[[_1st_order, _with_linear_symmetries], _Clairaut]	✓	1.637
10252	$y\ln(y')+y'-y\ln(y)-xy=0$	[_separable]	✓	3.459
10253	$\sin(y')+y'-x=0$	[_quadrature]	✓	0.496
10254	$a\cos(y')+by'+x=0$	[_quadrature]	✓	0.453
10255	$y'^2\sin(y')-y=0$	[_quadrature]	✓	1.477
10256	$(1+y'^2)\sin(-y+xy')^2-1=0$	[_Clairaut]	✓	7.583
10257	$(1+y'^2)(\arctan(y')+ax)+y'=0$	[_quadrature]	✓	1.110
10258	$ax^n f(y')+xy'-y=0$	['y=_G(x,y)']	✓	1.040
10259	$(-y+xy')^n f(y')+yg(y')+xh(y')=0$	['x=_G(y,y)']	✓	4.898
10260	$f(xy'^2)+2xy'-y=0$	['y=_G(x,y)']	✓	0.427

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
10261	$f\left(x - \frac{3y'^2}{2}\right) + y'^3 - y = 0$	[[_1st_order, '_with_symmetry_[F(x),G(y)]']]	✓	0.848
10262	$y' f(xyy' - y^2) - x^2y' + xy = 0$	[NONE]	✓	0.987
10263	$\phi(f(x, y, y'), g(x, y, y')) = 0$	[NONE]	✓	2.128
10264	$y' = F\left(\frac{y}{x+a}\right)$	[[_homogeneous, 'class C'], _dAlembert]	✓	0.907
10265	$y' = 2x + F(y - x^2)$	[[_1st_order, _with_linear_symmetries]]	✓	0.669
10266	$y' = -\frac{ax}{2} + F\left(y + \frac{x^2a}{4} + \frac{bx}{2}\right)$	[[_1st_order, _with_linear_symmetries]]	✓	0.969
10267	$y' = F(y e^{-bx}) e^{bx}$	[[_1st_order, _with_linear_symmetries]]	✓	0.898
10268	$y' = \frac{1 + 2F\left(\frac{4x^2y+1}{4x^2}\right) x}{2x^3}$	[[_1st_order, '_with_symmetry_[F(x),G(x)]']]	✗	2.283
10269	$y' = \frac{1 + F\left(\frac{axy+1}{ax}\right) a x^2}{a x^2}$	[[_1st_order, '_with_symmetry_[F(x),G(y)]']]	✗	2.415
10270	$y' = -\frac{\left(x^2a - 2F\left(y + \frac{ax^4}{8}\right)\right) x}{2}$	[[_1st_order, '_with_symmetry_[F(x),G(x)]']]	✗	2.457
10271	$y' = \frac{2a}{y + 2F(y^2 - 4ax) a}$	[[_1st_order, _with_linear_symmetries]]	✓	1.000
10272	$y' = F(\ln(\ln(y)) - \ln(x)) y$	[[_1st_order, '_with_symmetry_[F(x),G(y)]']]	✗	3.198
10273	$y' = \frac{F\left(\frac{y}{\sqrt{x^2+1}}\right) x}{\sqrt{x^2+1}}$	[[_1st_order, '_with_symmetry_[F(x),G(y)]']]	✗	3.521
10274	$y' = \frac{\left(x^{3/2} + 2F\left(y - \frac{x^3}{6}\right)\right) \sqrt{x}}{2}$	[[_1st_order, '_with_symmetry_[F(x),G(x)]']]	✗	2.788

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
10275	$y' = \frac{x + F(-(x-y)(x+y))}{y}$	[[_1st_order, '_with_symmetry_[F(x),G(y)]']]	✗	2.119
10276	$y' = \frac{F\left(-\frac{-1+y\ln(x)}{y}\right) y^2}{x}$	[[_1st_order, '_with_symmetry_[F(x),G(y)]']]	✓	1.478
10277	$y' = \frac{x}{-y + F(y^2 + x^2)}$	[[_1st_order, '_with_symmetry_[F(x),G(y)]']]	✗	2.348
10278	$y' = \frac{F\left(\frac{y^2 a + b x^2}{a}\right) x}{\sqrt{a} y}$	[[_1st_order, '_with_symmetry_[F(x),G(y)]']]	✗	2.278
10279	$y' = \frac{6x^3 + 5\sqrt{x} + 5F\left(y - \frac{2x^3}{5} - 2\sqrt{x}\right)}{5x}$	[[_1st_order, '_with_symmetry_[F(x),G(x)]']]	✗	3.312
10280	$y' = \frac{F(y^{3/2} - \frac{3e^x}{2}) e^x}{\sqrt{y}}$	[[_1st_order, '_with_symmetry_[F(x),G(y)]']]	✗	2.845
10281	$y' = \frac{F\left(-\frac{-y^2+b}{x^2}\right) x}{y}$	[[_1st_order, '_with_symmetry_[F(x),G(y)]']]	✗	2.072
10282	$y' = \frac{F\left(\frac{xy^2+1}{x}\right)}{yx^2}$	[[_1st_order, '_with_symmetry_[F(x),G(y)]']]	✗	2.207
10283	$y' = \frac{-2x^2 + x + F(y + x^2 - x)}{x}$	[[_1st_order, '_with_symmetry_[F(x),G(x)]']]	✓	1.416
10284	$y' = \frac{2a}{x^2 \left(-y + 2F\left(\frac{xy^2-4a}{x}\right) a\right)}$	[[_1st_order, '_with_symmetry_[F(x),G(y)]']]	✓	2.503
10285	$y' = \frac{y + F\left(\frac{y}{x}\right)}{x-1}$	[[_homogeneous, 'class D']]	✓	1.676

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
10286	$y' = \frac{-x + F(y^2 + x^2)}{y}$	[[_1st_order, '_with_symmetry_[F(x),G(y)]']]	✗	2.325
10287	$y' = \frac{F\left(-\frac{-1+2y\ln(x)}{y}\right) y^2}{x}$	[[_1st_order, '_with_symmetry_[F(x),G(y)]']]	✓	1.480
10288	$y' = \frac{F(-(x-y)(x+y)) x}{y}$	[[_1st_order, '_with_symmetry_[F(x),G(y)]']]	✗	2.117
10289	$y' = \frac{y^2\left(2 + F\left(\frac{x^2-y}{yx^2}\right) x^2\right)}{x^3}$	[NONE]	✗	1.884
10290	$y' = \frac{2F(y + \ln(2x + 1)) x + F(y + \ln(2x + 1))}{2x + 1}$	[[_1st_order, '_with_symmetry_[F(x),G(y)]']]	✗	2.857
10291	$y' = \frac{2y^3}{1 + 2F\left(\frac{4xy^2+1}{y^2}\right) y}$	['x=_G(y,y)']	✗	2.306
10292	$y' = -\frac{y^2\left(2x - F\left(-\frac{xy-2}{2y}\right)\right)}{4x}$	[NONE]	✓	2.204
10293	$y' = -\left(-e^{-x^2} + x^2 e^{-x^2} - F\left(y - \frac{x^2 e^{-x^2}}{2}\right)\right) x$	[[_1st_order, '_with_symmetry_[F(x),G(x)]']]	✗	3.083
10294	$y' = \frac{2y + F\left(\frac{y}{x^2}\right) x^3}{x}$	[[_1st_order, '_with_symmetry_[F(x),G(y)]']]	✗	2.114
10295	$y' = \frac{\sqrt{y}}{\sqrt{y} + F\left(\frac{x-y}{\sqrt{y}}\right)}$	[[_1st_order, '_with_linear_symmetries]]	✓	1.443
10296	$y' = \frac{-3x^2 y + F(x^3 y)}{x^3}$	[[_1st_order, '_with_symmetry_[F(x),G(y)]']]	✗	2.220
10297	$y' = \frac{y + F\left(\frac{y}{x}\right) x^2}{x}$	[[_homogeneous, 'class D']]	✓	1.094

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
10298	$y' = \frac{-2x - y + F(x(x + y))}{x}$	[[_1st_order, '_with_symmetry_[F(x),G(y)]']]	✗	2.375
10299	$y' = \frac{(y e^{-\frac{x^2}{4}} x + 2F(y e^{-\frac{x^2}{4}})) e^{\frac{x^2}{4}}}{2}$	[[_1st_order, '_with_symmetry_[F(x),G(y)]']]	✓	1.892
10300	$y' = \frac{x + y + F\left(\frac{-y+x \ln(x)}{x}\right) x^2}{x}$	[[_1st_order, '_with_symmetry_[F(x),G(y)]']]	✗	2.629
10301	$y' = \frac{x(a - 1)(a + 1)}{y + F\left(\frac{y^2}{2} - \frac{a^2 x^2}{2} + \frac{x^2}{2}\right) a^2 - F\left(\frac{y^2}{2} - \frac{a^2 x^2}{2} + \frac{x^2}{2}\right)}$	[[_1st_order, '_with_symmetry_[F(x),G(y)]']]	✗	2.493
10302	$y' = \frac{y}{x(-1 + F(xy)y)}$	[[_1st_order, '_with_symmetry_[F(x),G(y)]']]	✗	232.320
10303	$y' = -\frac{-x^2 + 2x^3y - F((xy - 1)x)}{x^4}$	[[_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]']]	✓	1.508
10304	$y' = \frac{F\left(\frac{(y+3)e^{\frac{3x^2}{2}}}{3y}\right) xy^2 e^{3x^2} e^{-\frac{9x^2}{2}}}{9}$	[[_1st_order, '_with_symmetry_[F(x),G(y)]']]	✗	3.214
10305	$y' = \frac{(1 + y)((y - \ln(1 + y) - \ln(x))x + 1)}{yx}$	['y=_G(x,y)']	✗	3.967
10306	$y' = \frac{6y}{8y^4 + 9y^3 + 12y^2 + 6y - F\left(-\frac{y^4}{3} - \frac{y^3}{2} - y^2 - y + x\right)}$	['x=_G(y,y)']	✗	2.777
10307	$y' = \frac{y^2 + 2xy + x^2 + e^{2F(-(x-y)(x+y))}}{y^2 + 2xy + x^2 - e^{2F(-(x-y)(x+y))}}$	[[_1st_order, '_with_linear_symmetries]]	✓	2.514
10308	$y' = \frac{1}{y + \sqrt{x}}$	[[_homogeneous, 'class G'], [_Abel, '2nd type', 'class C']]	✓	2.537

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
10309	$y' = \frac{1}{y + 2 + \sqrt{3x + 1}}$	[[_1st_order, _with_linear_symmetries], [_Abel, '2nd type', 'class C']]	✓	5.191
10310	$y' = \frac{x^2}{y + x^{3/2}}$	[[_1st_order, _with_linear_symmetries], _rational, [_Abel, '2nd type', 'class C']]	✓	5.468
10311	$y' = \frac{x^{5/3}}{y + x^{4/3}}$	[[_homogeneous, 'class G'], _rational, [_Abel, '2nd type', 'class C']]	✓	4.710
10312	$y' = \frac{ix^2(i - 2\sqrt{-x^3 + 6y})}{2}$	[[_1st_order, '_with_symmetry_[F(x),G(y)]']]	✗	36.171
10313	$y' = \frac{x}{y + \sqrt{x^2 + 1}}$	[_rational, [_Abel, '2nd type', 'class C']]	✗	4.415
10314	$y' = \frac{(-1 + y \ln(x))^2}{x}$	[_Riccati]	✓	2.446
10315	$y' = \frac{x(-2 + 3\sqrt{x^2 + 3y})}{3}$	[[_1st_order, '_with_symmetry_[F(x),G(y)]']]	✓	3.028
10316	$y' = \frac{(-1 + 2y \ln(x))^2}{x}$	[_Riccati]	✓	2.769
10317	$y' = \frac{e^{bx}}{y e^{-bx} + 1}$	[[_1st_order, _with_linear_symmetries], [_Abel, '2nd type', 'class C']]	✓	3.391
10318	$y' = \frac{x^2(1 + 2\sqrt{x^3 - 6y})}{2}$	[[_1st_order, '_with_symmetry_[F(x),G(y)]']]	✓	3.608
10319	$y' = \frac{e^x}{y e^{-x} + 1}$	[[_1st_order, _with_linear_symmetries], [_Abel, '2nd type', 'class C']]	✓	3.342
10320	$y' = \frac{e^{\frac{2x}{3}}}{y e^{-\frac{2x}{3}} + 1}$	[[_1st_order, _with_linear_symmetries], [_Abel, '2nd type', 'class C']]	✓	3.067

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
10321	$y' = \frac{1 + 2x^5\sqrt{4x^2y + 1}}{2x^3}$	[[_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]']]	✗	36.740
10322	$y' = \frac{x(x + 2\sqrt{x^3 - 6y})}{2}$	[[_1st_order, '_with_symmetry_[F(x),G(x)]']]	✓	3.711
10323	$y' = (-\ln(y) + x^2)y$	[[_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]']]	✓	1.483
10324	$y' = \frac{e^{-x^2}x}{ye^{x^2} + 1}$	[[_Abel, '2nd type', 'class C', [_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]']]	✗	2.764
10325	$y' = -(-\ln(\ln(y)) + \ln(x))y$	['x=_G(y,y)']	✗	2.968
10326	$y' = (-\ln(\ln(y)) + \ln(x))^2y$	['y=_G(x,y)']	✗	3.476
10327	$y' = \frac{y}{\ln(\ln(y)) - \ln(x) + 1}$	['y=_G(x,y)']	✗	3.609
10328	$y' = \frac{1 + 2\sqrt{4x^2y + 1}x^4}{2x^3}$	[[_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]']]	✗	36.699
10329	$y' = \frac{(-y^2 + 4ax)^2}{y}$	[_rational]	✗	2.860
10330	$y' = \frac{x(-2 + 3x\sqrt{x^2 + 3y})}{3}$	[[_1st_order, '_with_symmetry_[F(x),G(x)]']]	✓	3.030
10331	$y' = -\frac{x^2(ax - 2\sqrt{a(ax^4 + 8y)})}{2}$	[[_1st_order, '_with_symmetry_[F(x),G(x)]']]	✗	5.619
10332	$y' = (-\ln(y) + x)y$	[[_1st_order, _with_linear_symmetries]]	✓	1.056
10333	$y' = \frac{x^3 + x^2 + 2\sqrt{x^3 - 6y}}{2x + 2}$	[[_1st_order, '_with_symmetry_[F(x),G(x)]']]	✓	3.084

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
10334	$y' = \frac{(y^2 a + b x^2)^2 x}{a^{5/2} y}$	[_rational, [_1st_order, ‘_with_symmetry_[F(x),G(y)]’]]	✗	3.073
10335	$y' = -\frac{x^3(\sqrt{a}x + \sqrt{a} - 2\sqrt{a}x^4 + 8y)}{2(x+1)}\sqrt{a}$	[_1st_order, ‘_with_symmetry_[F(x),G(x)]’]]	✗	5.883
10336	$y' = -\frac{x}{4} + \frac{1}{4} + x\sqrt{x^2 - 2x + 1 + 8y}$	[[_1st_order, ‘_with_symmetry_[F(x),G(x)]’]]	✓	3.411
10337	$y' = -\frac{x}{2} - \frac{a}{2} + x\sqrt{x^2 + 2ax + a^2 + 4y}$	[[_1st_order, ‘_with_symmetry_[F(x),G(x)]’]]	✓	3.212
10338	$y' = \frac{(\ln(y) + x^2)y}{x}$	[[_1st_order, ‘_with_symmetry_[F(x),G(x)*y+H(x)]’]]	✓	1.536
10339	$y' = \frac{2a + x\sqrt{-y^2 + 4ax}}{y}$	[‘y=_G(x,y)’]	✗	37.254
10340	$y' = -\frac{x}{2} + 1 + x\sqrt{x^2 - 4x + 4y}$	[[_1st_order, ‘_with_symmetry_[F(x),G(x)]’]]	✓	3.374
10341	$y' = -\frac{2x^2 + 2x - 3\sqrt{x^2 + 3y}}{3(x+1)}$	[[_1st_order, ‘_with_symmetry_[F(x),G(x)]’]]	✓	2.592
10342	$y' = \frac{y^3 e^{-\frac{4x}{3}}}{y e^{-\frac{2x}{3}} + 1}$	[[_1st_order, _with_linear_symmetries], [_Abel, ‘2nd type’, ‘class C’]]	✓	2.530
10343	$y' = \frac{(\ln(y) + x^3)y}{x}$	[[_1st_order, ‘_with_symmetry_[F(x),G(x)*y+H(x)]’]]	✓	1.488
10344	$y' = -\frac{x}{4} + \frac{1}{4} + x^2\sqrt{x^2 - 2x + 1 + 8y}$	[[_1st_order, ‘_with_symmetry_[F(x),G(x)]’]]	✓	3.389
10345	$y' = -\frac{x^2 - 1 - 4\sqrt{x^2 - 2x + 1 + 8y}}{4(x+1)}$	[[_1st_order, ‘_with_symmetry_[F(x),G(x)]’]]	✓	2.432

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
10346	$y' = \frac{-\frac{ax}{2} - \frac{b}{2}}{+x\sqrt{a^2x^2 + 2abx + b^2 + 4ay - 4c}}$	[[_1st_order, '_with_symmetry_[F(x),G(x)]']]	✓	3.262
10347	$y' = \frac{-\frac{x}{2} - \frac{a}{2}}{+x^2\sqrt{x^2 + 2ax + a^2 + 4y}}$	[[_1st_order, '_with_symmetry_[F(x),G(x)]']]	✓	3.162
10348	$y' = \frac{-\frac{ax}{2} - \frac{b}{2}}{+x^2\sqrt{a^2x^2 + 2abx + b^2 + 4ay - 4c}}$	[[_1st_order, '_with_symmetry_[F(x),G(x)]']]	✓	3.328
10349	$y' = \frac{x}{2} + \frac{1}{2} + x^2\sqrt{x^2 + 2x + 1 - 4y}$	[[_1st_order, '_with_symmetry_[F(x),G(x)]']]	✓	3.184
10350	$y' = \frac{2a + x^2\sqrt{-y^2 + 4ax}}{y}$	['y=_G(x,y)']	✗	35.528
10351	$y' = -\frac{x}{2} + 1 + x^2\sqrt{x^2 - 4x + 4y}$	[[_1st_order, '_with_symmetry_[F(x),G(x)]']]	✓	3.434
10352	$y' = \frac{(\sqrt{a}x^4 + \sqrt{a}x^3 - 2\sqrt{a}x^4 + 8y)\sqrt{a}}{2(x+1)}$	[[_1st_order, '_with_symmetry_[F(x),G(x)]']]	✗	37.449
10353	$y' = (-\ln(y) + 1 + x^2 + x^3)y$	[[_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]']]	✓	2.493
10354	$y' = \frac{y^3e^{-2bx}}{ye^{-bx} + 1}$	[[_1st_order, _with_linear_symmetries], [_Abel, '2nd type', 'class C']]	✓	1.746
10355	$y' = \frac{y^3e^{-2x}}{ye^{-x} + 1}$	[[_1st_order, _with_linear_symmetries], [_Abel, '2nd type', 'class C']]	✓	2.549
10356	$y' = \frac{(-2y^{3/2} + 3e^x)^2 e^x}{4\sqrt{y}}$	[[_1st_order, '_with_symmetry_[F(x),G(y)]']]	✗	4.018

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
10357	$y' = \frac{ix \left( i - 2\sqrt{-x^2 + 4 \ln(a) + 4 \ln(y)} \right)}{2}$	[[_1st_order, _with_symmetry_[F(x),G(y)]]]	✗	5.522
10358	$y' = \frac{(xy^2 + 1)^2}{yx^4}$	[_rational]	✗	2.663
10359	$y' = \frac{x^2(3x + \sqrt{-9x^4 + 4y^3})}{y^2}$	['y=_G(x,y)']	✗	45.205
10360	$y' = \frac{-\sin(2y) + \cos(2y)x^2 + x^2}{2x}$	['y=_G(x,y)']	✓	2.314
10361	$y' = -\frac{x^2 - x - 2 - 2\sqrt{x^2 - 4x + 4y}}{2(x + 1)}$	[[_1st_order, _with_symmetry_[F(x),G(x)]]]	✓	2.561
10362	$y' = \frac{y + x^3 a e^x + a x^4 + a x^3 - xy^2 e^x - y^2}{x}$	[[_2_homogeneous, _Riccati], 'class D']	✓	2.553
10363	$y' = \frac{x + 1 + 2x^6 \sqrt{4x^2 y + 1}}{2x^3 (x + 1)}$	[[_1st_order, _with_symmetry_[F(x),G(x)*y+H(x)]]]	✗	6.581
10364	$y' = \frac{y + x^3 a \ln(x + 1) + a x^4 + a x^3 - xy^2 \ln(x + 1) - y^2}{x}$	[[_2_homogeneous, _Riccati], 'class D']	✓	2.826
10365	$y' = \frac{x^2(x + 1 + 2x\sqrt{x^3 - 6y})}{2x + 2}$	[[_1st_order, _with_symmetry_[F(x),G(x)]]]	✗	5.085
10366	$y' = \frac{y + x^3 \ln(x) + x^4 + x^3 + 7xy^2 \ln(x)}{x}$	[[_2_homogeneous, _Riccati], 'class D']	✓	5.296
10367	$y' = \frac{x^2 + 2x + 1 + 2\sqrt{x^2 + 2x + 1 - 4y}}{2x + 2}$	[[_1st_order, _with_symmetry_[F(x),G(x)]]]	✓	2.437
10368	$y' = \frac{y + x^3 b \ln\left(\frac{1}{x}\right) + x^4 b + b x^3 + xay^2 \ln\left(\frac{1}{x}\right) + x^2 ay^2 + axy^2}{x}$	[[_2_homogeneous, _Riccati], 'class D']	✓	5.579

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
10369	$y' = \frac{2a}{x(-xy + 2axy^2 - 8a^2)}$	[[_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓	2.258
10370	$y' = \frac{y(-1 + \ln(x(x+1)))yx^4 - \ln(x(x+1))x^3}{x}$	[Bernoulli]	✓	5.179
10371	$y' = \frac{y + \sqrt{y^2 + x^2}x^2}{x}$	[[_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]]]	✗	8.983
10372	$y' = \frac{y + \ln((x-1)(x+1))x^3 + 7\ln((x-1)(x+1))xy^2}{x}$	[[_homogeneous, 'class D'], _Riccati]	✓	2.898
10373	$y' = \frac{y^3x e^{2x^2}}{y e^{x^2} + 1}$	[[_Abel, '2nd type', 'class C'], [_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]]]	✗	3.013
10374	$y' = \frac{y - \ln\left(\frac{x+1}{x-1}\right)x^3 + \ln\left(\frac{x+1}{x-1}\right)xy^2}{x}$	[[_homogeneous, 'class D'], _Riccati]	✓	3.150
10375	$y' = \frac{y + e^{\frac{x+1}{x-1}}x^3 + e^{\frac{x+1}{x-1}}xy^2}{x}$	[[_homogeneous, 'class D'], _Riccati]	✓	3.253
10376	$y' = \frac{xy - y - e^{x+1}x^3 + e^{x+1}xy^2}{(x-1)x}$	[[_homogeneous, 'class D'], _Riccati]	✓	2.520
10377	$y' = \frac{-x^2 + 1 + 4x^3\sqrt{x^2 - 2x + 1} + 8y}{4x + 4}$	[[_1st_order, '_with_symmetry_[F(x),G(x)]]]	✗	5.997
10378	$y' = \frac{-\sin(2y) + \cos(2y)x^3 + x^3}{2x}$	['y=_G(x,y)']	✓	2.504
10379	$y' = \frac{y + x^3\sqrt{y^2 + x^2}}{x}$	[[_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]]]	✗	3.072
10380	$y' = (1 + y^2e^{-2bx} + y^3e^{-3bx})e^{bx}$	[[_1st_order, _with_linear_symmetries], _Abel]	✓	1.616
10381	$y' = \frac{x + 1 + 2\sqrt{4x^2y + 1}x^3}{2x^3(x+1)}$	[[_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]]]	✗	5.288

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
10382	$y' = \frac{y \ln(x-1) + x^4 + x^3 + y^2 x^2 + xy^2}{\ln(x-1)x}$	[[_homogeneous, 'class D', _Riccati]	✓	2.724
10383	$y' = \frac{y \ln(x-1) + e^{x+1}x^3 + 7e^{x+1}xy^2}{\ln(x-1)x}$	[[_homogeneous, 'class D', _Riccati]	✓	3.714
10384	$y' = (1 + y^2 e^{-\frac{4x}{3}} + y^3 e^{-2x}) e^{\frac{2x}{3}}$	[[_1st_order, _with_linear_symmetries], _Abel]	✓	2.192
10385	$y' = (1 + y^2 e^{-2x} + y^3 e^{-3x}) e^x$	[[_1st_order, _with_linear_symmetries], _Abel]	✓	1.661
10386	$y' = \frac{x(-2x - 2 + 3x^2 \sqrt{x^2 + 3y})}{3x + 3}$	[[_1st_order, '_with_symmetry_[F(x),G(x)]']]	✗	5.233
10387	$y' = \frac{1}{x(xy^2 + 1 + x)y}$	[[_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓	1.795
10388	$y' = \frac{2x e^x - 2x - \ln(x) - 1 + x^4 \ln(x) + x^4 - 2yx^2 \ln(x) - 2x^2 y + y^2 \ln(x) + y^2}{e^x - 1}$	[[_1st_order, '_with_symmetry_[F(x),G(x)]'], _Riccati]	✗	17.802
10389	$y' = \frac{-y e^x + xy - x^3 \ln(x) - x^3 - xy^2 \ln(x)}{(-e^x + x)x}$	[[_homogeneous, 'class D', _Riccati]	✓	3.354
10390	$y' = \frac{y(1 - x + yx^2 \ln(x) + x^3 y - x \ln(x))}{(x-1)x}$	[_Bernoulli]	✓	3.230
10391	$y' = \frac{y \ln(x)x - y + 2x^5 b + 2x^3 a y^2}{(x \ln(x) - 1)x}$	[[_homogeneous, 'class D', _Riccati]	✓	3.109
10392	$y' = \frac{(\ln(y) + x + x^3 + x^4)y}{x}$	[[_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]']]	✓	1.949
10393	$y' = \frac{(-\ln(y-1) + \ln(1+y) + 2 \ln(x))y}{x(1+y)}$	['y = G(x,y)']	✗	20.075

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
10394	$y' = \frac{(-\ln(y-1) + \ln(1+y) + 2\ln(x))^2}{16}$	['y=_G(x,y)']	✗	44.592
10395	$y' = \frac{(-y^2 + 4ax)^3}{(-y^2 + 4ax - 1)y}$	[_rational]	✗	2.840
10396	$y' = \frac{2ax + 2a + x^3\sqrt{-y^2 + 4ax}}{(x+1)y}$	['y=_G(x,y)']	✗	43.694
10397	$y' = \frac{-\ln(x) + e^{\frac{1}{x}} + 4x^2y + 2x + 2xy^2 + 2x^3}{\ln(x) - e^{\frac{1}{x}}}$	[[_3_1st_order, _with_symmetry_[F(x),G(x)]', _Riccati]	✓	211.440
10398	$y' = -\frac{(\ln(y)x + \ln(y) - 1)y}{x+1}$	[[_1st_order, _with_symmetry_[F(x),G(x)*y+H(x)]']]	✗	2.881
10399	$y' = \frac{x^2 + 2x + 1 + 2x^3\sqrt{x^2 + 2x + 1} - 4y}{2x + 2}$	[[_1st_order, _with_symmetry_[F(x),G(x)]']]	✗	6.314
10400	$y' = \frac{-bya + b^2 + ab + b^2x - ba\sqrt{x} - a^2}{a(-ay + b + a + bx - a\sqrt{x})}$	[[_1st_order, _with_linear_symmetries], _rational, [_Abel, '2nd type', 'class A']]	✓	2.366
10401	$y' = \frac{y(-\ln(\frac{1}{x}) + e^x + yx^2 \ln(x) + x^3y)}{(-\ln(\frac{1}{x}) + e^x)x}$	[_Bernoulli][x^2]	✓	4.112
10402	$y' = \frac{-x^2 + x + 2 + 2x^3\sqrt{x^2 - 4x + 4y}}{2x + 2}$	[[_1st_order, _with_symmetry_[F(x),G(x)]']]	✗	5.675
10403	$y' = \frac{3x^4 + 3x^3 + \sqrt{9x^4 - 4y^3}}{(x+1)y^2}$	[_rational]	✗	38.407
10404	$y' = \frac{x^2 + x + ax + a - 2\sqrt{x^2 + 2ax + a}}{2(x+1)}$	[[_1st_order, _with_symmetry_[F(x),G(x)]']]	✓	2.633

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
10405	$y' = (1 + y^2 e^{2x^2} + y^3 e^{3x^2}) e^{-x^2} x$	[_Abel]	✓	2.204
10406	$y' = \frac{y(-e^x + \ln(2x) x^2 y - \ln(2x) x) e^{-x}}{x}$	[_Bernoulli]	✓	6.671
10407	$y' = \frac{x^3(3x + 3 + \sqrt{9x^4 - 4y^3})}{(x + 1) y^2}$	['y=_G(x,y)']	✗	37.375
10408	$y' = \frac{(18x^{3/2} + 36y^2 - 12x^3 y + x^6) \sqrt{x}}{36}$	[[_1st_order, '_with_symmetry_[F(x),G(x)]', _Riccati]	✓	4.223
10409	$y' = -\frac{y^3}{(-1 + 2y \ln(x) - y) x}$	[[_1st_order, '_with_symmetry_[F(x)*G(y),0]', [_Abel, '2nd type', 'class C']]	✓	2.308
10410	$y' = \frac{2a}{y + 2ay^4 - 16a^2xy^2 + 32a^3x^2}$	[[_1st_order, _with_linear_symmetries]]	✓	1.848
10411	$y' = -\frac{y^3}{(-1 + y \ln(x) - y) x}$	[[_1st_order, '_with_symmetry_[F(x)*G(y),0]', [_Abel, '2nd type', 'class C']]	✓	2.209
10412	$y' = \frac{-\ln(x) + 2 \ln(2x) xy + \ln(2x) + \ln(2x) x^2}{\ln(x)}$	[[_1st_order, '_with_symmetry_[F(x),G(x)]', _Riccati]	✓	5.118
10413	$y' = -\frac{bya - bc + b^2x + ba\sqrt{x} - a^2}{a(ay - c + bx + a\sqrt{x})}$	[[_1st_order, _with_linear_symmetries], _rational, [_Abel, '2nd type', 'class A']]	✓	2.151
10414	$y' = \frac{(2x + 2 + y) y}{(\ln(y) + 2x - 1) (x + 1)}$	['x=_G(y,y)']	✗	2.907
10415	$y' = \frac{(x^3 + 3y^2) y}{(6y^2 + x) x}$	[_rational, [_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]']]	✓	1.629

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
10416	$y' = \frac{y(x-y)}{x(x-y^3)}$	[_rational]	✓	1.372
10417	$y' = \frac{(2y^{3/2} - 3e^x)^3 e^x}{4(2y^{3/2} - 3e^x + 2)\sqrt{y}}$	[[_1st_order, '_with_symmetry_[F(x),G(y)]']]	✗	6.950
10418	$y' = \frac{1+2y}{x(-2+xy^2+2xy^3)}$	[_rational, [_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓	2.574
10419	$y' = \frac{-x^2 - x - ax - a + 2x^3\sqrt{x^2 + 2ax} + a^2 + 4y}{2x + 2}$	[[_1st_order, '_with_symmetry_[F(x),G(x)]']]	✗	6.731
10420	$y' = \frac{2x \sin(x) - \ln(2x) + \ln(2x)x^4 - 2 \ln(2x)x^2 y + \ln(2x)y^2}{\sin(x)}$	[[_1st_order, '_with_symmetry_[F(x),G(x)]'], _Riccati]	✗	136.747
10421	$y' = \frac{(-\ln(y)x - \ln(y) + x^3)y}{x+1}$	[[_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]']]	✗	2.946
10422	$y' = \frac{(-1 + 2y \ln(x))^3}{(-1 + 2y \ln(x) - y)x}$	[[_1st_order, '_with_symmetry_[F(x),G(y)]'], [_Abel, '2nd type', 'class C']]	✓	2.949
10423	$y' = \frac{2x^2 + 2x + x^4 - 2x^2y - 1 + y^2}{x+1}$	[_rational, [_1st_order, '_with_symmetry_[F(x),G(x)]'], _Riccati]	✓	2.676
10424	$y' = \frac{x(-1+x-2xy+2x^3)}{x^2-y}$	[_rational, [_1st_order, '_with_symmetry_[F(x),G(x)]'], [_Abel, '2nd type', 'class A']]	✗	2.202
10425	$y' = \frac{2a}{-x^2y + 2ay^4x^2 - 16a^2xy^2 + 32a^3}$	['y=_G(x,y)']	✓	3.066

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
10426	$y' = \frac{1 + 2y}{x(-2 + xy + 2xy^2)}$	[_rational, [_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓	2.314
10427	$y' = \frac{x + y^4 - 2y^2x^2 + x^4}{y}$	[_rational]	✗	3.486
10428	$y' = \frac{(y^2a + bx^2)^3 x}{a^{5/2}(y^2a + bx^2 + a)y}$	[_rational, [_1st_order, '_with_symmetry_[F(x),G(y)]']]	✗	3.987
10429	$y' = -\frac{\cos(y)(x - \cos(y) + 1)}{(x \sin(y) - 1)(x + 1)}$	['y=_G(x,y)']	✗	53.773
10430	$y' = -\frac{i(8ix + 16y^4 + 8y^2x^2 + x^4)}{32y}$	[_rational]	✗	1.231
10431	$y' = \frac{x}{-y + x^4 + 2y^2x^2 + y^4}$	[_rational]	✗	3.506
10432	$y' = \frac{(-1 + y \ln(x))^3}{(-1 + y \ln(x) - y)x}$	[[_1st_order, '_with_symmetry_[F(x),G(y)]'], [_Abel, '2nd type', 'class C']]	✓	2.622
10433	$y' = -\frac{i(ix + x^4 + 2y^2x^2 + y^4)}{y}$	[_rational]	✗	1.161
10434	$y' = -\frac{y(\tan(x) + \ln(2x)x - \ln(2x)x^2y)}{x \tan(x)}$ [Bernoulli]		✓	12.095
10435	$y' = \frac{y(x + y)}{x(x + y^3)}$	[_rational]	✓	1.354
10436	$y' = \frac{(x - y)^2(x + y)^2 x}{y}$	[_rational]	✗	2.511
10437	$y' = \frac{(x^2 + 3y^2)y}{(6y^2 + x)x}$	[_rational, [_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]']]	✓	1.544
10438	$y' = \frac{(\ln(y)x + \ln(y) + x^4)y}{x(x + 1)}$	[[_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]']]	✓	2.424

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
10439	$y' = \frac{\cos(y)(\cos(y)x^3 - x - 1)}{(x \sin(y) - 1)(x + 1)}$	['y=_G(x,y)']	✗	81.319
10440	$y' = \frac{(x + 1 + x^4 \ln(y)) y \ln(y)}{x(x + 1)}$	['x=_G(y,y)']	✗	3.393
10441	$y' = \frac{xy + x^3 + xy^2 + y^3}{x^2}$	[[_homogeneous, 'class D'], _rational, _Abel]	✓	1.465
10442	$y' = \frac{y^{3/2}}{y^{3/2} + x^2 - 2xy + y^2}$	[[_1st_order, _with_linear_symmetries], _rational]	✓	2.834
10443	$y' = \frac{2x^3y + x^6 + y^2x^2 + y^3}{x^4}$	[_rational, _Abel]	✗	2.547
10444	$y' = \frac{-4xy + x^3 + 2x^2 - 4x - 8}{-8y + 2x^2 + 4x - 8}$	[[_1st_order, _with_linear_symmetries], _rational, [_Abel, '2nd type', 'class A']]	✓	1.234
10445	$y' = \frac{(2x + 2 + x^3y)y}{(\ln(y) + 2x - 1)(x + 1)}$	['x=_G(y,y)']	✗	5.519
10446	$y' = -\frac{i(54ix^2 + 81y^4 + 18x^4y^2 + x^8)x}{243y}$	[_rational]	✗	1.316
10447	$y' = \frac{(xy^2 + 1)^3}{x^4(xy^2 + 1 + x)y}$	[_rational]	✗	3.112
10448	$y' = \frac{-4xy - x^3 + 4x^2 - 4x + 8}{8y + 2x^2 - 8x + 8}$	[[_1st_order, _with_linear_symmetries], _rational, [_Abel, '2nd type', 'class A']]	✓	1.266
10449	$y' = -\frac{(\ln(y)x + \ln(y) - x)y}{x(x + 1)}$	[[_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]]]	✗	3.237
10450	$y' = \frac{(\ln(y)x + \ln(y) + x)y}{x(x + 1)}$	[[_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]]]	✓	2.247
10451	$y' = \frac{(-\ln(y)x - \ln(y) + x^4)y}{x(x + 1)}$	[[_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]]]	✗	3.253

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
10452	$y' = \frac{y \left( -1 - \ln \left( \frac{(x-1)(x+1)}{x} \right) + \ln \left( \frac{(x-1)(x+1)}{x} \right) \right)}{x}$	[Bernoulli]	✓	13.862
10453	$y' = \frac{y \left( -\ln(x) - x \ln \left( \frac{(x-1)(x+1)}{x} \right) + \ln \left( \frac{(x-1)(x+1)}{x} \right) \right)}{x \ln(x)}$	[Bernoulli]	✓	5.014
10454	$y' = \frac{-8xy - x^3 + 2x^2 - 8x + 32}{32y + 4x^2 - 8x + 32}$	[[_1st_order, _with_linear_symmetries], _rational, [_Abel, '2nd type', 'class A']]	✓	1.264
10455	$y' = \frac{y(1+y)}{x(-y-1+xy)}$	[_rational, [_1st_order, '_with_symmetry_[F(x)*G(y),0]'], [_Abel, '2nd type', 'class B']]	✓	1.669
10456	$y' = -\frac{i(16ix^2 + 16y^4 + 8x^4y^2 + x^8)x}{32y}$	[_rational]	✗	1.306
10457	$y' = \frac{2y^6}{y^3 + 2 + 16xy^2 + 32x^2y^4}$	[_rational]	✓	3.125
10458	$y' = \frac{-4axy - a^2x^3 - 2ax^2b - 4ax + 8}{8y + 2x^2a + 4bx + 8}$	[[_1st_order, _with_linear_symmetries], _rational, [_Abel, '2nd type', 'class A']]	✓	1.711
10459	$y' = \frac{(x+1 + \ln(y)x) \ln(y)y}{x(x+1)}$	['x=_G(y,y)']	✗	3.381
10460	$y' = \frac{xy + x + y^2}{(x-1)(x+y)}$	[[_homogeneous, 'class D'], _rational, [_Abel, '2nd type', 'class B']]	✓	2.699
10461	$y' = \frac{-4xy - x^3 - 2x^2a - 4x + 8}{8y + 2x^2 + 4ax + 8}$	[[_1st_order, _with_linear_symmetries], _rational, [_Abel, '2nd type', 'class A']]	✓	1.358
10462	$y' = \frac{x - y + \sqrt{y}}{x - y + \sqrt{y} + 1}$	[[_1st_order, _with_linear_symmetries], _rational]	✓	1.515

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
10463	$y' = \frac{y \left( -\ln\left(\frac{1}{x}\right) - \ln\left(\frac{x^2+1}{x}\right)x + \ln\left(\frac{x^2+1}{x}\right) \right)}{x \ln\left(\frac{1}{x}\right)}$	[Bernoulli]	✓	7.507
10464	$y' = \frac{y(1+y)}{x(-y-1+xy^4)}$	[_rational, [_1st_order, ‘_with_symmetry_[F(x)*G(y),0]’]]	✓	2.989
10465	$y' = \frac{-3x^2y + 1 + x^6y^2 + y^3x^9}{x^3}$	[_rational, _Abel]	✗	2.542
10466	$y' = \frac{x^3y + x^3 + xy^2 + y^3}{(x-1)x^3}$	[[_homogeneous, ‘class D’], _rational, _Abel]	✓	2.579
10467	$y' = \frac{xy + y + x\sqrt{y^2 + x^2}}{x(x+1)}$	[[_1st_order, ‘_with_symmetry_[F(x),G(x)*y+H(x)]’]]	✗	10.778
10468	$y' = \frac{(x^4 + x^3 + x + 3y^2)y}{(6y^2 + x)x}$	[_rational, [_1st_order, ‘_with_symmetry_[F(x),G(x)*y+H(x)]’]]	✓	1.885
10469	$y' = \frac{y \left( -\tanh\left(\frac{1}{x}\right) - \ln\left(\frac{x^2+1}{x}\right)x + \ln\left(\frac{x^2+1}{x}\right) \right)}{x \tanh\left(\frac{1}{x}\right)}$	[Bernoulli]	✓	42.089
10470	$y' = \frac{y(\tanh(x) + \ln(2x)x - \ln(2x)x^2y)}{x \tanh(x)}$	[Bernoulli]	✓	41.764
10471	$y' = \frac{-\sinh(x) + x^2 \ln(x) + 2y \ln(x)x + \ln(x)}{\sinh(x)}$	[[_1st_order, ‘_with_symmetry_[F(x),G(x)]’], _Riccati]	✓	27.234
10472	$y' = \frac{\ln(x) - \sinh(x)x^2 - 2\sinh(x)xy}{\ln(x)}$	[[_1st_order, ‘_with_symmetry_[F(x),G(x)]’], _Riccati]	✓	74.734
10473	$y' = \frac{y \ln(x) + \cosh(x)xy^2 + \cosh(x)x^3y}{x \ln(x)}$	[[_homogeneous, ‘class D’], _Riccati]	✓	38.230

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
10474	$y' = \frac{x(-x - 1 + x^2 - 2x^2y + 2x^4)}{(x^2 - y)(x + 1)}$	[_rational, [_1st_order, '_with_symmetry_[F(x),G(x)]', [_Abel, '2nd type', 'class B']]	✗	2.222
10475	$y' = \frac{y(\ln(x - 1) + \coth(x + 1)x - \coth(x + 1)x^2)}{x \ln(x - 1)}$	[_Bernoulli]	✓	41.195
10476	$y' = \frac{\ln(x - 1) - \coth(x + 1)x^2 - 2 \coth(x + 1)x^2y}{\ln(x - 1) - \coth(x + 1)x^2 - 2 \coth(x + 1)x^2y}$	[[_1st_order, 'with_symmetry_[F(x),G(x)]', _Riccati]	✓	191.989
10477	$y' = \frac{2x \ln(\frac{1}{x-1}) - \coth(\frac{x+1}{x-1}) + \coth(\frac{x+1}{x-1})x^2y + \coth(\frac{x+1}{x-1})x^2y}{\ln(\frac{1}{x-1})}$	[[_2nd_order, 'with_symmetry_[F(x),G(x)]', _Riccati]	✗	341.682
10478	$y' = \frac{2x^2 \cosh(\frac{1}{x-1}) - 2x \cosh(\frac{1}{x-1}) - 1 + 2x^2y + x^4 - x + xy^2 - 2x^3y + x^4}{(x - 1) \cosh(\frac{1}{x-1})}$	[[_2nd_order, 'with_symmetry_[F(x),G(x)]', _Riccati]	✗	145.532
10479	$y' = \frac{y(-\cosh(\frac{1}{x+1})x + \cosh(\frac{1}{x+1}) - x + x^2y - x^3 + x^3y)}{x(x - 1) \cosh(\frac{1}{x+1})}$	[_Bernoulli]	✓	8.809
10480	$y' = -\frac{y(xy + 1)}{x(xy + 1 - y)}$	[_rational, [_Abel, '2nd type', 'class B']]	✓	1.827
10481	$y' = \frac{y}{x(-1 + y + x^2y^3 + y^4x^3)}$	[_rational]	✗	7.423
10482	$y' = \frac{x^3 + 3x^2a + 3a^2x + a^3 + xy^2 + y^2a}{(x + a)^3}$	[[_3_homogeneous, 'class C', _rational, _Abel]	✓	72.873
10483	$y' = \frac{y^3x e^{3x^2} e^{-\frac{9x^2}{2}}}{9e^{\frac{3x^2}{2}} + 3e^{\frac{3x^2}{2}}y + 9y}$	[[_Abel, '2nd type', 'class C']]	✗	4.098
10484	$y' = \frac{y(-1 - \cosh(\frac{x+1}{x-1})x + \cosh(\frac{x+1}{x-1})x^2y - \cosh(\frac{x+1}{x-1})x^2 + \cosh(\frac{x+1}{x-1})x^3y)}{x}$	[_Bernoulli]	✓	13.081

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
10485	$y' = \frac{(x + y + 1)y}{(2y^3 + y + x)(x + 1)}$	[_rational]	✗	2.587
10486	$y' = \frac{y \left( -1 - x e^{\frac{x+1}{x-1}} + x^2 e^{\frac{x+1}{x-1}} y - e^{\frac{x+1}{x-1}} x^2 + x^3 e^{\frac{x+1}{x-1}} y \right)}{x}$	[Bernoulli]	✓	4.832
10487	$y' = \frac{-b^3 + 6b^2x - 12bx^2 + 8x^3 - 4by^2 + 8xy^2 + 8y^3}{(2x - b)^3}$	[[homogeneous, 'class C'], _rational, _Abel]	✓	74.838
10488	$y' = \frac{y e^{-\frac{x^2}{4}} x + 2 + 2y^2 e^{-\frac{x^2}{2}} + 2y^3 e^{-\frac{3x^2}{4}}}{2}$	[Abel]	✓	3.831
10489	$y' = -\frac{-\frac{1}{x} - F1(y + \frac{1}{x})}{x}$	[[_1st_order, '_with_symmetry_[F(x),G(x)]']]	✗	2.396
10490	$y' = \frac{-F1(y^2 - 2 \ln(x))}{\sqrt{y^2} x}$	[[_1st_order, '_with_symmetry_[F(x),G(y)]']]	✗	2.981
10491	$y' = \frac{-\sin(2y)x - \sin(2y) + \cos(2y)x^4}{2x(x+1)}$	['y=-G(x,y)']	✗	19.471
10492	$y' = \frac{xy + y + x^4 \sqrt{y^2 + x^2}}{x(x+1)}$	[[_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]']]	✗	6.821
10493	$y' = \frac{-\sin(2y)x - \sin(2y) + x \cos(2y)}{2x(x+1)}$	['y=-G(x,y)']	✗	10.721
10494	$y' = -\frac{1}{-x - F1(y - \ln(x)) y e^y}$	[NONE]	✗	3.136
10495	$y' = \frac{(1 + 2y)(1 + y)}{x(-2y - 2 + x + 2xy)}$	[_rational, [_1st_order, '_with_symmetry_[F(x)*G(y),0]'], [_Abel, '2nd type', 'class B']]	✓	1.945
10496	$y' = \frac{-125 + 300x - 240x^2 + 64x^3 - 80y^2 + 64xy + 64y^3}{(4x - 5)^3}$	[[homogeneous, 'class C'], _rational, _Abel]	✓	80.000

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
10497	$y' = \frac{x + y + y^2 - 2y \ln(x) x + x^2 \ln(x)^2}{x}$	[[_1st_order, '_with_symmetry_[F(x),G(x)]'], _Riccati]	✓	1.889
10498	$y' = \frac{x^3 e^y + x^4 + e^y y - e^y \ln(e^y + x) + xy}{x^2}$	['y=-G(x,y)']	✗	38.668
10499	$y' = \frac{x^2}{2} + \sqrt{x^3 - 6y} + x^2 \sqrt{x^3 - 6y} + x^3 \sqrt{x^3 - 6y}$	[[_1st_order, '_with_symmetry_[F(x),G(x)]']]	✗	45.147
10500	$y' = \frac{(-\sqrt{a} x^3 + 2\sqrt{a} x^4 + 8y + 2x^2 \sqrt{a} x^4 + 8y) \sqrt{a}}{2}$	[[_1st_order, '_with_symmetry_[F(x),G(x)]']]	✗	38.224
10501	$y' = \frac{y(-3x^3 y - 3 + y^2 x^7)}{x(x^3 y + 1)}$	[_rational, [_Abel, '2nd type', 'class C'], [_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]']]	✗	2.609
10502	$y' = \frac{(y + 3)^3 e^{\frac{9x^2}{2}} x e^{\frac{3x^2}{2}} e^{-3x^2}}{243 e^{\frac{3x^2}{2}} + 81 e^{\frac{3x^2}{2}} y + 243y}$	[[_Abel, '2nd type', 'class C']]	✗	4.825
10503	$y' = \frac{(x - y)^3 (x + y)^3 x}{(-y^2 + x^2 - 1) y}$	[_rational]	✗	2.615
10504	$y' = \frac{-2 \cos(y) + x^3 \cos(2y) \ln(x) + x^3 \ln(x)}{2 \sin(y) \ln(x) x}$	['y=-G(x,y)']	✗	54.844
10505	$y' = \frac{y}{x(-1 + xy + xy^3 + xy^4)}$	[_rational, [_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓	2.709
10506	$y' = -\frac{2x}{3} + \sqrt{x^2 + 3y} + x^2 \sqrt{x^2 + 3y} + x^3 \sqrt{x^2 + 3y}$	[[_1st_order, '_with_symmetry_[F(x),G(x)]']]	✗	36.709
10507	$y' = \frac{-2 \cos(y) + x^2 \cos(2y) \ln(x) + x^2 \ln(x)}{2 \sin(y) \ln(x) x}$	['y=-G(x,y)']	✗	54.599

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
10508	$y' = \frac{y(xy + 1)}{x(-xy - 1 + y^4x^3)}$	[_rational]	✓	2.213
10509	$y' = \frac{(4e^{-x^2} - 4x^2e^{-x^2} + 4y^2 - 4x^2e^{-x^2}y)}{4}$	[[_1st_order, 'class D'], _with_symmetry_[F(x),G(x)]', _Riccati]	✓	2.731
10510	$y' = \frac{y(x + y)}{x(x + y + y^3 + y^4)}$	[_rational]	✓	1.517
10511	$y' = \frac{y(x^3 + x^2y + y^2)}{x^2(x - 1)(x + y)}$	[[_homogeneous, 'class D'], _rational, [_Abel, '2nd type', 'class C']]	✓	3.760
10512	$y' = \frac{((x^2 + 1)^{3/2}x^2 + (x^2 + 1)^{3/2} + y^2(x^2 + 1) + x^2y^3 + y^3)x}{(x^2 + 1)^3}$	[_Abel]	✗	15.407
10513	$y' = \frac{(3xy^2 + x + 3y^2)y}{(6y^2 + x)x(x + 1)}$	[_rational, [_1st_order, 'with_symmetry_[F(x),G(x)*y+H(x)]']]	✗	2.737
10514	$y' = \frac{-y + x^3\sqrt{y^2 + x^2} - x^2\sqrt{y^2 + x^2}y}{x}$	[[_1st_order, 'with_symmetry_[F(x),G(x)*y+H(x)]']]	✗	6.829
10515	$y' = \frac{(1 + 2y)(1 + y)}{x(-2y - 2 + xy^3 + 2xy^4)}$	[_rational, [_1st_order, 'with_symmetry_[F(x)*G(y),0]']]	✓	2.955
10516	$y' = \frac{1 + 2\sqrt{4x^2y + 1}x^3 + 2x^5\sqrt{4x^2y + 1}}{2x^3}$	[[_1st_order, 'with_symmetry_[F(x),G(x)*y+H(x)]']]	✗	41.079
10517	$y' = \frac{y(x - y)}{x(x - y - y^3 - y^4)}$	[_rational]	✓	1.459
10518	$y' = \frac{2a + \sqrt{-y^2 + 4ax} + x^2\sqrt{-y^2 + 4ax}}{y}$	['y = G(x,y)']	✗	52.230
10519	$y' = \frac{(x + y + 1)y}{(y^4 + y^3 + y^2 + x)(x + 1)}$	[_rational]	✗	2.406

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
10520	$y' = \frac{-y + x^4\sqrt{y^2 + x^2} - x^3\sqrt{y^2 + x^2}y}{x}$	[[_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]]]	✗	7.079
10521	$y' = \frac{(x^4 + 3xy^2 + 3y^2)y}{(6y^2 + x)x(x + 1)}$	[_rational, [_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]]]	✗	3.184
10522	$y' = \frac{1}{-(y^3)^{2/3}x - F1(y^3 - 3\ln(x))(y^3)^{1/3}x}$	[NONE]	✗	2.390
10523	$y' = \frac{y(x - y)(1 + y)}{x(xy + x - y)}$	[_rational, [_Abel, '2nd type', 'class C']]	✓	1.627
10524	$y' = \frac{1}{-\ln(x)(y^3)^{2/3} - F1(y^3 + 3\text{Ei}_1(-\ln(x)))\ln(x)(y^3)^{1/3}}$	[NONE]	✗	68.699
10525	$y' = \frac{30x^3 + 25\sqrt{x} + 25y^2 - 20x^3y - 100\sqrt{x}y + 4x^3 + 40x^{7/2} + 100x}{25x}$	[_rational, Riccati]	✓	16.763
10526	$y' = \frac{(e^{-\frac{y}{x}}y + e^{-\frac{y}{x}}x + x^2)e^{\frac{y}{x}}}{x}$	[[_1st_order, _with_linear_symmetries]]	✓	2.027
10527	$y' = \frac{(e^{-\frac{y}{x}}y + e^{-\frac{y}{x}}x + x^3)e^{\frac{y}{x}}}{x}$	[[_1st_order, _with_linear_symmetries]]	✓	1.884
10528	$y' = \frac{bx^3 + c^2\sqrt{a} - 2cbx^2\sqrt{a} + 2cy^2a^{3/2} + b^2x^2\sqrt{a} - 2y^2a^{3/2}bx^2 + a^{5/2}y^4}{ax^2y}$	[_rational]	✗	5.396
10529	$y' = \frac{y + x^2\ln(x)^3 + 2x^2\ln(x)^2y + x^2\ln(x)y}{x\ln(x)}$	[Riccati]	✓	4.433
10530	$y' = \frac{y + x^3\ln(x)^3 + 2x^3\ln(x)^2y + x^3\ln(x)y}{x\ln(x)}$	[Riccati]	✓	3.169
10531	$y' = \frac{y(x + y)(1 + y)}{x(xy + x + y)}$	[_rational, [_Abel, '2nd type', 'class C']]	✓	1.578
10532	$y' = \frac{3x^3 + \sqrt{-9x^4 + 4y^3} + x^2\sqrt{-9x^4 + 4y^3} + x^3\sqrt{-9x^4 + 4y^3}}{y^2}$	[NONE]	✗	38.908

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
10533	$y' = \frac{1}{-x + \left(\frac{1}{y} + 1\right)x + \_F1\left(\left(\frac{1}{y} + 1\right)x\right)}$	1 ['y=_G(x,y)']	✗	2.233
10534	$y' = \frac{x}{2} + \frac{1}{2} + \sqrt{x^2 + 2x + 1 - 4y} + x^2\sqrt{x^2 + 2x + 1 - 4y} + x^3\sqrt{x^2 + 2x + 1 - 4y}$	[[_1st_order, '_with_symmetry_[F(x),G(x)]']]	✗	36.889
10535	$y' = \frac{\cosh(x)}{\sinh(x)} + \_F1(y - \ln(\sinh(x)))$	[[_1st_order, '_with_symmetry_[F(x),G(y)]']]	✗	4.776
10536	$y' = -\frac{x}{2} + 1 + \sqrt{x^2 - 4x + 4y} + x^2\sqrt{x^2 - 4x + 4y} + x^3\sqrt{x^2 - 4x + 4y}$	[[_1st_order, '_with_symmetry_[F(x),G(x)]']]	✗	37.220
10537	$y' = \frac{1}{\sin(x)} + \_F1(y - \ln(\sin(x)) + \ln(\cos(x) + 1))$	[[_1st_order, '_with_symmetry_[F(x),G(y)]']]	✗	7.674
10538	$y' = \frac{b^3 + y^2b^3 + 2yb^2ax + x^2ba^2 + y^3b^3}{b^3}$	[[_homogeneous, 'class C'], _Abel]	✓	9.012
10539	$y' = \frac{\alpha^3 + y^2\alpha^3 + 2y\alpha^2\beta x + \alpha\beta^2x^2 + y^3\alpha^3}{\alpha^3}$	[[_homogeneous, 'class C'], _Abel]	✓	9.170
10540	$y' = \frac{14xy + 12 + 2x + x^3y^3 + 6y^2x^2}{x^2(xy + 2 + x)}$	[_rational, [_1st_order, '_with_symmetry_[F(x),G(x)]'], [_Abel, '2nd type', 'class C']]	✓	2.175
10541	$y' = \frac{y(\ln(x) + \ln(y) - 1 + x^2 \ln(x)^2 + 2x^2 \ln(y) \ln(x) + x^2 \ln(y)^2)}{x}$	[NONE]	✗	3.948
10542	$y' = \frac{y(\ln(y) - 1 + \ln(x) + x^3 \ln(x)^2 + 2x^3 \ln(y) \ln(x) + x^3 \ln(y)^2)}{x}$	[NONE]	✗	3.845
10543	$y' = -\frac{\left(-\frac{1}{x} - \_F1(y^2 - 2x)\right)x}{\sqrt{y^2}}$	[NONE]	✗	2.535

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
10544	$y' = -\frac{x}{4} + \frac{1}{4} + \sqrt{x^2 - 2x + 1 + 8y}$ $+ x^2 \sqrt{x^2 - 2x + 1 + 8y}$ $+ x^3 \sqrt{x^2 - 2x + 1 + 8y}$	[[_1st_order, '_with_symmetry_[F(x),G(x)]']]	✗	37.334
10545	$y' = \frac{a^3 + y^2 a^3 + 2y a^2 b x + a b^2 x^2 + y^3 a^3 + 3y^2 a^2 b x + 3y a b^2 x^2 + b^3 x^3}{a^3}$	[[_homogeneous, 'class C'], _Abel]	✓	9.283
10546	$y' = -\frac{-x - F1(y^2 - 2x)}{\sqrt{y^2} x}$	[NONE]	✗	2.528
10547	$y' = \frac{-\sin(2y) + x \cos(2y) + \cos(2y) x^3 + \cos(2y) x^4}{2x}$	['y=G(x,y)']	✓	3.893
10548	$y' = -\frac{\left(-\frac{y e^{\frac{1}{x}}}{x} - F1\left(y e^{\frac{1}{x}}\right)\right) e^{-\frac{1}{x}}}{x}$	[[_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]']]	✗	2.817
10549	$y' = \frac{y + x \sqrt{y^2 + x^2} + x^3 \sqrt{y^2 + x^2} + x^4 \sqrt{y^2 + x^2}}{x}$	[[_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]']]	✗	7.729
10550	$y' = \frac{y \left( e^{-\frac{x^2}{2}} x y + e^{-\frac{x^2}{4}} x + 2y^2 e^{-\frac{3x^2}{4}} \right) e^{\frac{x^2}{4}}}{2y e^{-\frac{x^2}{4}} + 2}$	[[_Abel, '2nd type', 'class C'], [_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]']]	✓	3.979
10551	$y' = \left( \frac{\ln(y-1)y}{(1-y)\ln(x)x} - \frac{\ln(y-1)}{(1-y)\ln(x)x} - f(x) \right) (1-y)$	[[_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]']]	✗	3.600
10552	$y' = -\frac{x}{2} - \frac{a}{2} + \sqrt{x^2 + 2ax + a^2 + 4y}$ $+ x^2 \sqrt{x^2 + 2ax + a^2 + 4y}$ $+ x^3 \sqrt{x^2 + 2ax + a^2 + 4y}$	[[_1st_order, '_with_symmetry_[F(x),G(x)]']]	✗	38.731
10553	$y' = -\frac{2x}{3} + 1 + y^2 + \frac{2x^2 y}{3} + \frac{x^4}{9}$ $+ y^3 + y^2 x^2 + \frac{y x^4}{3} + \frac{x^6}{27}$	[[_1st_order, _with_linear_symmetries], _Abel]	✓	1.550

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
10554	$y' = 2x + 1 + y^2 - 2x^2y + x^4 + y^3 - 3y^2x^2 + 3yx^4 - x^6$	[[_1st_order, _with_linear_symmetries], _Abel]	✓	1.177
10555	$y' = \frac{-x + 1 - 2y + 3x^2 - 2x^2y + 2x^4 + x^3}{x^2 - y}$	[_rational, _1st_order, _with_symmetry_[F(x),G(x)]'], [_Abel, '2nd type', 'class A']]	✗	2.325
10556	$y' = \frac{(e^{-\frac{y}{x}}y + e^{-\frac{y}{x}}x + x + x^3 + x^4) e^{\frac{y}{x}}}{x}$	[[_1st_order, _with_symmetry_[F(x),G(x)*y+H(x)]']]	✗	4.157
10557	$y' = \frac{2xy^2 + 4y \ln(2x + 1)x + 2 \ln(2x + 1)^2 + 2y \ln(2x + 1)}{2x + 1}$	[[_1st_order, _with_symmetry_[F(x),G(x)]'], _Riccati]	✓	2.415
10558	$y' = \frac{-30x^3y + 12x^6 + 70x^{7/2} - 30x^3 - 25\sqrt{x}y + 30x - 25\sqrt{x} - 25}{5(-5y + 2x^3 + 10\sqrt{x})x}$	[_rational, _1st_order, _with_symmetry_[F(x),G(x)]'], [_Abel, '2nd type', 'class B']]	✓	2.411
10559	$y' = \frac{1 + 2y}{x(-2 + x + xy^2 + 3xy^3 + 2xy + 2xy^4)}$	[_rational, _1st_order, _with_symmetry_[F(x)*G(y),0]']]	✓	2.919
10560	$y' = \frac{(-256x^2a + 512 + 512y^2 + 128ya x^4 + 8a^2x^8 + 512y^3 + 192x^4ay^2 + 24ya^2x^8 + a^3x^{12})x}{512}$	[[_1st_order, _with_symmetry_[F(x),G(x)]'], _Abel]	✓	2.028
10561	$y' = \frac{-xy - y + x^5\sqrt{y^2 + x^2} - x^4\sqrt{y^2 + x^2} + x^2y}{x(x + 1)}$	[[_1st_order, _with_symmetry_[F(x),G(x)*y+H(x)]']]	✗	29.662
10562	$y' = -\frac{y^2(x^2y - 2x - 2xy + y)}{2(-2 + xy - 2y)x}$	[_rational, [_Abel, '2nd type', 'class C']]	✓	2.997

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
10563	$y' = \frac{-2xy + 2x^3 - 2x - y^3 + 3y^2x^2 - 3yx^4 + x^6}{-y + x^2 - 1}$	[[1st_order, _with_linear_symmetries], _rational, [_Abel, '2nd type', 'class C']]	✓	1.895
10564	$y' = \frac{1 + y^4 - 8axy^2 + 16a^2x^2 + y^6 - 12y^4ax + 48y^2a^2x^2 - 64a^3x^3}{y}$	[[rational]]	✗	3.130
10565	$y' = \frac{-xy - y + \sqrt{y^2 + x^2}x^2 - x\sqrt{y^2 + x^2}y}{x(x+1)}$	[[1st_order, _with_symmetry_[F(x),G(x)*y+H(x)]]]	✗	9.295
10566	$y' = \frac{-y - 2a - 2ay^4 + 16a^2xy^2 - 32a^3x^2 - 2ay^6 + 24y^4a^2x - 96y^2a^3x^2 + 128a^4x^3}{-y - 2a - 2ay^4 + 16a^2xy^2 - 32a^3x^2 - 2ay^6 + 24y^4a^2x - 96y^2a^3x^2 + 128a^4x^3}$	[[1st_order, _with_linear_symmetries]]	✓	2.015
10567	$y' = \frac{-18xy - 6x^3 - 18x + 27y^3 + 27y^2x^2}{27y + 9x^2 + 27}$	[[1st_order, _with_linear_symmetries], _rational, [_Abel, '2nd type', 'class C']]	✓	1.937
10568	$y' = \frac{(-108x^{3/2} - 216 - 216y^2 + 72x^3y^3 - 6x^6 - 216y^3 + 108x^3y^2 - 18yx^6 + x^9)\sqrt{x}}{-216}$	[[1st_order, _with_symmetry_[F(x),G(x)]]], _Abel]	✓	$\frac{79404}{9}\sqrt{x}$
10569	$y' = \frac{(a^3 + y^4a^3 + 2y^2a^2bx^2 + ax^4b^2 + y^6a^4 + 3y^4a^2bx^2 + 3y^2a^2b^2x^4 + b^3x^6)x}{a^{7/2}y}$	[[rational], [_1st2_order, _with_symmetry_[F(x),G(y)]]]	✗	4.527
10570	$y' = \frac{(-1 - y^4 + 2y^2x^2 - x^4 - y^6 + 3x^2y^4 - 3x^4y^2 + x^6)x}{y}$	[[rational]]	✗	2.623
10571	$y' = \frac{i(32ix + 64 + 64y^4 + 32y^2x^2 + 4x^4 + 64y^4 + 48x^2y^4 + 12x^4y^2 + x^6)}{128y}$	[[rational]]	✗	3.419
10572	$y' = \frac{2x^2 - 4x^3y + 1 + x^4y^2 + x^6y^3 - 3y^2x^4 + 3yx^4 - x^3}{x^4}$	[[rational, _3Abel]]	✓	2.190

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
10573	$y' = \frac{ya^2x + a + a^2x + y^3a^3x^3 + 3y^2a^2x^2}{a^2x^2 (axy + 1 + ax)}$	[_rational, [_1st_order, '_with_symmetry_[F(x),G(x)]'], [_Abel, '2nd type', 'class C']]	✓	2.296
10574	$y' = \frac{6x^2y - 2x + 1 - 5x^3y^2 - 2xy + y^3x^4}{x^2 (x^2y - x + 1)}$	[_rational, [_Abel, '2nd type', 'class C'], [_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]']]	✓	2.824
10575	$y' = \frac{(-8 - 8y^3 + 24y^{3/2}e^x - 18e^{2x} - 8y^{3/2}e^{2x} + 36y^3e^{2x} - 54y^{3/2}e^{2x} + 27e^{3x})e^x}{8\sqrt{y}}$	[_1st_order, '_with_symmetry_[F(x),G(y)]']	✗	46.171
10576	$y' = \frac{x}{-y + 1 + y^4 + 2y^2x^2 + x^4 + y^6 + 3x^2y^4 + 3x^4y^2 + x^6}$	[_rational]	✗	2.449
10577	$y' = \frac{y^2(-2y + 2x^2 + 2x^2y + yx^4)}{x^3 (x^2 - y + x^2y)}$	[_rational, [_Abel, '2nd type', 'class C']]	✗	3.039
10578	$y' = \frac{y^2 + 2xy + x^2 + e^{-\frac{2}{-y^2+x^2-1}}}{y^2 + 2xy + x^2 - e^{-\frac{2}{-y^2+x^2-1}}}$	[[_1st_order, '_with_linear_symmetries]]	✓	3.150
10579	$y' = \frac{6x + x^3 + x^3y^2 + 4x^2y + x^3y^3 + 6y^2x^2 + 12xy + 8}{x^3}$	[_rational, [_1st_order, '_with_symmetry_[F(x),G(x)]'], _Abel]	✗	2.925
10580	$y' = \frac{i(ix + 1 + x^4 + 2y^2x^2 + y^4 + x^6 + 3x^2y^2 + 3x^4y^4 + y^6)}{y}$	[_rational]	✗	3.110
10581	$y' = \frac{(-256ax^2y - 32a^2x^6 - 256x^2a + 512y^2 + 192x^4ay^2 + 24ya^2x^6 + a^3x^{12})x}{512y + 64ax^4 + 512}$	[_rational, [_1st_order, '_with_symmetry_[F(x),G(x)]'], [_Abel, '2nd type', 'class C']]	✗	4.274
10582	$y' = \frac{x + 1 + y^4 - 2y^2x^2 + x^4 + y^6 - 3x^2y^4 + 3x^4y^2 - x^6}{y}$	[_rational]	✗	2.524

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
10583	$y' = \frac{(-108x^{3/2}y + 18x^{9/2} - 108x^{3/2} - 216y^3 + 108x^3y^2 - 18yx^6 + x^9)\sqrt{x}}{-216y + 36x^3 - 216}$	[_rational, 2 [_1st_order, _with_symmetry_[F(x),G(x)]'], [_Abel, '2nd type', 'class C']]	✗	10.885
10584	$y' = \frac{32x^5y + 8x^3 + 32x^5 + 64x^6y^3 + 48x^4y^2 + 12x^2y + 1}{16x^6(4x^2y + 1 + 4x^2)}$	[_rational, 1 [_1st_order, _with_symmetry_[F(x),G(x)]'], [_Abel, '2nd type', 'class C']]	✗	3.410
10585	$y' = \frac{32x^5 + 64x^6 + 64x^6y^2 + 32yx^4 + 4x^2 + 64x^6y^3 + 48x^4y^2 + 12x^2y + 1}{64x^8}$	[_rational, 1 [_1st_order, _with_symmetry_[F(x),G(x)]'], _Abel]	✓	1.764
10586	$y' = \frac{2a(-y^2 + 4ax - 1)}{-y^3 + 4axy - y - 2ay^6 + 24y^4a^2x - 96y^2a^3x^2 + 128a^4x^3}$	[[_1st_order, _with_linear_symmetries], _rational]	✓	1.937
10587	$y' = \frac{(y - a \ln(y) x + x^2) y}{(-y \ln(y) - y \ln(x) - y + ax) x}$	[NONE]	✓	1.935
10588	$y' = \frac{-xy^2 + x^3 - x - y^6 + 3x^2y^4 - 3x^4y^2 + x}{(-y^2 + x^2 - 1) y}$	[_rational]	✗	2.920
10589	$y' = \frac{\sin\left(\frac{y}{x}\right) \left(y + 2x^2 \sin\left(\frac{y}{2x}\right) \cos\left(\frac{y}{2x}\right)\right)}{2 \sin\left(\frac{y}{2x}\right) x \cos\left(\frac{y}{2x}\right)}$	[[_homogeneous, 'class D']]	✓	8.305
10590	$y' = \frac{\sin\left(\frac{y}{x}\right) \left(y + 2x^3 \cos\left(\frac{y}{2x}\right) \sin\left(\frac{y}{2x}\right)\right)}{2 \sin\left(\frac{y}{2x}\right) x \cos\left(\frac{y}{2x}\right)}$	[[_homogeneous, 'class D']]	✓	11.911
10591	$y' = \frac{a^2x + a^3x^3 + a^3x^3y^2 + 2a^2x^2y + ax + y^3a^3x^3 + 3y^2a^2x^2 + 3axy + 1}{a^3x^3}$	[_rational, 2 [_1st_order, _with_symmetry_[F(x),G(x)]'], _Abel]	✗	3.212
10592	$y' = \frac{x(1 + x^2 + y^2)}{-y^3 - x^2y - y + y^6 + 3x^2y^4 + 3x^4y^2 + x^6}$	[_rational]	✗	2.783

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
10593	$y' = \frac{-2 \cos(x)x + 2 \sin(x)x^2 + 2x + 2y^2}{4y \cos(x)x - 4xy + x^2 \cos(2x) + 3x^2 - 4x^2 \cos(x)}$	[[_1st_order, 'with_symmetry_[F(x),G(x)]'], _Riccati]	✓	6.000
10594	$y' = \frac{4x(a-1)(a+1)}{4y + a^2y^4 - 2a^4y^2x^2 + 4y^2a^2x^2 + a^6x^4 - 3a^4x^4 + 3a^2x^4 - y^4 - 2y^2x^2 - x^4}$	[_rational]	✗	3.750
10595	$y' = \frac{x^3 + y^4x^3 + 2y^2x^2 + x + x^3y^6 + 3x^2y^4 + 3xy^2 + 1}{x^5y}$	[_rational]	✗	3.061
10596	$y' = \frac{-2x - y + 1 + y^2x^2 + 2x^3y + x^4 + x^3y^3 + 3x^4y^2 + 3x^5y + x^6}{x}$	[_rational, Abel]	✗	2.730
10597	$y' = -\left(-\frac{\ln(y)}{x} + \frac{\cos(x)\ln(y)}{\sin(x)} - F1(x)\right)y$	[[_1st_order, 'with_symmetry_[F(x),G(x)*y+H(x)]']]	✓	39.989
10598	$y' = \frac{2ax}{-x^3y + 2ax^3 + 2ay^4x^3 - 16y^2a^2x^2 + 32a^3x + 2ay^6x^3 - 24y^4a^2x^2 + 96y^2xa^3 - 128a^4}$	[_rational]	✓	4.232
10599	$y' = \frac{-y^3 - y + 2y^2 \ln(x) - \ln(x)^2 y^3}{-1 + 3y \ln(x) - 3 \ln(x)^2 y^2 + \ln(x)^3 y^3}$	[[_Abel, '2nd type', 'class C1]]	✓	3.301
10600	$y' = \frac{2a(xy^2 - 4a + x)}{-x^3y^3 + 4ax^2y - x^3y + 2ay^6x^3 - 24y^4a^2x^2 + 96y^2xa^3 - 128a^4}$	[_rational]	✓	3.317
10601	$y' = \frac{-y^3 - y + 4y^2 \ln(x) - 4 \ln(x)^2 y^3}{-1 + 6y \ln(x) - 12 \ln(x)^2 y^2 + 8 \ln(x)^3 y^3}$	[[_Abel, '2nd type', 'class C1]]	✓	3.599
10602	$y' = \frac{y(\ln(y)x + \ln(y) - x - 1 + x \ln(x))}{x(x+1)}$	[NONE]	✗	5.338
10603	$y' = \frac{y(x \ln(x) + \ln(x) + \ln(y)x + \ln(y))}{x(x+1)}$	[NONE]	✗	4.645

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
10604	$y' = \frac{2y^8}{y^5 + 2y^6 + 2y^2 + 16xy^4 + 32y^6x^2 + 2 + 24xy^2 + 96x^2y^4 + 128x^3y^6}$	[_rational]	✓	2.172
10605	$y' = \frac{y^{3/2}(x - y + \sqrt{y})}{y^{3/2}x - y^{5/2} + y^2 + x^3 - 3x^2y + 3xy^2 - y^3}$	[[_1st_order, _with_linear_symmetries], _rational]	✓	5.573
10606	$y' = \frac{2y^6(1 + 4xy^2 + y^2)}{y^3 + 4y^5x + y^5 + 2 + 24xy^2 + 96x^2y^4 + 128x^3y^6}$	[_rational]	✗	3.157
10607	$y' = -\left(-\frac{\ln(y)}{x} + \frac{\ln(y)}{x \ln(x)} - \_F1(x)\right) y$	[[_1st_order, _with_symmetry_[F(x),G(x)*y+H(x)]]]	✓	37.381
10608	$y' = \frac{y^2}{y^2 + y^{3/2} + \sqrt{y}x^2 - 2y^{3/2}x + y^{5/2} + x^3 - 3x^2y + 3xy^2 - y^3}$	[[_1st_order, _with_linear_symmetries], _rational]	✓	2.150
10609	$y' = \frac{y^2 + 2xy + x^2 + e^{-2(x-y)(x+y)}}{y^2 + 2xy + x^2 - e^{-2(x-y)(x+y)}}$	[[_1st_order, _with_linear_symmetries]]	✓	2.179
10610	$y' = -\frac{\left(-\frac{\ln(y)^2}{2x} - \_F1(x)\right) y}{\ln(y)}$	[NONE]	✓	7.806
10611	$y' = \frac{y^2 + 2xy + x^2 + e^{2(x-y)^2(x+y)^2}}{y^2 + 2xy + x^2 - e^{2(x-y)^2(x+y)^2}}$	[[_1st_order, _with_linear_symmetries]]	✓	2.418
10612	$y' = \frac{-8x^2y^3 + 16xy^2 + 16xy^3 - 8 + 12xy}{16(-2 + xy - 2y)x}$	[_rational, _Abel, '2nd type', 'class C']	✓	3.038
10613	$y' = \frac{(-8e^{-x^2} + 8x^2e^{-x^2} - 8 - 8y^2 + 8x^2e^{-x^2}y - 2x^4e^{-2x^2} - 8y^3 + 12x^2e^{-x^2}y^2 - 6yx^4e^{-2x^2} + x^6)}{y^2 - 2xy + x^2}$	[[_1st_order, _with_symmetry_[F(x),G(x)]]], _Abel]	✓	6.871
10614	$y' = \frac{(e^{-\frac{y}{x}}yx + e^{-\frac{y}{x}}y + e^{-\frac{y}{x}}x^2 + e^{-\frac{y}{x}}x + x)}{x(x+1)}$	[[_1st_order, _with_symmetry_[F(x),G(x)*y+H(x)]]]	✗	6.660

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
10615	$y' = \frac{16xy^3 - 8y^3 - 8y + 8xy^2 - 2x^2y^3}{32yx}$	[_rational, [_Abel, '2nd type', 'class C']]	✓	2.897
10616	$y' = \frac{(e^{-\frac{y}{x}}yx + e^{-\frac{y}{x}}y + e^{-\frac{y}{x}}x^2 + e^{-\frac{y}{x}}x + x^4)}{x(x+1)}$	[[_1st_order, _with_symmetry_[F(x),G(x)*y+H(x)]]]	✗	3.625
10617	$y' = \frac{-3x^2y - 2x^3 - 2x - xy^2 - y + x^3y^3}{x(xy + x^2 + 1)}$	[_rational, [_Abel, '2nd type', 'class C']], [_1st_order, 'with_symmetry_[F(x),G(x)*y+H(x)]]]	✓	3.763
10618	$y' = \frac{(27y^3 + 27e^{3x^2}y + 18e^{3x^2}y^2 + 3y^3e^{3x^2})}{243y}$	[[_Abel, '2nd type', 'class C']]	✗	213.555
10619	$y' = \frac{-x^2 - xy - x^3 - xy^2 + 2yx^2 \ln(x)}{x^2}$	[_Abel]	✗	3.726
10620	$y' = \frac{x}{2} + 1 + y^2 + \frac{x^2y}{4} - xy - \frac{x^4}{8} + \frac{x^3}{8} + \frac{x^2}{4} + y^3 - \frac{3y^2x^2}{4} - \frac{3xy^2}{2} + \frac{3yx^4}{16} + \frac{3x^3y}{4} - \frac{x^6}{64} - \frac{3x^5}{32}$	[[_1st_order, _with_linear_symmetries], _Abel]	✓	1.643
10621	$y' = -\frac{x}{2} + 1 + y^2 + \frac{7x^2y}{2} - 2xy + \frac{13x^4}{16} - \frac{3x^3}{2} + x^2 + y^3 + \frac{3y^2x^2}{4} - 3xy^2 + \frac{3yx^4}{16} - \frac{3x^3y}{2} + \frac{x^6}{64} - \frac{3x^5}{16}$	[[_1st_order, _with_linear_symmetries], _Abel]	✓	2.137
10622	$y' = -\frac{x}{4} + 1 + y^2 + \frac{7x^2y}{16} - \frac{xy}{2} + \frac{5x^4}{128} - \frac{5x^3}{64} + \frac{x^2}{16} + y^3 + \frac{3y^2x^2}{8} - \frac{3xy^2}{4} + \frac{3yx^4}{64} - \frac{3x^3y}{16} + \frac{x^6}{512} - \frac{3x^5}{256}$	[[_1st_order, _with_linear_symmetries], _Abel]	✓	1.660
10623	$y' = \frac{-2y - 2 \ln(2x + 1) - 2 + 2xy^3 + y^3}{6y^2 \ln(2x + 1) x + 3y^2 \ln(2x + 1) + 6y \ln(2x + 1) x + (2x + 1)(y + \ln(2x + 1) + 1)}$	[[_1st_order, _with_symmetry_[F(x),G(x)]]], [_Abel, '2nd type', 'class C']]	✗	38.647

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
10624	$y' = \frac{-x^2 + x + 1 + y^2 + 5x^2y - 2xy + 4x^4}{-3x^3 + y^3 + 3y^2x^2 + 3yx^4 - 6x^5y + x^6 - 3x^5}$	[[_rational, _1st_order, _with_symmetry_[F(x),G(x)],[_Abel]]	✓	2.511
10625	$y' = \frac{-32xy + 16x^3 + 16x^2 - 32x - 64y^3}{-48y^2x^2 + 96xy^2 - 12yx^4 - 48x^3y - 48x^2y + x^6 + 6x^5}$	[[_1st_order, _with_linear_symmetries], _rational, [_Abel, '2nd type', 'class C']]	✓	2.333
10626	$y' = \frac{y \ln(x)x + x^2 \ln(x) - 2xy - x^2 - y^2}{x(-y + x \ln(x))}$	[[_Abel, '2nd type', 'class C'], [_1st_order, _with_symmetry_[F(x),G(x)*y+H(x)]]]	✗	5.046
10627	$y' = \frac{-32xy - 72x^3 + 32x^2 - 32x + 64y^3}{-48y^2x^2 - 192xy^2 + 12yx^4 - 96x^3y + 192x^2y + x^6 - 12x^5}$	[[_1st_order, _with_linear_symmetries], _rational, [_Abel, '2nd type', 'class C']]	✓	1.982
10628	$y' = -\frac{y^2 + 2xy + x^2 + e^{\frac{2(x-y)^3(x+y)^3}{-y^2+x^2-1}}}{-y^2 - 2xy - x^2 + e^{\frac{2(x-y)^3(x+y)^3}{-y^2+x^2-1}}}$	[[_1st_order, _with_linear_symmetries]]	✓	11.404
10629	$y' = \frac{-128xy - 24x^3 + 32x^2 - 128x + 512y^3}{-192y^2x^2 - 384xy^2 + 24yx^4 - 96x^3y + 96x^2y + x^6 - 512x^5}$	[[_1st_order, _with_linear_symmetries], _rational, [_Abel, '2nd type', 'class C']]	✓	2.220
10630	$y' = \frac{-32axy - 8a^2x^3 - 16ax^2b - 32ax + 64y^3}{-48y^2x^2 + 48x^2ay + 96y^2bx + 12ya^2x^4 + 48abyx^3 + 48yb^2x^2 - 64y + 16x^2a + 32bx + 64}$	[[_1st_order, _with_linear_symmetries], _rational, [_Abel, '2nd type', 'class C']]	✓	2.231
10631	$y' = \frac{-32xy - 8x^3 - 16x^2a - 32x + 64y^3}{-48y^2x^2 + 96axy + 12yx^4 + 48ya^2x^3 + 48a^2x^2y + x^6 - 64y + 16x^2 + 32ax + 64}$	[[_1st_order, _with_linear_symmetries], _rational, [_Abel, '2nd type', 'class C']]	✓	1.845

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
10632	$y' = \frac{-8e^{-x^2}y + 4x^2e^{-2x^2} - 8e^{-x^2} + 8x^2e^{-x^2}y - 4x^2e^{-2x^2} + 8x^2e^{-x^2}}{-8y^3 + 12x^2e^{-x^2}y^2 - 6yx^4e^{-x^2}}$	$[[\_1st\_order, \_with\_symmetry\_try\_ [F(x),G(x)], \_Abel, '2nd type', 'class C']]$	<span style="color: red;">✗</span>	45.455
10633	$y' = \frac{2x^2 \cos(x) + 2 \sin(x) x^3 - 2x \sin(x)}{2x + 2y^2x^2 - 4y \sin(x) x + 4y \cos(x) x^2 + 4xy + 3 - c}$	$[[\_1st\_order, \_with\_symmetry\_try\_ [F(x),G(x)], \_Riccati]]$	<span style="color: blue;">✓</span>	23.091
10634	$y' = \frac{-216y^4 - 252y^3 - 396y^2 - 216y + 36x^2 - 72xy + 60y^5 - 36xy^3 - 72xy^2 - 24xy^4 + 4y^8 + 4y^8 + 4y^8}{-216y^4 - 252y^3 - 396y^2 - 216y + 36x^2 - 72xy + 60y^5 - 36xy^3 - 72xy^2 - 24xy^4 + 4y^8 + 4y^8 + 4y^8}$	$[\_rational]$	<span style="color: blue;">✓</span>	3.375
10635	$y' = \frac{x^2y + x^4 + 2x^3 - 3x^2 + xy + x + y^3}{x(y + x^2 - x + 1)}$	$[\_rational, \_1st\_order, \_with\_symmetry\_try\_ [F(x),G(x)], \_Abel, '2nd type', 'class C']]$	<span style="color: blue;">✓</span>	2.679
10636	$y' = -\frac{ax}{2} + 1 + y^2 + \frac{ax^2y}{2} + bxy + \frac{a^2x^4}{16} + \frac{ax^3b}{4} + \frac{b^2x^2}{4} + y^3 + \frac{3x^2ay^2}{4} + \frac{3y^2bx}{2} + \frac{3ya^2x^4}{16} + \frac{3abyx^3}{4} + \frac{3yb^2x^2}{4} + \frac{a^3x^6}{64} + \frac{3a^2x^5b}{32} + \frac{3ax^4b^2}{16} + \frac{b^3x^3}{8}$	$[[\_1st\_order, \_with\_linear\_symmetries], \_Abel]$	<span style="color: blue;">✓</span>	1.514
10637	$y' = -\frac{x}{2} + 1 + y^2 + \frac{x^2y}{2} + axy + \frac{x^4}{16} + \frac{ax^3}{4} + \frac{a^2x^2}{4} + y^3 + \frac{3y^2x^2}{4} + \frac{3axy^2}{2} + \frac{3yx^4}{16} + \frac{3ya x^3}{4} + \frac{3a^2x^2y}{4} + \frac{x^6}{64} + \frac{3x^5a}{32} + \frac{3a^2x^4}{16} + \frac{a^3x^3}{8}$	$[[\_1st\_order, \_with\_linear\_symmetries], \_Abel]$	<span style="color: blue;">✓</span>	1.740
10638	$y' = \frac{-y + \sqrt{y^2 + x^2} x^2 - x\sqrt{y^2 + x^2} y}{-y + \sqrt{y^2 + x^2} x^2 - x\sqrt{y^2 + x^2} y + x^5\sqrt{y^2 + x^2} - x^4\sqrt{y^2 + x^2}}$	$[[\_1st\_order, \_with\_symmetry\_try\_ [F(x),G(x)*y+H(x)]]]$	<span style="color: red;">✗</span>	44.024

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
10639	$y' = \frac{y(\ln(x) + \ln(y) - 1 + x \ln(x)^2 + 2x \ln(y) \ln(x) + x \ln(y)^2 + x^3 \ln(x)^2 + 2x^3 \ln(y) \ln(x) + x^3 \ln(y)^2)}{x}$	[NONE]	✗	14.672
10640	$y' = \frac{150x^3 + 125\sqrt{x} + 125 + 125y^2 - 100x^3y - 500\sqrt{xy} + 20x^6 + 200x^{7/2} + 500x + 125y^3 - 150x^3y^2}{125x}$	[_rational, _Abel]	✓	5.088
10641	$y' = \frac{-150x^3y + 60x^6 + 350x^{7/2} - 150x^3}{-125\sqrt{xy} + 250x - 125\sqrt{x} - 125y^3 + 150x^3y^2 + 750y^2\sqrt{x}}$	[_rational, _Abel, '2nd-type', 'class C']	✗	31.224
10642	$y' = \frac{y\left(-1 - x^{\frac{2}{\ln(x)+1}} e^{\frac{2\ln(x)^2}{\ln(x)+1}} x^2 - x^{\frac{2}{\ln(x)+1}} e^{\frac{2\ln(x)^2}{\ln(x)+1}} x^2 \ln(x) + x^{\frac{2}{\ln(x)+1}} e^{\frac{2\ln(x)^2}{\ln(x)+1}} x^2 y + 2x^{\frac{2}{\ln(x)+1}} e^{\frac{2\ln(x)^2}{\ln(x)+1}} x^2 y \ln(x)\right)}{(\ln(x) + 1)x}$	[Bernoulli]	✗	54.734
10643	$y' = \frac{y\left(-1 - x^3 x^{\frac{2}{\ln(x)+1}} e^{\frac{2\ln(x)^2}{\ln(x)+1}} - x^3 x^{\frac{2}{\ln(x)+1}} e^{\frac{2\ln(x)^2}{\ln(x)+1}} \ln(x) + x^3 x^{\frac{2}{\ln(x)+1}} e^{\frac{2\ln(x)^2}{\ln(x)+1}} y + 2x^3 x^{\frac{2}{\ln(x)+1}} e^{\frac{2\ln(x)^2}{\ln(x)+1}} y \ln(x)\right)}{(\ln(x) + 1)x}$	[Bernoulli]	✗	55.709
10644	$y' = \frac{2x + 4y \ln(2x + 1)x + 6y^2 \ln(2x + 1)}{x + 6y \ln(2x + 1)^2 x + 2 \ln(2x + 1)x + 2xy^3 + 2 \ln(2x + 1)x}$	[[_1st_order, _with_symmetry], try_[F(x),G(x)], _Abel]	✗	4.587
10645	$y' = \frac{-y \sin(\frac{y}{x}) + y \sin(\frac{3y}{2x}) \cos(\frac{y}{2x}) + y \cos(\frac{y}{2x}) \sin(\frac{y}{2x}) + 2 \sin(\frac{y}{x}) x^3 \cos(\frac{y}{2x}) \sin(\frac{y}{2x})}{2 \cos(\frac{y}{x}) \cos^2(\frac{y}{2x}) \sin(\frac{y}{2x}) x}$	[[homogeneous], 'class D']	✓	72.394
10646	$y' = \frac{-y \sin(\frac{y}{x}) + y \sin(\frac{3y}{2x}) \cos(\frac{y}{2x}) + y \cos(\frac{y}{2x}) \sin(\frac{y}{2x}) + 2 \sin(\frac{y}{x}) x^2 \sin(\frac{y}{2x}) \cos(\frac{y}{2x})}{2 \cos(\frac{y}{x}) \cos^2(\frac{y}{2x}) \sin(\frac{y}{2x}) x}$	[[homogeneous], 'class D']	✓	10.759
10647	$y' = \frac{y^2 + 2xy + x^2 + e^{2+2y^4-4y^2x^2+2x^4+2y^6} - 6x^2y^4 + 6x^2y^6 - 2x^4}{y^2 + 2xy + x^2 - e^{2+2y^4-4y^2x^2+2x^4+2y^6} - 6x^2y^4 + 6x^2y^6 - 2x^4}$	[[_1st_order, _with_linear_symmetries]]	✓	3.579
10648	$y' = \frac{4x(a-1)(a+1)(-y^2 + a^2x^2 - x^2 - 2xy)}{-4y^3 + 4a^2x^2y - 4x^2y - 8y - a^2y^6 + 3a^4y^4x^2 - 6y^4a^2x^2 - 3a^6y^2x^4 + 9y^2a^4x^4 - 9y^2a^2x^4 + a^8}$	[_rational]	✗	5.856
10649	$y' = \frac{-4 \cos(x)x + 4 \sin(x)x^2 + 4x + 4}{4y^2 + 8y \cos(x)x - 8xy + 2x^2 \cos(2x) + 6x^2 - 8x^2 \cos(x)}$	[[_1st_order, _with_symmetry], try_[F(x),G(x)], _Abel]	✓	20.331

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
10650	$y' = \frac{1}{8 + x^6 + 2x^4 - 8a^2 - 2a^6x^4 + 6a^4x^4 - 6a^2x^4 + 2y^4 + 4y^2x^2 - 8y + 3x^2y^4 + 3x^4y^2 - 2a^2y^4}$	[_rational]	✗	5.958
10651	$y' = \frac{-y \sin(\frac{y}{x}) + y \sin(\frac{3y}{2x}) \cos(\frac{y}{2x}) + y \cos(\frac{y}{2x}) \sin(\frac{3y}{2x}) + 2 \sin(\frac{y}{x}) \cos(\frac{y}{2x}) \sin(\frac{y}{2x}) x + 2 \sin(\frac{y}{x})}{2 \cos(\frac{y}{x}) \cos(\frac{y}{2x}) \sin(\frac{y}{2x}) x}$	[[homogeneous, 'class D']]	✓	22.652
10652	$y' = \frac{1}{216 + 216x^3 - 324x^2y^3 - 432xy + 216xy^2 - 1944y^4 - 648y^2x^2 + 1152xy^4 - 1728y^3 - 1296y^5}$	[_rational]	✓	2.995
10653	$y' = \frac{x(-513 - 432x - 456x^6 - 576x^5 - 756x^4 - 648x^2y^3 - 864x^3y^2 - 144x^7 - 3219y^2x^2 + 1008xy^3)}{1}$	[_rational, '_1st_order', '_with_symmetry_[F(x),G(x)]', '_Abel]	✓	3.219
10654	$y' = \frac{-\sin(\frac{y}{x})yx - y \sin(\frac{y}{x}) + y \sin(\frac{3y}{2x}) \cos(\frac{y}{2x}) x + y \cos(\frac{y}{2x}) \sin(\frac{3y}{2x}) x + y \cos(\frac{y}{2x}) \sin(\frac{y}{2x}) x + y}{2 \cos(\frac{y}{x}) \cos(\frac{y}{2x}) \sin(\frac{y}{2x}) x(x+1)}$	[[homogeneous, 'class D']]	✓	44.636
10655	$y' = \frac{y \sin(\frac{3y}{2x}) \cos(\frac{y}{2x}) x + y \sin(\frac{3y}{2x}) \cos(\frac{y}{2x}) x + y \cos(\frac{y}{2x}) \sin(\frac{3y}{2x}) x + y \cos(\frac{y}{2x}) \sin(\frac{y}{2x}) x - \sin(\frac{y}{x})}{2 \cos(\frac{y}{x}) \sin(\frac{y}{2x}) x \cos(\frac{y}{2x}) (x+1)}$	[[homogeneous, 'class D']]	✓	40.921
10656	$y' = \frac{1}{216x^3 - 324x^2y^3 - 1296xy - 1944xy^2 + 2808y^4 - 648y^2x^2 - 432xy^4 + 1728y^3 - 1296y - 1296y^5}$	[_rational]	✗	4.644
10657	$y' = \frac{(xy + 1)^3}{x^5}$	[_rational, '_1st_order', '_with_symmetry_[F(x),G(x)]', '_Abel]	✓	2.569
10658	$y' = \frac{x(-x^2 + 2x^2y - 2x^4 + 1)}{y - x^2}$	[_rational, '_1st_order', '_with_symmetry_[F(x),G(x)]', '_Abel', '2nd type', 'class A']	✗	2.139
10659	$y' = y(y^2 + ye^{bx} + e^{2bx})e^{-2bx}$	[[_1st_order, _with_linear_symmetries], _Abel]	✓	2.497
10660	$y' = y^3 - 3y^2x^2 + 3yx^4 - x^6 + 2x$	[[_1st_order, _with_linear_symmetries], _Abel]	✓	1.508
10661	$y' = y^3 + y^2x^2 + \frac{yx^4}{3} + \frac{x^6}{27} - \frac{2x}{3}$	[[_1st_order, _with_linear_symmetries], _Abel]	✓	1.559

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
10662	$y' = \frac{y(y^2x^7 + yx^4 + x - 3)}{x}$	[_rational, _Abel]	✗	2.322
10663	$y' = y(y^2 + e^{-x^2}y + e^{-2x^2})e^{2x^2}x$	[[_1st_order, '_with_symmetry_[F(x),G(y)]'], _Abel]	✓	6.232
10664	$y' = \frac{y(y^2 + xy + x^2 + x)}{x^2}$	[[_homogeneous, 'class D'], _rational, _Abel]	✓	1.970
10665	$y' = \frac{y^3 - 3xy^2 + 3x^2y - x^3 + x}{x}$	[[_1st_order, _with_linear_symmetries], _rational, _Abel]	✓	1.608
10666	$y' = \frac{x^3y^3 + 6y^2x^2 + 12xy + 8 + 2x}{x^3}$	[_rational, [_1st_order, '_with_symmetry_[F(x),G(x)]'], _Abel]	✓	2.118
10667	$y' = \frac{y^3a^3x^3 + 3y^2a^2x^2 + 3axy + 1 + a^2x}{x^3a^3}$	[_rational, [_1st_order, '_with_symmetry_[F(x),G(x)]'], _Abel]	✓	2.130
10668	$y' = \frac{ye^{-\frac{x^2}{2}}(2y^2 + 2ye^{\frac{x^2}{4}} + 2e^{\frac{x^2}{2}} + xe^{\frac{x^2}{2}})}{2}$	[_Abel]	✓	36.518
10669	$y' = \frac{y^3 - 3xy^2 + 3x^2y - x^3 + x^2}{(x-1)(x+1)}$	[_rational, [_1st_order, '_with_symmetry_[F(x),G(x)]'], _Abel]	✓	2.885
10670	$y' = \frac{y(y^2x^2 + yxe^x + e^{2x})e^{-2x}(x-1)}{x}$	[[_1st_order, '_with_symmetry_[F(x),G(y)]'], _Abel]	✗	3.990
10671	$y' = \frac{(xy+1)(y^2x^2 + x^2y + 2xy + 1 + x + \frac{1}{x^2})}{x^5}$	[_rational, [_1st_order, '_with_symmetry_[F(x),G(x)]'], _Abel]	✓	2.165
10672	$y' = \frac{y^3 - 3xy^2 \ln(x) + 3x^2 \ln(x)^2 y - x^3 \ln(x)^3 + x^2 + xy}{x^2}$	[_Abel]	✓	2.296
10673	$y' = -F(x)(-x^2a + y^2) + \frac{y}{x}$	[[_homogeneous, 'class D'], _Riccati]	✓	2.157

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
10674	$y' = -F(x)(-x^2 - 2xy + y^2) + \frac{y}{x}$	[[_homogeneous, 'class D'], _Riccati]	✓	2.802
10675	$y' = -F(x)(-y^2a - bx^2) + \frac{y}{x}$	[[_homogeneous, 'class D'], _Riccati]	✓	2.420
10676	$y' = -F(x)(-y^2 + 2x^2y + 1 - x^4) + 2x$	[[_1st_order, '_with_symmetry_[F(x),G(x)]'], _Riccati]	✓	2.749
10677	$y' = -F(x)(x^2 + 2xy - y^2) + \frac{y}{x}$	[[_homogeneous, 'class D'], _Riccati]	✓	2.751
10678	$y' = -F(x)(-7xy^2 - x^3) + \frac{y}{x}$	[[_homogeneous, 'class D'], _Riccati]	✓	2.291
10679	$y' = -F(x)(-y^2 - 2y \ln(x) - \ln(x)^2) + \frac{y}{\ln(x)x}$	[_Riccati]	✓	2.956
10680	$y' = -x^3(-y^2 - 2y \ln(x) - \ln(x)^2) + \frac{y}{\ln(x)x}$	[_Riccati]	✓	3.494
10681	$y' = (y - e^x)^2 + e^x$	[[_1st_order, '_with_symmetry_[F(x),G(x)]'], _Riccati]	✓	1.620
10682	$y' = \frac{(y - \text{Si}(x))^2 + \sin(x)}{x}$	[[_1st_order, '_with_symmetry_[F(x),G(x)]'], _Riccati]	✓	6.656
10683	$y' = (y + \cos(x))^2 + \sin(x)$	[[_1st_order, '_with_symmetry_[F(x),G(x)]'], _Riccati]	✓	2.275
10684	$y' = \frac{(y - \ln(x) - \text{Ci}(x))^2 + \cos(x)}{x}$	[[_1st_order, '_with_symmetry_[F(x),G(x)]'], _Riccati]	✓	54.532
10685	$y' = \frac{(y - x + \ln(x + 1))^2 + x}{x + 1}$	[[_1st_order, _with_linear_symmetries], _Riccati]	✓	2.266

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
10686	$y' = \frac{2x^2y + x^3 + y \ln(x) x - y^2 - xy}{x^2(x + \ln(x))}$	[_Riccati]	✓	2.911
10687	$y'' = 0$	[[_2nd_order, _quadrature]]	✓	1.394
10688	$y'' + y = 0$	[[_2nd_order, _missing_x]]	✓	1.915
10689	$y'' + y - \sin(nx) = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	2.345
10690	$y'' + y - \cos(bx) a = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	2.349
10691	$y'' + y - \sin(ax) \sin(bx) = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	12.858
10692	$y'' - y = 0$	[[_2nd_order, _missing_x]]	✓	2.030
10693	$y'' - 2y - 4x^2e^{x^2} = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.343
10694	$y'' + a^2y - \cot(ax) = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.517
10695	$y'' + ly = 0$	[[_2nd_order, _missing_x]]	✓	1.691
10696	$y'' + (ax + b)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.760
10697	$y'' - (x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.900
10698	$y'' - (x^2 + a)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.381
10699	$y'' - (a^2x^2 + a)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.957
10700	$y'' - cx^ay = 0$	[[_Emden, _Fowler]]	✓	0.950
10701	$y'' - (a^2x^{2n} - 1)y = 0$	[_Titchmarsh]	✗	0.176
10702	$y'' + (ax^{2c} + bx^{c-1})y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.332
10703	$y'' + (e^{2x} - v^2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.677

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
10704	$y'' + a e^{bx} y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.756
10705	$y'' - (4a^2 b^2 x^2 e^{2bx^2} - 1) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.201
10706	$y'' + (a e^{2x} + b e^x + c) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.313
10707	$y'' + (a \cosh(x)^2 + b) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.803
10708	$y'' + (a \cos(2x) + b) y = 0$	[_ellipsoidal]	✗	0.641
10709	$y'' + (a \cos(x)^2 + b) y = 0$	[_ellipsoidal]	✗	0.864
10710	$y'' - (1 + 2 \tan(x)^2) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.793
10711	$y'' - \left( \frac{m(m-1)}{\cos(x)^2} + \frac{n(n-1)}{\sin(x)^2} + a \right) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	5.335
10712	$y'' - (n(n+1) \text{WeierstrassP}(x, g2, g3) + B) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.164
10713	$y'' - (n(n+1) k^2 \text{JacobiSN}(x, k)^2 + b) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.305
10714	$y'' - \left( \frac{p'''(x)}{30} + \frac{7p''(x)}{3} + ap(x) + b \right) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.214
10715	$y'' - (f(x)^2 + f'(x)) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.322
10716	$y'' + (P(x) + l) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.141
10717	$y'' - f(x) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.127

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
10718	$y'' + y' + a e^{-2x}y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]]	✓	1.178
10719	$y'' - y' + e^{2x}y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]]	✓	1.088
10720	$y'' + ay' + by = 0$	[[_2nd_order, _missing_x]]	✓	1.135
10721	$y'' + ay' + by - f(x) = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.184
10722	$y'' + ay' - (b^2x^2 + c)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.608
10723	$y'' + 2ay' + f(x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.205
10724	$y'' + xy' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	1.230
10725	$y'' + xy' - y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.528
10726	$y'' + xy' + (n + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.536
10727	$y'' + xy' - ny = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.538
10728	$y'' - xy' + 2y = 0$	[_Hermite]	✓	1.339
10729	$y'' - xy' - ay = 0$	[_Hermite]	✗	0.557
10730	$y'' - xy' + (x - 1)y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]]	✓	1.318
10731	$y'' - 2xy' + ay = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.523
10732	$y'' + 4xy' + (4x^2 + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.798

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
10733	$y'' - 4xy' + (3x^2 + 2n - 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.560
10734	$y'' - 4xy' + (4x^2 - 1)y - e^x = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.901
10735	$y'' - 4xy' + (4x^2 - 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.733
10736	$y'' - 4xy' + (4x^2 - 3)y - e^{x^2} = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.211
10737	$y'' + axy' + by = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.619
10738	$y'' + 2axy' + a^2x^2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.518
10739	$y'' + (ax + b)y' + (cx + d)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.786
10740	$y'' + (ax + b)y' + (a_1x^2 + b_1x + c_1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	2.464
10741	$y'' - x^2y' + xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.590
10742	$y'' - x^2y' - (x + 1)^2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.378
10743	$y'' - x^2(x + 1)y' + x(x^4 - 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.309
10744	$y'' + x^4y' - x^3y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.849
10745	$y'' + ax^{q-1}y' + bx^{q-2}y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.615
10746	$y'' + y'\sqrt{x} + \left(\frac{1}{4\sqrt{x}} + \frac{x}{4} - 9\right)y - xe^{-\frac{x^{3/2}}{3}} = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.601
10747	$y'' - \frac{y'}{\sqrt{x}} + \frac{(x + \sqrt{x} - 8)y}{4x^2} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.326
10748	$y'' - (2e^x + 1)y' + e^{2x}y - e^{3x} = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.799
10749	$y'' + ay' + \tan(x) + by = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.889

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
10750	$y'' + 2ny' \cot(x) + (-a^2 + n^2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	1.753
10751	$y'' + y' \tan(x) + y \cos(x)^2 = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	3.019
10752	$y'' + y' \tan(x) - y \cos(x)^2 = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.924
10753	$y'' + y' \cot(x) + v(v + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	1.326
10754	$y'' - y' \cot(x) + y \sin(x)^2 = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	2.952
10755	$y'' + ay' \tan(x) + by = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	1.473
10756	$y'' + 2ay' \cot(ax) + (-a^2 + b^2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	2.101
10757	$y'' + ap''(x)y' + (a + bp(x) - 4nap(x)^2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.348
10758	$y'' + \frac{(11 \text{WeierstrassP}(x, a, b) \text{WeierstrassPPrime}(x, a, b) - 6 \text{WeierstrassP}(x, a, b)^2 + \frac{a}{2})y'}{\text{WeierstrassPPrime}(x, a, b) + \text{WeierstrassP}(x, a, b)^2} + \frac{(\text{WeierstrassPPrime}(x, a, b)^2 - \text{WeierstrassP}(x, a, b)^2) \text{WeierstrassPPrime}(x, a, b) - \text{WeierstrassP}(x, a, b)}{\text{WeierstrassPPrime}(x, a, b) + \text{WeierstrassP}(x, a, b)} = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	42.775
10759	$y'' + f(x)y' + g(x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.257
10760	$y'' + f(x)y' + (f'(x) + a)y - g(x) = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✗	0.299
10761	$y'' + (af(x) + b)y' + (cf(x) + d)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.284
10762	$y'' + f(x)y' + \left(\frac{f(x)^2}{4} + \frac{f'(x)}{2} + a\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.056
10763	$y'' - \frac{af'(x)y'}{f(x)} + bf(x)^{2a}y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓	1.104

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
10764	$y'' - \left( \frac{f'(x)}{f(x)} + 2a \right) y' + \left( \frac{af'(x)}{f(x)} + a^2 - b^2 f(x)^2 \right) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	1.056
10765	$y'' + \frac{f(x) f'''(x) y'}{f(x)^2 + b^2} - \frac{a^2 f'(x)^2 y}{f(x)^2 + b^2} = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.636
10766	$y'' - \left( \frac{2f'(x)}{f(x)} + \frac{g''(x)}{g'(x)} - \frac{g'(x)}{g(x)} \right) y' + \left( \frac{f'(x) \left( \frac{2f'(x)}{f(x)} + \frac{g''(x)}{g'(x)} - \frac{g'(x)}{g(x)} \right)}{f(x)} - \frac{f''(x)}{f(x)} - \frac{v^2 g'(x)^2}{g(x)^2} + g'(x)^2 \right) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	1.712
10767	$y'' - \left( \frac{g''(x)}{g'(x)} + \frac{(2v-1)g'(x)}{g(x)} + \frac{2h'(x)}{h(x)} \right) y' + \left( \frac{h'(x) \left( \frac{g''(x)}{g'(x)} + \frac{(2v-1)g'(x)}{g(x)} + \frac{2h'(x)}{h(x)} \right)}{h(x)} - \frac{h''(x)}{h(x)} + g'(x)^2 \right) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	1.790
10768	$4y'' + 9xy = 0$	[[_Emden, _Fowler]]	✓	1.029
10769	$4y'' - (x^2 + a) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.402
10770	$4y'' + 4y' \tan(x) - (5 \tan(x)^2 + 2) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	1.978
10771	$ay'' - (ab + c + x) y' + (b(x + c) + d) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.928
10772	$a^2 y'' + a(a^2 - 2b e^{-ax}) y' + b^2 e^{-2ax} y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.697
10773	$x(y'' + y) - \cos(x) = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.947
10774	$xy'' + (x + a) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.431

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
10775	$xy'' + y' = 0$	[[_2nd_order, __missing_y]]	✓	0.898
10776	$xy'' + y' + ay = 0$	[[_Emden, _Fowler]]	✓	0.803
10777	$xy'' + y' + lxy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.007
10778	$xy'' + y' + (x + a)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.631
10779	$xy'' - y' + ay = 0$	[[_Emden, _Fowler]]	✓	0.868
10780	$xy'' - y' - yax^3 = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)']]]	✓	1.452
10781	$xy'' - y' + x^3(e^{x^2} - v^2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.474
10782	$xy'' + 2y' - xy - e^x = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	2.009
10783	$xy'' + 2y' + axy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.476
10784	$xy'' + 2y' + ax^2y = 0$	[[_Emden, _Fowler]]	✓	0.881
10785	$xy'' - 2y' + ay = 0$	[[_Emden, _Fowler]]	✓	0.891
10786	$xy'' + vy' + ay = 0$	[[_Emden, _Fowler]]	✓	1.075
10787	$xy'' + ay' + bxy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.201
10788	$xy'' + ay' + bx^{a1}y = 0$	[[_Emden, _Fowler]]	✓	1.208
10789	$xy'' + (x + b)y' + ay = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.875
10790	$xy'' + (x + a + b)y' + ay = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.993
10791	$xy'' - xy' - y - x(x + 1)e^x = 0$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓	1.279
10792	$xy'' - xy' - ay = 0$	[_Laguerre]	✗	0.507
10793	$xy'' - (x + 1)y' + y = 0$	[_Laguerre]	✓	1.103

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
10794	$xy'' - (x + 1)y' - 2(x - 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.107
10795	$xy'' + (b - x)y' - ay = 0$	[_Laguerre]	✗	0.901
10796	$xy'' - 2(x - 1)y' - y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.554
10797	$xy'' - (3x - 2)y' - (2x - 3)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.597
10798	$xy'' + (ax + b + n)y' + nay = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	1.106
10799	$xy'' - (a + b)(x + 1)y' + abxy = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	1.196
10800	$xy'' + (x(a + b) + m + n)y' + (abx + an + bm)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	1.478
10801	$xy'' - 2(ax + b)y' + (a^2x + 2ab)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.356
10802	$xy'' + (ax + b)y' + (cx + d)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	1.925
10803	$xy'' - (x^2 - x)y' + (x - 1)y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓	1.557
10804	$xy'' - (x^2 - x - 2)y' - x(x + 3)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.367
10805	$xy'' - (2x^2a + 1)y' + bx^3y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	2.515
10806	$xy'' - 2(x^2 - a)y' + 2nxy = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	1.079
10807	$xy'' + (4x^2 - 1)y' - 4x^3y - 4x^5 = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	2.226
10808	$xy'' + (2ax^3 - 1)y' + (a^2x^3 + a)x^2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.152
10809	$xy'' + (2ax \ln(x) + 1)y' + (a^2x \ln(x)^2 + a \ln(x) + a)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.363

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
10810	$xy'' + (f(x)x + 2)y' + f(x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.761
10811	$(x - 3)y'' - (4x - 9)y' + (3x - 6)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.279
10812	$2xy'' + y' + ay = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)']]]	✓	1.518
10813	$2xy'' - (x - 1)y' + ay = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.688
10814	$2xy'' - (2x - 1)y' + ay = 0$	[_Laguerre]	✗	0.703
10815	$(2x - 1)y'' - (-4 + 3x)y' + (x - 3)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	2.278
10816	$4xy'' - (x + a)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.424
10817	$4xy'' + 2y' - y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)']]]	✓	1.212
10818	$4xy'' + 4y' - (x + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.077
10819	$4xy'' + 4y - (x + 2)y + ly = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.538
10820	$4xy'' + 4my' - (x - 2m - 4n)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.779
10821	$16xy'' + 8y' - (x + a)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.626
10822	$axy'' + by' + cy = 0$	[[_Emden, _Fowler]]	✓	1.137
10823	$axy'' + (bx + 3a)y' + 3by = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.370
10824	$5(ax + b)y'' + 8ay' + c(ax + b)^{1/5}y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.839
10825	$2axy'' + (bx + a)y' + cy = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.898
10826	$2axy'' + (bx + 3a)y' + cy = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.917

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
10827	$(a_2 x + b_2) y'' + (a_1 x + b_1) y' + (a_0 x + b_0) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	6.094
10828	$x^2 y'' - 6y = 0$	[[_Emden, _Fowler]]	✓	0.752
10829	$x^2 y'' - 12y = 0$	[[_Emden, _Fowler]]	✓	0.748
10830	$x^2 y'' + ay = 0$	[[_Emden, _Fowler]]	✓	1.180
10831	$x^2 y'' + (ax + b) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.855
10832	$x^2 y'' + (x^2 - 2) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.830
10833	$x^2 y'' - (x^2 a + 2) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	4.890
10834	$x^2 y'' + (a^2 x^2 - 6) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	4.196
10835	$x^2 y'' + (x^2 a - v(v - 1)) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.163
10836	$x^2 y'' + (x^2 a + bx + c) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.652
10837	$x^2 y'' + (a x^k - b(b - 1)) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.085
10838	$x^2 y'' + \frac{y}{\ln(x)} - x e^x (2 + x \ln(x)) = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✗	0.278
10839	$x^2 y'' + ay' - xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.325
10840	$x^2 y'' + ay' - (b^2 x^2 + ab) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.699
10841	$x^2 y'' + xy' - y - x^2 a = 0$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓	1.809
10842	$x^2 y'' + xy' + ay = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓	1.261
10843	$x^2 y'' + xy' - (x + a) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.803

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
10844	$x^2 y'' + xy' + (-v^2 + x^2) y = 0$	[_Bessel]	✓	2.205
10845	$x^2 y'' + xy' + (-v^2 + x^2) y - f(x) = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	6.237
10846	$x^2 y'' + xy' + (lx^2 - v^2) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	2.158
10847	$x^2 y'' + (x + a) y' - y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	1.467
10848	$x^2 y'' - xy' + y - 3x^3 = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.761
10849	$x^2 y'' - xy' + (ax^m + b) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	3.080
10850	$x^2 y'' + 2xy' = 0$	[[_2nd_order, _missing_y]]	✓	0.786
10851	$x^2 y'' + 2xy' + (ax - b^2) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	2.579
10852	$x^2 y'' + 2xy' + (x^2 a + b) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	2.619
10853	$x^2 y'' + 2xy' + (lx^2 + ax - n(n + 1)) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.847
10854	$x^2 y'' + 2(x - 1) y' + ay = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.624
10855	$x^2 y'' + 2(x + a) y' - b(b - 1) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.728
10856	$x^2 y'' - 2xy' + 2y - x^5 \ln(x) = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	2.271
10857	$x^2 y'' - 2xy' - 4y - x \sin(x) - (x^2 a + 12a + 4) \cos(x) = 0$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓	2.885
10858	$x^2 y'' - 2xy' + (x^2 + 2) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	2.616
10859	$x^2 y'' - 2xy' + (x^2 + 2) y - \frac{x^2}{\cos(x)} = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	10.263
10860	$x^2 y'' - 2xy' + (x^2 + 2) y - \frac{x^3}{\cos(x)} = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	12.898

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
10861	$x^2y'' - 2xy' + (a^2x^2 + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	2.837
10862	$x^2y'' + 3xy' + (-v^2 + x^2 + 1)y - f(x) = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	6.402
10863	$x^2y'' + (3x - 1)y' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	1.410
10864	$x^2y'' - 3xy' + 4y - 5x = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.596
10865	$x^2y'' - 3xy' - 5y - x^2 \ln(x) = 0$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓	1.796
10866	$x^2y'' - 4xy' + 6y - x^4 + x^2 = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.976
10867	$x^2y'' + 5xy' - (2x^3 - 4)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.824
10868	$x^2y'' - 5xy' + 8y - \sin(x)x^3 = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	2.508
10869	$x^2y'' + axy' + by = 0$	[[_Emden, _Fowler]]	✓	2.028
10870	$x^2y'' + (ax + b)y' + cy = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.976
10871	$x^2y'' + axy' + (bx^m + c)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	4.188
10872	$x^2y'' + x^2y' + (ax + b)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.644
10873	$x^2y'' + x^2y' - 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.019
10874	$x^2y'' + (x^2 - 1)y' - y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.355
10875	$x^2y'' + x(x + 1)y' + (x - 9)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.145
10876	$x^2y'' + x(x + 1)y' + (3x - 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.457
10877	$x^2y'' + x(x + 3)y' - y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.642

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
10878	$x^2 y'' - x(x-1)y' + (x-1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.461
10879	$x^2 y'' - (x^2 - 2x)y' - (x+a)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.662
10880	$x^2 y'' - (x^2 - 2x)y' - (2+3x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.283
10881	$x^2 y'' - x(4+x)y' + 4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.199
10882	$x^2 y'' + 2x^2 y' - v(v-1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.659
10883	$x^2 y'' + x(2x+1)y' - 4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.152
10884	$x^2 y'' - 2x(x+1)y' + 2(x+1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.416
10885	$x^2 y'' + a x^2 y' - 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.130
10886	$x^2 y'' + (a+2b)x^2 y' + ((a+b)b x^2 - 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.292
10887	$x^2 y'' + a x^2 y' + f(x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.223
10888	$x^2 y'' + (2ax+b)xy' + (abx + c x^2 + d)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	1.534
10889	$x^2 y'' + (ax+b)y'x + (a_1 x^2 + b_1 x + c_1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	2.287
10890	$x^2 y'' + x^3 y' + (x^2 - 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.592
10891	$x^2 y'' + (x^2 + 2)xy' + (x^2 - 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.326
10892	$x^2 y'' - 2x(x^2 - a)y' + (2n x^2 + ((-1)^n - 1)a)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	1.463
10893	$x^2 y'' + 4x^3 y' + (4x^4 + 2x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.336
10894	$x^2 y'' + (x^2 a + b)xy' + f(x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.555

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
10895	$x^2 y'' + (x^3 + 1) xy' - y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.809
10896	$x^2 y'' + (-x^4 + (2n + 2a + 1)x^2 + (-1)^n a - a^2) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	1.045
10897	$x^2 y'' + (a x^n + b) y' x + (a_1 x^{2n} + b_1 x^n + c_1) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.912
10898	$x^2 y'' + (a x^{a_1} + b) xy' + (A x^{2a_1} + B x^{a_1} + C x^{b_1} + DD) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.792
10899	$x^2 y'' - (2x^2 \tan(x) - x) y' - (x \tan(x) + a) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	2.416
10900	$x^2 y'' + (2x^2 \cot(x) + x) y' + (x \cot(x) + a) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	2.609
10901	$x^2 y'' + 2x f(x) y' + (f'(x) x + f(x)^2 - f(x) + x^2 a + b x + c) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	1.039
10902	$x^2 y'' + 2x^2 f(x) y' + (x^2 (f'(x) + f(x)^2 + a) - v(v - 1)) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	1.077
10903	$x^2 y'' + (x - 2f(x) x^2) y' + (x^2 (1 + f(x)^2 - f'(x)) - f(x) x - v^2) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	1.050
10904	$(x^2 + 1) y'' + xy' + 2y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓	2.652
10905	$(x^2 + 1) y'' + xy' - 9y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓	1.594

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
10906	$(x^2 + 1)y'' + xy' + ay = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]]	✓	2.157
10907	$(x^2 + 1)y'' - xy' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	2.834
10908	$(x^2 + 1)y'' + 2xy' - v(v - 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	1.007
10909	$(x^2 + 1)y'' - 2xy' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.209
10910	$(x^2 + 1)y'' + 3xy' + ay = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	2.286
10911	$(x^2 + 1)y'' + 4xy' + 2y - 2\cos(x) + 2x = 0$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓	1.616
10912	$(x^2 + 1)y'' + axy' + (a - 2)y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	1.697
10913	$(x^2 - 1)y'' - v(v + 1)y = 0$	[_Gegenbauer]	✗	0.563
10914	$(x^2 - 1)y'' - n(n + 1)y + \frac{d}{dx}\text{LegendreP}(n, x) = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✗	0.649
10915	$(x^2 - 1)y'' + xy' + 2 = 0$	[[_2nd_order, _missing_y]]	✓	1.408
10916	$(x^2 - 1)y'' + xy' + ay = 0$	[_Gegenbauer, [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]]	✓	2.416
10917	$(x^2 - 1)y'' + xy' + f(x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.451
10918	$(x^2 - 1)y'' + 2xy' = 0$	[[_2nd_order, _missing_y]]	✓	1.099
10919	$(x^2 - 1)y'' + 2xy' - a = 0$	[[_2nd_order, _missing_y]]	✓	2.059
10920	$(x^2 - 1)y'' + 2xy' - ly = 0$	[_Gegenbauer]	✗	0.899

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
10921	$(x^2 - 1)y'' + 2xy' - v(v + 1)y = 0$	[_Gegenbauer]	✗	0.969
10922	$(x^2 - 1)y'' - 2xy' - (v + 2)(v - 1)y = 0$	[_Gegenbauer]	✗	586.521
10923	$(x^2 - 1)y'' - (3x + 1)y' - (x^2 - x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.780
10924	$(x^2 - 1)y'' + 4xy' + (x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.808
10925	$(x^2 - 1)y'' + 2(n + 1)xy' - (v + n + 1)(v - n)y = 0$	[_Gegenbauer]	✗	1.349
10926	$(x^2 - 1)y'' - 2(n - 1)xy' - (v - n + 1)(v + n)y = 0$	[_Gegenbauer]	✗	1.344
10927	$(x^2 - 1)y'' - 2(v - 1)xy' - 2vy = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	1.726
10928	$(x^2 - 1)y'' + 2axy' + a(a - 1)y = 0$	[_Gegenbauer]	✓	2.801
10929	$(x^2 - 1)y'' + axy' + (bx^2 + cx + d)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	1.260
10930	$(x^2 - 1)y'' + (ax + b)y' + cy = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	1.268
10931	$(-a^2 + x^2)y'' + 8xy' + 12y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.207
10932	$x(x + 1)y'' - (x - 1)y' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.236
10933	$x(x + 1)y'' + (ax + b)y' + cy = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	1.237
10934	$x(x + 1)y'' + (2 + 3x)y' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	1.362
10935	$(x^2 + x - 2)y'' + (x^2 - x)y' - (6x^2 + 7x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.552
10936	$x(x - 1)y'' + ay' - 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	1.399
10937	$x(x - 1)y'' + (2x - 1)y' - v(v + 1)y = 0$	[_Jacobi]	✗	0.888
10938	$x(x - 1)y'' + ((a + 1)x + b)y' = 0$	[[_2nd_order, _missing_y]]	✓	1.341

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
10939	$x(x-1)y'' + (ax+b)y' + cy = 0$	[_Jacobi]	✗	1.344
10940	$x(x-1)y'' + ((a+1)x+b)y' - ly = 0$	[_Jacobi]	✗	1.388
10941	$x(x-1)y'' + ((a1+b1+1)x-d1)y' + a1b1d1 = 0$	[[_2nd_order, _missing_y]]	✓	1.443
10942	$x(x+2)y'' + 2(n+1) + (n+1-2l)x - lx^2)y' + (2l(p-n-1)x + 2pl+m)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	1.554
10943	$(x+1)^2y'' + (x^2+x-1)y' - (x+2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.716
10944	$x(x+3)y'' + (3x-1)y' + y - (20x+30)(x^2+3x)^{7/3} = 0$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓	3.136
10945	$(x^2+3x+4)y'' + (x^2+x+1)y' - (2x+3)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.730
10946	$(x-1)(-2+x)y'' - (2x-3)y' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	256.680
10947	$(-2+x)^2y'' - (-2+x)y' - 3y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	1.088
10948	$2x^2y'' - (2x^2+l-5x)y' - (4x-1)y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	1.881
10949	$2x(x-1)y'' + (2x-1)y' + (ax+b)y = 0$	[_Jacobi]	✗	0.711
10950	$2x(x-1)y'' + ((2v+5)x-2v-3)y' + (v+1)y = 0$	[_Jacobi]	✗	1.073
10951	$(2x^2+6x+4)y'' + (10x^2+21x+8)y' + (12x^2+17x+8)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	2.490
10952	$4x^2y'' + y = 0$	[[_Emden, _Fowler]]	✓	0.785
10953	$4x^2y'' + (4a^2x^2+1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.966

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
10954	$4x^2y'' - (-4kx + 4m^2 + x^2 - 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.680
10955	$4x^2y'' + 4xy' + (-v^2 + x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.990
10956	$4x^2y'' + 4xy' + (-x^2 + 2(1 - m + 2l)x - m^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.908
10957	$4x^2y'' + 4xy' - (4x^2 + 1)y - 4\sqrt{x^3}e^x = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	8.436
10958	$4x^2y'' + 4xy' - (x^2a + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	2.439
10959	$4x^2y'' + 4xy' + f(x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	1.138
10960	$4x^2y'' + 5xy' - y - \ln(x) = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.971
10961	$4x^2y'' + 8xy' - (4x^2 + 12x + 3)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	3.443
10962	$4x^2y'' - 4x(2x - 1)y' + (4x^2 - 4x - 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.989
10963	$4x^2y'' + 4x^3y' + (x^2 + 6)(x^2 - 4)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.905
10964	$4x^2y'' + 4x^2 \ln(x)y' + (x^2 \ln(x)^2 + 2x - 8)y - 4x^2\sqrt{e^x x^{-x}} = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.546
10965	$(2x + 1)^2 y'' - 2(2x + 1)y' - 12y - 3x - 1 = 0$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓	1.463
10966	$x(4x - 1)y'' + ((4a + 2)x - a)y' + a(a - 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	1.229
10967	$(3x - 1)^2 y'' + 3(3x - 1)y' - 9y - \ln(3x - 1)^2 = 0$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓	2.995
10968	$9x(x - 1)y'' + 3(2x - 1)y' - 20y = 0$	[_Jacobi]	✓	1.445

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
10969	$16x^2y'' + (4x + 3)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	2.342
10970	$16x^2y'' + 32xy' - (4x + 5)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	6.083
10971	$(27x^2 + 4)y'' + 27xy' - 3y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓	2.205
10972	$48x(x - 1)y'' + (152x - 40)y' + 53y = 0$	[_Jacobi]	✗	1.348
10973	$50x(x - 1)y'' + 25(2x - 1)y' - 2y = 0$	[_Jacobi, [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓	3.143
10974	$144x(x - 1)y'' + (120x - 48)y' + y = 0$	[_Jacobi]	✗	1.194
10975	$144x(x - 1)y'' + (168x - 96)y' + y = 0$	[_Jacobi]	✗	0.998
10976	$ax^2y'' + bxy' + (cx^2 + dx + f)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.962
10977	$a_2x^2y'' + (a_1x^2 + b_1x)y' + (a_0x^2 + b_0x + c_0)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	2.445
10978	$(x^2a + 1)y'' + axy' + by = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓	292.637
10979	$(a^2x^2 - 1)y'' + 2a^2xy' = 0$	[[_2nd_order, _missing_y]]	✓	1.330
10980	$(a^2x^2 - 1)y'' + 2a^2xy' - 2a^2y = 0$	[_Gegenbauer]	✓	1.694
10981	$(x^2a + bx)y'' + 2by' - 2ay = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	1.510
10982	$A_2(ax + b)^2y'' + A_1(ax + b)y' + A_0(ax + b)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.717
10983	$(x^2a + bx + c)y'' + (dx + f)y' + gy = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	3.797

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
10984	$x^3y'' + xy' - (2x + 3)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.454
10985	$x^3y'' + 2xy' - y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.541
10986	$x^3y'' + x^2y' + (x^2a + bx + a)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.504
10987	$x^3y'' + x(x + 1)y' - 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.487
10988	$x^3y'' - x^2y' + xy - \ln(x)^3 = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.705
10989	$x^3y'' - (x^2 - 1)y' + xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.678
10990	$x^3y'' + 3x^2y' + xy - 1 = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.596
10991	$x(x^2 + 1)y'' + (2x^2 + 1)y' - v(v + 1)xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	1.122
10992	$x(x^2 + 1)y'' + 2(x^2 - 1)y' - 2xy = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	1.308
10993	$x(x^2 + 1)y'' + (2(n + 1)x^2 + 2n + 1)y' - (v - n)(v + n + 1)xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	1.398
10994	$x(x^2 + 1)y'' - (2(n - 1)x^2 + 2n - 1)y' + (v + n)(-v + n - 1)xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	1.368
10995	$x(x^2 - 1)y'' + y' + yax^3 = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓	2.529
10996	$x(x^2 - 1)y'' + (x^2 - 1)y' - xy = 0$	[[_elliptic, _class_II]]	✗	107.424
10997	$x(x^2 - 1)y'' + (3x^2 - 1)y' + xy = 0$	[[_elliptic, _class_I]]	✗	0.976
10998	$x(x^2 - 1)y'' + (x^2a + b)y' + cxy = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	1.562
10999	$x(x^2 + 2)y'' - y' - 6xy = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	1.959

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
11000	$x(x^2 - 2)y'' - (x^3 + 3x^2 - 2x - 2)y' + (x^2 + 4x + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.633
11001	$x^2(x + 1)y'' - x(2x + 1)y' + (2x + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.189
11002	$x^2(x + 1)y'' + 2x(2 + 3x)y' = 0$	[[_2nd_order, _missing_y]]	✓	1.071
11003	$y'' = -\frac{2(-2 + x)y'}{x(x - 1)} + \frac{2(x + 1)y}{x^2(x - 1)}$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)']]]	✓	1.157
11004	$y'' = \frac{(5x - 4)y'}{x(x - 1)} - \frac{(9x - 6)y}{x^2(x - 1)}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.311
11005	$y'' = -\frac{((a + b + 1)x + \alpha + \beta - 1)y'}{x(x - 1)} - \frac{(abx - \alpha\beta)y}{x^2(x - 1)}$	[[_2nd_order, _with_linear_symmetries]]	✗	1.681
11006	$y'' = -\frac{y'}{x + 1} - \frac{y}{x(x + 1)^2}$	[[_2nd_order, _with_linear_symmetries]]	✓	0.963
11007	$y'' = \frac{2y'}{x(-2 + x)} - \frac{y}{x^2(-2 + x)}$	[[_2nd_order, _with_linear_symmetries]]	✗	107.481
11008	$y'' = \frac{2y}{x(x - 1)^2}$	[[_2nd_order, _with_linear_symmetries]]	✓	0.978
11009	$y'' = -\frac{((\alpha + \beta + 1)x^2 - (\alpha + \beta + 1 + a(\gamma + \delta) - \delta)x + a\gamma)y'}{x(x - 1)(x - a)} - \frac{(\alpha\beta x - q)y}{x(x - 1)(x - a)}$	[[_2nd_order, _with_linear_symmetries]]	✗	2.472
11010	$y'' = -\frac{(Ax^2 + Bx + C)y'}{(x - a)(x - b)(x - c)} - \frac{(DDx + E)y}{(x - a)(x - b)(x - c)}$	[[_2nd_order, _with_linear_symmetries]]	✗	3.193
11011	$y'' = \frac{(x - 4)y'}{2x(-2 + x)} - \frac{(x - 3)y}{2x^2(-2 + x)}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.188

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
11012	$y'' = \frac{y'}{x+1} - \frac{(3x+1)y}{4x^2(x+1)}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.191
11013	$y'' = -\frac{(3x-1)y'}{2x(x-1)} + \frac{v(v+1)y}{4x^2}$	[[_2nd_order, _with_linear_symmetries]]	✗	1.009
11014	$y'' = -\frac{((a+1)x-1)y'}{x(x-1)} - \frac{((a^2-b^2)x+c^2)y}{4x^2(x-1)}$	[[_2nd_order, _with_linear_symmetries]]	✗	1.329
11015	$y'' = -\frac{(3x-1)y'}{2x(x-1)} - \frac{(ax+b)y}{4x(x-1)^2}$	[[_2nd_order, _with_linear_symmetries]]	✗	0.958
11016	$y'' = -\frac{(-3x+1)y}{(x-1)(2x-1)^2}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.198
11017	$y'' = -\frac{(3x+a+2b)y'}{2(x+a)(x+b)} - \frac{(-b+a)y}{4(x+a)^2(x+b)}$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, 'with_symmetry_[0,F(x)']]]	✓	2.503
11018	$y'' = \frac{(6x-1)y'}{3x(-2+x)} + \frac{y}{3x^2(-2+x)}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.332
11019	$y'' = -\frac{(a(b+2)x^2+(c-d+1)x)y'}{(ax+1)x^2} - \frac{(abx-cd)y}{(ax+1)x^2}$	[[_2nd_order, _with_linear_symmetries]]	✗	1.599
11020	$y'' = \frac{2(ax+2b)y'}{x(ax+b)} - \frac{(2ax+6b)y}{(ax+b)x^2}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.090
11021	$y'' = -\frac{(2ax+b)y'}{x(ax+b)} - \frac{(avx-b)y}{(ax+b)x^2} + Ax$	[[_2nd_order, _linear, _nonhomogeneous]]	✗	108.484
11022	$y'' = -\frac{ay}{x^4}$	[[_Emden, _Fowler]]	✓	3.975
11023	$y'' = -\frac{(x^2a(-a+1)-b(x+b))y}{x^4}$	[[_2nd_order, _with_linear_symmetries]]	✗	0.691

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
11024	$y'' = -\frac{(e^{\frac{2}{x}} - v^2)y}{x^4}$	[[_2nd_order, _with_linear_symmetries]]	✗	0.306
11025	$y'' = -\frac{y'}{x^3} + \frac{2y}{x^4}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.362
11026	$y'' = \frac{(a+b)y'}{x^2} - \frac{(x(a+b)+ab)y}{x^4}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.722
11027	$y'' = -\frac{y'}{x} - \frac{y}{x^4}$	[[_Emden, _Fowler]]	✓	0.845
11028	$y'' = -\frac{y'}{x} - \frac{(bx^2 + a(x^4 + 1))y}{x^4}$	[[_2nd_order, _with_linear_symmetries]]	✗	0.898
11029	$y'' = -\frac{(x^2 + 1)y'}{x^3} - \frac{y}{x^4}$	[[_2nd_order, _with_linear_symmetries]]	✗	0.732
11030	$y'' = -\frac{2y'}{x} - \frac{a^2y}{x^4}$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)']]]	✓	1.276
11031	$y'' = -\frac{(2x^2 + 1)y'}{x^3} + \frac{y}{x^4}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.377
11032	$y'' = -\frac{2(x+a)y'}{x^2} - \frac{by}{x^4}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.951
11033	$y'' = \frac{(2x^2 - 1)y'}{x^3} - \frac{y}{x^4}$	[[_2nd_order, _with_linear_symmetries]]	✓	2.519
11034	$y'' = \frac{(2x^2 - 1)y'}{x^3} - \frac{2y}{x^4}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.803
11035	$y'' = -\frac{(x^3 - 1)y'}{x(x^3 + 1)} + \frac{xy}{x^3 + 1}$	[[_2nd_order, _with_linear_symmetries]]	✓	2.451
11036	$y'' = -\frac{(2x^2 + 1)y'}{x(x^2 + 1)} - \frac{(-v(v+1)x^2 - n^2)y}{x^2(x^2 + 1)}$	[[_2nd_order, _with_linear_symmetries]]	✗	1.257
11037	$y'' = -\frac{(x^2a + a - 1)y'}{x(x^2 + 1)} - \frac{(bx^2 + c)y}{x^2(x^2 + 1)}$	[[_2nd_order, _with_linear_symmetries]]	✗	1.353

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
11038	$y'' = \frac{(x^2 - 2)y'}{x(x^2 - 1)} - \frac{(x^2 - 2)y}{x^2(x^2 - 1)}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.291
11039	$y'' = -\frac{2xy'}{x^2 - 1} - \frac{v(v + 1)y}{x^2(x^2 - 1)}$	[[_2nd_order, _with_linear_symmetries]]	✗	1.103
11040	$y'' = -\frac{2xy'}{x^2 - 1} + \frac{v(v + 1)y}{x^2}$	[[_2nd_order, _with_linear_symmetries]]	✗	1.067
11041	$y'' = \frac{2xy'}{x^2 - 1} - \frac{(a(a + 1) - ax^2(a + 3))y}{x^2(x^2 - 1)}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.803
11042	$x^2(x^2 - 1)y'' - 2x^3y' - ((a - n)(a + n + 1)x^2(x^2 - 1) + 2x^2a + n(n + 1)(x^2 - 1))y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	2.400
11043	$y'' = -\frac{(x^2a + a - 2)y'}{x(x^2 - 1)} - \frac{by}{x^2}$	[[_2nd_order, _with_linear_symmetries]]	✗	1.699
11044	$y'' = \frac{(2bcx^c(x^2 - 1) + 2(a - 1)x^2 - 2a)y'}{x(x^2 - 1)} - \frac{(b^2c^2x^{2c}(x^2 - 1) + bcx^{c+2}(2a - c - 1) - bcx^{2a - c + 1} + x^2(a(a - 1) - v(v + 1)) - a(a - 1))y}{x^2(x^2 - 1)}$	[[_2nd_order, _with_linear_symmetries]]	✗	3.339
11045	$y'' = -\frac{ay}{(x^2 + 1)^2}$	[_Halm]	✓	1.456
11046	$y'' = -\frac{2xy'}{x^2 + 1} - \frac{y}{(x^2 + 1)^2}$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, ' _with_symmetry_[0,F(x)]']]	✓	1.118
11047	$y'' = -\frac{2xy'}{x^2 + 1} - \frac{(a^2(x^2 + 1)^2 - n(n + 1)(x^2 + 1) + 2n^2)y'}{(x^2 + 1)^2}$	[[_2nd_order, _with_linear_symmetries]]	✗	1.256
11048	$y'' = -\frac{axy'}{x^2 + 1} - \frac{by}{(x^2 + 1)^2}$	[[_2nd_order, _with_linear_symmetries]]	✗	1.181
11049	$y'' = -\frac{ay}{(x^2 - 1)^2}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.668

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
11050	$y'' = -\frac{2xy'}{x^2 - 1} + \frac{a^2 y}{(x^2 - 1)^2}$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓	1.456
11051	$y'' = -\frac{2xy'}{x^2 - 1} - \frac{(-a^2 - \lambda(x^2 - 1)) y}{(x^2 - 1)^2}$	[[_2nd_order, _with_linear_symmetries]]	✗	1.031
11052	$y'' = -\frac{2xy'}{x^2 - 1} - \frac{((x^2 - 1)(x^2 a + bx + c) - k^2) y}{(x^2 - 1)^2}$	[[_2nd_order, _with_linear_symmetries]]	✗	1.333
11053	$y'' = -\frac{2xy'}{x^2 - 1} - \frac{(-a^2(x^2 - 1)^2 - n(n + 1)(x^2 - 1)) y}{(x^2 - 1)^2}$	[[_2nd_order, _with_linear_symmetries]]	✗	1.292
11054	$y'' = \frac{2x(2a - 1) y'}{x^2 - 1} - \frac{(x^2(2a(2a - 1) - v(v + 1)) + 2a + v(v + 1)) y}{(x^2 - 1)^2}$	[[_2nd_order, _with_linear_symmetries]]	✗	1.526
11055	$y'' = -\frac{2x(n + 1 - 2a) y'}{x^2 - 1} - \frac{(4a x^2(a - n) - (x^2 - 1)(2a + (v - a)(v + n + 1))) y}{(x^2 - 1)^2}$	[[_2nd_order, _with_linear_symmetries]]	✗	1.415
11056	$y'' = -\frac{(2x^2 + a) y'}{x(x^2 + a)} - \frac{by}{x^2(x^2 + a)}$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓	3.583
11057	$y'' = -\frac{b^2 y}{(a^2 + x^2)^2}$	[[_Emden, _Fowler]]	✓	1.729
11058	$y'' = -\frac{2(x^2 - 1) y'}{x(x - 1)^2} - \frac{(-2x^2 + 2x + 2) y}{x^2(x - 1)^2}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.345
11059	$y'' = \frac{12y}{(x + 1)^2(x^2 + 2x + 3)}$	[[_2nd_order, _with_linear_symmetries]]	✓	4.190

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
11060	$y'' = -\frac{by}{x^2(x-a)^2}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.940
11061	$y'' = -\frac{by}{x^2(x-a)^2} + c$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	2.173
11062	$y'' = \frac{cy}{(x-a)^2(x-b)^2}$	[[_2nd_order, _with_linear_symmetries]]	✓	2.609
11063	$y'' = \frac{((\alpha + \beta + 1)(x-a)^2(x-b) + (1 - \alpha - \beta)(x-b)^2(x-a))y' - \alpha\beta(-b+a)^2y}{(x-a)^2(x-b)^2}$	[[_2nd_order, _with_linear_symmetries]]	✓	5.268
11064	$y'' = \frac{(-x^2(a^2 - 1) + 2(a + 3)bx - b^2)y}{4x^2}$	[[_2nd_order, _with_linear_symmetries]]	✗	1.025
11065	$y'' = -\frac{(x^2a + a - 3)y}{4(x^2 + 1)^2}$	[_Halm]	✓	1.765
11066	$y'' = \frac{18y}{(2x + 1)^2(x^2 + x + 1)}$	[[_2nd_order, _with_linear_symmetries]]	✓	4.307
11067	$y'' = \frac{3y}{4(x^2 + x + 1)^2}$	[[_Emden, _Fowler]]	✓	1.991
11068	$y'' = \frac{(3x - 1)y'}{2x(x - 1)} - \frac{(v(v + 1)(x - 1) - a^2x)y}{4x^2(x - 1)^2}$	[[_2nd_order, _with_linear_symmetries]]	✗	1.301
11069	$y'' = \frac{(3x - 1)y'}{2x(x - 1)} - \frac{(-v(v + 1)(x - 1)^2 - 4n^2x)y}{4x^2(x - 1)^2}$	[[_2nd_order, _with_linear_symmetries]]	✗	1.322
11070	$y'' = -\frac{3y}{16x^2(x - 1)^2}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.006
11071	$y'' = \frac{(7x^2a + 5)y'}{x(x^2a + 1)} - \frac{(15x^2a + 5)y}{x^2(x^2a + 1)}$	[[_2nd_order, _with_linear_symmetries]]	✓	0.800

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
11072	$y'' = -\frac{bxy'}{(x^2 - 1)a} - \frac{(cx^2 + dx + e)y}{a(x^2 - 1)^2}$	[[_2nd_order, _with_linear_symmetries]]	✗	1.421
11073	$y'' = -\frac{(bx^2 + cx + d)y}{ax^2(x - 1)^2}$	[[_2nd_order, _with_linear_symmetries]]	✗	0.875
11074	$y'' = -\frac{2y'}{x} - \frac{cy}{x^2(ax + b)^2}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.967
11075	$y'' = -\frac{y}{(ax + b)^4}$	[[_Emden, _Fowler]]	✓	1.581
11076	$y'' = -\frac{Ay}{(x^2a + bx + c)^2}$	[[_Emden, _Fowler]]	✓	3.612
11077	$y'' = -\frac{y'}{x^4} + \frac{y}{x^5}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.579
11078	$y'' = -\frac{(3x^2 - 1)y'}{(x^2 - 1)x} - \frac{(x^2 - 1 - (2v + 1)^2)y}{(x^2 - 1)^2}$	[[_2nd_order, _with_linear_symmetries]]	✗	1.279
11079	$y'' = \frac{(3x + 1)y'}{(x - 1)(x + 1)} - \frac{36(x + 1)^2y}{(x - 1)^2(3x + 5)^2}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.561
11080	$y'' = \frac{y'}{x} - \frac{ay}{x^6}$	[[_Emden, _Fowler]]	✓	2.565
11081	$y'' = -\frac{(3x^2 + a)y'}{x^3} - \frac{by}{x^6}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.216
11082	$y'' = -\frac{((1 - 4a)x^2 - 1)y'}{x(x^2 - 1)} - \frac{((-v^2 + x^2)(x^2 - 1)^2 + 4a(a + 1))y}{x^2(x^2 - 1)^2}$	[[_2nd_order, _with_linear_symmetries]]	✗	2.989
11083	$y'' = -\left(\frac{1 - a_1 - b_1}{x - c_1} + \frac{1 - a_2 - b_2}{x - c_2} + \frac{1 - a_3 - b_3}{x - c_3}\right)y' - \frac{\left(\frac{a_1 b_1 (c_1 - c_3)(c_1 - c_2)}{x - c_1} + \frac{a_2 b_2 (c_2 - c_1)(c_2 - c_3)}{x - c_2} + \frac{a_3 b_3 (c_3 - c_2)(c_3 - c_1)}{x - c_3}\right)y}{(x - c_1)(x - c_2)(x - c_3)}$	[[_2nd_order, _with_linear_symmetries]]	✗	7.862

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
11084	$y'' = -\frac{(2x^2 + 1)y'}{x^3} - \frac{(-2x^2 + 1)y}{4x^6}$	[[_2nd_order, _with_linear_symmetries]]	✓	0.891
11085	$y'' = \frac{(2x^2 + 1)y'}{x^3} - \frac{(ax^4 + 10x^2 + 1)y}{4x^6}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.375
11086	$y'' = -\frac{27xy}{16(x^3 - 1)^2}$	[[_2nd_order, _with_linear_symmetries]]	✓	4.453
11087	$y'' = -\left(\frac{(1 - a1 - b1) b1}{b1 x - a1} + \frac{(1 - a2 - b2) b2}{b2 x - a2} + \frac{(1 - a3 - b3) b3}{b3 x - a3}\right) y' - \frac{(a1 b1(a1 b2 - a2 b1)(-a1 b3 + a3 b1)}{b1 x - a1} + \frac{a2 b2(a2 b3 - a3 b2)(a1 b2 - a2 b1)}{b2 x - a2} + \frac{a3 b3(-a1 b3 + a3 b1)(a2 b3 - a3 b2)}{b3 x - a3}$	[[_2nd_order, _with_linear_symmetries]]	✗	9.762
11088	$y'' = \frac{(x^2((x^2 - a1)(x^2 - a2) + (x^2 - a2)(x^2 - a3) + (x^2 - a3)(x^2 - a1)) - (x^2 - a1)(x^2 - a2)(x^2 - a3))}{x(x^2 - a1)(x^2 - a2)(x^2 - a3)} - \frac{(Ax^2 + B)y}{x(x^2 - a1)(x^2 - a2)(x^2 - a3)}$	[[_2nd_order, _with_linear_symmetries]]	✗	7.641
11089	$y'' = -ax^{2a-1}x^{-2a}y' - b^2x^{-2a}y$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]]]	✓	0.848
11090	$y'' = -\frac{(apx^b + q)y'}{x(ax^b - 1)} - \frac{(arx^b + s)y}{x^2(ax^b - 1)}$	[[_2nd_order, _with_linear_symmetries]]	✗	2.021
11091	$y'' = \frac{y}{1 + e^x}$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]]]	✗	0.270
11092	$y'' = \frac{y'}{x \ln(x)} + \ln(x)^2 y$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]]]	✓	0.828

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
11093	$y'' = \frac{y'}{x(\ln(x)-1)} - \frac{y}{x^2(\ln(x)-1)}$	[[_2nd_order, _with_linear_symmetries]]	✓	0.515
11094	$y'' = -\frac{(-a^2 \sinh(x)^2 - n(n-1))y}{\sinh(x)^2}$	[[_2nd_order, _with_linear_symmetries]]	✗	1.335
11095	$y'' = -\frac{2n \cosh(x)y'}{\sinh(x)} - (-a^2 + n^2)y$	[[_2nd_order, _with_linear_symmetries]]	✗	2.004
11096	$y'' = -\frac{(2n+1)\cos(x)y'}{\sin(x)} - (v+n+1)(v-n)y$	[[_2nd_order, _with_linear_symmetries]]	✗	2.793
11097	$y'' = -\frac{(\sin(x)^2 - \cos(x))y'}{\sin(x)} - y \sin(x)^2$	[[_2nd_order, _with_linear_symmetries]]	✓	2.569
11098	$y'' = -\frac{x \sin(x)y'}{\cos(x)x - \sin(x)} + \frac{\sin(x)y}{\cos(x)x - \sin(x)}$	[[_2nd_order, _with_linear_symmetries]]	✓	3.658
11099	$y'' = -\frac{(\sin(x)x^2 - 2\cos(x)x)y'}{x^2\cos(x)} - \frac{(2\cos(x) - x\sin(x))y}{x^2\cos(x)}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.449
11100	$\cos(x)^2 y'' - (a\cos(x)^2 + n(n-1))y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	1.390
11101	$y'' = -\frac{a(n-1)\sin(2ax)y'}{\cos(ax)^2} - \frac{na^2((n-1)\sin(ax)^2 + \cos(ax)^2)y}{\cos(ax)^2}$	[[_2nd_order, _with_linear_symmetries]]	✓	4.341
11102	$y'' = \frac{2y}{\sin(x)^2}$	[[_2nd_order, _with_linear_symmetries]]	✗	0.736
11103	$y'' = -\frac{ay}{\sin(x)^2}$	[[_2nd_order, _with_linear_symmetries]]	✗	0.793
11104	$\sin(x)^2 y'' - (a\sin(x)^2 + n(n-1))y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	1.492

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
11105	$y'' = \frac{(-a^2 \cos(x)^2 - (3 - 2a) \cos(x) - 3 + 3a)y}{\sin(x)^2}$	[[_2nd_order, _with_linear_symmetries]]	✗	4.816
11106	$\sin(x)^2 y'' - \left( a^2 \cos(x)^2 + b \cos(x) + \frac{b^2}{(2a - 3)^2} + 3a + 2 \right) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	12.375
11107	$y'' = \frac{(-(a^2 b^2 - (a + 1)^2) \sin(x)^2 - a(a + 1)b \sin(2x) - a(a - 1))y}{\sin(x)^2}$	[[_2nd_order, _with_linear_symmetries]]	✗	5.703
11108	$y'' = -\frac{(a \cos(x)^2 + b \sin(x)^2 + c)y}{\sin(x)^2}$	[[_2nd_order, _with_linear_symmetries]]	✗	2.658
11109	$y'' = -\frac{\cos(x)y'}{\sin(x)} + \frac{y}{\sin(x)^2}$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓	2.577
11110	$y'' = -\frac{\cos(x)y'}{\sin(x)} - \frac{(v(v + 1) \sin(x)^2 - n^2)y}{\sin(x)^2}$	[[_2nd_order, _with_linear_symmetries]]	✗	3.647
11111	$y'' = \frac{\cos(2x)y'}{\sin(2x)} - 2y$	[[_2nd_order, _with_linear_symmetries]]	✗	2.415
11112	$y'' = -\frac{\cos(x)y'}{\sin(x)} - \frac{(-17 \sin(x)^2 - 1)y}{4 \sin(x)^2}$	[[_2nd_order, _with_linear_symmetries]]	✓	2.058
11113	$y'' = -\frac{\sin(x)y'}{\cos(x)} - \frac{(2x^2 + x^2 \sin(x)^2 - 24 \cos(x)^2)y}{4x^2 \cos(x)^2} + \sqrt{\cos(x)}$	[[_2nd_order, _linear, _nonhomogeneous]]	✗	6.925

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
11114	$y'' = -\frac{b \cos(x) y'}{\sin(x) a} - \frac{(c \cos(x)^2 + d \cos(x) + e) y}{a \sin(x)^2}$	[[_2nd_order, _with_linear_symmetries]]	✗	4.706
11115	$y'' = -\frac{4 \sin(3x) y}{\sin(x)^3}$	[[_2nd_order, _with_linear_symmetries]]	✗	2.460
11116	$y'' = -\frac{(4v(v+1) \sin(x)^2 - \cos(x)^2 + 2 - 4m)y}{4 \sin(x)^2}$	[[_2nd_order, _with_linear_symmetries]]	✗	3.667
11117	$y'' = \frac{(3 \sin(x)^2 + 1) y'}{\cos(x) \sin(x)} + \frac{\sin(x)^2 y}{\cos(x)^2}$	[[_2nd_order, _with_linear_symmetries]]	✓	3.490
11118	$y'' = -\frac{(-a \cos(x)^2 \sin(x)^2 - m(m-1) \sin(x)^2 - n(n-1) \cos(x)^2) y}{\cos(x)^2 \sin(x)}$	[[_2nd_order, _with_linear_symmetries]]	✗	5.416
11119	$y'' = \frac{\phi'(x) y'}{\phi(x) - \phi(a)} - \frac{(-n(n+1) (\phi(x) - \phi(a))^2 + D^{(2)}(\phi(a)) y)}{\phi(x) - \phi(a)}$	[[_2nd_order, _with_linear_symmetries]]	✗	0.590
11120	$y'' = -\frac{(\phi(x^3) - \phi(x) \phi'(x) - \phi''(x)) y'}{\phi'(x) + \phi(x)^2} - \frac{(\phi'(x)^2 - \phi(x)^2 \phi'(x) - \phi(x) \phi''(x)) y}{\phi'(x) + \phi(x)^2}$	[[_2nd_order, _with_linear_symmetries]]	✗	1.183
11121	$y'' = \frac{2 \operatorname{JacobiSN}(x, k) \operatorname{JacobiCN}(x, k) \operatorname{JacobiDN}(x, k) y' - 2(1-2k^2+1) \operatorname{JacobiSN}(a, k)^2 + 3k^2 \operatorname{JacobiSN}(x, k) - \operatorname{JacobiSN}(a, k)}{2}$	[[_2nd_order, _with_linear_symmetries]]	✗	0.981
11122	$y'' = -\frac{xy'}{f(x)} + \frac{y}{f(x)}$	[[_2nd_order, _with_linear_symmetries]]	✓	0.840
11123	$y'' = -\frac{f'(x) y'}{2f(x)} - \frac{g(x) y}{f(x)}$	[[_2nd_order, _with_linear_symmetries]]	✗	0.349
11124	$y'' = -\frac{(2f(x) g'(x)^2 g(x) - (g(x)^2 - 1) (f(x) g''(x) + 2f'(x) g'(x))) y'}{f(x) g'(x) (g(x)^2 - 1)} - \frac{((g(x)^2 - 1) (f'(x) (f(x) g''(x) + 2f'(x) g'(x)) - f(x) f''(x) g'(x)) - (2f'(x) g(x) + v(v+1) f(x)^2 g'(x) (g(x)^2 - 1)) y}{f(x)^2 g'(x) (g(x)^2 - 1)}$	[[_2nd_order, _with_linear_symmetries]]	✗	2.682

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
11125	$y'' = -\frac{y'}{x} - \frac{(x-1)y}{x^4}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.049
11126	$y'' = -\frac{y'}{x} - \frac{(-x-1)y}{x^4}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.048
11127	$y'' = -\frac{b^2y}{(-a^2+x^2)^2}$	[[_2nd_order, _with_linear_symmetries]]	✓	2.025
11128	$y''' - \lambda y = 0$	[[_3rd_order, _missing_x]]	✓	0.131
11129	$y''' + ya x^3 - bx = 0$	[[_3rd_order, _linear, _nonhomogeneous]]	✗	0.046
11130	$y''' - a x^b y = 0$	[[_3rd_order, _with_linear_symmetries]]	✗	0.043
11131	$y''' + 3y' - 4y = 0$	[[_3rd_order, _missing_x]]	✓	0.073
11132	$y''' - a^2 y' - e^{2ax} \sin(x)^2 = 0$	[[_3rd_order, _missing_y]]	✓	0.240
11133	$y''' + 2axy' + ay = 0$	[[_3rd_order, _with_linear_symmetries]]	✗	0.048
11134	$y''' - x^2 y'' + (a+b-1)xy' - bya = 0$	[[_3rd_order, _with_linear_symmetries]]	✗	0.057
11135	$y''' + x^{2c-2}y' + (c-1)x^{2c-3}y = 0$	[[_3rd_order, _with_linear_symmetries]]	✗	0.085
11136	$y''' - 3(2 \text{WeierstrassP}(x, g2, g3) + a)y' + by = 0$	[[_3rd_order, _with_linear_symmetries]]	✗	0.055
11137	$y''' + (-n^2+1) \text{WeierstrassP}(x, g2, g3)y' + \frac{((-n^2+1) \text{WeierstrassPPrime}(x, g2, g3) - a)y}{2} = 0$	[[_3rd_order, _with_linear_symmetries]]	✗	0.054
11138	$y''' - (4n(n+1) \text{WeierstrassP}(x, g2, g3) + a)y' - 2n(n+1) \text{WeierstrassPPrime}(x, g2, g3)y = 0$	[[_3rd_order, _with_linear_symmetries]]	✗	0.052

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
11139	$y''' + (A \text{WeierstrassP}(x, g2, g3) + a) y' + B \text{WeierstrassPPrime}(x, g2, g3) y = 0$	[[_3rd_order, _with_linear_symmetries]]	✗	0.050
11140	$y''' - (3k^2 \text{JacobiSN}(z, x)^2 + a) y' + (b + c \text{JacobiSN}(z, x)^2 - 3k^2 \text{JacobiSN}(z, x) \text{JacobiCN}(z, x) \text{JacobiDN}(z, x)) y = 0$	[[_3rd_order, _with_linear_symmetries]]	✗	0.056
11141	$y''' - (6k^2 \sin(x)^2 + a) y' + by = 0$	[[_3rd_order, _with_linear_symmetries]]	✗	0.056
11142	$y''' + 2f(x) y' + f'(x) y = 0$	[[_3rd_order, _with_linear_symmetries]]	✗	0.047
11143	$y''' - 2y'' - 3y' + 10y = 0$	[[_3rd_order, _missing_x]]	✓	0.074
11144	$y''' - 2y'' - a^2 y' + 2a^2 y - \sinh(x) = 0$	[[_3rd_order, _linear, _nonhomogeneous]]	✓	0.615
11145	$y''' - 3ay'' + 3a^2 y' - a^3 y - e^{ax} = 0$	[[_3rd_order, _with_linear_symmetries]]	✓	0.140
11146	$y''' + a2 y'' + a1 y' + a0 y = 0$	[[_3rd_order, _missing_x]]	✓	0.208
11147	$y''' - 6xy'' + 2(4x^2 + 2a - 1) y' - 8axy = 0$	[[_3rd_order, _with_linear_symmetries]]	✗	0.056
11148	$y''' + 3axy'' + 3a^2 x^2 y' + a^3 x^3 y = 0$	[[_3rd_order, _with_linear_symmetries]]	✗	0.049
11149	$y''' - y'' \sin(x) - 2y' \cos(x) + y \sin(x) - \ln(x) = 0$	[[_3rd_order, _fully_exact, _linear]]	✗	0.053
11150	$y''' + f(x) y'' + y' + f(x) y = 0$	[[_3rd_order, _with_linear_symmetries]]	✗	0.048
11151	$y''' + f(x) (x^2 y'' - 2xy' + 2y) = 0$	[[_3rd_order, _with_linear_symmetries]]	✗	0.053
11152	$y''' + f(x) y'' + g(x) y' + (f(x) g(x) + g'(x)) y = 0$	[[_3rd_order, _with_linear_symmetries]]	✗	0.048
11153	$y''' + 3f(x) y'' + (f'(x) + 2f(x)^2 + 4g(x)) y' + (4f(x) g(x) + 2g'(x)) y = 0$	[[_3rd_order, _with_linear_symmetries]]	✗	0.053

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
11154	$4y''' - 8y'' - 11y' - 3y + 18e^x = 0$	[[_3rd_order, _with_linear_symmetries]]	✓	0.122
11155	$27y''' - 36n^2 \text{WeierstrassP}(x, g2, g3) y' - 2n(3+n)(4n - 3) \text{WeierstrassPPrime}(x, g2, g3) y = 0$	[[_3rd_order, _with_linear_symmetries]]	✗	0.055
11156	$xy''' + 3y'' + xy = 0$	[[_3rd_order, _with_linear_symmetries]]	✗	0.052
11157	$xy''' + 3y'' - ax^2y = 0$	[[_3rd_order, _with_linear_symmetries]]	✗	0.049
11158	$xy''' + (a+b)y'' - xy' - ay = 0$	[[_3rd_order, _with_linear_symmetries]]	✗	0.052
11159	$xy''' - (x+2v)y'' - (x-2v-1)y' + (x-1)y = 0$	[[_3rd_order, _with_linear_symmetries]]	✗	0.050
11160	$xy''' + (x^2-3)y'' + 4xy' + 2y - f(x) = 0$	[[_3rd_order, _fully_exact, _linear]]	✗	0.055
11161	$2xy''' + 3y'' + axy - b = 0$	[[_3rd_order, _linear, _nonhomogeneous]]	✗	0.050
11162	$2xy''' - 4(x+\nu-1)y'' + (2x+6\nu-5)y' + (1-2\nu)y = 0$	[[_3rd_order, _with_linear_symmetries]]	✗	0.055
11163	$2xy''' + 3(2ax+k)y'' + 6(ak+bx)y' + (3bk+2cx)y = 0$	[[_3rd_order, _with_linear_symmetries]]	✗	0.051
11164	$(-2+x)xy''' - (-2+x)xy'' - 2y' + 2y = 0$	[[_3rd_order, _exact_linear, _homogeneous]]	✗	0.054
11165	$(2x-1)y''' - 8xy' + 8y = 0$	[[_3rd_order, _with_linear_symmetries]]	✗	0.056
11166	$(2x-1)y''' + (4+x)y'' + 2y' = 0$	[[_3rd_order, _missing_y]]	✓	2.034
11167	$y'''x^2 - 6y' + ax^2y = 0$	[[_3rd_order, _with_linear_symmetries]]	✗	0.049
11168	$y'''x^2 + (x+1)y'' - y = 0$	[[_3rd_order, _with_linear_symmetries]]	✗	0.048
11169	$y'''x^2 - xy'' + (x^2+1)y' = 0$	[[_3rd_order, _missing_y]]	✓	0.918

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
11170	$y'''x^2 + 3xy'' + (4a^2x^{2a} + 1 - 4\nu^2a^2)y' = 4a^3x^{2a-1}y$	[[_3rd_order, _with_linear_symmetries]]	✓	0.606
11171	$y'''x^2 - 3(x - m)xy'' + (2x^2 + 4(n - m)x + m(2m - 1))y' - 2n(2x - 2m + 1)y = 0$	[[_3rd_order, _with_linear_symmetries]]	✗	0.061
11172	$y'''x^2 + 4xy'' + (x^2 + 2)y' + 3xy - f(x) = 0$	[[_3rd_order, _linear, _nonhomogeneous]]	✗	0.051
11173	$y'''x^2 + 5xy'' + 4y' - \ln(x) = 0$	[[_3rd_order, _missing_y]]	✓	0.316
11174	$y'''x^2 + 6xy'' + 6y' = 0$	[[_3rd_order, _missing_y]]	✓	0.158
11175	$y'''x^2 + 6xy'' + 6y' + ax^2y = 0$	[[_3rd_order, _with_linear_symmetries]]	✗	0.056
11176	$y'''x^2 - 3(p + q)xy'' + 3p(3q + 1)y' - x^2y = 0$	[[_3rd_order, _with_linear_symmetries]]	✗	0.056
11177	$y'''x^2 - 2(n + 1)xy'' + (x^2a + 6n)y' - 2axy = 0$	[[_3rd_order, _with_linear_symmetries]]	✗	0.055
11178	$y'''x^2 - (x^2 - 2x)y'' - \left(x^2 + \nu^2 - \frac{1}{4}\right)y' + \left(x^2 - 2x + \nu^2 - \frac{1}{4}\right)y = 0$	[[_3rd_order, _with_linear_symmetries]]	✗	0.054
11179	$y'''x^2 - (x + \nu)xy'' + \nu(2x + 1)y' - \nu(x + 1)y = 0$	[[_3rd_order, _with_linear_symmetries]]	✗	0.059
11180	$y'''x^2 - 2(x^2 - x)y'' + \left(x^2 - 2x + \frac{1}{4} - \nu^2\right)y' + \left(\nu^2 - \frac{1}{4}\right)y = 0$	[[_3rd_order, _with_linear_symmetries]]	✗	0.057
11181	$y'''x^2 - (x^4 - 6x)y'' - (2x^3 - 6)y' + 2x^2y = 0$	[[_3rd_order, _with_linear_symmetries]]	✗	0.075
11182	$(x^2 + 1)y''' + 8xy'' + 10y' - 3 + \frac{1}{x^2} - 2\ln(x) = 0$	[[_3rd_order, _missing_y]]	✓	0.678

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
11183	$(x^2 + 2)y''' - 2xy'' + (x^2 + 2)y' - 2xy = 0$	[[_3rd_order, _with_linear_symmetries]]	✗	0.053
11184	$2x(x - 1)y''' + 3(2x - 1)y'' + (2ax + b)y' + ay = 0$	[[_3rd_order, _with_linear_symmetries]]	✗	0.060
11185	$x^3y''' + (-\nu^2 + 1)xy' + (ax^3 + \nu^2 - 1)y = 0$	[[_3rd_order, _with_linear_symmetries]]	✗	0.059
11186	$x^3y''' + (4x^3 + (-4\nu^2 + 1)x)y' + (4\nu^2 - 1)y = 0$	[[_3rd_order, _with_linear_symmetries]]	✗	0.055
11187	$x^3y''' + (ax^{2\nu} + 1 - \nu^2)xy' + (bx^{3\nu} + a(\nu - 1)x^{2\nu} + \nu^2 - 1)y = 0$	[[_3rd_order, _with_linear_symmetries]]	✗	0.084
11188	$x^3y''' + 3x^2y'' - 2xy' + 2y - 6x^3(x - 1)\ln(x) + x^3(8 + x) = 0$	[[_3rd_order, _with_linear_symmetries]]	✓	0.310
11189	$x^3y''' + 3x^2y'' + (-a^2 + 1)xy' = 0$	[[_3rd_order, _missing_y]]	✓	0.184
11190	$x^3y''' - 4x^2y'' + (x^2 + 8)xy' - 2(x^2 + 4)y = 0$	[[_3rd_order, _with_linear_symmetries]]	✗	0.056
11191	$x^3y''' + 6x^2y'' + (ax^3 - 12)y = 0$	[[_3rd_order, _with_linear_symmetries]]	✓	0.296
11192	$x^3y''' + 3(-a + 1)x^2y'' + (4b^2c^2x^{2c+1} + 1 - 4\nu^2c^2 + 3a(a - 1)x)y' + (4b^2c^2(c - a)x^{2c} + a(4\nu^2c^2 - a^2))y = 0$	[[_3rd_order, _with_linear_symmetries]]	✗	0.088
11193	$x^3y''' + (x + 3)x^2y'' + 5(x - 6)xy' + (4x + 30)y = 0$	[[_3rd_order, _with_linear_symmetries]]	✗	0.055
11194	$x^3y''' + x^2y'' + \ln(x) + 2xy' - y - 2x^3 = 0$	[[_3rd_order, _linear, _nonhomogeneous]]	✓	22.290
11195	$(x^2 + 1)xy''' + 3(2x^2 + 1)y'' - 12y = 0$	[[_3rd_order, _with_linear_symmetries]]	✗	0.059
11196	$(x + 3)x^2y''' - 3x(x + 2)y'' + 6(x + 1)y' - 6y = 0$	[[_3rd_order, _with_linear_symmetries]]	✗	0.078

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
11197	$2(x - a_1)(x - a_2)(x - a_3)y''' + (9x^2 - 6(a_1 + a_2 + a_3)x + 3a_1a_2 + 3a_1a_3 + 3a_2a_3)y'' - 2((n^2 + n - 3)x + b)y' - n(n + 1)y = 0$	[[_3rd_order, _with_linear_symmetries]]	✗	0.066
11198	$(x + 1)x^3y''' - (4x + 2)x^2y'' + (10x + 4)xy' - 4(3x + 1)y = 0$	[[_3rd_order, _with_linear_symmetries]]	✗	0.065
11199	$4x^4y''' - 4x^3y'' + 4x^2y' - 1 = 0$	[[_3rd_order, _missing_y]]	✓	0.903
11200	$(x^2 + 1)x^3y''' - (4x^2 + 2)x^2y'' + (10x^2 + 4)xy' - 4(3x^2 + 1)y = 0$	[[_3rd_order, _with_linear_symmetries]]	✗	0.058
11201	$x^6y''' + x^2y'' - 2y = 0$	[[_3rd_order, _with_linear_symmetries]]	✗	0.051
11202	$x^6y''' + 6x^5y'' + ay = 0$	[[_3rd_order, _with_linear_symmetries]]	✗	0.053
11203	$x^2(x^4 + 2x^2 + 2x + 1)y''' - (2x^6 + 3x^4 - 6x^2 - 6x - 1)y'' + (x^6 - 6x^3 - 15x^2 - 12x - 2)y' + (x^4 + 4x^3 + 8x^2 + 6x + 1)y = 0$	[[_3rd_order, _with_linear_symmetries]]	✗	0.062
11204	$(x - a)^3(x - b)^3y''' - cy = 0$	[[_3rd_order, _with_linear_symmetries]]	✗	0.103
11205	$y''' \sin(x) + (2 \cos(x) + 1)y'' - y' \sin(x) - \cos(x) = 0$	[[_3rd_order, _missing_y]]	✓	1.259
11206	$(\sin(x) + x)y''' + 3(\cos(x) + 1)y'' - 3y' \sin(x) - y \cos(x) + \sin(x) = 0$	[[_3rd_order, _fully_exact, _linear]]	✗	0.059
11207	$y''' \sin(x)^2 + 3y'' \sin(x) \cos(x) + (\cos(2x) + 4\nu(\nu + 1) \sin(x)^2)y' + 2\nu(\nu + 1)y \sin(2x) = 0$	[[_3rd_order, _with_linear_symmetries]]	✗	0.069
11208	$f'(x)y'' + f(x)y''' + g'(x)y' + g(x)y'' + h'(x)y + h(x)y' + A(x)(f(x)y'' + g(x)y' + h(x)y) = 0$	[[_3rd_order, _with_linear_symmetries]]	✗	0.058

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
11209	$y''' + xy' + ny = 0$	[[_3rd_order, _with_linear_symmetries]]	✗	0.049
11210	$y''' - xy' - ny = 0$	[[_3rd_order, _with_linear_symmetries]]	✗	0.049
11211	$y'''' = 0$	[[_high_order, _quadrature]]	✓	0.039
11212	$y'''' + 4y - f = 0$	[[_high_order, _missing_x]]	✓	0.118
11213	$y'''' + \lambda y = 0$	[[_high_order, _missing_x]]	✓	0.080
11214	$y'''' - 12y'' + 12y - 16x^4 e^{x^2} = 0$	[[_high_order, _linear, _nonhomogeneous]]	✓	0.194
11215	$y'''' + 2a^2 y'' + a^4 y - \cosh(ax) = 0$	[[_high_order, _linear, _nonhomogeneous]]	✓	1.063
11216	$y'''' + (\lambda + 1)a^2 y'' + \lambda a^4 y = 0$	[[_high_order, _missing_x]]	✓	0.113
11217	$y'''' + a(bx - 1)y'' + aby' + \lambda y = 0$	[[_high_order, _with_linear_symmetries]]	✗	0.050
11218	$y'''' + (x^2 a + b\lambda + c)y'' + (x^2 a + \beta\lambda + \gamma)y = 0$	[[_high_order, _with_linear_symmetries]]	✗	0.050
11219	$y'''' + a \text{WeierstrassP}(x, g_2, g_3)y'' + b \text{WeierstrassPPrime}(x, g_2, g_3)y' + \left(c \left(6 \text{WeierstrassP}(x, g_2, g_3)^2 - \frac{g_2}{2}\right) + d\right)y = 0$	[[_high_order, _with_linear_symmetries]]	✗	0.056
11220	$y'''' - (12k^2 \text{JacobiSN}(z, x)^2 + a)y'' + by' + (\alpha \text{JacobiSN}(z, x)^2 + \beta)y = 0$	[[_high_order, _with_linear_symmetries]]	✗	0.062
11221	$y'''' + 2y''' - 3y'' - 4y' + 4y - 32 \sin(2x) + 24 \cos(2x) = 0$	[[_high_order, _linear, _nonhomogeneous]]	✓	0.178
11222	$y'''' + 4axy''' + 6a^2 x^2 y'' + 4a^3 x^3 y' + a^4 x^4 y = 0$	[[_high_order, _with_linear_symmetries]]	✗	0.051

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
11223	$4y'''' - 12y''' + 11y'' - 3y' - 4 \cos(x) = 0$	[[_high_order, _missing_y]]	✓	0.144
11224	$xy'''' + 5y''' - 24 = 0$	[[_high_order, _missing_y]]	✓	0.378
11225	$xy'''' - (6x^2 + 1)y''' + 12x^3y'' - (9x^2 - 7)x^2y' + 2(x^2 - 3)x^3y = 0$	[[_high_order, _with_linear_symmetries]]	✗	0.056
11226	$x^2y'''' - 2(\nu^2x^2 + 6)y'' + \nu^2(\nu^2x^2 + 4)y = 0$	[[_high_order, _with_linear_symmetries]]	✗	0.061
11227	$x^2y'''' + 2xy''' + ay - bx^2 = 0$	[[_high_order, _linear, _nonhomogeneous]]	✗	0.056
11228	$x^2y'''' + 4xy''' + 2y'' = 0$	[[_high_order, _missing_y]]	✓	0.214
11229	$x^2y'''' + 6xy''' + 6y'' = 0$	[[_high_order, _missing_y]]	✓	0.203
11230	$x^2y'''' + 6xy''' + 6y'' - \lambda^2y = 0$	[[_high_order, _with_linear_symmetries]]	✗	0.049
11231	$x^2y'''' + 8xy''' + 12y'' = 0$	[[_high_order, _missing_y]]	✓	0.183
11232	$x^2y'''' + 8xy''' + 12y'' - \lambda^2y = 0$	[[_high_order, _with_linear_symmetries]]	✗	0.050
11233	$x^2y'''' + (2n - 2\nu + 4)xy''' + (n - \nu + 1)(n - \nu + 2)y'' - \frac{b^4y}{16} = 0$	[[_high_order, _with_linear_symmetries]]	✗	0.058
11234	$x^3y'''' + 2y'''x^2 - xy'' + y' - a^4x^3y = 0$	[[_high_order, _with_linear_symmetries]]	✗	0.052
11235	$x^3y'''' + 6y'''x^2 + 6xy'' = 0$	[[_high_order, _missing_y]]	✓	0.222
11236	$x^4y'''' - 2n(n + 1)x^2y'' + 4n(n + 1)xy' + (ax^4 + n(n + 1)(3 + n)(n - 2))y = 0$	[[_high_order, _with_linear_symmetries]]	✗	0.061

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
11237	$x^4 y'''' + 4x^3 y''' - (4n^2 - 1) x^2 y'' + (4n^2 - 1) xy' - 4yx^4 = 0$	[[_high_order, _with_linear_symmetries]]	✗	0.086
11238	$x^4 y'''' + 4x^3 y''' - (4n^2 - 1) x^2 y'' - (4n^2 - 1) xy' + (-4x^4 + 4n^2 - 1) y = 0$	[[_high_order, _with_linear_symmetries]]	✗	0.058
11239	$x^4 y'''' + 4x^3 y''' - (4n^2 + 3) x^2 y'' + (12n^2 - 3) xy' - (4x^4 + 12n^2 - 3) y = 0$	[[_high_order, _with_linear_symmetries]]	✗	0.059
11240	$x^4 y'''' + 6x^3 y''' + (4x^4 + (-\rho^2 - \sigma^2 + 7) x^2) y'' + (16x^3 + (-\rho^2 - \sigma^2 + 1) x) y' + (\rho^2 \sigma^2 + 8x^2) y = 0$	[[_high_order, _with_linear_symmetries]]	✗	0.055
11241	$x^4 y'''' + 6x^3 y''' + (4x^4 + (-2\mu^2 - 2\nu^2 + 7) x^2) y'' + (16x^3 + (-2\mu^2 - 2\nu^2 + 1) x) y' + (8x^2 + (\mu^2 - \nu^2)^2) y = 0$	[[_high_order, _with_linear_symmetries]]	✗	0.056
11242	$x^4 y'''' + 8x^3 y''' + 12x^2 y'' = 0$	[[_high_order, _missing_y]]	✓	0.135
11243	$x^4 y'''' + 8x^3 y''' + 12x^2 y'' + ay = 0$	[[_high_order, _with_linear_symmetries]]	✓	0.161
11244	$x^4 y'''' + (6 - 4a) x^3 y''' + (4b^2 c^2 x^{2c} + 6(a - 1)^2 - 2c^2(\mu^2 + \nu^2) + 1) x^2 y'' + (4(3c - 2a + 1) b^2 c^2 x^{2c} + (2a - 1) (2c^2(\mu^2 + \nu^2) - 2a(a - 1) - 1)) xy' + (4(a - c) (a - 2c) b^2 c^2 x^{2c} + (c\mu + c\nu + a) (c\mu + c\nu - a) (c\mu - c\nu + a) (c\mu - c\nu - a)) y = 0$	[[_high_order, _with_linear_symmetries]]	✗	0.108

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
11245	$ \begin{aligned} & x^4 y'''' + (6 - 4a - 4c) x^3 y''' \\ & + (-2\nu^2 c^2 + 2a^2 \\ & + 4(a + c - 1)^2 \\ & + 4(a - 1)(c - 1) - 1) x^2 y'' \\ & + (2\nu^2 c^2 - 2a^2 \\ & - (2a - 1)(2c - 1))(2a \\ & + 2c - 1) x y' \\ & + ((-\nu^2 c^2 + a^2)(-\nu^2 c^2 \\ & + a^2 + 4ac + 4c^2) \\ & - b^4 c^4 x^{4c}) y = 0 \end{aligned} $	[[_high_order, _with_linear_symmetries]]	✗	0.098
11246	$ \begin{aligned} & \nu^4 x^4 y'''' + (4\nu - 2) \nu^3 x^3 y''' \\ & + (\nu - 1)(2\nu - 1) \nu^2 x^2 y'' \\ & - \frac{b^4 x^{\frac{2}{\nu}} y}{16} = 0 \end{aligned} $	[[_high_order, _with_linear_symmetries]]	✗	0.083
11247	$ \begin{aligned} & (x^2 - 1)^2 y'''' \\ & + 10x(x^2 - 1) y''' \\ & + (24x^2 - 8 - 2(\mu(\mu + 1) \\ & + \nu(\nu + 1))(x^2 - 1)) y'' \\ & - 6x(\mu(\mu + 1) \\ & + \nu(\nu + 1) - 2) y' \\ & + ((\mu(\mu + 1) - \nu(\nu + 1))^2 \\ & - 2\mu(\mu + 1) \\ & - 2\nu(\nu + 1)) y = 0 \end{aligned} $	[[_high_order, _with_linear_symmetries]]	✗	0.068
11248	$ \begin{aligned} & (e^x + 2x) y'''' + 4(e^x + 2) y''' \\ & + 6e^x y'' + 4e^x y' + y e^x - \frac{1}{x^5} = 0 \end{aligned} $	[[_high_order, _fully, _exact, _linear]]	✗	0.063
11249	$ \begin{aligned} & y'''' \sin(x)^4 \\ & + 2y''' \sin(x)^3 \cos(x) \\ & + y'' \sin(x)^2 (\sin(x)^2 - 3) \\ & + y' \sin(x) \cos(x) (2 \sin(x)^2 \\ & + 3) + (a^4 \sin(x)^4 - 3) y = 0 \end{aligned} $	[[_high_order, _with_linear_symmetries]]	✗	0.060
11250	$ \begin{aligned} & y'''' \sin(x)^6 \\ & + 4y''' \sin(x)^5 \cos(x) \\ & - 6y'' \sin(x)^6 \\ & - 4y' \sin(x)^5 \cos(x) \\ & + y \sin(x)^6 - f = 0 \end{aligned} $	[[_high_order, _linear, _nonhomogeneous]]	✗	0.054
11251	$ \begin{aligned} & f(y'''' - 2a^2 y'' + a^4 y) \\ & + 2 \operatorname{df}(y''' - a^2 y') = 0 \end{aligned} $	[[_high_order, _missing_x]]	✓	0.093

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
11252	$fy'''' = 0$	[[_high_order, _quadrature]]	✓	0.065
11253	$y'''' - 2a^2y'' + a^4y - \lambda(ax - b)(y'' - a^2y) = 0$	[[_high_order, _with_linear_symmetries]]	✗	0.056
11254	$y^{(5)} + 2y''' + y' - ax - b \sin(x) - c \cos(x) = 0$	[[_high_order, _missing_y]]	✓	1.489
11255	$y^{(6)} + y - \sin\left(\frac{3x}{2}\right) \sin\left(\frac{x}{2}\right) = 0$	[[_high_order, _linear, _nonhomogeneous]]	✓	2.683
11256	$y^{(5)} - axy - b = 0$	[[_high_order, _linear, _nonhomogeneous]]	✗	0.043
11257	$y^{(5)} + ax^\nu y' + a\nu x^{\nu-1}y = 0$	[[_high_order, _with_linear_symmetries]]	✗	0.052
11258	$y^{(5)} + ay'''' - f = 0$	[[_high_order, _missing_x]]	✓	0.118
11259	$xy^{(5)} - mny'''' + axy = 0$	[[_high_order, _with_linear_symmetries]]	✗	0.048
11260	$x(ay' + by'' + cy''' + ey'''' )y = 0$	[[_high_order, _missing_x]]	✓	0.442
11261	$xy^{(5)} - (aA_1 - A_0)x - A_1 - ((aA_2 - A_1)x + A_2)y' = 0$	[[_high_order, _missing_y]]	✗	0.075
11262	$x^2y'''' - ay = 0$	[[_high_order, _with_linear_symmetries]]	✗	0.052
11263	$x^{10}y^{(5)} - ay = 0$	[[_high_order, _with_linear_symmetries]]	✗	0.051
11264	$x^{5/2}y^{(5)} - ay = 0$	[[_high_order, _with_linear_symmetries]]	✗	0.066
11265	$(x - a)^5(x - b)^5y^{(5)} - cy = 0$	[[_high_order, _with_linear_symmetries]]	✗	0.060

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
11266	$y'' - y^2 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓	1.900
11267	$y'' - 6y^2 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓	1.843
11268	$y'' - 6y^2 - x = 0$	[[_Painleve, '1st']]	✗	0.085
11269	$y'' - 6y^2 + 4y = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓	3.741
11270	$y'' + y^2a + bx + c = 0$	[NONE]	✗	0.090
11271	$y'' - 2y^3 - xy + a = 0$	[[_Painleve, '2nd']]	✗	0.089
11272	$y'' - ay^3 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓	1.640
11273	$y'' - 2a^2y^3 + 2abxy - b = 0$	[NONE]	✗	0.093
11274	$y'' + d + bxy + cy + ay^3 = 0$	[NONE]	✗	0.093
11275	$y'' + d + by^2 + cy + ay^3 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓	3.942
11276	$y'' + ax^ry^2 = 0$	[[_Emden, _Fowler], [_2nd_order, _with_linear_symmetries]]	✗	0.093
11277	$y'' + 6a^{10}y^{11} - y = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓	0.988
11278	$y'' - \frac{1}{(y^2a + bxy + cx^2 + \alpha y + \beta x + \gamma)^{3/2}} = 0$	[NONE]	✗	0.332
11279	$y'' - e^y = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓	35.130
11280	$y'' + ae^x\sqrt{y} = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.124
11281	$y'' + e^x \sin(y) = 0$	[NONE]	✗	0.176

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
11282	$y'' + a \sin(y) = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓	2.201
11283	$y'' + a^2 \sin(y) - \beta \sin(x) = 0$	[NONE]	✗	0.309
11284	$y'' + a^2 \sin(y) - \beta f(x) = 0$	[NONE]	✗	0.209
11285	$y'' = \frac{f\left(\frac{y}{\sqrt{x}}\right)}{x^{3/2}}$	[[_2nd_order, _with_linear_symmetries]]	✗	0.381
11286	$y'' - 3y' - y^2 - 2y = 0$	[[_2nd_order, _missing_x]]	✗	0.508
11287	$y'' - 7y' - y^{3/2} + 12y = 0$	[[_2nd_order, _missing_x]]	✗	1.092
11288	$y'' + 5ay' - 6y^2 + 6a^2y = 0$	[[_2nd_order, _missing_x]]	✗	2.198
11289	$y'' + 3ay' - 2y^3 + 2a^2y = 0$	[[_2nd_order, _missing_x]]	✗	2.394
11290	$y'' - \frac{(3n+4)y'}{n} - \frac{2(n+1)(2+n)y\left(y^{\frac{n}{n+1}} - 1\right)}{n^2} = 0$	[[_2nd_order, _missing_x]]	✗	1.333
11291	$y'' + ay' + by^n + \frac{(a^2-1)y}{4} = 0$	[[_2nd_order, _missing_x]]	✗	1.007
11292	$y'' + ay' + bx^v y^n = 0$	[NONE]	✗	0.102
11293	$y'' + ay' + be^y - 2a = 0$	[[_2nd_order, _missing_x]]	✗	0.789
11294	$y'' + ay' + f(x) \sin(y) = 0$	[NONE]	✗	0.140
11295	$y'' + yy' - y^3 = 0$	[[_2nd_order, _missing_x]]	✓	24.017
11296	$y'' + yy' - y^3 + ay = 0$	[[_2nd_order, _missing_x]]	✗	4.575
11297	$y'' + (y+3a)y' - y^3 + y^2a + 2a^2y = 0$	[[_2nd_order, _missing_x]]	✗	4.363
11298	$y'' + (y+3f(x))y' - y^3 + y^2f(x) + y(f'(x) + 2f(x)^2) = 0$	[NONE]	✗	0.109

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
11299	$y'' + yy' - y^3 - \left(\frac{f'(x)}{f(x)} + f(x)\right)(3y' + y^2) + \left(af(x)^2 + 3f'(x) + \frac{3f'(x)^2}{f(x)^2} - \frac{f''(x)}{f(x)}\right)y + bf(x)^3 = 0$	[NONE]	✗	0.137
11300	$y'' + \left(y - \frac{3f'(x)}{2f(x)}\right)y' - y^3 - \frac{f'(x)y^2}{2f(x)} + \frac{\left(f(x) + \frac{f'(x)^2}{f(x)^2} - f''(x)\right)y}{2f(x)} = 0$	[NONE]	✗	0.133
11301	$y'' + 2yy' + f(x)y' + f'(x)y = 0$	[[_2nd_order, _exact, _nonlinear], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_y_y1], [_2nd_order, _reducible, _mu_xy]]	✗	1.296
11302	$y'' + 2yy' + f(x)(y' + y^2) - g(x) = 0$	[[_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✗	0.094
11303	$y'' + 3yy' + y^3 + f(x)y - g(x) = 0$	[NONE]	✗	0.093
11304	$y'' + (3y + f(x))y' + y^3 + y^2f(x) = 0$	[[_2nd_order, _with_potential_symmetries]]	✗	0.204
11305	$y'' - 3yy' - 3y^2a - 4a^2y - b = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✗	3.114
11306	$y'' - (3y + f(x))y' + y^3 + y^2f(x) = 0$	[[_2nd_order, _with_potential_symmetries]]	✗	0.204

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
11307	$y'' - 2a yy' = 0$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _non-linear], _Lagerstrom, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓	0.662
11308	$y'' + ayy' + by^3 = 0$	[[_2nd_order, _missing_x]]	✓	43.853
11309	$y'' + f(x, y) y' + g(x, y) = 0$	[NONE]	✗	0.099
11310	$y'' + ay'^2 + by = 0$	[[_2nd_order, _missing_x]]	✓	1.033
11311	$y'' + ay' y'  + by' + cy = 0$	[[_2nd_order, _missing_x]]	✗	0.551
11312	$y'' + ay'^2 + by' + cy = 0$	[[_2nd_order, _missing_x]]	✗	0.527
11313	$y'' + ay'^2 + b \sin(y) = 0$	[[_2nd_order, _missing_x]]	✓	4.592
11314	$y'' + ay' y'  + b \sin(y) = 0$	[[_2nd_order, _missing_x]]	✗	0.504
11315	$y'' + ayy'^2 + by = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓	1.262
11316	$y'' + f(y) y'^2 + g(x) y' = 0$	[_Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓	0.507
11317	$y'' - \frac{D(f)(y) y'^3}{f(y)} + g(x) y' + h(x) f(y) = 0$	[NONE]	✗	0.164
11318	$y'' + \phi(y) y'^2 + f(x) y' + g(x) \Phi(y) = 0$	[NONE]	✗	0.161
11319	$y'' + f(y) y'^2 + g(y) y' + h(y) = 0$	[[_2nd_order, _missing_x]]	✗	0.171
11320	$y'' + (1 + y'^2) (f(x, y) y' + g(x, y)) = 0$	[NONE]	✗	0.109

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
11321	$y'' + ay(1 + y'^2)^2 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓	2.834
11322	$y'' - a(-y + xy')^v = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.217
11323	$y'' - kx^ay^by'^r = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.099
11324	$y'' + \left(y' - \frac{y}{x}\right)^a f(x, y) = 0$	[NONE]	✗	0.178
11325	$y'' = a\sqrt{1 + y'^2}$	[[_2nd_order, _missing_x]]	✓	0.496
11326	$y'' = a\sqrt{1 + y'^2} + b$	[[_2nd_order, _missing_x]]	✓	1.699
11327	$y'' = a\sqrt{y'^2 + by^2}$	[[_2nd_order, _missing_x]]	✓	2.569
11328	$y'' = a(1 + y'^2)^{3/2}$	[[_2nd_order, _missing_x]]	✓	0.563
11329	$y'' - 2ax(1 + y'^2)^{3/2} = 0$	[[_2nd_order, _missing_y], [_2nd_order, _reducible, _mu_y_y1]]	✓	2.474
11330	$y'' - ay(1 + y'^2)^{3/2} = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓	8.461
11331	$y'' = 2a(c + bx + y)(1 + y'^2)^{3/2}$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_y_y1]]	✗	0.294
11332	$y'' + y^3y' - yy'\sqrt{y^4 + 4y'} = 0$	[[_2nd_order, _missing_x]]	✓	4.136
11333	$y'' - f(y', ax + by) = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.107
11334	$y'' - yf\left(x, \frac{y'}{y}\right) = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.114

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
11335	$y'' - x^{n-2} f(yx^{-n}, y'x^{1-n}) = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.163
11336	$8y'' + 9y'^4 = 0$	[[_2nd_order, _missing_x]]	✓	0.595
11337	$ay'' + h(y') + cy = 0$	[[_2nd_order, _missing_x]]	✗	0.718
11338	$xy'' + 2y' - y^n x = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.099
11339	$xy'' + 2y' + ax^v y^n = 0$	[[_Emden, _Fowler], [_2nd_order, _with_linear_symmetries]]	✗	0.099
11340	$xy'' + 2y' + xe^y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.092
11341	$xy'' + ay' + bxe^y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.092
11342	$xy'' + ay' + bx^{5-2a}e^y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.120
11343	$xy'' + (y - 1)y' = 0$	[[_2nd_order, _exact, _nonlinear], [_2nd_order, _with_linear_symmetries], [_2nd_order, _reducible, _mu_xy]]	✓	0.576
11344	$xy'' - x^2y'^2 + 2y' + y^2 = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _reducible, _mu_xy]]	✗	0.158
11345	$xy'' + a(-y + xy')^2 - b = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.159
11346	$2xy'' + y'^3 + y' = 0$	[[_2nd_order, _missing_y], [_2nd_order, _reducible, _mu_y_y1]]	✓	0.567
11347	$x^2y'' = a(y^n - y)$	[[_2nd_order, _with_linear_symmetries]]	✗	0.101
11348	$x^2y'' + a(e^y - 1) = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.107
11349	$x^2y'' - (2a + b - 1)xy' + (c^2b^2x^{2b} + a(a + b))y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	3.069

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
11350	$x^2 y'' + (a + 1) xy' - x^k f(x^k y, xy' + ky) = 0$	[NONE]	✗	0.141
11351	$x^2 y'' + a(-y + xy')^2 - b x^2 = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.159
11352	$x^2 y'' + ayy'^2 + bx = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.085
11353	$x^2 y'' - \sqrt{a x^2 y'^2 + b y^2} = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.292
11354	$(x^2 + 1) y'' + y'^2 + 1 = 0$	[[_2nd_order, _missing_y], [_2nd_order, _reducible, _mu_y_y1]]	✓	0.732
11355	$4x^2 y'' - x^4 y'^2 + 4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.085
11356	$9x^2 y'' + ay^3 + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.186
11357	$x^3 (y'' + yy' - y^3) + 12xy + 24 = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.095
11358	$x^3 y'' - a(-y + xy')^2 = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _reducible, _mu_xy]]	✗	0.165
11359	$2x^3 y'' + x^2(9 + 2xy) y' + b + xy(a + 3xy - 2y^2 x^2) = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.096
11360	$2(-x^k + 4x^3) (y'' + yy' - y^3) - (k x^{k-1} - 12x^2) (3y' + y^2) + axy + b = 0$	[NONE]	✗	0.127
11361	$x^4 y'' + a^2 y^n = 0$	[[_Emden, _Fowler], [_2nd_order, _with_linear_symmetries]]	✗	0.097
11362	$x^4 y'' - x(x^2 + 2y) y' + 4y^2 = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✗	0.156

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
11363	$x^4 y'' - x^2(x + y')y' + 4y^2 = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _reducible, _mu_xy]]	✗	0.157
11364	$x^4 y'' + (-y + xy')^3 = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.151
11365	$y''\sqrt{x} - y^{3/2} = 0$	[[_Emden, _Fowler], [_2nd_order, _with_linear_symmetries]]	✗	0.117
11366	$(x^2 a + bx + c)^{3/2} y'' - F\left(\frac{y}{\sqrt{x^2 a + bx + c}}\right) = 0$	[NONE]	✗	7.986
11367	$x^{\frac{n}{n+1}} y'' - y^{\frac{2n+1}{n+1}} = 0$	[[_Emden, _Fowler], [_2nd_order, _with_linear_symmetries]]	✗	0.149
11368	$f(x)^2 y'' + f(x) f'(x) y' - h(y, f(x) y') = 0$	[NONE]	✗	0.104
11369	$y''y - a = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓	0.507
11370	$y''y - ax = 0$	[[_Emden, _Fowler], [_2nd_order, _with_linear_symmetries]]	✗	0.081
11371	$y''y - x^2 a = 0$	[[_Emden, _Fowler], [_2nd_order, _with_linear_symmetries]]	✗	0.084
11372	$y''y + y'^2 - a = 0$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓	1.701
11373	$y''y + y^2 - ax - b = 0$	[NONE]	✗	0.088

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
Continued from previous page

#	ODE	CAS classification	Solved?	time (sec)
11374	$y''y + y'^2 - y' = 0$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓	0.574
11375	$y''y - y'^2 + 1 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓	2.138
11376	$y''y - y'^2 - 1 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓	2.964
11377	$y''y - y'^2 + e^x y (cy^2 + d) + e^{2x} (b + ay^4) = 0$	[NONE]	✗	0.128
11378	$y''y - y'^2 - y^2 \ln(y) = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_xy]]	✓	4.353
11379	$y''y - y'^2 - y' + f(x)y^3 + y^2 \left( \frac{f''(x)}{f(x)} - \frac{f'(x)^2}{f(x)^2} \right) = 0$	[NONE]	✗	0.118
11380	$y''y - y'^2 + f(x)y' - f'(x)y - y^3 = 0$	[NONE]	✗	0.105
11381	$y''y - y'^2 + f'(x)y' - f''(x)y + f(x)y^3 - y^4 = 0$	[NONE]	✗	0.111
11382	$y''y - y'^2 + ayy' + by^2 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_xy]]	✓	4.377
11383	$y''y - y'^2 + ayy' - 2y^2a + by^3 = 0$	[[_2nd_order, _missing_x]]	✗	0.653
11384	$y''y - y'^2 - (-1 + ay)y' + 2a^2y^2 - 2b^2y^3 + ay = 0$	[[_2nd_order, _missing_x]]	✗	1.206
11385	$y''y - y'^2 + (-1 + ay)y' - y(1 + y)(b^2y^2 - a^2) = 0$	[[_2nd_order, _missing_x]]	✗	2.255

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

*Continued from previous page*

#	ODE	CAS classification	Solved?	time (sec)
11386	$y''y - y'^2 + (\tan(x) + \cot(x))yy' + (\cos(x)^2 - n^2 \cot(x)^2)y^2 \ln(y) = 0$	[[_2nd_order, _reducible, _mu_xy]]	✗	4.269
11387	$y''y - y'^2 - f(x)yy' - g(x)y^2 = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _reducible, _mu_xy]]	✗	0.215
11388	$y''y - y'^2 + (g(x) + y^2 f(x))y' - y(g'(x) - f'(x)y^2) = 0$	[[_2nd_order, _reducible, _mu_y_y1], [_2nd_order, _reducible, _mu_xy]]	✗	0.121
11389	$y''y - 3y'^2 + 3yy' - y^2 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_xy]]	✓	4.062
11390	$y''y - ay'^2 = 0$	[[_2nd_order, _missing_x], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓	0.362
11391	$y''y + a(1 + y'^2) = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓	0.811
11392	$y''y + ay'^2 + by^3 = 0$	[[_2nd_order, _missing_x]]	✓	2.427
11393	$y''y + ay'^2 + byy' + cy^2 + dy^{-a+1} = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_xy]]	✗	10.363
11394	$y''y + ay'^2 + f(x)yy' + g(x)y^2 = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.097
11395	$y''y + ay'^2 + by^2y' + cy^4 = 0$	[[_2nd_order, _missing_x]]	✓	8.234
11396	$y''y - \frac{(a-1)y'^2}{a} - f(x)y^2y' + \frac{af(x)^2y^4}{(a+2)^2} - \frac{af'(x)y^3}{a+2} = 0$	[NONE]	✗	0.137

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
11397	$y''y - y'^2 - 1 - 2ay(1 + y'^2)^{3/2} = 0$	[[_2nd_order, _missing_x]]	✓	204.332
11398	$y''(x + y) + y'^2 - y' = 0$	[[_2nd_order, _exact, _nonlinear], [_2nd_order, _with_linear_symmetries], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_y_y1], [_2nd_order, _reducible, _mu_xy]]	✓	4.854
11399	$y''(x - y) + 2y'(y' + 1) = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_y_y1]]	✗	0.145
11400	$y''(x - y) - (y' + 1)(1 + y'^2) = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_y_y1]]	✗	0.152
11401	$y''(x - y) - h(y') = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_y_y1]]	✗	0.297
11402	$2y''y + y'^2 + 1 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓	1.081
11403	$2y''y - y'^2 + a = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓	1.349
11404	$2y''y - y'^2 + y^2f(x) + a = 0$	[NONE]	✗	0.090
11405	$2y''y - y'^2 - 8y^3 = 0$	[[_2nd_order, _missing_x]]	✓	5.058
11406	$2y''y - y'^2 - 8y^3 - 4y^2 = 0$	[[_2nd_order, _missing_x]]	✓	1.326

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
11407	$2y''y - y'^2 - 4(x + 2y)y^2 = 0$	[NONE]	✗	0.092
11408	$2y''y - y'^2 + (ay + b)y^2 = 0$	[[_2nd_order, _missing_x]]	✓	1.657
11409	$2y''y - y'^2 + 1 + 2xy^2 + ay^3 = 0$	[NONE]	✗	0.095
11410	$2y''y - y'^2 + (bx + ay)y^2 = 0$	[NONE]	✗	0.091
11411	$2y''y - y'^2 - 3y^4 = 0$	[[_2nd_order, _missing_x]]	✓	2.058
11412	$2y''y - y'^2 + b - 4(x^2 + a)y^2 - 8xy^3 - 3y^4 = 0$	[[_Painleve, '4th']]	✗	0.095
11413	$2y''y - y'^2 + 3f(x)yy' + 2(f(x)^2 + f'(x))y^2 - 8y^3 = 0$	[NONE]	✗	0.109
11414	$2y''y - y'^2 + 4y^2y' + 1 + y^2f(x) + y^4 = 0$	[NONE]	✗	0.095
11415	$2y''y - 3y'^2 = 0$	[[_2nd_order, _missing_x], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓	0.332
11416	$2y''y - 3y'^2 - 4y^2 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_xy]]	✓	5.185
11417	$2y''y - 3y'^2 + y^2f(x) = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.089
11418	$2y''y - 6y'^2 + (1 + ay^3)y^2 = 0$	[[_2nd_order, _missing_x]]	✓	1.605
11419	$2y''y - y'^2(1 + y'^2) = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓	68.682
11420	$2(y - a)y'' + y'^2 + 1 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓	1.210
11421	$3y''y - 2y'^2 - x^2a - bx - c = 0$	[NONE]	✗	0.183

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
11422	$3y''y - 5y'^2 = 0$	[[_2nd_order, _missing_x], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓	0.642
11423	$4y''y - 3y'^2 + 4y = 0$	[[_2nd_order, _missing_x]]	✓	15.491
11424	$4y''y - 3y'^2 - 12y^3 = 0$	[[_2nd_order, _missing_x]]	✓	5.059
11425	$4y''y - 3y'^2 + ay^3 + by^2 + cy = 0$	[[_2nd_order, _missing_x]]	✓	7.517
11426	$4y''y - 3y'^2 + \left(6y^2 - \frac{2f'(x)y}{f(x)}\right)y' + y^4 - 2y^2y' + g(x)y^2 + f(x)y = 0$	[NONE]	✗	0.121
11427	$4y''y - 5y'^2 + y^2a = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_xy]]	✓	4.661
11428	$12y''y - 15y'^2 + 8y^3 = 0$	[[_2nd_order, _missing_x]]	✓	4.762
11429	$nyy'' - (n-1)y'^2 = 0$	[[_2nd_order, _missing_x], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓	0.365
11430	$ayy'' + by'^2 + c4y^4 + c3y^3 + c2y^2 + c1y + c0 = 0$	[[_2nd_order, _missing_x]]	✓	1.899
11431	$ayy'' + by'^2 - \frac{yy'}{\sqrt{c^2 + x^2}} = 0$	[_Liouville, [_2nd_order, _with_linear_symmetries], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓	0.831
11432	$ayy'' - (a-1)y'^2 + (a+2)f(x)y^2y' + f(x)^2y^4 + af'(x)y^3 = 0$	[NONE]	✗	0.116

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
11433	$(ay + b)y'' + cy'^2 = 0$	[[_2nd_order, _missing_x], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓	0.562
11434	$xyy'' + xy'^2 - yy' = 0$	[[_2nd_order, _exact, _nonlinear], _Liouville, [_2nd_order, _with_linear_symmetries], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓	0.766
11435	$xyy'' + xy'^2 + ayy' + f(x) = 0$	[[_2nd_order, _exact, _nonlinear], [_2nd_order, _reducible, _mu_xy]]	✗	0.206
11436	$xyy'' - xy'^2 + yy' + x(d + ay^4) + y(c + by^2) = 0$	[[_Painleve, '3rd']]	✗	0.098
11437	$xyy'' - xy'^2 + ayy' + bxy^3 = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.096
11438	$xyy'' + 2xy'^2 + ayy' = 0$	[_Liouville, [_2nd_order, _with_linear_symmetries], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓	0.682
11439	$xyy'' - 2xy'^2 + (1 + y)y' = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✗	0.141
11440	$xyy'' - 2xy'^2 + ayy' = 0$	[_Liouville, [_2nd_order, _with_linear_symmetries], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓	0.239

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
11441	$xyy'' - 4xy'^2 + 4yy' = 0$	[_Liouville, [_2nd_order, _with_linear_symmetries], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓	0.577
11442	$xyy'' + \left(\frac{ax}{\sqrt{b^2 - x^2}} - x\right)y'^2 - yy' = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.346
11443	$x(x+y)y'' + xy'^2 + (x-y)y' - y = 0$	[[_2nd_order, _exact, _nonlinear], [_2nd_order, _with_linear_symmetries], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_y_y1], [_2nd_order, _reducible, _mu_xy]]	✓	0.898
11444	$2xyy'' - xy'^2 + yy' = 0$	[_Liouville, [_2nd_order, _with_linear_symmetries], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓	0.339
11445	$x^2(y-1)y'' - 2x^2y'^2 - 2x(y-1)y' - 2y(y-1)^2 = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _reducible, _mu_y_y1], [_2nd_order, _reducible, _mu_xy]]	✗	0.211
11446	$x^2(x+y)y'' - (-y+xy')^2 = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _reducible, _mu_xy]]	✗	0.170
11447	$x^2(x-y)y'' + a(-y+xy')^2 = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _reducible, _mu_xy]]	✗	0.171
11448	$2x^2yy'' - x^2(1+y'^2) + y^2 = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.155

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
11449	$ax^2yy'' + bx^2y'^2 + cxyy' + dy^2 = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _reducible, _mu_xy]]	✗	0.153
11450	$x(x+1)^2yy'' - x(x+1)^2y'^2 + 2(x+1)^2yy' - a(x+2)y^2 = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _reducible, _mu_xy]]	✗	0.226
11451	$8(-x^3+1)yy'' - 4(-x^3+1)y'^2 - 12x^2yy' + 3xy^2 = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _reducible, _mu_xy]]	✗	0.181
11452	$f_0(x)yy'' + f_1(x)y'^2 + f_2(x)yy' + f_3(x)y^2 = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.100
11453	$y^2y'' - a = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓	71.285
11454	$y^2y'' + yy'^2 + ax = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.133
11455	$y^2y'' + yy'^2 - ax - b = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.139
11456	$(1+y^2)y'' + (1-2y)y'^2 = 0$	[[_2nd_order, _missing_x], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓	2.271
11457	$(1+y^2)y'' - 3yy'^2 = 0$	[[_2nd_order, _missing_x], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓	0.378
11458	$(x+y^2)y'' - 2(x-y^2)y'^3 + y'(1+4yy') = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _reducible, _mu_y_y1]]	✗	0.169

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
11459	$(y^2 + x^2) y'' - (1 + y'^2) (-y + xy') = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_y_y1]]	✗	0.154
11460	$(y^2 + x^2) y'' - 2(1 + y'^2) (-y + xy') = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_y_y1]]	✗	0.159
11461	$2y(1 - y) y'' - (1 - 2y) y'^2 + y(1 - y) y' f(x) = 0$	[_Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✗	0.256
11462	$2y(1 - y) y'' - (1 - 3y) y'^2 + h(y) = 0$	[[_2nd_order, _missing_x]]	✓	1.523
11463	$2y(y - 1) y'' - (3y - 1) y'^2 + 4yy'(f(x)y + g(x)) + 4y^2(y - 1)(g(x)^2 - f(x)^2 - g'(x) - f'(x)) = 0$	[[_2nd_order, _reducible, _mu_xy]]	✗	0.141
11464	$-2y(1 - y) y'' + (1 - 3y) y'^2 - 4yy'(f(x)y + g(x)) + (1 - y)^3 (f_0(x)^2 y^2 - f_1(x)^2) + 4y^2(1 - y)(f(x)^2 - g(x)^2 - g'(x) - f'(x)) = 0$	[NONE]	✗	0.155
11465	$3y(1 - y) y'' - 2(1 - 2y) y'^2 - h(y) = 0$	[[_2nd_order, _missing_x]]	✓	1.710
11466	$(1 - y) y'' - 3(1 - 2y) y'^2 - h(y) = 0$	[[_2nd_order, _missing_x]]	✓	1.769
11467	$ay(y - 1) y'' + (by + c) y'^2 + h(y) = 0$	[[_2nd_order, _missing_x]]	✓	2.392

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
11468	$ay(y-1)y'' - (a-1)(2y-1)y'^2 + fy(y-1)y' = 0$	[[_2nd_order, _missing_x], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓	0.820
11469	$aby(y-1)y'' - ((2ab-a-b)y + (-a+1)b)y'^2 + fy(y-1)y' = 0$	[[_2nd_order, _missing_x], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓	1.344
11470	$xy^2y'' - a = 0$	[[_Emden, _Fowler], [_2nd_order, _with_linear_symmetries]]	✗	0.131
11471	$(a^2-x^2)(a^2-y^2)y'' + (a^2-x^2)yy'^2 - x(a^2-y^2)y' = 0$	[_Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✗	0.339
11472	$2x^2y(y-1)y'' - x^2(3y-1)y'^2 + 2xy(y-1)y' + (y^2a+b)(y-1)^3 + cxy^2(y-1) + dx^2y^2(1+y) = 0$	[[_Painleve, '5th']]	✗	0.118
11473	$x^3y^2y'' + (x+y)(-y+xy')^3 = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.167
11474	$y^3y'' - a = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓	0.992
11475	$y(1+y^2)y'' + (1-3y^2)y'^2 = 0$	[[_2nd_order, _missing_x], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓	0.943
11476	$2y^3y'' + y^4 - a^2xy^2 - 1 = 0$	[NONE]	✗	0.094
11477	$2y^3y'' + y^2y'^2 - x^2a - bx - c = 0$	[NONE]	✗	0.091

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
11478	$2(y-a)(y-b)(y-c)y'' - ((y-a)^2(y-b)(y-c) + (y-b)(y-c))y'^2 + (y-a)^2(y-b)^2(y-c)^2 \left( A_0 + \frac{B_0}{(y-a)^2} + \frac{C_1}{(y-b)^2} + \frac{D_0}{(y-c)^2} \right) = 0$	[[_2nd_order, _missing_x]]	✓	40.455
11479	$(4y^3 - ay - b)y'' - \left(6y^2 - \frac{a}{2}\right)y'^2 = 0$	[[_2nd_order, _missing_x], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓	1.995
11480	$(4y^3 - ay - b)(y'' + fy') - \left(6y^2 - \frac{a}{2}\right)y'^2 = 0$	[[_2nd_order, _missing_x], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓	1.343
11481	$-2xy(1-x)(1-y)(x-y)y'' + x(1-x)(x-2xy-2y+3y^2)y'^2 + 2y(1-y)(x^2+y-2xy)y' - y^2(1-y)^2 - f(y(y-1)(y-x))^{3/2} = 0$	unknown	✗	0.295
11482	$2x^2y(1-x)^2(1-y)(x-y)y'' - x^2(1-x)^2(x-2xy-2y+3y^2)y'^2 - 2xy(1-x)(1-y)(x^2+y-2xy)y' + bx(1-y)^2(x-y)^2 - c(1-x)y^2(x-y)^2 - dxy^2(1-x)(1-y)^2 + ay^2(x-y)^2(1-y)^2 = 0$	[[_Painleve, '6th']]	✗	0.156

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
11483	$(y^2 - 1)(a^2 y^2 - 1)y'' + b\sqrt{(1 - y^2)(1 - a^2 y^2)}y'^2 + (1 + a^2 - 2a^2 y^2)yy'^2 = 0$	[[_2nd_order, _missing_x], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓	9.290
11484	$(c + 2bx + x^2 a + y^2)^2 y'' + dy = 0$	[NONE]	✗	0.164
11485	$\sqrt{y}y'' - a = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓	0.710
11486	$\sqrt{y^2 + x^2}y'' - a(1 + y'^2)^{3/2} = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.346
11487	$y(1 - \ln(y))y'' + (1 + \ln(y))y'^2 = 0$	[[_2nd_order, _missing_x], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓	0.483
11488	$(b + a \sin(y)^2)y'' + ay'^2 \cos(y) \sin(y) + Ay(c + a \sin(y)^2) = 0$	[[_2nd_order, _missing_x]]	✓	76.256
11489	$h(y)y'' + ah(y)y'^2 + j(y) = 0$	[[_2nd_order, _missing_x]]	✓	1.624
11490	$h(y)y'' - D(h)(y)y'^2 - h(y)^2 j\left(x, \frac{y'}{h(y)}\right) = 0$	[NONE]	✗	0.151
11491	$y'y'' - x^2yy' - xy^2 = 0$	[[_2nd_order, _exact, _nonlinear], [_2nd_order, _with_linear_symmetries], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_y_y1], [_2nd_order, _reducible, _mu_poly_yn]]	✗	3.056
11492	$(-y + xy')y'' + 4y'^2 = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.150

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
Continued from previous page

#	ODE	CAS classification	Solved?	time (sec)
11493	$(-y + xy')y'' - (1 + y'^2)^2 = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.165
11494	$ax^3y'y'' + by^2 = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.137
11495	$(f_1y' + f_2y)y'' + f_3y'^2 + f_4(x)yy' + f_5(x)y^2 = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.100
11496	$(2y^2y' + x^2)y'' + 2yy'^3 + 3xy' + y = 0$	[[_2nd_order, _exact, _nonlinear], [_2nd_order, _with_linear_symmetries], [_2nd_order, _reducible, _mu_poly_yn]]	✗	7.933
11497	$(y'^2 + y^2)y'' + y^3 = 0$	[[_2nd_order, _missing_x]]	✓	38.526
11498	$(y'^2 + a(-y + xy'))y'' - b = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.161
11499	$(a\sqrt{1 + y'^2} - xy')y'' - y'^2 - 1 = 0$	[[_2nd_order, _missing_y]]	✗	724.726
11500	$h(y')y'' + j(y)y' + f = 0$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], [_2nd_order, _reducible, _mu_x_y1]]	✗	0.169
11501	$y''^2 - ay - b = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✗	0.083
11502	$a^2y''^2 - 2axy'' + y' = 0$	[[_2nd_order, _missing_y]]	✗	5.499
11503	$2(x^2 + 1)y''^2 - xy''(x + 4y') + 2(x + y')y' - 2y = 0$	[NONE]	✗	0.085
11504	$3x^2y''^2 - 2(3xy' + y)y'' + 4y'^2 = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.140
11505	$x^2(2 - 9x)y''^2 - 6x(1 - 6x)y'y'' + 6y''y - 36xy'^2 = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.150

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
11506	$F_{1,1}(x) y'^2 + ((F_{2,1}(x) + F_{1,2}(x)) y'' + y(F_{1,0}(x) + F_{0,1}(x))) y' + F_{2,2}(x) y'^2 + y(F_{2,0}(x) + F_{0,2}(x)) y'' + F_{0,0}(x) y^2 = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.109
11507	$yy''^2 - a e^{2x} = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.148
11508	$(a^2 y^2 - b^2) y''^2 - 2a^2 y y'^2 y'' + (a^2 y'^2 - 1) y'^2 = 0$	[[_2nd_order, _missing_x]]	✓	14.157
11509	$(y^2 - x^2 y'^2 + x^2 y y'')^2 - 4xy(-y + xy')^3 = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.100
11510	$(2y''y - y'^2)^3 + 32y''(xy'' - y')^3 = 0$	unknown	✗	0.462
11511	$\sqrt{ay''^2 + by'^2 + cyy'' + dy'^2} = 0$	[[_2nd_order, _missing_x]]	✗	10.533
11512	$y''' - a^2(y'^5 + 2y'^3 + y') = 0$	[[_3rd_order, _missing_x], [_3rd_order, _missing_y], [_3rd_order, _with_linear_symmetries], [_3rd_order, _reducible, _mu_y2]]	✓	3.371
11513	$y''' + y''y - y'^2 + 1 = 0$	[[_3rd_order, _missing_x], [_3rd_order, _with_linear_symmetries]]	✗	0.048
11514	$y''' - y''y + y'^2 = 0$	[[_3rd_order, _missing_x], [_3rd_order, _with_linear_symmetries]]	✗	0.051
11515	$y''' + ayy'' = 0$	[[_3rd_order, _missing_x], [_3rd_order, _with_linear_symmetries]]	✗	0.047
11516	$y'''x^2 + xy'' + (2xy - 1)y' + y^2 - f(x) = 0$	[[_3rd_order, _exact, _nonlinear]]	✗	0.049

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
11517	$y'''x^2 + x(y-1)y'' + xy'^2 + (1-y)y' = 0$	[[_3rd_order, _exact, _nonlinear], [_3rd_order, _with_linear_symmetries], [_3rd_order, _reducible, _mu_y2]]	✗	0.057
11518	$yy''' - y'y'' + y^3y' = 0$	[[_3rd_order, _missing_x], [_3rd_order, _exact, _nonlinear], [_3rd_order, _with_linear_symmetries]]	✗	0.092
11519	$4y^2y''' - 18yy'y'' + 15y'^3 = 0$	[[_3rd_order, _missing_x], [_3rd_order, _with_linear_symmetries]]	✗	0.052
11520	$9y^2y''' - 45yy'y'' + 40y'^3 = 0$	[[_3rd_order, _missing_x], [_3rd_order, _with_linear_symmetries]]	✗	0.056
11521	$2y'y''' - 3y'^2 = 0$	[[_3rd_order, _missing_x]]	✓	0.630
11522	$(1 + y'^2)y''' - 3y'y''^2 = 0$	[[_3rd_order, _missing_x], [_3rd_order, _missing_y], [_3rd_order, _with_linear_symmetries], [_3rd_order, _reducible, _mu_y2], [_3rd_order, _reducible, _mu_poly_yn]]	✓	0.372
11523	$(1 + y'^2)y''' - (3y' + a)y''^2 = 0$	[[_3rd_order, _missing_x], [_3rd_order, _missing_y], [_3rd_order, _with_linear_symmetries], [_3rd_order, _reducible, _mu_y2], [_3rd_order, _reducible, _mu_poly_yn]]	✓	8.251

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
11524	$y''y''' - a\sqrt{b^2y''^2 + 1} = 0$	[[_3rd_order, _missing_x], [_3rd_order, _missing_y], [_3rd_order, _with_linear_symmetries], [_3rd_order, _reducible, _mu_y2]]	✓	8.492
11525	$y'y'''' - y''y''' + y'^3y''' = 0$	[[_high_order, _missing_x], [_high_order, _missing_y], [_high_order, _with_linear_symmetries]]	✗	0.076
11526	$y'(f'''(x)y' + 3f''(x)y'' + 3f'(x)y''' + f(x)y'''' - y''fy'' + y'^3(f'(x)y' + f(x)y'') + 2q(x)y'^2 \sin(y) + (q(x)y'' - q'(x)y') \cos(y) = 0$	[NONE]	✗	0.071
11527	$3y''y'''' - 5y'''^2 = 0$	[[_high_order, _missing_x], [_high_order, _missing_y], [_high_order, _with_linear_symmetries], [_high_order, _reducible, _mu_poly_yn]]	✓	0.667
11528	$9y''^2y^{(5)} - 45y''y''''y'''' + 40y'''' = 0$	[[_high_order, _missing_x], [_high_order, _missing_y], [_high_order, _with_linear_symmetries]]	✗	0.085
11529	$y'' - f(y) = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓	0.916
11530	$y''' = f(y)$	[[_3rd_order, _missing_x], [_3rd_order, _with_linear_symmetries]]	✗	0.016
11531	$\begin{bmatrix} x' = ax \\ y' = b \end{bmatrix}$	system_of_ODEs	✓	0.314
11532	$\begin{bmatrix} x' = ay \\ y' = -ax \end{bmatrix}$	system_of_ODEs	✓	0.317

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
11533	$\begin{bmatrix} x' = ay \\ y' = bx \end{bmatrix}$	system_of_ODEs	✓	0.370
11534	$\begin{bmatrix} x' = ax - y \\ y' = x + ay \end{bmatrix}$	system_of_ODEs	✓	0.316
11535	$\begin{bmatrix} x' = ax + by \\ y' = cx + by \end{bmatrix}$	system_of_ODEs	✓	0.701
11536	$\begin{bmatrix} ax' + by' = \alpha x + \beta y \\ bx' - ay' = \beta x - \alpha y \end{bmatrix}$	system_of_ODEs	✓	0.758
11537	$\begin{bmatrix} x' = -y \\ y' = 2x + 2y \end{bmatrix}$	system_of_ODEs	✓	0.413
11538	$\begin{bmatrix} x' + 3x + 4y = 0 \\ y' + 2x + 5y = 0 \end{bmatrix}$	system_of_ODEs	✓	0.316
11539	$\begin{bmatrix} x' = -5x - 2y \\ y' = x - 7y \end{bmatrix}$	system_of_ODEs	✓	0.381
11540	$\begin{bmatrix} x' = a_1x + b_1y + c_1 \\ y' = a_2x + b_2y + c_2 \end{bmatrix}$	system_of_ODEs	✓	1.467
11541	$\begin{bmatrix} x' + 2y = 3t \\ y' - 2x = 4 \end{bmatrix}$	system_of_ODEs	✓	0.564
11542	$\begin{bmatrix} x' + y - t^2 + 6t + 1 = 0 \\ -x + y' = -3t^2 + 3t + 1 \end{bmatrix}$	system_of_ODEs	✓	0.619
11543	$\begin{bmatrix} x' + 3x - y = e^{2t} \\ y' + x + 5y = e^t \end{bmatrix}$	system_of_ODEs	✓	0.497
11544	$\begin{bmatrix} x' + 2x + y' + y = e^{2t} + t \\ x' - x + y' + 3y = e^t - 1 \end{bmatrix}$	system_of_ODEs	✓	0.204
11545	$\begin{bmatrix} x' + y' - y = e^t \\ 2x' + y' + 2y = \cos(t) \end{bmatrix}$	system_of_ODEs	✓	0.560
11546	$\begin{bmatrix} 4x' + 9y' + 2x + 31y = e^t \\ 3x' + 7y' + x + 24y = 3 \end{bmatrix}$	system_of_ODEs	✓	0.752

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
11547	$\begin{cases} 4x' + 9y' + 11x + 31y = e^t \\ 3x' + 7y' + 8x + 24y = e^{2t} \end{cases}$	system_of_ODEs	✓	0.526
11548	$\begin{cases} 4x' + 9y' + 44x + 49y = t \\ 3x' + 7y' + 34x + 38y = e^t \end{cases}$	system_of_ODEs	✓	0.552
11549	$\begin{cases} x' = xf(t) + yg(t) \\ y' = -xg(t) + yf(t) \end{cases}$	system_of_ODEs	✗	0.053
11550	$\begin{cases} x' + (ax + by) f(t) = g(t) \\ y' + (cx + dy) f(t) = h(t) \end{cases}$	system_of_ODEs	✗	0.055
11551	$\begin{cases} x' = x \cos(t) \\ y' = x e^{-\sin(t)} \end{cases}$	system_of_ODEs	✗	0.053
11552	$\begin{cases} tx' + y = 0 \\ ty' + x = 0 \end{cases}$	system_of_ODEs	✗	0.049
11553	$\begin{cases} tx' + 2x = t \\ ty' - (t + 2)x - ty = -t \end{cases}$	system_of_ODEs	✗	0.053
11554	$\begin{cases} tx' + 2x - 2y = t \\ ty' + x + 5y = t^2 \end{cases}$	system_of_ODEs	✗	0.053
11555	$\begin{cases} t^2(1 - \sin(t)) x' = t(1 - 2 \sin(t)) x + t^2 y \\ t^2(1 - \sin(t)) y' = (t \cos(t) - \sin(t)) x + t(1 - t \cos(t)) y \end{cases}$	system_of_ODEs	✗	0.075
11556	$\begin{cases} x' + y' + y = f(t) \\ x'' + y'' + y' + x + y = g(t) \end{cases}$	system_of_ODEs	✗	0.025
11557	$\begin{cases} 2x' + y' - 3x = 0 \\ x'' + y' - 2y = e^{2t} \end{cases}$	system_of_ODEs	✗	0.051
11558	$\begin{cases} x' + x - y' = 2t \\ x'' + y' - 9x + 3y = \sin(2t) \end{cases}$	system_of_ODEs	✗	0.051
11559	$\begin{cases} x' - x + 2y = 0 \\ x'' - 2y' = 2t - \cos(2t) \end{cases}$	system_of_ODEs	✗	0.051
11560	$\begin{cases} tx' - ty' - 2y = 0 \\ tx'' + 2x' + xt = 0 \end{cases}$	system_of_ODEs	✗	0.049

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
11561	$\begin{bmatrix} x'' + ay = 0 \\ y'' - a^2y = 0 \end{bmatrix}$	system_of_ODEs	<b>X</b>	0.047
11562	$\begin{bmatrix} x'' = ax + by \\ y'' = cx + dy \end{bmatrix}$	system_of_ODEs	<b>X</b>	0.047
11563	$\begin{bmatrix} x'' = a_1x + b_1y + c_1 \\ y'' = a_2x + b_2y + c_2 \end{bmatrix}$	system_of_ODEs	<b>X</b>	0.049
11564	$\begin{bmatrix} x'' + x + y = -5 \\ y'' - 4x - 3y = -3 \end{bmatrix}$	system_of_ODEs	<b>X</b>	0.047
11565	$\begin{bmatrix} x'' = (3 \cos(at + b)^2 - 1) c^2x + \frac{3c^2y \sin(2atb)}{2} \\ y'' = (3 \sin(at + b)^2 - 1) c^2y + \frac{3c^2x \sin(2atb)}{2} \end{bmatrix}$	system_of_ODEs	<b>X</b>	0.055
11566	$\begin{bmatrix} x'' + 6x + 7y = 0 \\ y'' + 3x + 2y = 2t \end{bmatrix}$	system_of_ODEs	<b>X</b>	0.049
11567	$\begin{bmatrix} x'' - ay' + bx = 0 \\ y'' + ax' + by = 0 \end{bmatrix}$	system_of_ODEs	<b>X</b>	0.049
11568	$\begin{bmatrix} a_1x'' + b_1x' + c_1x - Ay' = B e^{i\omega t} \\ a_2y'' + b_2y' + c_2y + Ax' = 0 \end{bmatrix}$	system_of_ODEs	<b>X</b>	0.056
11569	$\begin{bmatrix} x'' + a(x' - y') + b_1x = c_1e^{i\omega t} \\ y'' + a(y' - x') + b_2y = c_2e^{i\omega t} \end{bmatrix}$	system_of_ODEs	<b>X</b>	0.057
11570	$\begin{bmatrix} a_{11}x'' + b_{11}x' + c_{11}x + a_{12}y'' + b_{12}y' + c_{12}y = 0 \\ a_{21}x'' + b_{21}x' + c_{21}x + a_{22}y'' + b_{22}y' + c_{22}y = 0 \end{bmatrix}$	system_of_ODEs	<b>X</b>	0.057
11571	$\begin{bmatrix} x'' - 2x' - y' + y = 0 \\ y''' - y'' + 2x' - x = t \end{bmatrix}$	system_of_ODEs	<b>X</b>	0.053
11572	$\begin{bmatrix} x'' + y'' + y' = \sinh(2t) \\ 2x'' + y'' = 2t \end{bmatrix}$	system_of_ODEs	<b>X</b>	0.052
11573	$\begin{bmatrix} x'' - x' + y' = 0 \\ x'' + y'' - x = 0 \end{bmatrix}$	system_of_ODEs	<b>X</b>	0.049

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
11574	$\begin{bmatrix} x' = 2x \\ y' = 3x - 2y \\ z' = 2y + 3z \end{bmatrix}$	system_of_ODEs	✓	0.468
11575	$\begin{bmatrix} x' = 4x \\ y' = x - 2y \\ z' = x - 4y + z \end{bmatrix}$	system_of_ODEs	✓	0.487
11576	$\begin{bmatrix} x' = y - z \\ y' = x + y \\ z' = x + z \end{bmatrix}$	system_of_ODEs	✓	0.349
11577	$\begin{bmatrix} x' - y + z = 0 \\ -x + y' - y = t \\ z' - x - z = t \end{bmatrix}$	system_of_ODEs	✓	0.557
11578	$\begin{bmatrix} ax' = bc(y - z) \\ by' = ca(z - x) \\ cz' = ab(x - y) \end{bmatrix}$	system_of_ODEs	✓	1.433
11579	$\begin{bmatrix} x' = cy - bz \\ y' = az - cx \\ z' = bx - ay \end{bmatrix}$	system_of_ODEs	✓	1.329
11580	$\begin{bmatrix} x' = h(t)y - g(t)z \\ y' = f(t)z - h(t)x \\ z' = xg(t) - yf(t) \end{bmatrix}$	system_of_ODEs	✗	0.057
11581	$\begin{bmatrix} x' = x + y - z \\ y' = y + z - x \\ z' = x - y + z \end{bmatrix}$	system_of_ODEs	✓	0.738
11582	$\begin{bmatrix} x' = -3x + 48y - 28z \\ y' = -4x + 40y - 22z \\ z' = -6x + 57y - 31z \end{bmatrix}$	system_of_ODEs	✓	0.514
11583	$\begin{bmatrix} x' = 6x - 72y + 44z \\ y' = 4x - 4y + 26z \\ z' = 6x - 63y + 38z \end{bmatrix}$	system_of_ODEs	✓	10.443
11584	$\begin{bmatrix} x' = ax + gy + \beta z \\ y' = gx + by + \alpha z \\ z' = \beta x + \alpha y + cz \end{bmatrix}$	system_of_ODEs	✓	158.402

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
11585	$\begin{bmatrix} tx' = 2x - t \\ t^3y' = -x + t^2y + t \\ t^4z' = -x - t^2y + t^3z + t \end{bmatrix}$	system_of_ODEs	<b>X</b>	0.059
11586	$\begin{bmatrix} atx' = bc(y - z) \\ bty' = ca(z - x) \\ ctz' = ab(x - y) \end{bmatrix}$	system_of_ODEs	<b>X</b>	0.058
11587	$\begin{bmatrix} x'_1 = ax_2 + bx_3 \cos(ct) + bx_4 \sin(ct) \\ x'_2 = -ax_1 + bx_3 \sin(ct) - bx_4 \cos(ct) \\ x'_3 = -bx_1 \cos(ct) - bx_2 \sin(ct) + ax_4 \\ x'_4 = -bx_1 \sin(ct) + bx_2 \cos(ct) - ax_3 \end{bmatrix}$	system_of_ODEs	<b>X</b>	0.069
11588	$\begin{bmatrix} x' = -x(x + y) \\ y' = y(x + y) \end{bmatrix}$	system_of_ODEs	<b>X</b>	0.050
11589	$\begin{bmatrix} x' = (ay + b)x \\ y' = (cx + d)y \end{bmatrix}$	system_of_ODEs	<b>X</b>	0.051
11590	$\begin{bmatrix} x' = x(a(px + qy) + \alpha) \\ y' = y(\beta + b(px + qy)) \end{bmatrix}$	system_of_ODEs	<b>X</b>	0.051
11591	$\begin{bmatrix} x' = h(a - x)(c - x - y) \\ y' = k(b - y)(c - x - y) \end{bmatrix}$	system_of_ODEs	<b>X</b>	0.051
11592	$\begin{bmatrix} x' = y^2 - \cos(x) \\ y' = -y \sin(x) \end{bmatrix}$	system_of_ODEs	<b>X</b>	0.051
11593	$\begin{bmatrix} x' = -xy^2 + x + y \\ y' = yx^2 - x - y \end{bmatrix}$	system_of_ODEs	<b>X</b>	0.051
11594	$\begin{bmatrix} x' = x + y - x(x^2 + y^2) \\ y' = -x + y - y(x^2 + y^2) \end{bmatrix}$	system_of_ODEs	<b>X</b>	0.054
11595	$\begin{bmatrix} x' = -y + x(x^2 + y^2 - 1) \\ y' = x + y(x^2 + y^2 - 1) \end{bmatrix}$	system_of_ODEs	<b>X</b>	0.051
11596	$y' = \begin{cases} x' = -y(x^2 + y^2) \\ x^2 + y^2 & 2x \leq x^2 + y^2 \\ \left(\frac{x}{2} - \frac{y^2}{2x}\right)(x^2 + y^2) & \text{otherwise} \end{cases}$	system_of_ODEs	<b>X</b>	0.055

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
11597	$\begin{bmatrix} x' = -y + \left( \begin{cases} x(x^2 + y^2 - 1) \sin\left(\frac{1}{x^2+y^2}\right) & x^2 + y^2 \neq 1 \\ 0 & \text{otherwise} \end{cases} \right) \\ y' = x + \left( \begin{cases} y(x^2 + y^2 - 1) \sin\left(\frac{1}{x^2+y^2}\right) & x^2 + y^2 \neq 1 \\ 0 & \text{otherwise} \end{cases} \right) \end{bmatrix}$	system_of_ODEs	<b>X</b>	0.059
11598	$\begin{bmatrix} (t^2 + 1) x' = -xt + y \\ (t^2 + 1) y' = -x - ty \end{bmatrix}$	system_of_ODEs	<b>X</b>	0.052
11599	$\begin{bmatrix} (x^2 + y^2 - t^2) x' = -2xt \\ (x^2 + y^2 - t^2) y' = -2ty \end{bmatrix}$	system_of_ODEs	<b>X</b>	0.057
11600	$\begin{bmatrix} x'^2 + tx' + ay' - x = 0 \\ x'y' + ty' - y = 0 \end{bmatrix}$	system_of_ODEs	<b>X</b>	0.073
11601	$\begin{bmatrix} x = tx' + f(x', y') \\ y = ty' + g(x', y') \end{bmatrix}$	system_of_ODEs	<b>X</b>	0.071
11602	$\begin{bmatrix} x'' = a e^{2x} - e^{-x} + e^{-2x} \cos(y)^2 \\ y'' = e^{-2x} \sin(y) \cos(y) - \frac{\sin(y)}{\cos(y)^3} \end{bmatrix}$	system_of_ODEs	<b>X</b>	0.055
11603	$\begin{bmatrix} x'' = \frac{kx}{(x^2+y^2)^{3/2}} \\ y'' = \frac{ky}{(x^2+y^2)^{3/2}} \end{bmatrix}$	system_of_ODEs	<b>X</b>	0.049
11604	$\begin{bmatrix} x' = y - z \\ y' = x^2 + y \\ z' = x^2 + z \end{bmatrix}$	system_of_ODEs	<b>X</b>	0.053
11605	$\begin{bmatrix} ax' = (b - c) yz \\ by' = (c - a) zx \\ cz' = (-b + a) xy \end{bmatrix}$	system_of_ODEs	<b>X</b>	0.057
11606	$\begin{bmatrix} x' = x(y - z) \\ y' = y(z - x) \\ z' = z(x - y) \end{bmatrix}$	system_of_ODEs	<b>X</b>	0.056
11607	$\begin{bmatrix} x' + y' = xy \\ y' + z' = yz \\ x' + z' = xz \end{bmatrix}$	system_of_ODEs	<b>X</b>	0.057

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
11608	$\begin{bmatrix} x' = \frac{x^2}{2} - \frac{y}{24} \\ y' = 2xy - 3z \\ z' = 3xz - \frac{y^2}{6} \end{bmatrix}$	system_of_ODEs	✗	0.057
11609	$\begin{bmatrix} x' = x(y^2 - z^2) \\ y' = y(z^2 - x^2) \\ z' = z(x^2 - y^2) \end{bmatrix}$	system_of_ODEs	✗	0.056
11610	$\begin{bmatrix} x' = x(y^2 - z^2) \\ y' = -y(z^2 + x^2) \\ z' = z(x^2 + y^2) \end{bmatrix}$	system_of_ODEs	✗	0.056
11611	$\begin{bmatrix} x' = -xy^2 + x + y \\ y' = yx^2 - x - y \\ z' = y^2 - x^2 \end{bmatrix}$	system_of_ODEs	✗	0.058
11612	$\begin{bmatrix} (x - y)(x - z)x' = f(t) \\ (y - x)(y - z)y' = f(t) \\ (z - x)(z - y)z' = f(t) \end{bmatrix}$	system_of_ODEs	✗	0.063
11613	$\begin{bmatrix} x'_1 \sin(x_2) = x_4 \sin(x_3) + x_5 \cos(x_3) \\ x'_2 = x_4 \cos(x_3) - x_5 \sin(x_3) \\ x'_3 + x'_1 \cos(x_2) = a \\ x'_4 - (1 - \lambda)ax_5 = -m \sin(x_2) \cos(x_3) \\ x'_5 + (1 - \lambda)ax_4 = m \sin(x_2) \sin(x_3) \end{bmatrix}$	system_of_ODEs	✗	0.076
11614	$\begin{bmatrix} 4 & -2 \\ 1 & 1 \end{bmatrix}$	Eigenvectors	✓	0.141
11615	$\begin{bmatrix} 5 & -6 \\ 3 & -4 \end{bmatrix}$	Eigenvectors	✓	0.145
11616	$\begin{bmatrix} 8 & -6 \\ 3 & -1 \end{bmatrix}$	Eigenvectors	✓	0.143
11617	$\begin{bmatrix} 4 & -3 \\ 2 & -1 \end{bmatrix}$	Eigenvectors	✓	0.147
11618	$\begin{bmatrix} 10 & -9 \\ 6 & -5 \end{bmatrix}$	Eigenvectors	✓	0.148
11619	$\begin{bmatrix} 6 & -4 \\ 3 & -1 \end{bmatrix}$	Eigenvectors	✓	0.147
11620	$\begin{bmatrix} 10 & -8 \\ 6 & -4 \end{bmatrix}$	Eigenvectors	✓	0.151

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
11621	$\begin{bmatrix} 7 & -6 \\ 12 & -10 \end{bmatrix}$	Eigenvectors	✓	0.157
11622	$\begin{bmatrix} 8 & -10 \\ 2 & -1 \end{bmatrix}$	Eigenvectors	✓	0.148
11623	$\begin{bmatrix} 9 & -10 \\ 2 & 0 \end{bmatrix}$	Eigenvectors	✓	0.152
11624	$\begin{bmatrix} 19 & -10 \\ 21 & -10 \end{bmatrix}$	Eigenvectors	✓	0.155
11625	$\begin{bmatrix} 13 & -15 \\ 6 & -6 \end{bmatrix}$	Eigenvectors	✓	0.158
11626	$\begin{bmatrix} 2 & 0 & 0 \\ 2 & -2 & -1 \\ -2 & 6 & 3 \end{bmatrix}$	Eigenvectors	✓	0.253
11627	$\begin{bmatrix} 5 & 0 & 0 \\ 4 & -4 & -2 \\ -2 & 12 & 6 \end{bmatrix}$	Eigenvectors	✓	0.269
11628	$\begin{bmatrix} 2 & -2 & 0 \\ 2 & -2 & -1 \\ -2 & 2 & 3 \end{bmatrix}$	Eigenvectors	✓	0.255
11629	$\begin{bmatrix} 1 & 0 & -1 \\ -2 & 3 & -1 \\ -6 & 6 & 0 \end{bmatrix}$	Eigenvectors	✓	0.292
11630	$\begin{bmatrix} 3 & 5 & -2 \\ 0 & 2 & 0 \\ 0 & 2 & 1 \end{bmatrix}$	Eigenvectors	✓	0.233
11631	$\begin{bmatrix} 1 & 0 & 0 \\ -6 & 8 & 2 \\ 12 & -15 & -3 \end{bmatrix}$	Eigenvectors	✓	0.271
11632	$\begin{bmatrix} 3 & 6 & -2 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix}$	Eigenvectors	✓	0.185
11633	$\begin{bmatrix} 1 & 0 & 0 \\ -4 & 7 & 2 \\ 10 & -15 & -4 \end{bmatrix}$	Eigenvectors	✓	0.208
11634	$\begin{bmatrix} 4 & -3 & 1 \\ 2 & -1 & 1 \\ 0 & 0 & 2 \end{bmatrix}$	Eigenvectors	✓	0.194
11635	$\begin{bmatrix} 5 & -6 & 3 \\ 6 & -7 & 3 \\ 6 & -6 & 2 \end{bmatrix}$	Eigenvectors	✓	0.198

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
11636	$\begin{bmatrix} 1 & 2 & 2 & 2 \\ 0 & 2 & 2 & 2 \\ 0 & 0 & 3 & 2 \\ 0 & 0 & 0 & 4 \end{bmatrix}$	Eigenvectors	✓	0.334
11637	$\begin{bmatrix} 1 & 0 & 4 & 0 \\ 0 & 1 & 4 & 0 \\ 0 & 0 & 3 & 0 \\ 0 & 0 & 0 & 3 \end{bmatrix}$	Eigenvectors	✓	0.221
11638	$\begin{bmatrix} 1 & 0 & 1 & 0 \\ 0 & 1 & 1 & 0 \\ 0 & 0 & 2 & 0 \\ 0 & 0 & 0 & 2 \end{bmatrix}$	Eigenvectors	✓	0.208
11639	$\begin{bmatrix} 4 & 0 & 0 & -3 \\ 0 & 2 & 0 & 0 \\ 0 & 0 & -1 & 0 \\ 6 & 0 & 0 & -5 \end{bmatrix}$	Eigenvectors	✓	0.335
11640	$\begin{bmatrix} 0 & 1 \\ -1 & 0 \end{bmatrix}$	Eigenvectors	✓	0.167
11641	$\begin{bmatrix} 0 & -6 \\ 6 & 0 \end{bmatrix}$	Eigenvectors	✓	0.178
11642	$\begin{bmatrix} 0 & -3 \\ 12 & 0 \end{bmatrix}$	Eigenvectors	✓	0.192
11643	$\begin{bmatrix} 0 & -12 \\ 12 & 0 \end{bmatrix}$	Eigenvectors	✓	0.179
11644	$\begin{bmatrix} 0 & 24 \\ -6 & 0 \end{bmatrix}$	Eigenvectors	✓	0.188
11645	$\begin{bmatrix} 0 & -4 \\ 36 & 0 \end{bmatrix}$	Eigenvectors	✓	0.187
11646	$\begin{bmatrix} 32 & -67 & 47 \\ 7 & -14 & 13 \\ -7 & 15 & -6 \end{bmatrix}$	Eigenvectors	✓	0.264
11647	$\begin{bmatrix} 22 & -9 & -8 & -8 \\ 10 & -7 & -14 & 2 \\ 10 & 0 & 8 & -10 \\ 29 & -9 & -3 & -15 \end{bmatrix}$	Eigenvectors	✓	0.529
11648	$\begin{bmatrix} 5 & -4 \\ 2 & -1 \end{bmatrix}$	Eigenvectors	✓	0.151
11649	$\begin{bmatrix} 6 & -6 \\ 4 & -4 \end{bmatrix}$	Eigenvectors	✓	0.146
11650	$\begin{bmatrix} 5 & -3 \\ 2 & 0 \end{bmatrix}$	Eigenvectors	✓	0.152

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
11651	$\begin{bmatrix} 5 & -4 \\ 3 & -2 \end{bmatrix}$	Eigenvectors	✓	0.148
11652	$\begin{bmatrix} 9 & -8 \\ 6 & -5 \end{bmatrix}$	Eigenvectors	✓	0.148
11653	$\begin{bmatrix} 10 & -6 \\ 12 & -7 \end{bmatrix}$	Eigenvectors	✓	0.151
11654	$\begin{bmatrix} 6 & -10 \\ 2 & -3 \end{bmatrix}$	Eigenvectors	✓	0.152
11655	$\begin{bmatrix} 11 & -15 \\ 6 & -8 \end{bmatrix}$	Eigenvectors	✓	0.156
11656	$\begin{bmatrix} -1 & 4 \\ -1 & 3 \end{bmatrix}$	Eigenvectors	✓	0.108
11657	$\begin{bmatrix} 3 & -1 \\ 1 & 1 \end{bmatrix}$	Eigenvectors	✓	0.104
11658	$\begin{bmatrix} 5 & 1 \\ -9 & -1 \end{bmatrix}$	Eigenvectors	✓	0.112
11659	$\begin{bmatrix} 11 & 9 \\ -16 & -13 \end{bmatrix}$	Eigenvectors	✓	0.112
11660	$\begin{bmatrix} 1 & 3 & 0 \\ 0 & 2 & 0 \\ 0 & 0 & 2 \end{bmatrix}$	Eigenvectors	✓	0.171
11661	$\begin{bmatrix} 2 & -2 & 1 \\ 2 & -2 & 1 \\ 2 & -2 & 1 \end{bmatrix}$	Eigenvectors	✓	0.189
11662	$\begin{bmatrix} 3 & -3 & 1 \\ 2 & -2 & 1 \\ 0 & 0 & 1 \end{bmatrix}$	Eigenvectors	✓	0.192
11663	$\begin{bmatrix} 3 & -2 & 0 \\ 0 & 1 & 0 \\ -4 & 4 & 1 \end{bmatrix}$	Eigenvectors	✓	0.188
11664	$\begin{bmatrix} 7 & -8 & 3 \\ 6 & -7 & 3 \\ 2 & -2 & 2 \end{bmatrix}$	Eigenvectors	✓	0.264
11665	$\begin{bmatrix} 6 & -5 & 2 \\ 4 & -3 & 2 \\ 2 & -2 & 3 \end{bmatrix}$	Eigenvectors	✓	0.261
11666	$\begin{bmatrix} 1 & 1 & -1 \\ -2 & 4 & -1 \\ -4 & 4 & 1 \end{bmatrix}$	Eigenvectors	✓	0.257

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
11667	$\begin{bmatrix} 2 & 0 & 0 \\ -6 & 11 & 2 \\ 6 & -15 & 0 \end{bmatrix}$	Eigenvectors	✓	0.263
11668	$\begin{bmatrix} 0 & 1 & 0 \\ -1 & 2 & 0 \\ -1 & 1 & 1 \end{bmatrix}$	Eigenvectors	✓	0.135
11669	$\begin{bmatrix} 2 & -2 & 1 \\ -1 & 2 & 0 \\ -5 & 7 & -1 \end{bmatrix}$	Eigenvectors	✓	0.132
11670	$\begin{bmatrix} -2 & 4 & -1 \\ -3 & 5 & -1 \\ -1 & 1 & 1 \end{bmatrix}$	Eigenvectors	✓	0.188
11671	$\begin{bmatrix} 3 & -2 & 1 \\ 1 & 0 & 1 \\ -1 & 1 & 2 \end{bmatrix}$	Eigenvectors	✓	0.193
11672	$\begin{bmatrix} 1 & 0 & -2 & 0 \\ 0 & 1 & -2 & 0 \\ 0 & 0 & -1 & 0 \\ 0 & 0 & 0 & -1 \end{bmatrix}$	Eigenvectors	✓	0.220
11673	$\begin{bmatrix} 1 & 0 & 0 & 1 \\ 0 & 1 & 0 & 1 \\ 0 & 0 & 1 & 1 \\ 0 & 0 & 0 & 2 \end{bmatrix}$	Eigenvectors	✓	0.215
11674	$\begin{bmatrix} 1 & 1 & 0 & 0 \\ 0 & 1 & 1 & 1 \\ 0 & 0 & 1 & 1 \\ 0 & 0 & 0 & 2 \end{bmatrix}$	Eigenvectors	✓	0.182
11675	$\begin{bmatrix} 1 & 1 & 0 & 1 \\ 0 & 1 & 1 & 1 \\ 0 & 0 & 2 & 1 \\ 0 & 0 & 0 & 2 \end{bmatrix}$	Eigenvectors	✓	0.180
11676	$\begin{bmatrix} 2 & 1 & 0 & 0 & 0 \\ 0 & 2 & 0 & 0 & 0 \\ 0 & 0 & 2 & 0 & 0 \\ 0 & 0 & 0 & 2 & 1 \\ 0 & 0 & 0 & 0 & 2 \end{bmatrix}$	Eigenvectors	✓	0.149
11677	$y' = f(x)$	[_quadrature]	✓	0.466
11678	$y' = f(y)$	[_quadrature]	✓	0.670
11679	$y' = f(x)g(y)$	[_separable]	✓	1.036
11680	$g(x)y' = f_1(x)y + f_0(x)$	[_linear]	✓	2.166

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
11681	$g(x)y' = f_1(x)y + f_n(x)y^n$	[_Bernoulli]	✓	2.619
11682	$y' = f\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A'], _dAlembert]	✓	1.294
11683	$y' = y^2a + bx + c$	[_Riccati]	✓	1.354
11684	$y' = y^2 - a^2x^2 + 3a$	[_Riccati]	✓	1.904
11685	$y' = y^2 + a^2x^2 + bx + c$	[_Riccati]	✓	8.704
11686	$y' = y^2a + bx^n$	[[_Riccati, _special]]	✓	1.632
11687	$y' = y^2 + anx^{n-1} - a^2x^{2n}$	[_Riccati]	✗	595.205
11688	$y' = y^2a + bx^{2n} + cx^{n-1}$	[_Riccati]	✓	3.506
11689	$y' = ax^ny^2 + bx^{-n-2}$	[[_homogeneous, 'class G'], _Riccati]	✓	2.635
11690	$y' = ax^ny^2 + bx^m$	[_Riccati]	✓	2.177
11691	$y' = y^2 + k(ax + b)^n(cx + d)^{-n-4}$	[_Riccati]	✗	7.766
11692	$y' = ax^ny^2 + bmx^{m-1} - ab^2x^{n+2m}$	[_Riccati]	✗	410.809
11693	$y' = (ax^{2n} + bx^{n-1})y^2 + c$	[_Riccati]	✓	50.787
11694	$(a_2x + b_2)(y' + \lambda y^2) + a_0x + b_0 = 0$	[_rational, _Riccati]	✓	3.579
11695	$x^2y' = ax^2y^2 + b$	[[_homogeneous, 'class G'], _rational, [_Riccati, _special]]	✓	1.976
11696	$x^2y' = y^2x^2 - a^2x^4 + a(-2b + 1)x^2 - b(b + 1)$	[_rational, _Riccati]	✓	2.595
11697	$x^2y' = ax^2y^2 + bx^n + c$	[_rational, _Riccati]	✓	2.344
11698	$x^2y' = y^2x^2 + ax^{2m}(bx^m + c)^n - \frac{n^2}{4} + \frac{1}{4}$	[_Riccati]	✗	4.306
11699	$(c_2x^2 + b_2x + a_2)(y' + \lambda y^2) + a_0 = 0$	[_rational, _Riccati]	✓	8.400
11700	$x^4y' = -x^4y^2 - a^2$	[_rational, [_Riccati, _special]]	✓	3.170

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
11701	$a x^2(x-1)^2 (y' + \lambda y^2) + b x^2 + c x + s = 0$	[_rational, _Riccati]	✓	4.184
11702	$(x^2 a + b x + c)^2 (y' + y^2) + A = 0$	[_rational, _Riccati]	✓	3.961
11703	$x^{n+1} y' = a x^{2n} y^2 + c x^m + d$	[_Riccati]	✓	3.183
11704	$(a x^n + b) y' = b y^2 + a x^{n-2}$	[_rational, _Riccati]	✓	4.177
11705	$(a x^n + b x^m + c) (y' - y^2) + a n(n-1) x^{n-2} + b m(m-1) x^{m-2} = 0$	[_rational, _Riccati]	✓	5.622
11706	$y' = y^2 a + b y + c x + k$	[_Riccati]	✓	1.475
11707	$y' = y^2 + a x^n y + a x^{n-1}$	[_Riccati]	✓	2.700
11708	$y' = y^2 + a x^n y + b x^{n-1}$	[_Riccati]	✓	3.353
11709	$y' = y^2 + (\alpha x + \beta) y + x^2 a + b x + c$	[_Riccati]	✓	38.499
11710	$y' = y^2 + a x^n y - a b x^n - b^2$	[_Riccati]	✗	3.606
11711	$y' = -(n+1) x^n y^2 + a x^{n+m+1} - a x^m$	[_Riccati]	✗	4.347
11712	$y' = a x^n y^2 + b x^m y + b c x^m - a c^2 x^n$	[_Riccati]	✗	4.779
11713	$y' = a x^n y^2 - a x^n (b x^m + c) y + b m x^{m-1}$	[_Riccati]	✓	7.045
11714	$y' = -a n x^{n-1} y^2 + c x^m (a x^n + b) y - c x^m$	[_Riccati]	✓	6.848
11715	$y' = a x^n y^2 + b x^m y + c k x^{k-1} - b c x^{m+k} - a c^2 x^{n+2k}$	[_Riccati]	✗	7.751
11716	$x y' = y^2 a + b y + c x^{2b}$	[_rational, _Riccati]	✓	1.896
11717	$x y' = y^2 a + b y + c x^n$	[_rational, _Riccati]	✓	2.133
11718	$x y' = y^2 a + (n + b x^n) y + c x^{2n}$	[_rational, _Riccati]	✓	3.258
11719	$x y' = x y^2 + a y + b x^n$	[_rational, _Riccati]	✓	2.068
11720	$x y' + a_3 x y^2 + a_2 y + a_1 x + a_0 = 0$	[_rational, _Riccati]	✓	5.704
11721	$x y' = a x^n y^2 + b y + c x^{-n}$	[[_homogeneous, 'class G'], _rational, _Riccati]	✓	2.760

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
11722	$xy' = ax^ny^2 + my - ab^2x^{n+2m}$	[_rational, _Riccati]	✓	2.371
11723	$xy' = x^{2n}y^2 + (m - n)y + x^{2m}$	[_rational, _Riccati]	✓	2.354
11724	$xy' = ax^ny^2 + by + cx^m$	[_rational, _Riccati]	✓	2.683
11725	$xy' = ax^{2n}y^2 + (bx^n - n)y + c$	[_rational, _Riccati]	✓	3.693
11726	$xy' = ax^{2n+m}y^2 + (bx^{m+n} - n)y + cx^m$	[_rational, _Riccati]	✓	36.730
11727	$(a_2x + b_2)(y' + \lambda y^2) + (a_1x + b_1)y + a_0x + b_0 = 0$	[_rational, _Riccati]	✓	18.160
11728	$(ax + c)y' = \alpha(bx + ay)^2 + \beta(bx + ay) - bx + \gamma$	[[_1st_order, _with_linear_symmetries], _rational, _Riccati]	✓	3.281
11729	$2x^2y' = 2y^2 + xy - 2a^2x$	[_rational, _Riccati]	✓	1.525
11730	$2x^2y' = 2y^2 + 3xy - 2a^2x$	[_rational, _Riccati]	✓	1.822
11731	$x^2y' = ax^2y^2 + bxy + c$	[[_homogeneous, 'class G'], _rational, _Riccati]	✓	2.365
11732	$x^2y' = cx^2y^2 + (x^2a + bx)y + \alpha x^2 + \beta x + \gamma$	[_rational, _Riccati]	✓	6.519
11733	$x^2y' = ax^2y^2 + bxy + cx^n + s$	[_rational, _Riccati]	✓	2.732
11734	$x^2y' = ax^2y^2 + bxy + cx^{2n} + sx^n$	[_rational, _Riccati]	✓	3.829
11735	$x^2y' = cx^2y^2 + (ax^n + b)xy + \alpha x^{2n} + \beta x^n + \gamma$	[_rational, _Riccati]	✓	8.530
11736	$x^2y' = (\alpha x^{2n} + \beta x^n + \gamma)y^2 + (ax^n + b)xy + cx^2$	[_rational, _Riccati]	✗	537.773
11737	$(x^2 - 1)y' + \lambda(y^2 - 2xy + 1) = 0$	[_rational, _Riccati]	✗	6.538
11738	$(x^2a + b)y' + \alpha y^2 + \beta xy + \frac{b(a + \beta)}{\alpha} = 0$	[_rational, _Riccati]	✓	400.595
11739	$(x^2a + b)y' + \alpha y^2 + \beta xy + \gamma = 0$	[_rational, _Riccati]	✓	427.681

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
11740	$(x^2a + b)y' + y^2 - 2xy + (-a + 1)x^2 - b = 0$	[_rational, [_1st_order, '._with_symmetry_[F(x),G(x)]'], _Riccati]	✓	2.538
11741	$(x^2a + bx + c)y' = y^2 + (2\lambda x + b)y + \lambda(\lambda - a)x^2 + \mu$	[_rational, [_1st_order, '._with_symmetry_[F(x),G(x)]'], _Riccati]	✓	4.771
11742	$(x^2a + bx + c)y' = y^2 + (ax + \mu)y - \lambda^2x^2 + \lambda(b - \mu)x + \lambda c$	[_rational, _Riccati]	✗	457.832
11743	$(a_2x^2 + b_2x + c_2)y' = y^2 + (a_1x + b_1)y - \lambda(\lambda + a_1 - a_2)x^2 + \lambda(b_2 - b_1)x + \lambda c_2$	[_rational, _Riccati]	✓	51.717
11744	$(a_2x^2 + b_2x + c_2)y' = y^2 + (a_1x + b_1)y + a_0x^2 + b_0x + c_0$	[_rational, _Riccati]	✓	44.242
11745	$(x - a)(x - b)y' + y^2 + k(y + x - a)(y + x - b) = 0$	[_rational, [_1st_order, '._with_symmetry_[F(x),G(x)]'], _Riccati]	✓	2.951
11746	$(c_2x^2 + b_2x + a_2)(y' + \lambda y^2) + (b_1x + a_1)y + a_0 = 0$	[_rational, _Riccati]	✓	18.652
11747	$x^3y' = ax^3y^2 + (bx^2 + c)y + sx$	[_rational, _Riccati]	✓	10.506
11748	$x^3y' = ax^3y^2 + x(bx + c)y + \alpha x + \beta$	[_rational, _Riccati]	✓	4.954
11749	$x(x^2 + a)(y' + \lambda y^2) + (bx^2 + c)y + sx = 0$	[_rational, _Riccati]	✓	4.924
11750	$x^2(x + a)(y' + \lambda y^2) + x(bx + c)y + \alpha x + \beta = 0$	[_rational, _Riccati]	✓	5.718
11751	$(x^2a + bx + e)(-y + xy') - y^2 + x^2 = 0$	[[_homogeneous, 'class D'], _rational, _Riccati]	✓	2.751
11752	$x^2(x^2 + a)(y' + \lambda y^2) + x(bx^2 + c)y + s = 0$	[_rational, _Riccati]	✓	7.302

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
11753	$a(x^2 - 1)(y' + \lambda y^2) + bx(x^2 - 1)y + cx^2 + dx + s = 0$	[_rational, _Riccati]	✗	5.204
11754	$x^{n+1}y' = ax^{2n}y^2 + bx^ny + cx^m + d$	[_Riccati]	✓	3.859
11755	$x(ax^k + b)y' = \alpha x^ny^2 + (\beta - anx^k)y + \gamma x^{-n}$	[_rational, _Riccati]	✓	40.350
11756	$x^2(ax^n - 1)(y' + \lambda y^2) + (px^n + q)xy + rx^n + s = 0$	[_rational, _Riccati]	✓	21.321
11757	$(ax^n + bx^m + c)y' = cy^2 - bx^{m-1}y + ax^{n-2}$	[_rational, _Riccati]	✗	93.551
11758	$(ax^n + bx^m + c)y' = ax^{n-2}y^2 + bx^{m-1}y + c$	[_rational, _Riccati]	✗	83.558
11759	$(ax^n + bx^m + c)y' = \alpha x^ky^2 + \beta x^sy - \alpha \lambda^2 x^k + \beta \lambda x^s$	[_rational, _Riccati]	✗	129.325
11760	$(ax^n + bx^m + c)(-y + xy') + sx^k(y^2 - \lambda x^2) = 0$	[[_homogeneous, 'class D'], _rational, _Riccati]	✓	40.727
11761	$y' = y^2a + be^{\lambda x}$	[_Riccati]	✓	1.475
11762	$y' = y^2 + a\lambda e^{\lambda x} - a^2e^{2\lambda x}$	[_Riccati]	✓	2.096
11763	$y' = \sigma y^2 + a + be^{\lambda x} + ce^{2\lambda x}$	[_Riccati]	✓	3.280
11764	$y' = \sigma y^2 + ay + be^x + c$	[_Riccati]	✓	2.024
11765	$y' = y^2 + by + a(\lambda - b)e^{\lambda x} - a^2e^{2\lambda x}$	[_Riccati]	✓	2.599
11766	$y' = y^2 + ae^{\lambda x}y - abe^{\lambda x} - b^2$	[_Riccati]	✓	2.166
11767	$y' = y^2 + ae^{2\lambda x}(e^{\lambda x} + b)^n - \frac{\lambda^2}{4}$	[_Riccati]	✓	5.774
11768	$y' = y^2 + ae^{8\lambda x} + be^{6\lambda x} + ce^{4\lambda x} - \lambda^2$	[_Riccati]	✓	7.751
11769	$y' = ae^{kx}y^2 + be^{sx}$	[_Riccati]	✓	2.647
11770	$y' = be^{\mu x}y^2 + a\lambda e^{\lambda x} - a^2be^{(\mu+2\lambda)x}$	[_Riccati]	✗	4.508
11771	$y' = ae^{\lambda x}y^2 + by + ce^{-\lambda x}$	[[_1st_order, _with_linear_symmetries], _Riccati]	✓	2.407

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
11772	$y' = a e^{\mu x} y^2 + \lambda y - a b^2 e^{(\mu+2\lambda)x}$	[_Riccati]	✓	2.276
11773	$y' = e^{\lambda x} y^2 + a e^{\mu x} y + a \lambda e^{(\mu-\lambda)x}$	[_Riccati]	✓	3.358
11774	$y' = -\lambda e^{\lambda x} y^2 + a e^{\mu x} y - a e^{(\mu-\lambda)x}$	[_Riccati]	✓	3.280
11775	$y' = a e^{\mu x} y^2 + a b e^{(\lambda+\mu)x} y - b \lambda e^{\lambda x}$	[_Riccati]	✗	421.163
11776	$y' = a e^{kx} y^2 + b y + c e^{sx} + d e^{-kx}$	[_Riccati]	✓	3.651
11777	$y' = a e^{(\mu+2\lambda)x} y^2 + (b e^{(\lambda+\mu)x} - \lambda) y + c e^{\mu x}$	[_Riccati]	✓	3.377
11778	$y' = a e^{kx} y^2 + b y + c e^{knx} + d e^{k(2n+1)x}$	[_Riccati]	✗	5.005
11779	$y' = e^{\mu x} (y - b e^{\lambda x})^2 + b \lambda e^{\lambda x}$	[[_1st_order, '_with_symmetry_[F(x),G(x)]'], _Riccati]	✓	2.524
11780	$(a e^{\lambda x} + b e^{\mu x} + c) y' = y^2 + k e^{\nu x} y - m^2 + k m e^{\nu x}$	[_Riccati]	✗	73.860
11781	$(a e^{\lambda x} + b e^{\mu x} + c) (y' - y^2) + a \lambda^2 e^{\lambda x} + b \mu^2 e^{\mu x} = 0$	[_Riccati]	✓	4.616
11782	$y' = y^2 + a x e^{\lambda x} y + a e^{\lambda x}$	[_Riccati]	✓	2.456
11783	$y' = a e^{\lambda x} y^2 + b e^{-\lambda x}$	[[_1st_order, _with_linear_symmetries], _Riccati]	✓	2.171
11784	$y' = a e^{\lambda x} y^2 + b n x^{n-1} - a b^2 e^{\lambda x} x^{2n}$	[_Riccati]	✗	6.925
11785	$y' = e^{\lambda x} y^2 + a x^n y + a \lambda x^n e^{-\lambda x}$	[_Riccati]	✗	4.819
11786	$y' = -\lambda e^{\lambda x} y^2 + a x^n e^{\lambda x} y - a x^n$	[_Riccati]	✓	3.177
11787	$y' = a e^{\lambda x} y^2 - a b x^n e^{\lambda x} y + b n x^{n-1}$	[_Riccati]	✓	4.330
11788	$y' = a x^n y^2 + b \lambda e^{\lambda x} - a b^2 x^n e^{2\lambda x}$	[_Riccati]	✗	6.171
11789	$y' = a x^n y^2 + \lambda y - a b^2 x^n e^{2\lambda x}$	[_Riccati]	✓	3.053
11790	$y' = a x^n y^2 - a b x^n e^{\lambda x} y + b \lambda e^{\lambda x}$	[_Riccati]	✗	5.936
11791	$y' = -(k+1) x^k y^2 + a x^{k+1} e^{\lambda x} y - a e^{\lambda x}$	[_Riccati]	✓	3.751

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
11792	$y' = a x^n y^2 - a x^n (b e^{\lambda x} + c) y + c x^n$	[_Riccati]	✗	6.789
11793	$y' = a x^n e^{2\lambda x} y^2 + (b x^n e^{\lambda x} - \lambda) y + c x^n$	[_Riccati]	✓	5.678
11794	$y' = a e^{\lambda x} (y - b x^n - c)^2 + b n x^{n-1}$	[[_1st_order, '_with_symmetry_[F(x),G(x)]'], _Riccati]	✓	3.869
11795	$x y' = a e^{\lambda x} y^2 + k y + a b^2 x^{2k} e^{\lambda x}$	[_Riccati]	✓	3.197
11796	$x y' = a x^{2n} e^{\lambda x} y^2 + (b x^n e^{\lambda x} - n) y + c e^{\lambda x}$	[_Riccati]	✗	19.308
11797	$y' = y^2 + 2a\lambda x e^{\lambda x^2} - a^2 e^{2\lambda x^2}$	[_Riccati]	✗	2.985
11798	$y' = a e^{-\lambda x^2} y^2 + \lambda x y + b^2 a$	[_Riccati]	✓	2.051
11799	$y' = a x^n y^2 + \lambda x y + a b^2 x^n e^{\lambda x^2}$	[_Riccati]	✓	3.227
11800	$x^4 (y' - y^2) = a + b e^{\frac{k}{x}} + c e^{\frac{2k}{x}}$	[_Riccati]	✓	3.958
11801	$y' = y^2 - a^2 + a\lambda \sinh(\lambda x) - a^2 \sinh(\lambda x)^2$	[_Riccati]	✓	11.519
11802	$y' = y^2 + a \sinh(\beta x) y + ab \sinh(\beta x) - b^2$	[_Riccati]	✓	4.475
11803	$y' = y^2 + ax \sinh(bx)^m y + a \sinh(bx)^m$	[_Riccati]	✓	8.675
11804	$y' = \lambda \sinh(\lambda x) y^2 - \lambda \sinh(\lambda x)^3$	[_Riccati]	✓	8.851
11805	$y' = (a \sinh(\lambda x)^2 - \lambda) y^2 - a \sinh(\lambda x)^2 + \lambda - a$	[_Riccati]	✓	29.718
11806	$(a \sinh(\lambda x) + b) y' = y^2 + c \sinh(\mu x) y - d^2 + cd \sinh(\mu x)$	[_Riccati]	✗	116.998
11807	$(a \sinh(\lambda x) + b) (y' - y^2) + a \lambda^2 \sinh(\lambda x) = 0$	[_Riccati]	✓	5.564
11808	$y' = \alpha y^2 + \beta + \gamma \cosh(x)$	[_Riccati]	✓	2.671
11809	$y' = y^2 + a \cosh(\beta x) y + ab \cosh(\beta x) - b^2$	[_Riccati]	✓	4.178

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
11810	$y' = y^2 + ax \cosh (bx)^m y + a \cosh (bx)^m$	[_Riccati]	✓	7.595
11811	$y' = (a \cosh (\lambda x)^2 - \lambda) y^2 + a + \lambda - a \cosh (\lambda x)^2$	[_Riccati]	✓	27.774
11812	$2y' = (a - \lambda + a \cosh (\lambda x)) y^2 + a + \lambda - a \cosh (\lambda x)$	[_Riccati]	✓	27.400
11813	$y' = y^2 - \lambda^2 + a \cosh (\lambda x)^n \sinh (\lambda x)^{-n-4}$	[_Riccati]	✗	29.810
11814	$y' = a \sinh (\lambda x) y^2 + b \sinh (\lambda x) \cosh (\lambda x)^n$	[_Riccati]	✓	11.479
11815	$y' = a \cosh (\lambda x) y^2 + b \cosh (\lambda x) \sinh (\lambda x)^n$	[_Riccati]	✓	11.573
11816	$(a \cosh (\lambda x) + b) y' = y^2 + c \cosh (\mu x) y - d^2 + cd \cosh (\mu x)$	[_Riccati]	✗	174.512
11817	$(a \cosh (\lambda x) + b) (y' - y^2) + a \lambda^2 \cosh (\lambda x) = 0$	[_Riccati]	✓	5.173
11818	$y' = y^2 + a\lambda - a(a + \lambda) \tanh (\lambda x)^2$	[_Riccati]	✓	5.052
11819	$y' = y^2 + 3a\lambda - \lambda^2 - a(a + \lambda) \tanh (\lambda x)^2$	[_Riccati]	✓	4.910
11820	$y' = y^2 + ax \tanh (bx)^m y + a \tanh (bx)^m$	[_Riccati]	✓	6.082
11821	$(a \tanh (\lambda x) + b) y' = y^2 + c \tanh (\mu x) y - d^2 + cd \tanh (\mu x)$	[_Riccati]	✗	293.752
11822	$y' = y^2 + a\lambda - a(a + \lambda) \coth (\lambda x)^2$	[_Riccati]	✓	4.906
11823	$y' = y^2 - \lambda^2 + 3a\lambda - a(a + \lambda) \coth (\lambda x)^2$	[_Riccati]	✓	4.438
11824	$y' = y^2 + ax \coth (bx)^m y + a \coth (bx)^m$	[_Riccati]	✓	6.733
11825	$(a \coth (\lambda x) + b) y' = y^2 + c \coth (\mu x) y - d^2 + cd \coth (\mu x)$	[_Riccati]	✗	327.952

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
11826	$y' = y^2 - 2\lambda^2 \tanh(\lambda x)^2 - 2\lambda^2 \coth(\lambda x)^2$	[_Riccati]	✓	19.472
11827	$y' = y^2 + a\lambda + b\lambda - 2ab - a(a + \lambda) \tanh(\lambda x)^2 - b(b + \lambda) \coth(\lambda x)^2$	[_Riccati]	✓	19.355
11828	$y' = a \ln(x)^n y^2 + bm x^{m-1} - a b^2 x^{2m} \ln(x)^n$	[_Riccati]	✗	7.409
11829	$xy' = y^2 a + b \ln(x) + c$	[_Riccati]	✓	2.133
11830	$xy' = y^2 a + b \ln(x)^k + c \ln(x)^{2k+2}$	[_Riccati]	✓	35.891
11831	$xy' = xy^2 - a^2 x \ln(\beta x)^2 + a$	[_Riccati]	✗	2.392
11832	$xy' = xy^2 - a^2 x \ln(\beta x)^{2k} + ak \ln(\beta x)^{k-1}$	[_Riccati]	✗	4.844
11833	$xy' = a x^n y^2 + b - a b^2 x^n \ln(x)^2$	[_Riccati]	✗	3.502
11834	$x^2 y' = y^2 x^2 + a \ln(x)^2 + b \ln(x) + c$	[_Riccati]	✓	7.441
11835	$x^2 y' = y^2 x^2 + a(b \ln(x) + c)^n + \frac{1}{4}$	[_Riccati]	✗	3.359
11836	$x^2 \ln(ax) (y' - y^2) = 1$	[_Riccati]	✓	1.599
11837	$y' = y^2 + a \ln(\beta x) y - ab \ln(\beta x) - b^2$	[_Riccati]	✓	2.339
11838	$y' = y^2 + ax \ln(bx)^m y + a \ln(bx)^m$	[_Riccati]	✓	2.276
11839	$y' = a x^n y^2 - ab x^{n+1} \ln(x) y + b \ln(x) + b$	[_Riccati]	✓	3.468
11840	$y' = -(n+1) x^n y^2 + a x^{n+1} \ln(x)^m y - a \ln(x)^m$	[_Riccati]	✓	3.587
11841	$y' = a \ln(x)^n y - abx \ln(x)^{n+1} y + b \ln(x) + b$	[_linear]	✓	2.276
11842	$y' = a \ln(x)^k (y - bx^n - c)^2 + bn x^{n-1}$	[[_1st_order, '_with_symmetry_[F(x),G(x)]'], _Riccati]	✓	5.716
11843	$y' = a \ln(x)^n y^2 + b \ln(x)^m y + bc \ln(x)^m - a c^2 \ln(x)^n$	[_Riccati]	✗	5.505

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
11844	$xy' = (ay + b \ln(x))^2$	[[_1st_order, _with_linear_symmetries], _Riccati]	✓	1.562
11845	$xy' = a \ln(\lambda x)^m y^2 + ky + a b^2 x^{2k} \ln(\lambda x)^m$	[_Riccati]	✓	38.800
11846	$xy' = a x^n (y + b \ln(x))^2 - b$	[[_1st_order, _with_symmetry_[F(x),G(x)]'], _Riccati]	✓	2.795
11847	$xy' = a x^{2n} \ln(x) y^2 + (b x^n \ln(x) - n) y + c \ln(x)$	[_Riccati]	✓	4.676
11848	$x^2 y' = a^2 x^2 y^2 - xy + b^2 \ln(x)^n$	[_Riccati]	✓	3.154
11849	$(a \ln(x) + b) y' = y^2 + c \ln(x)^n y - \lambda^2 + \lambda c \ln(x)^n$	[_Riccati]	✗	38.732
11850	$(a \ln(x) + b) y' = \ln(x)^n y^2 + cy - \lambda^2 \ln(x)^n + \lambda c$	[_Riccati]	✗	44.703
11851	$y' = \alpha y^2 + \beta + \gamma \sin(\lambda x)$	[_Riccati]	✓	3.324
11852	$y' = y^2 - a^2 + a \lambda \sin(\lambda x) + a^2 \sin(\lambda x)^2$	[_Riccati]	✓	7.693
11853	$y' = y^2 + \lambda^2 + c \sin(\lambda x + a)^n \sin(\lambda x + b)^{-n-4}$	[_Riccati]	✗	161.015
11854	$y' = y^2 + a \sin(\beta x) y + ab \sin(\beta x) - b^2$	[_Riccati]	✓	4.606
11855	$y' = y^2 + a \sin(bx)^m y + a \sin(bx)^m$	[_Riccati]	✗	16.779
11856	$y' = \lambda \sin(\lambda x) y^2 + \lambda \sin(\lambda x)^3$	[_Riccati]	✓	8.116
11857	$2y' = (\lambda + a - a \sin(\lambda x)) y^2 + \lambda - a - a \sin(\lambda x)$	[_Riccati]	✓	75.004
11858	$y' = (\lambda + a \sin(\lambda x)^2) y^2 + \lambda - a + a \sin(\lambda x)^2$	[_Riccati]	✓	33.953
11859	$y' = -(k+1) x^k y^2 + a x^{k+1} \sin(x)^m y - a \sin(x)^m$	[_Riccati]	✓	21.405

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
11860	$y' = a \sin(\lambda x + \mu)^k (y - b x^n - c)^2 + b n x^{n-1}$	[[_1st_order, '_with_symmetry_[F(x),G(x)]'], _Riccati]	✓	66.997
11861	$x y' = a \sin(\lambda x)^m y^2 + k y + a b^2 x^{2k} \sin(\lambda x)^m$	[_Riccati]	✓	22.758
11862	$(a \sin(\lambda x) + b) y' = y^2 + c \sin(\mu x) y - d^2 + c d \sin(\mu x)$	[_Riccati]	✗	123.118
11863	$(a \sin(\lambda x) + b) (y' - y^2) - a \lambda^2 \sin(\lambda x) = 0$	[_Riccati]	✓	5.676
11864	$y' = \alpha y^2 + \beta + \gamma \cos(\lambda x)$	[_Riccati]	✓	2.973
11865	$y' = y^2 - a^2 + a \lambda \cos(\lambda x) + a^2 \cos(\lambda x)^2$	[_Riccati]	✓	6.419
11866	$y' = y^2 + \lambda^2 + c \cos(\lambda x + a)^n \cos(\lambda x + b)^{-n-4}$	[_Riccati]	✗	162.096
11867	$y' = y^2 + a \cos(\beta x) y + a b \cos(\beta x) - b^2$	[_Riccati]	✓	4.633
11868	$y' = y^2 + a \cos(bx)^m y + a \cos(bx)^m$	[_Riccati]	✗	14.886
11869	$y' = \lambda \cos(\lambda x) y^2 + \lambda \cos(\lambda x)^3$	[_Riccati]	✓	18.010
11870	$2y' = (\lambda + a - a \cos(\lambda x)) y^2 + \lambda - a - a \cos(\lambda x)$	[_Riccati]	✓	43.472
11871	$y' = (\lambda + a \cos(\lambda x)^2) y^2 + \lambda - a + a \cos(\lambda x)^2$	[_Riccati]	✓	29.284
11872	$y' = -(k+1) x^k y^2 + a x^{k+1} \cos(x)^m y - a \cos(x)^m$	[_Riccati]	✓	18.194
11873	$y' = a \cos(\lambda x + \mu)^k (y - b x^n - c)^2 + b n x^{n-1}$	[[_1st_order, '_with_symmetry_[F(x),G(x)]'], _Riccati]	✓	40.821
11874	$x y' = a \cos(\lambda x)^m y^2 + k y + a b^2 x^{2k} \cos(\lambda x)^m$	[_Riccati]	✓	50.393

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
11875	$(a \cos(\lambda x) + b) y' = y^2 + c \cos(\mu x) y - d^2 + cd \cos(\mu x)$	[_Riccati]	✗	120.270
11876	$(a \cos(\lambda x) + b) (y' - y^2) - a \lambda^2 \cos(\lambda x) = 0$	[_Riccati]	✓	5.286
11877	$y' = y^2 + a\lambda + a(\lambda - a) \tan(\lambda x)^2$	[_Riccati]	✓	5.816
11878	$y' = y^2 + \lambda^2 + 3a\lambda + a(\lambda - a) \tan(\lambda x)^2$	[_Riccati]	✓	6.168
11879	$y' = y^2 a + b \tan(x) y + c$	[_Riccati]	✓	5.289
11880	$y' = y^2 a + 2ab \tan(x) y + b(ab - 1) \tan(x)^2$	[[_1st_order, '_with_symmetry_[F(x),G(x)]'], _Riccati]	✓	3.293
11881	$y' = y^2 + a \tan(\beta x) y + ab \tan(\beta x) - b^2$	[_Riccati]	✓	5.002
11882	$y' = y^2 + ax \tan(bx)^m y + a \tan(bx)^m$	[_Riccati]	✓	6.261
11883	$y' = -(k + 1) x^k y^2 + a x^{k+1} \tan(x)^m y - a \tan(x)^m$	[_Riccati]	✓	13.619
11884	$y' = a \tan(\lambda x)^n y^2 - a b^2 \tan(\lambda x)^{2+n} + b \lambda \tan(\lambda x)^2 + b \lambda$	[_Riccati]	✓	34.124
11885	$y' = a \tan(\lambda x + \mu)^k (y - b x^n - c)^2 + b n x^{n-1}$	[[_1st_order, '_with_symmetry_[F(x),G(x)]'], _Riccati]	✓	148.893
11886	$xy' = a \tan(\lambda x)^m y^2 + ky + a b^2 x^{2k} \tan(\lambda x)^m$	[_Riccati]	✓	59.906
11887	$(a \tan(\lambda x) + b) y' = y^2 + k \tan(\mu x) y - d^2 + kd \tan(\mu x)$	[_Riccati]	✗	224.790
11888	$y' = y^2 + a\lambda + a(\lambda - a) \cot(\lambda x)^2$	[_Riccati]	✓	6.014
11889	$y' = y^2 + \lambda^2 + 3a\lambda + a(\lambda - a) \cot(\lambda x)^2$	[_Riccati]	✓	5.637
11890	$y' = y^2 - 2ab \cot(ax) y + b^2 - a^2$	[_Riccati]	✓	7.523

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
11891	$y' = y^2 + a \cot(\beta x) y + ab \cot(\beta x) - b^2$	[_Riccati]	✓	6.238
11892	$y' = y^2 + ax \cot(bx)^m y + a \cot(bx)^m$	[_Riccati]	✓	6.862
11893	$y' = -(k+1)x^k y^2 + ax^{k+1} \cot(x)^m y - a \cot(x)^m$	[_Riccati]	✓	14.811
11894	$y' = a \cot(\lambda x + \mu)^k (y - bx^n - c)^2 + bn x^{n-1}$	[[_1st_order, '_with_symmetry_[F(x),G(x)]'], _Riccati]	✗	182.798
11895	$xy' = a \cot(\lambda x)^m y^2 + ky + ab^2 x^{2k} \cot(\lambda x)^m$	[_Riccati]	✓	61.205
11896	$(a \cot(\lambda x) + b) y' = y^2 + c \cot(\mu x) y - d^2 + cd \cot(\mu x)$	[_Riccati]	✗	212.609
11897	$y' = y^2 + \lambda^2 + c \sin(\lambda x)^n \cos(\lambda x)^{-n-4}$	[_Riccati]	✗	27.997
11898	$y' = a \sin(\lambda x) y^2 + b \sin(\lambda x) \cos(\lambda x)^n$	[_Riccati]	✓	12.223
11899	$y' = \lambda \sin(\lambda x) y^2 + a \cos(\lambda x)^n y - a \cos(\lambda x)^{n-1}$	[_Riccati]	✗	68.506
11900	$y' = a \cos(\lambda x) y^2 + b \cos(\lambda x) \sin(\lambda x)^n$	[_Riccati]	✓	13.525
11901	$y' = \lambda \sin(\lambda x) y^2 + ax^n \cos(\lambda x) y - ax^n$	[_Riccati]	✓	15.294
11902	$\sin(2x)^{n+1} y' = ay^2 \sin(x)^{2n} + b \cos(x)^{2n}$	[_Riccati]	✗	337.657
11903	$y' = y^2 - y \tan(x) + a(-a+1) \cot(x)^2$	[_Riccati]	✓	7.367
11904	$y' = y^2 - my \tan(x) + b^2 \cos(x)^{2m}$	[_Riccati]	✓	35.647
11905	$y' = y^2 + my \cot(x) + b^2 \sin(x)^{2m}$	[_Riccati]	✓	35.384
11906	$y' = y^2 - 2\lambda^2 \tan(x)^2 - 2\lambda^2 \cot(\lambda x)^2$	[_Riccati]	✗	112.496
11907	$y' = y^2 + a\lambda + b\lambda + 2ab + a(\lambda - a) \tan(\lambda x)^2 + b(\lambda - b) \cot(\lambda x)^2$	[_Riccati]	✓	16.823

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
11908	$y' = y^2 - \frac{\lambda^2}{2} - \frac{3\lambda^2 \tan(\lambda x)^2}{4} + a \cos(\lambda x)^2 \sin(\lambda x)^n$	[_Riccati]	✓	35.443
11909	$y' = \lambda \sin(\lambda x) y^2 + a \sin(\lambda x) y - a \tan(\lambda x)$	[_Riccati]	✓	12.625
11910	$y' = y^2 + \lambda \arcsin(x)^n y - a^2 + a\lambda \arcsin(x)^n$	[_Riccati]	✓	3.738
11911	$y' = y^2 + \lambda x \arcsin(x)^n y + \lambda \arcsin(x)^n$	[_Riccati]	✓	6.658
11912	$y' = -(k+1)x^k y^2 + \lambda \arcsin(x)^n (x^{k+1} y - 1)$	[_Riccati]	✓	53.296
11913	$y' = \lambda \arcsin(x)^n y^2 + ay + ab - b^2 \lambda \arcsin(x)^n$	[_Riccati]	✗	9.209
11914	$y' = \lambda \arcsin(x)^n y^2 - b\lambda x^m \arcsin(x)^n y + bm x^{m-1}$	[_Riccati]	✗	27.263
11915	$y' = \lambda \arcsin(x)^n y^2 + \beta m x^{m-1} - \lambda \beta^2 x^{2m} \arcsin(x)^n$	[_Riccati]	✗	37.320
11916	$y' = \lambda \arcsin(x)^n (y - ax^m - b)^2 + am x^{m-1}$	[[_1st_order, '_with_symmetry_[F(x),G(x)]'], _Riccati]	✗	32.895
11917	$xy' = \lambda \arcsin(x)^n y^2 + ky + \lambda b^2 x^{2k} \arcsin(x)^n$	[_Riccati]	✓	24.658
11918	$xy' = (ax^{2m} y^2 + bx^n y + c) \arcsin(x)^m - ny$	[_Riccati]	✗	111.743
11919	$y' = y^2 + \lambda \arccos(x)^n y - a^2 + a\lambda \arccos(x)^n$	[_Riccati]	✗	7.465
11920	$y' = y^2 + \lambda x \arccos(x)^n y + \lambda \arccos(x)^n$	[_Riccati]	✓	15.698
11921	$y' = -(k+1)x^k y^2 + \lambda \arccos(x)^n (x^{k+1} y - 1)$	[_Riccati]	✓	56.122
11922	$y' = \lambda \arccos(x)^n y^2 + ay + ab - b^2 \lambda \arccos(x)^n$	[_Riccati]	✗	13.747

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
11923	$y' = \lambda \arccos(x)^n y^2 - b\lambda x^m \arccos(x)^n y + bm x^{m-1}$	[_Riccati]	✗	64.049
11924	$y' = \lambda \arccos(x)^n y^2 + \beta m x^{m-1} - \lambda \beta^2 x^{2m} \arccos(x)^n$	[_Riccati]	✗	47.568
11925	$y' = \lambda \arccos(x)^n (y - a x^m - b)^2 + am x^{m-1}$	[[_1st_order, '_with_symmetry_[F(x),G(x)]'], _Riccati]	✗	43.085
11926	$xy' = \lambda \arccos(x)^n y^2 + ky + \lambda b^2 x^{2k} \arccos(x)^n$	[_Riccati]	✓	83.115
11927	$xy' = (a x^{2m} y^2 + b x^n y + c) \arccos(x)^m - ny$	[_Riccati]	✗	156.483
11928	$y' = y^2 + \lambda \arctan(x)^n y - a^2 + a\lambda \arctan(x)^n$	[_Riccati]	✓	4.825
11929	$y' = y^2 + \lambda x \arctan(x)^n y + \lambda \arctan(x)^n$	[_Riccati]	✓	6.860
11930	$y' = -(k+1)x^k y^2 + \lambda \arctan(x)^n (x^{k+1} y - 1)$	[_Riccati]	✓	39.800
11931	$y' = \lambda \arctan(x)^n y^2 + ay + ab - b^2 \lambda \arctan(x)^n$	[_Riccati]	✗	7.785
11932	$y' = \lambda \arctan(x)^n y^2 - b\lambda x^m \arctan(x)^n y + bm x^{m-1}$	[_Riccati]	✗	49.465
11933	$y' = \lambda \arctan(x)^n y^2 + \beta m x^{m-1} - \lambda \beta^2 x^{2m} \arctan(x)^n$	[_Riccati]	✗	76.519
11934	$y' = \lambda \arctan(x)^n (y - a x^m - b)^2 + am x^{m-1}$	[[_1st_order, '_with_symmetry_[F(x),G(x)]'], _Riccati]	✗	90.319
11935	$xy' = \lambda \arctan(x)^n y^2 + ky + \lambda b^2 x^{2k} \arctan(x)^n$	[_Riccati]	✓	36.539
11936	$xy' = (a x^{2m} y^2 + b x^n y + c) \arctan(x)^m - ny$	[_Riccati]	✗	105.393

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
11937	$y' = y^2 + \lambda \operatorname{arccot}(x)^n y - a^2 + a\lambda \operatorname{arccot}(x)^n$	[_Riccati]	✓	5.303
11938	$y' = y^2 + \lambda x \operatorname{arccot}(x)^n y + \lambda \operatorname{arccot}(x)^n$	[_Riccati]	✓	6.007
11939	$y' = -(k+1)x^k y^2 + \lambda \operatorname{arccot}(x)^n (x^{k+1}y - 1)$	[_Riccati]	✓	41.211
11940	$y' = \lambda \operatorname{arccot}(x)^n y^2 + ay + ab - b^2 \lambda \operatorname{arccot}(x)^n$	[_Riccati]	✗	11.346
11941	$y' = \lambda \operatorname{arccot}(x)^n y^2 - b\lambda x^m \operatorname{arccot}(x)^n y + bm x^{m-1}$	[_Riccati]	✗	64.713
11942	$y' = \lambda \operatorname{arccot}(x)^n y^2 + \beta m x^{m-1} - \lambda \beta^2 x^{2m} \operatorname{arccot}(x)^n$	[_Riccati]	✗	77.639
11943	$y' = \lambda \operatorname{arccot}(x)^n (y - a x^m - b)^2 + am x^{m-1}$	[[_1st_order, '_with_symmetry_[F(x),G(x)]'], _Riccati]	✗	112.058
11944	$xy' = \lambda \operatorname{arccot}(x)^n y^2 + ky + \lambda b^2 x^{2k} \operatorname{arccot}(x)^n$	[_Riccati]	✓	36.702
11945	$xy' = (a x^{2m} y^2 + b x^n y + c) \operatorname{arccot}(x)^m - ny$	[_Riccati]	✗	294.594
11946	$y' = y^2 + f(x)y - a^2 - af(x)$	[_Riccati]	✓	1.917
11947	$y' = y^2 f(x) - ay - ab - b^2 f(x)$	[_Riccati]	✓	2.508
11948	$y' = y^2 + xf(x)y + f(x)$	[_Riccati]	✓	1.868
11949	$y' = y^2 f(x) - a x^n f(x)y + an x^{n-1}$	[_Riccati]	✓	3.329
11950	$y' = y^2 f(x) + an x^{n-1} - a^2 x^{2n} f(x)$	[_Riccati]	✗	6.354
11951	$y' = -(n+1)x^n y^2 + x^{n+1} f(x)y - f(x)$	[_Riccati]	✓	3.131
11952	$xy' = y^2 f(x) + ny + a x^{2n} f(x)$	[_Riccati]	✓	2.352
11953	$xy' = x^{2n} f(x) y^2 + (a x^n f(x) - n)y + bf(x)$	[_Riccati]	✗	15.647
11954	$y' = y^2 f(x) + g(x)y - a^2 f(x) - ag(x)$	[_Riccati]	✓	2.537

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
11955	$y' = y^2 f(x) + g(x)y + an x^{n-1} - a x^n g(x) - a^2 x^{2n} f(x)$	[_Riccati]	✗	147.229
11956	$y' = y^2 f(x) - a x^n g(x)y + an x^{n-1} + a^2 x^{2n} (g(x) - f(x))$	[_Riccati]	✗	188.577
11957	$y' = a e^{\lambda x} y^2 + a e^{\lambda x} f(x)y + \lambda f(x)$	[_Riccati]	✓	3.089
11958	$y' = y^2 f(x) - a e^{\lambda x} f(x)y + a \lambda e^{\lambda x}$	[_Riccati]	✓	4.497
11959	$y' = y^2 f(x) + a \lambda e^{\lambda x} - a^2 e^{2\lambda x} f(x)$	[_Riccati]	✗	6.327
11960	$y' = y^2 f(x) + \lambda y + a^2 e^{2\lambda x} f(x)$	[_Riccati]	✓	2.134
11961	$y' = y^2 f(x) - f(x)(a e^{\lambda x} + b)y + a \lambda e^{\lambda x}$	[_Riccati]	✓	5.290
11962	$y' = e^{\lambda x} f(x)y^2 + (af(x) - \lambda)y + b e^{-\lambda x} f(x)$	[_Riccati]	✓	3.385
11963	$y' = y^2 f(x) + g(x)y + a \lambda e^{\lambda x} - a e^{\lambda x} g(x) - a^2 e^{2\lambda x} f(x)$	[_Riccati]	✗	13.043
11964	$y' = y^2 f(x) - a e^{\lambda x} g(x)y + a \lambda e^{\lambda x} + a^2 e^{2\lambda x} (g(x) - f(x))$	[_Riccati]	✗	20.601
11965	$y' = y^2 f(x) + 2a \lambda x e^{\lambda x^2} - a^2 f(x) e^{2\lambda x^2}$	[_Riccati]	✗	6.542
11966	$y' = y^2 f(x) + \lambda x y + a f(x) e^{\lambda x}$	[_Riccati]	✗	4.839
11967	$y' = y^2 f(x) - a \tanh(\lambda x)^2 (af(x) + \lambda) + a \lambda$	[_Riccati]	✗	299.589
11968	$y' = y^2 f(x) - a \coth(\lambda x)^2 (af(x) + \lambda) + a \lambda$	[_Riccati]	✗	276.190
11969	$y' = y^2 f(x) - a^2 f(x) + a \lambda \sinh(\lambda x) - a^2 f(x) \sinh(\lambda x)^2$	[_Riccati]	✗	37.296
11970	$xy' = y^2 f(x) + a - a^2 f(x) \ln(x)^2$	[_Riccati]	✗	3.880
11971	$xy' = f(x)(y + a \ln(x))^2 - a$	[[_1st_order, '_with_symmetry_[F(x),G(x)]'], _Riccati]	✗	4.924

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
11972	$y' = y^2 f(x) - ax \ln(x) f(x) y + a \ln(x) + a$	[_Riccati]	✗	3.691
11973	$y' = -a \ln(x) y^2 + a f(x) (x \ln(x) - x) y - f(x)$	[_Riccati]	✓	3.527
11974	$y' = \lambda \sin(\lambda x) y^2 + f(x) \cos(\lambda x) y - f(x)$	[_Riccati]	✓	11.432
11975	$y' = y^2 f(x) - a^2 f(x) + a \lambda \sin(\lambda x) + a^2 f(x) \sin(\lambda x)^2$	[_Riccati]	✗	52.010
11976	$y' = y^2 f(x) - a^2 f(x) + a \lambda \cos(\lambda x) + a^2 f(x) \cos(\lambda x)^2$	[_Riccati]	✗	52.931
11977	$y' = y^2 f(x) - a \tan(\lambda x)^2 (a f(x) - \lambda) + a \lambda$	[_Riccati]	✗	362.875
11978	$y' = y^2 f(x) - a \cot(\lambda x)^2 (a f(x) - \lambda) + a \lambda$	[_Riccati]	✗	378.316
11979	$y' = y^2 - f(x)^2 + f'(x)$	[_Riccati]	✓	1.414
11980	$y' = y^2 f(x) - f(x) g(x) y + g'(x)$	[_Riccati]	✓	1.668
11981	$y' = -f'(x) y^2 + f(x) g(x) y - g(x)$	[_Riccati]	✓	1.954
11982	$y' = g(x) (y - f(x))^2 + f'(x)$	[[_1st_order, '_with_symmetry_[F(x),G(x)]'], _Riccati]	✓	1.826
11983	$y' = \frac{f'(x) y^2}{g(x)} - \frac{g'(x)}{f(x)}$	[_Riccati]	✗	2.913
11984	$f(x)^2 y' - f'(x) y^2 + g(x) (y - f(x)) = 0$	[_Riccati]	✗	3.311
11985	$y' = f'(x) y^2 + a e^{\lambda x} f(x) y + a e^{\lambda x}$	[_Riccati]	✓	2.366
11986	$y' = y^2 f(x) + g'(x) y + a f(x) e^{2g(x)}$	[_Riccati]	✓	0.984
11987	$y' = y^2 - \frac{f''(x)}{f(x)}$	[_Riccati]	✓	1.037
11988	$y' = y^2 + a^2 f(ax + b)$	[_Riccati]	✗	1.328

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
11989	$y' = y^2 + \frac{f(\frac{1}{x})}{x^4}$	[_Riccati]	✗	1.667
11990	$y' = y^2 + \frac{f(\frac{ax+b}{cx+d})}{(cx+d)^4}$	[_Riccati]	✗	4.072
11991	$x^2y' = x^4f(x)y^2 + 1$	[_Riccati]	✗	2.621
11992	$x^2y' = x^4y^2 + x^{2n}f(ax^n + b) - \frac{n^2}{4} + \frac{1}{4}$	[_Riccati]	✗	25.201
11993	$y' = y^2f(x) + g(x)y + h(x)$	[_Riccati]	✗	2.431
11994	$y' = y^2 + e^{2\lambda x}f(e^{\lambda x}) - \frac{\lambda^2}{4}$	[_Riccati]	✗	3.115
11995	$y' = y^2 - \frac{\lambda^2}{4} + \frac{e^{2\lambda x}f(\frac{ae^{\lambda x}+b}{ce^{\lambda x}+d})}{(ce^{\lambda x}+d)^4}$	[_Riccati]	✗	46.377
11996	$y' = y^2 - \lambda^2 + \frac{f(\coth(\lambda x))}{\sinh(\lambda x)^4}$	[_Riccati]	✗	38.546
11997	$y' = y^2 - \lambda^2 + \frac{f(\tanh(\lambda x))}{\cosh(\lambda x)^4}$	[_Riccati]	✗	20.173
11998	$x^2y' = y^2x^2 + f(a \ln(x) + b) + \frac{1}{4}$	[_Riccati]	✗	2.487
11999	$y' = y^2 + \lambda^2 + \frac{f(\cot(\lambda x))}{\sin(\lambda x)^4}$	[_Riccati]	✗	106.207
12000	$y' = y^2 + \lambda^2 + \frac{f(\tan(\lambda x))}{\cos(\lambda x)^4}$	[_Riccati]	✗	26.644
12001	$y' = y^2 + \lambda^2 + \frac{f(\frac{\sin(\lambda x+a)}{\sin(\lambda x+b)})}{\sin(\lambda x+b)^4}$	[_Riccati]	✗	455.068
12002	$yy' - y = A$	[_quadrature]	✓	1.241
12003	$yy' - y = Ax + B$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	10.441
12004	$yy' - y = -\frac{2x}{9} + A + \frac{B}{\sqrt{x}}$	[_rational, [_Abel, '2nd type', 'class B']]	✗	8.180

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
12005	$yy' - y = 2A\left(\sqrt{x} + 4A + \frac{3A^2}{\sqrt{x}}\right)$	[_rational, [_Abel, '2nd type', 'class B']]	✗	5.806
12006	$yy' - y = Ax + \frac{B}{x} - \frac{B^2}{x^3}$	[_rational, [_Abel, '2nd type', 'class B']]	✗	1.407
12007	$yy' - y = Ax^{k-1} - kBx^k + kB^2x^{2k-1}$	[_rational, [_Abel, '2nd type', 'class A']]	✗	2.553
12008	$yy' - y = \frac{A}{x} - \frac{A^2}{x^3}$	[_rational, [_Abel, '2nd type', 'class B']]	✗	1.270
12009	$yy' - y = A + Be^{-\frac{2x}{A}}$	[[_Abel, '2nd type', 'class A']]	✗	1.391
12010	$yy' - y = A\left(e^{\frac{2x}{A}} - 1\right)$	[[_Abel, '2nd type', 'class A']]	✗	1.353
12011	$yy' - y = -\frac{2(m+1)}{(3+m)^2} + Ax^m$	[_rational, [_Abel, '2nd type', 'class A']]	✗	2.132
12012	$yy' - y = -\frac{2x}{9} + 6A^2\left(1 + \frac{2A}{\sqrt{x}}\right)$	[_rational, [_Abel, '2nd type', 'class B']]	✗	6.291
12013	$yy' - y = \frac{2m-2}{(m-3)^2} + \frac{2A\left(m(3+m)\sqrt{x} + (4m^2 + 3m + 9)A + \frac{3m(3+m)A^2}{\sqrt{x}}\right)}{(m-3)^2}$	[_rational, [_Abel, '2nd type', 'class B']]	✗	40.360
12014	$yy' - y = \frac{(2m+1)x}{4m^2} + \frac{A}{x} - \frac{A^2}{x^3}$	[_rational, [_Abel, '2nd type', 'class B']]	✗	1.899
12015	$yy' - y = \frac{4}{9}x + 2Ax^2 + 2A^2x^3$	[_rational, [_Abel, '2nd type', 'class A']]	✗	1.370
12016	$yy' - y = -\frac{3x}{16} + \frac{5A}{x^{1/3}} - \frac{12A^2}{x^{5/3}}$	[_rational, [_Abel, '2nd type', 'class B']]	✗	4.474
12017	$yy' - y = \frac{A}{x}$	[_rational, [_Abel, '2nd type', 'class B']]	✗	0.656
12018	$yy' - y = -\frac{x}{4} + \frac{A\left(\sqrt{x} + 5A + \frac{3A^2}{\sqrt{x}}\right)}{4}$	[_rational, [_Abel, '2nd type', 'class B']]	✗	7.684
12019	$yy' - y = \frac{2a^2}{\sqrt{8a^2 + x^2}}$	[[_Abel, '2nd type', 'class B']]	✗	2.276

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
12020	$yy' - y = 2x + \frac{A}{x^2}$	[_rational, [_Abel, '2nd type', 'class B']]	✗	0.996
12021	$yy' - y = -\frac{6X}{25} + \frac{2A(2\sqrt{x} + 19A + \frac{6A^2}{\sqrt{x}})}{25}$	[_rational, [_Abel, '2nd type', 'class B']]	✗	26.868
12022	$yy' - y = \frac{3x}{8} + \frac{3\sqrt{a^2 + x^2}}{8} - \frac{a^2}{16\sqrt{a^2 + x^2}}$	[[_Abel, '2nd type', 'class B']]	✗	5.482
12023	$yy' - y = -\frac{4x}{25} + \frac{A}{\sqrt{x}}$	[_rational, [_Abel, '2nd type', 'class B']]	✗	4.967
12024	$yy' - y = -\frac{9x}{100} + \frac{A}{x^{5/3}}$	[_rational, [_Abel, '2nd type', 'class B']]	✗	40.179
12025	$yy' - y = -\frac{12x}{49} + \frac{2A(5\sqrt{x} + 34A + \frac{15A^2}{\sqrt{x}})}{49}$	[_rational, [_Abel, '2nd type', 'class B']]	✗	7.218
12026	$yy' - y = -\frac{12x}{49} + \frac{A(25\sqrt{x} + 41A + \frac{10A^2}{\sqrt{x}})}{98}$	[_rational, [_Abel, '2nd type', 'class B']]	✗	7.052
12027	$yy' - y = -\frac{2x}{9} + \frac{A}{\sqrt{x}}$	[_rational, [_Abel, '2nd type', 'class B']]	✗	4.683
12028	$yy' - y = -\frac{5x}{36} + \frac{A}{x^{7/5}}$	[_rational, [_Abel, '2nd type', 'class B']]	✗	47.165
12029	$yy' - y = -\frac{12x}{49} + \frac{6A(-3\sqrt{x} + 23A + \frac{12A^2}{\sqrt{x}})}{49}$	[_rational, [_Abel, '2nd type', 'class B']]	✗	6.835
12030	$yy' - y = -\frac{30x}{121} + \frac{3A(21\sqrt{x} + 35A + \frac{6A^2}{\sqrt{x}})}{242}$	[_rational, [_Abel, '2nd type', 'class B']]	✗	7.452

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
12031	$yy' - y = -\frac{3x}{16} + \frac{A}{x^{5/3}}$	[_rational, [_Abel, '2nd type', 'class B']]	✗	39.495
12032	$yy' - y = -\frac{12x}{49} + \frac{4A(-10\sqrt{x} + 27A + \frac{10A^2}{\sqrt{x}})}{49}$	[_rational, [_Abel, '2nd type', 'class B']]	✗	6.447
12033	$yy' - y = \frac{A}{\sqrt{x}}$	[_rational, [_Abel, '2nd type', 'class B']]	✗	1.728
12034	$yy' - y = \frac{A}{x^2}$	[_rational, [_Abel, '2nd type', 'class B']]	✗	0.686
12035	$yy' - y = A(2+n) \left( \sqrt{x} + 2(2+n)A + \frac{(n+1)(3+n)A^2}{\sqrt{x}} \right)$	[_rational, [_Abel, '2nd type', 'class B']]	✗	18.512
12036	$yy' - y = A(2+n) \left( \sqrt{x} + 2(2+n)A + \frac{(2n+3)A^2}{\sqrt{x}} \right)$	[_rational, [_Abel, '2nd type', 'class B']]	✗	18.201
12037	$yy' - y = A\sqrt{x} + 2A^2 + \frac{B}{\sqrt{x}}$	[_rational, [_Abel, '2nd type', 'class B']]	✗	11.721
12038	$yy' - y = 2A^2 - A\sqrt{x}$	[_rational, [_Abel, '2nd type', 'class A']]	✗	2.027
12039	$yy' - y = -\frac{x}{4} + \frac{6A(\sqrt{x} + 8A + \frac{5A^2}{\sqrt{x}})}{49}$	[_rational, [_Abel, '2nd type', 'class B']]	✗	7.283
12040	$yy' - y = -\frac{6x}{25} + \frac{6A(2\sqrt{x} + 7A + \frac{4A^2}{\sqrt{x}})}{25}$	[_rational, [_Abel, '2nd type', 'class B']]	✗	6.774
12041	$yy' - y = -\frac{3x}{16} + \frac{3A}{x^{1/3}} - \frac{12A^2}{x^{5/3}}$	[_rational, [_Abel, '2nd type', 'class B']]	✗	4.810
12042	$yy' - y = \frac{3x}{8} + \frac{3\sqrt{b^2 + x^2}}{8} + \frac{3b^2}{16\sqrt{b^2 + x^2}}$	[[_Abel, '2nd type', 'class B']]	✗	5.223

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
12043	$yy' - y = \frac{9x}{32} + \frac{15\sqrt{b^2 + x^2}}{32} + \frac{3b^2}{64\sqrt{b^2 + x^2}}$	[[_Abel, '2nd type', 'class B']]	✗	6.583
12044	$yy' - y = -\frac{3x}{32} - \frac{3\sqrt{a^2 + x^2}}{32} + \frac{15a^2}{64\sqrt{a^2 + x^2}}$	[[_Abel, '2nd type', 'class B']]	✗	5.657
12045	$yy' - y = Ax^2 - \frac{9}{625A}$	[_rational, [_Abel, '2nd type', 'class A']]	✗	1.061
12046	$yy' - y = -\frac{6}{25}x - Ax^2$	[_rational, [_Abel, '2nd type', 'class A']]	✗	0.919
12047	$yy' - y = \frac{6}{25}x - Ax^2$	[_rational, [_Abel, '2nd type', 'class A']]	✗	0.901
12048	$yy' - y = 12x + \frac{A}{x^{5/2}}$	[_rational, [_Abel, '2nd type', 'class B']]	✗	5.463
12049	$yy' - y = \frac{63x}{4} + \frac{A}{x^{5/3}}$	[_rational, [_Abel, '2nd type', 'class B']]	✗	45.556
12050	$yy' - y = 2x + 2A \left( 10\sqrt{x} + 31A + \frac{30A^2}{\sqrt{x}} \right)$	[_rational, [_Abel, '2nd type', 'class B']]	✗	6.883
12051	$yy' - y = 2x + 2A \left( -10\sqrt{x} + 19A + \frac{30A^2}{\sqrt{x}} \right)$	[_rational, [_Abel, '2nd type', 'class B']]	✗	6.666
12052	$yy' - y = -\frac{28x}{121} + \frac{2A \left( 5\sqrt{x} + 106A + \frac{65A^2}{\sqrt{x}} \right)}{121}$	[_rational, [_Abel, '2nd type', 'class B']]	✗	7.944
12053	$yy' - y = -\frac{12x}{49} + \frac{A \left( 5\sqrt{x} + 262A + \frac{65A^2}{\sqrt{x}} \right)}{49}$	[_rational, [_Abel, '2nd type', 'class B']]	✗	7.064

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
12054	$yy' - y = -\frac{12x}{49} + A\sqrt{x}$	[_rational, [_Abel, '2nd type', 'class A']]	✗	4.053
12055	$yy' - y = 6x + \frac{A}{x^4}$	[_rational, [_Abel, '2nd type', 'class B']]	✗	0.905
12056	$yy' - y = 20x + \frac{A}{\sqrt{x}}$	[_rational, [_Abel, '2nd type', 'class B']]	✗	4.848
12057	$yy' - y = \frac{15x}{4} + \frac{A}{x^7}$	[_rational, [_Abel, '2nd type', 'class B']]	✗	0.980
12058	$yy' - y = -\frac{10x}{49} + \frac{2A(4\sqrt{x} + 61A + \frac{12A^2}{\sqrt{x}})}{49}$	[_rational, [_Abel, '2nd type', 'class B']]	✗	6.411
12059	$yy' - y = -\frac{12x}{49} + \frac{2A(\sqrt{x} + 166A + \frac{55A^2}{\sqrt{x}})}{49}$	[_rational, [_Abel, '2nd type', 'class B']]	✗	7.010
12060	$yy' - y = -\frac{4x}{25} + \frac{A(7\sqrt{x} + 49A + \frac{6A^2}{\sqrt{x}})}{50}$	[_rational, [_Abel, '2nd type', 'class B']]	✗	6.950
12061	$yy' - y = \frac{15x}{4} + \frac{6A}{x^{1/3}} - \frac{3A^2}{x^{5/3}}$	[_rational, [_Abel, '2nd type', 'class B']]	✗	4.733
12062	$yy' - y = -\frac{3x}{16} + \frac{A}{x^{1/3}} + \frac{B}{x^{5/3}}$	[_rational, [_Abel, '2nd type', 'class B']]	✗	16.858
12063	$yy' - y = -\frac{5x}{36} + \frac{A}{x^{3/5}} - \frac{B}{x^{7/5}}$	[_rational, [_Abel, '2nd type', 'class B']]	✗	9.607
12064	$yy' - y = \frac{k}{\sqrt{Ax^2 + Bx + c}}$	[[_Abel, '2nd type', 'class B']]	✗	3.995
12065	$yy' - y = -\frac{12x}{49} + 3A\left(\frac{1}{49} + B\right)\sqrt{x} + 3A^2\left(\frac{4}{49} - \frac{5B}{2}\right) + \frac{15A^3\left(\frac{1}{49} - \frac{5B}{4}\right)}{4\sqrt{x}}$	[_rational, [_Abel, '2nd type', 'class B']]	✗	5.351

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
12066	$yy' - y = -\frac{6x}{25} + \frac{4B^2 \left( (2-A)x^{1/3} - \frac{3B(2A+1)}{2} + \frac{B^2(1-3A)}{x} \right) + \frac{AB^3}{x}}{75}$	[_rational, [_Abel, '2nd type', 'class B']]	✗	6.791
12067	$yy' - y = \frac{3x}{4} - \frac{3Ax^{1/3}}{2} + \frac{3A^2}{4x^{1/3}} - \frac{27A^4}{625x^{5/3}}$	[_rational, [_Abel, '2nd type', 'class B']]	✗	8.480
12068	$yy' - y = -\frac{6x}{25} + \frac{7Ax^{1/3}}{5} + \frac{31A^2}{3x^{1/3}} - \frac{100A^4}{3x^{5/3}}$	[_rational, [_Abel, '2nd type', 'class B']]	✗	8.276
12069	$yy' - y = -\frac{10x}{49} + \frac{13A^2}{5x^{1/5}} - \frac{7A^3}{20x^{4/5}}$	[_rational, [_Abel, '2nd type', 'class B']]	✗	15.621
12070	$yy' - y = -\frac{33x}{169} + \frac{286A^2}{3x^{5/11}} - \frac{770A^3}{9x^{13/11}}$	[_rational, [_Abel, '2nd type', 'class B']]	✗	37.077
12071	$yy' - y = -\frac{21x}{100} + \frac{7A^2 \left( \frac{123}{x^{1/7}} + \frac{280A}{x^{5/7}} - \frac{400A^2}{x^{9/7}} \right)}{9}$	[_rational, [_Abel, '2nd type', 'class B']]	✗	39.836
12072	$yy' - y = ax + bx^m$	[_rational, [_Abel, '2nd type', 'class A']]	✗	1.583
12073	$yy' - y = -\frac{(m+1)x}{(2+m)^2} + Ax^{2m+1} + Bx^{3m+1}$	[_rational, [_Abel, '2nd type', 'class A']]	✗	12.594
12074	$yy' - y = a^2 \lambda e^{2\lambda x} - a(b\lambda + 1) e^{\lambda x} + b$	[[_Abel, '2nd type', 'class A']]	✗	2.660
12075	$yy' - y = a^2 \lambda e^{2\lambda x} + a\lambda x e^{\lambda x} + b e^{\lambda x}$	[[_Abel, '2nd type', 'class A']]	✗	2.345
12076	$yy' - y = 2a^2 \lambda \sin(2\lambda x) + 2a \sin(\lambda x)$	[[_Abel, '2nd type', 'class A']]	✗	7.234
12077	$yy' - y = a^2 \frac{f'(x) f''(x)}{(f(x) + b)^2 f''(x)} - \frac{f''(x)}{f'(x)^3}$	[[_Abel, '2nd type', 'class B']]	✗	0.915
12078	$yy' = (ax + b)y + 1$	[_rational, [_Abel, '2nd type', 'class A']]	✗	0.953

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
12079	$yy' = \frac{y}{(ax+b)^2} + 1$	[_rational, [_Abel, '2nd type', 'class B']]	✗	1.651
12080	$yy' = \left(a - \frac{1}{ax}\right)y + 1$	[_rational, [_Abel, '2nd type', 'class B']]	✗	0.919
12081	$yy' = \frac{y}{\sqrt{ax+b}} + 1$	[[_1st_order, _with_linear_symmetries], [_Abel, '2nd type', 'class B']]	✓	11.649
12082	$yy' = \frac{3y}{\sqrt{ax^{3/2} + 8x}} + 1$	[[_Abel, '2nd type', 'class B']]	✗	3.243
12083	$yy' = \left(\frac{a}{x^{2/3}} - \frac{2}{3ax^{1/3}}\right)y + 1$	[_rational, [_Abel, '2nd type', 'class B']]	✗	2.715
12084	$yy' = ae^{\lambda x}y + 1$	[[_Abel, '2nd type', 'class A']]	✗	1.138
12085	$yy' = (ae^{\lambda x} + be^{-\lambda x})y + 1$	[[_Abel, '2nd type', 'class A']]	✗	1.716
12086	$yy' = ay \cosh(x) + 1$	[[_Abel, '2nd type', 'class A']]	✗	1.924
12087	$yy' = ay \sinh(x) + 1$	[[_Abel, '2nd type', 'class A']]	✗	2.040
12088	$yy' = a \cos(\lambda x)y + 1$	[[_Abel, '2nd type', 'class A']]	✗	2.179
12089	$yy' = a \sin(\lambda x)y + 1$	[[_Abel, '2nd type', 'class A']]	✗	2.350
12090	$yy' = (ax + 3b)y + cx^3 - abx^2 - 2b^2x$	[_rational, [_Abel, '2nd type', 'class A']]	✗	2.765
12091	$yy' = (3ax + b)y - a^2x^3 - abx^2 + cx$	[_rational, [_Abel, '2nd type', 'class A']]	✓	3.182
12092	$2yy' = (7ax + 5b)y - 3a^2x^3 - 2cx^2 - 3b^2x$	[_rational, [_Abel, '2nd type', 'class A']]	✗	2.594
12093	$yy' = ((3 - m)x - 1)y - (m - 1)ax$	[_rational, [_Abel, '2nd type', 'class A']]	✗	1.243
12094	$yy' + x(x^2a + b)y + x = 0$	[_rational, [_Abel, '2nd type', 'class A']]	✗	1.154

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
12095	$yy' + a\left(1 - \frac{1}{x}\right)y = a^2$	[_rational, [_Abel, '2nd type', 'class B']]	✗	0.883
12096	$yy' - a\left(1 - \frac{b}{x}\right)y = a^2b$	[_rational, [_Abel, '2nd type', 'class B']]	✗	0.931
12097	$yy' = x^{n-1}((2n+1)x + an)y - nx^{2n}(x+a)$	[_rational, [_Abel, '2nd type', 'class A']]	✗	2.798
12098	$yy' = a(-bn+x)x^{n-1}y + c(x^2 - (2n+1)bx + n(n+1)b^2)x^{2n-1}$	[_rational, [_Abel, '2nd type', 'class A']]	✗	5.530
12099	$yy' = (a(2n+k)x^k + b)x^{n-1}y + (-a^2nx^{2k} - abx^k + c)x^{2n-1}$	[_rational, [_Abel, '2nd type', 'class A']]	✗	42.371
12100	$yy' = \frac{(a(2n+k)x^{2k} + b(2m-k))x^{m-k-1}y - a^2mx^{4k} + cx^{2k} + b^2m}{x}$	[_rational, [_Abel, '2nd type', 'class B']]	✗	53.830
12101	$yy' = \frac{((m+2L-3)x + n - 2L + 3)y}{x} + \frac{((m-L-1)x^2 + (n-m-2L+3)x - n + L - 2)x^{1-2L}}{x^2}$	[_rational, [_Abel, '2nd type', 'class B']]	✗	15.151
12102	$yy' = (a(2n+1)x^2 + cx + b(2n-1))x^{n-2}y - (na^2x^4 + acx^3 + nb^2 + bcx + dx^2)x^{2n-3}$	[_rational, [_Abel, '2nd type', 'class A']]	✗	8.897
12103	$yy' = (a(n-1)x + b(2\lambda+n))x^{\lambda-1}(ax + b)^{-\lambda-2}y - (anx + b(\lambda+n))x^{2\lambda-1}(ax+b)^{-2\lambda-3}$	[[_Abel, '2nd type', 'class A']]	✗	34.583
12104	$yy' - \frac{a((m-1)x+1)y}{x} = \frac{a^2(mx+1)(x-1)}{x}$	[_rational, [_Abel, '2nd type', 'class B']]	✗	2.378
12105	$yy' - a\left(1 - \frac{b}{\sqrt{x}}\right)y = \frac{a^2b}{\sqrt{x}}$	[_rational, [_Abel, '2nd type', 'class B']]	✗	2.337

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
12106	$yy' = \frac{3y}{(ax+b)^{1/3} x^{5/3}} + \frac{3}{(ax+b)^{2/3} x^{7/3}}$	[[_Abel, '2nd type', 'class B']]	X	5.813
12107	$\begin{aligned} 3yy' &= \frac{(-7\lambda s(3s+4\lambda)x + 6s - 2\lambda)y}{x^{1/3}} \\ &+ \frac{6\lambda sx - 6}{x^{2/3}} \\ &+ 2(\lambda s(3s+4\lambda)x + 5\lambda)(-\lambda s(3s+4\lambda)x + 3s + 4\lambda)x^{1/3} \end{aligned}$	[_rational, [_Abel, '2nd type', 'class B']]	X	19.862
12108	$yy' + \frac{a(6x-1)y}{2x} = -\frac{a^2(x-1)(4x-1)}{2x}$	[_rational, [_Abel, '2nd type', 'class B']]	X	2.217
12109	$yy' - \frac{a(1 + \frac{2b}{x^2})y}{2} = \frac{a^2(3x + \frac{4b}{x})}{16}$	[_rational, [_Abel, '2nd type', 'class B']]	X	1.739
12110	$yy' + \frac{a(13x-20)y}{14x^{9/7}} = \frac{3a^2(x-1)(x-8)}{14x^{11/7}}$	[_rational, [_Abel, '2nd type', 'class B']]	X	84.489
12111	$yy' + \frac{5a(23x-16)y}{56x^{9/7}} = \frac{3a^2(x-1)(25x-32)}{56x^{11/7}}$	[_rational, [_Abel, '2nd type', 'class B']]	X	91.959
12112	$yy' + \frac{a(19x+85)y}{26x^{18/13}} = \frac{3a^2(x-1)(x+25)}{26x^{23/13}}$	[_rational, [_Abel, '2nd type', 'class B']]	X	23.843
12113	$yy' + \frac{a(13x-18)y}{15x^{7/5}} = \frac{4a^2(x-1)(x-6)}{15x^{9/5}}$	[_rational, [_Abel, '2nd type', 'class B']]	X	6.249
12114	$yy' + \frac{a(1+5x)y}{2\sqrt{x}} = a^2(-x^2+1)$	[_rational, [_Abel, '2nd type', 'class B']]	X	5.259
12115	$yy' + \frac{3a(19x-14)x^{7/5}y}{35} = \frac{4a^2(x-1)(9x-14)x^{9/5}}{35}$	[_rational, [_Abel, '2nd type', 'class A']]	X	3.506

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
12116	$yy' + \frac{3a(3x+7)y}{10x^{13/10}} = \frac{a^2(x-1)(x+9)}{5x^{8/5}}$	[_rational, [_Abel, '2nd type', 'class B']]	✗	80.440
12117	$yy' + \frac{a(7x-12)y}{10x^{7/5}} = \frac{a^2(x-1)(x-16)}{10x^{9/5}}$	[_rational, [_Abel, '2nd type', 'class B']]	✗	6.437
12118	$yy' + \frac{3a(13x-8)y}{20x^{7/5}} = \frac{a^2(x-1)(27x-32)}{20x^{9/5}}$	[_rational, [_Abel, '2nd type', 'class B']]	✗	7.586
12119	$yy' + \frac{3a(3x+11)y}{14x^{10/7}} = \frac{a^2(x-1)(x-27)}{14x^{13/7}}$	[_rational, [_Abel, '2nd type', 'class B']]	✗	6.427
12120	$yy' - \frac{a(x+1)y}{2x^{7/4}} = \frac{a^2(x-1)(3x+5)}{4x^{5/2}}$	[_rational, [_Abel, '2nd type', 'class B']]	✗	25.180
12121	$yy' - \frac{a(x+1)y}{2x^{7/4}} = \frac{a^2(x-1)(x+5)}{4x^{5/2}}$	[_rational, [_Abel, '2nd type', 'class B']]	✗	23.794
12122	$yy' - \frac{a(4x+3)y}{14x^{8/7}} = \frac{a^2(x-1)(16x+5)}{14x^{9/7}}$	[_rational, [_Abel, '2nd type', 'class B']]	✗	5.784
12123	$yy' + \frac{a(13x-3)y}{6x^{2/3}} = \frac{a^2(x-1)(5x-1)}{6x^{1/3}}$	[_rational, [_Abel, '2nd type', 'class B']]	✗	12.622
12124	$yy' - \frac{a(8x-1)y}{28x^{8/7}} = \frac{a^2(x-1)(32x+3)}{28x^{9/7}}$	[_rational, [_Abel, '2nd type', 'class B']]	✗	6.237
12125	$yy' - \frac{a(5x-4)y}{x^4} = \frac{a^2(x-1)(3x-1)}{x^7}$	[_rational, [_Abel, '2nd type', 'class B']]	✗	1.707
12126	$yy' - \frac{2a(3x-10)y}{5x^4} = \frac{a^2(x-1)(8x-5)}{5x^7}$	[_rational, [_Abel, '2nd type', 'class B']]	✗	1.743

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
12127	$yy' + \frac{a(39x - 4)y}{42x^{9/7}} = -\frac{a^2(x - 1)(9x - 1)}{42x^{11/7}}$	[_rational, [_Abel, '2nd type', 'class B']]	✗	7.045
12128	$yy' + \frac{a(-2 + x)y}{x} = \frac{2a^2(x - 1)}{x}$	[_rational, [_Abel, '2nd type', 'class B']]	✗	1.128
12129	$yy' + \frac{a(3x - 2)y}{x} = -\frac{2a^2(x - 1)^2}{x}$	[_rational, [_Abel, '2nd type', 'class B']]	✗	1.704
12130	$yy' + \frac{a(1 - \frac{b}{x^2})y}{x} = \frac{a^2b}{x}$	[_rational, [_Abel, '2nd type', 'class B']]	✗	1.484
12131	$yy' - \frac{a(-4 + 3x)y}{4x^{5/2}} = \frac{a^2(x - 1)(x + 2)}{4x^4}$	[_rational, [_Abel, '2nd type', 'class B']]	✗	5.293
12132	$yy' + \frac{a(33x + 2)y}{30x^{6/5}} = -\frac{a^2(x - 1)(9x - 4)}{30x^{7/5}}$	[_rational, [_Abel, '2nd type', 'class B']]	✗	6.414
12133	$yy' - \frac{a(x - 8)y}{8x^{5/2}} = -\frac{a^2(x - 1)(-4 + 3x)}{8x^4}$	[_rational, [_Abel, '2nd type', 'class B']]	✗	6.373
12134	$yy' + \frac{a(17x + 18)y}{30x^{22/15}} = -\frac{a^2(x - 1)(4 + x)}{30x^{29/15}}$	[_rational, [_Abel, '2nd type', 'class B']]	✗	76.484
12135	$yy' - \frac{a(6x - 13)y}{13x^{5/2}} = -\frac{a^2(x - 1)(x - 13)}{26x^4}$	[_rational, [_Abel, '2nd type', 'class B']]	✗	6.567
12136	$yy' + \frac{a(24x + 11)x^{27/20}y}{30} = -\frac{a^2(x - 1)(9x + 1)}{60x^{17/10}}$	[_rational, [_Abel, '2nd type', 'class B']]	✗	107.542
12137	$yy' - \frac{2a(2 + 3x)y}{5x^{8/5}} = \frac{a^2(x - 1)(8x + 1)}{5x^{11/5}}$	[_rational, [_Abel, '2nd type', 'class B']]	✗	6.669
12138	$yy' - \frac{6a(1 + 4x)y}{5x^{7/5}} = \frac{a^2(x - 1)(27x + 8)}{5x^{9/5}}$	[_rational, [_Abel, '2nd type', 'class B']]	✗	6.375

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
12139	$yy' - \frac{a(4+x)y}{5x^{8/5}} = \frac{a^2(x-1)(3x+7)}{5x^{3/5}}$	[_rational, [_Abel, '2nd type', 'class B']]	✗	2.353
12140	$yy' - \frac{a(4+x)y}{5x^{8/5}} = \frac{a^2(x-1)(3x+7)}{5x^{11/5}}$	[_rational, [_Abel, '2nd type', 'class B']]	✗	5.872
12141	$\frac{yy'}{x^{5/2}} - \frac{a(2x-1)y}{x^{5/2}} = \frac{a^2(x-1)(3x+1)}{2x^4}$	[_rational, [_Abel, '2nd type', 'class B']]	✗	5.358
12142	$yy' + \frac{a(x-6)y}{5x^{7/5}} = \frac{2a^2(x-1)(4+x)}{5x^{9/5}}$	[_rational, [_Abel, '2nd type', 'class B']]	✗	5.424
12143	$yy' + \frac{a(21x+19)y}{5x^{7/5}} = \frac{2a^2(x-1)(9x-4)}{5x^{9/5}}$	[_rational, [_Abel, '2nd type', 'class B']]	✗	39.488
12144	$yy' - \frac{3ay}{x^{7/4}} = \frac{a^2(x-1)(x-9)}{4x^{5/2}}$	[_rational, [_Abel, '2nd type', 'class B']]	✗	12.368
12145	$yy' - \frac{a((k+1)x-1)y}{x^2} = \frac{a^2(k+1)(x-1)}{x^2}$	[_rational, [_Abel, '2nd type', 'class B']]	✗	1.628
12146	$yy' - a((k-2)x+2k-3)x^{-k}y = a^2(k-2)(x-1)^2x^{1-2k}$	[_rational, [_Abel, '2nd type', 'class A']]	✗	6.425
12147	$yy' - \frac{a((4k-7)x-4k+5)x^{-k}y}{2} = \frac{a^2(2k-3)(x-1)^2x^{1-2k}}{2}$	[_rational, [_Abel, '2nd type', 'class A']]	✗	7.055
12148	$yy' - ((2n-1)x-an)x^{-1-n}y = n(x-a)x^{-2n}$	[_rational, [_Abel, '2nd type', 'class A']]	✗	3.980
12149	$yy' - ((n+1)x-an)x^{n-1}(x-a)^{-n-2}y = nx^{2n}(x-a)^{-2n-3}$	[[_Abel, '2nd type', 'class A']]	✗	10.602
12150	$yy' - a((2k-3)x+1)x^{-k}y = a^2(k-2)((k-1)x+1)x^{2-2k}$	[_rational, [_Abel, '2nd type', 'class A']]	✗	5.471
12151	$yy' - a((n+2k-3)x+3-2k)x^{-k}y = a^2((n+k-1)x^2 - (n+2k-3)x+k-2)x^{1-2k}$	[_rational, [_Abel, '2nd type', 'class A']]	✗	9.278

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
12152	$yy' - \frac{a((2+n)x-2)x^{-\frac{2n+1}{n}}y}{n} = \frac{a^2((n+1)x^2-2x-n+1)x^{-\frac{3n+2}{n}}}{n}$	[_rational, [_Abel, '2nd type', 'class A']]	✗	5.940
12153	$yy' - \frac{a\left(\frac{(n+4)x}{2+n} - 2\right)x^{-\frac{2n+1}{n}}y}{n} = \frac{a^2(2x^2 + (n^2 + n - 4)x - (n-1)(2+n))x^{-\frac{3n+2}{n}}}{n(2+n)}$	[_rational, [_Abel, '2nd type', 'class A']]	✗	7.061
12154	$yy' + \frac{a\left(\frac{(3n+5)x}{2} + \frac{n-1}{n+1}\right)x^{-\frac{n+4}{3+n}}y}{3+n} = \frac{a^2\left((n+1)x^2 - \frac{(n^2+2n+5)x}{n+1} + \frac{4}{n+1}\right)x^{-\frac{n+5}{3+n}}}{6+2n}$	[_rational, [_Abel, '2nd type', 'class A']]	✗	11.928
12155	$yy' - a\left(\frac{2+n}{n} + bx^n\right)y = -\frac{a^2x\left(\frac{n+1}{n} + bx^n\right)}{n}$	[_rational, [_Abel, '2nd type', 'class A']]	✗	2.958
12156	$yy' = (ae^x + b)y + ce^{2x} - abe^x - b^2$	[[_Abel, '2nd type', 'class A']]	✗	2.614
12157	$yy' = (a(2\mu + \lambda)e^{\lambda x} + b)e^{\mu x}y + (-a^2\mu e^{2\lambda x} - abe^{\lambda x} + c)e^{2\mu x}$	[[_Abel, '2nd type', 'class A']]	✗	6.444
12158	$yy' = (ae^{\lambda x} + b)y + c(a^2e^{2\lambda x} + ab(\lambda x + 1)e^{\lambda x} + b^2\lambda x)$	[[_Abel, '2nd type', 'class A']]	✗	4.316
12159	$yy' = e^{\lambda x}(2a\lambda x + a + b)y - e^{2\lambda x}(a^2\lambda x^2 + abx + c)$	[[_Abel, '2nd type', 'class A']]	✗	87.284
12160	$yy' = e^{ax}(2x^2a + b + 2x)y + e^{2ax}(-ax^4 - bx^2 + c)$	[[_Abel, '2nd type', 'class A']]	✗	5.443
12161	$yy' + a(2bx + 1)e^{bx}y = -a^2bx^2e^{2bx}$	[[_Abel, '2nd type', 'class A']]	✗	2.456
12162	$yy' - a(1 + 2n + 2n(n+1)x)e^{(n+1)x}y = -a^2n(n+1)(nx+1)x e^{2(n+1)x}$	[[_Abel, '2nd type', 'class A']]	✗	5.500
12163	$yy' + a(1 + 2b\sqrt{x})e^{2b\sqrt{x}}y = -a^2bx^{3/2}e^{4b\sqrt{x}}$	[[_Abel, '2nd type', 'class A']]	✗	4.959
12164	$yy' = (a \cosh(x) + b)y - ab \sinh(x) + c$	[[_Abel, '2nd type', 'class A']]	✗	8.446

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
12165	$yy' = (a \sinh(x) + b)y - ab \cosh(x) + c$	[[_Abel, '2nd type', 'class A']]	✗	8.546
12166	$yy' = (2 \ln(x) + a + 1)y + x(-\ln(x)^2 - a \ln(x) + b)$	[[_Abel, '2nd type', 'class A']]	✗	1.888
12167	$yy' = (2 \ln(x)^2 + 2 \ln(x) + a)y + x(-\ln(x)^4 - a \ln(x)^2 + b)$	[[_Abel, '2nd type', 'class A']]	✗	2.315
12168	$yy' = ax \cos(\lambda x^2)y + x$	[[_Abel, '2nd type', 'class A']]	✗	4.905
12169	$yy' = ax \sin(\lambda x^2)y + x$	[[_Abel, '2nd type', 'class A']]	✗	4.944
12170	$(Ay + Bx + a)y' + By + kx + b = 0$	[[_homogeneous, 'class C'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓	3.149
12171	$(y + ax + b)y' = \alpha y + \beta x + \gamma$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	7.625
12172	$(y + akx^2 + bx + c)y' = -y^2a + 2akxy + my + k(k + b - m)x + s$	[_rational, [_Abel, '2nd type', 'class A']]	✗	6.650
12173	$(y + Ax^n + a)y' + nAx^{n-1}y + kx^m + b = 0$	[_exact, _rational, [_1st_order, '_with_symmetry_[F(x),G(x)']], [_Abel, '2nd type', 'class A']]	✓	35.935
12174	$(y + ax^{n+1} + bx^n)y' = (anx^n + cx^{n-1})y$	[_rational, [_Abel, '2nd type', 'class A']]	✗	3.063
12175	$xyy' = y^2a + by + cx^n + s$	[_rational, [_Abel, '2nd type', 'class B']]	✗	2.234
12176	$xyy' = -ny^2 + a(2n + 1)xy + by - a^2nx^2 - abx + c$	[_rational, [_Abel, '2nd type', 'class B']]	✗	2.007
12177	$y'' + ay = 0$	[[_2nd_order, _missing_x]]	✓	1.673
12178	$y'' - (ax + b)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.931

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
12179	$y'' - (a^2x^2 + a)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.958
12180	$y'' - (x^2a + b)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.519
12181	$y'' + a^3x(-ax + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.613
12182	$y'' - (x^2a + bcx)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.563
12183	$y'' - ax^ny = 0$	[[_Emden, _Fowler]]	✓	0.867
12184	$y'' - a(ax^{2n} + nx^{n-1})y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.284
12185	$y'' - ax^{n-2}(ax^n + n + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.297
12186	$y'' + (ax^{2n} + bx^{n-1})y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.288
12187	$y'' + ay' + by = 0$	[[_2nd_order, _missing_x]]	✓	1.103
12188	$y'' + ay' + (bx + c)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.755
12189	$y'' + ay' - (bx^2 + c)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.639
12190	$y'' + ay' + b(-bx^2 + ax + 1)y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]]	✓	1.408
12191	$y'' + ay' + bx(-bx^3 + ax + 2)y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]]	✓	1.355
12192	$y'' + ay' + b(-bx^{2n} + ax^n + nx^{n-1})y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]]	✗	0.555

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
12193	$y'' + ay' + b(-bx^{2n} - ax^n + nx^{n-1})y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.553
12194	$y'' + xy' + (n - 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.560
12195	$y'' - 2xy' + 2ny = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.538
12196	$y'' + axy' + by = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.614
12197	$y'' + axy' + bxy = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.597
12198	$y'' + axy' + (bx + c)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.661
12199	$y'' + 2axy' + (bx^4 + a^2x^2 + cx + a)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.684
12200	$y'' + (ax + b)y' - ay = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.578
12201	$y'' + (ax + b)y' + ay = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	1.477
12202	$y'' + (ax + b)y' + c(ax + b - c)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.520
12203	$y'' + (ax + 2b)y' + (abx + b^2 - a)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.254
12204	$y'' + (ax + b)y' + (cx + d)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.784
12205	$y'' + (ax + b)y' + c((a - c)x^2 + bx + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	1.400
12206	$y'' + 2(ax + b)y' + (a^2x^2 + 2abx + c)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.232
12207	$y'' + (ax + b)y' + (\alpha x^2 + \beta x + \gamma)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	2.426
12208	$y'' + (ax + b)y' + c(-cx^{2n} + ax^{n+1} + bx^n + nx^{n-1})y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.739
12209	$y'' + a(-b^2 + x^2)y' - a(x + b)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.567

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
12210	$y'' + (x^2a + b)y' + c(x^2a + b - c)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.626
12211	$y'' + (x^2a + 2b)y' + (abx^2 - ax + b^2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.776
12212	$y'' + (2x^2 + a)y' + (x^4 + x^2a + b + 2x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.394
12213	$y'' + (x^2a + bx)y' + (\alpha x^2 + \beta x + \gamma)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.823
12214	$y'' + (abx^2 + bx + 2a)y' + a^2(bx^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.823
12215	$y'' + (x^2a + bx + c)y' + x(abx^2 + bc + 2a)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.660
12216	$y'' + (x^2a + bx + c)y' + (abx^3 + acx^2 + b)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.697
12217	$y'' + (ax^3 + 2b)y' + (abx^3 - x^2a + b^2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.728
12218	$y'' + (ax^3 + bx)y' + 2(2x^2a + b)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.286
12219	$y'' + (abx^3 + bx^2 + 2a)y' + a^2(bx^3 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.821
12220	$y'' + ax^n y' = 0$	[[_2nd_order, _missing_y]]	✓	1.031
12221	$y'' + ax^n y' + bx^{n-1}y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.802
12222	$y'' + 2ax^n y' + a(ax^{2n} + nx^{n-1})y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.263
12223	$y'' + ax^n y' + (bx^{2n} + cx^{n-1})y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.967
12224	$y'' + ax^n y' - b(ax^{m+n} + bx^{2m} + mx^{m-1})y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	1.035

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
12225	$y'' + 2ax^n y' + (a^2 x^{2n} + bx^{2m} + an x^{n-1} + cx^{m-1}) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	1.220
12226	$y'' + (ax^n + b) y' + c(ax^n + b - c) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.616
12227	$y'' + (ax^n + 2b) y' + (abx^n - ax^{n-1} + b^2) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.798
12228	$y'' + (abx^n + bx^{n-1} + 2a) y' + a^2(bx^n + 1) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.902
12229	$y'' + (abx^n + 2bx^{n-1} - a^2x) y' + a(abx^n + bx^{n-1} - a^2x) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	1.360
12230	$y'' + x^n(x^2a + (ac + b)x + bc) y' - x^n(ax + b) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	1.197
12231	$y'' + (ax^n + bx^m) y' - (ax^{n-1} + bx^{m-1}) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.720
12232	$y'' + (ax^n + bx^m) y' + (anx^{n-1} + bm x^{m-1}) y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓	2.246
12233	$y'' + (ax^n + bx^m) y' + (a(n+1)x^{n-1} + b(m+1)x^{m-1}) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	3.442
12234	$y'' + (ax^n + bx^m) y' + c(ax^n + bx^m - c) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.872
12235	$y'' + (ax^n + bx^m) y' + (abx^{m+n} + b(m+1)x^{m-1} - ax^{n-1}) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	1.005
12236	$y'' + (ax^n + bx^m + c) y' + (abx^{m+n} + bcx^m + anx^{n-1}) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.944
12237	$xy'' + \frac{y'}{2} + ay = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓	1.381

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
12238	$xy'' + ay' + by = 0$	[[_Emden, _Fowler]]	✓	0.976
12239	$xy'' + ay' + bxy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.165
12240	$xy'' + ay' + (bx + c)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.854
12241	$xy'' + ny' + bx^{1-2n}y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)']]]	✓	0.848
12242	$xy'' + (1 - 3n)y' - a^2n^2x^{2n-1}y = 0$	[[_Emden, _Fowler]]	✗	0.497
12243	$xy'' + ay' + bx^ny = 0$	[[_Emden, _Fowler]]	✓	1.193
12244	$xy'' + ay' + bx^n(-x^{n+1}b + a + n)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.689
12245	$xy'' + axy' + ay = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	1.393
12246	$xy'' + (b - x)y' - ay = 0$	[_Laguerre]	✗	0.872
12247	$xy'' + (ax + b)y' + c((a - c)x + b)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	1.306
12248	$xy'' + (2ax + b)y' + a(ax + b)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.261
12249	$xy'' + (x(a + b) + n + m)y' + (abx + an + bm)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	1.477
12250	$xy'' + (ax + b)y' + (cx + d)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	1.899
12251	$xy'' - (ax + 1)y' - bx^2(bx + a)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.491
12252	$xy'' - (2ax + 1)y' + (bx^3 + a^2x + a)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.513
12253	$xy'' + (ax + b)y' + cx(-cx^2 + ax + b + 1) = 0$	[[_2nd_order, _missing_y]]	✓	1.227
12254	$xy'' - (2ax + 1)y' + bx^3y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.704

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

*Continued from previous page*

#	ODE	CAS classification	Solved?	time (sec)
12255	$xy'' + (abx^2 + b - 5)y' + 2a^2(b - 2)x^3y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	1.501
12256	$xy'' + (x^2a + bx)y' - (acx^2 + (bc + c^2 + a)x + b + 2c)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.838
12257	$xy'' + (x^2a + bx + 2)y' + by = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.851
12258	$xy'' + (x^2a + bx + c)y' + (2ax + b)y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	2.030
12259	$xy'' + (x^2a + bx + c)y' + (c - 1)(ax + b)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.523
12260	$xy'' + (x^2a + bx + c)y' + (Ax^2 + Bx + C0)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	1.057
12261	$xy'' + (x^2a + bx + 2)y' + (cx^2 + dx + b)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.918
12262	$xy'' + (ax^3 + b)y' + a(b - 1)x^2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.688
12263	$xy'' + x(x^2a + b)y' + (3x^2a + b)y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	1.589
12264	$xy'' + (ax^3 + bx^2 + 2)y' + bxy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.961
12265	$xy'' + (abx^3 + bx^2 + ax - 1)y' + a^2bx^3y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	2.020
12266	$xy'' + (ax^3 + bx^2 + cx + d)y' + (d - 1)(x^2a + bx + c)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.675
12267	$xy'' + ax^n y' + (abx^n - ax^{n-1} - b^2x + 2b)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.814
12268	$xy'' + (ax^n + 2)y' + ax^{n-1}y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.871
12269	$xy'' + (x^n + 1 - n)y' + bx^{2n-1}y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.660

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

*Continued from previous page*

#	ODE	CAS classification	Solved?	time (sec)
12270	$xy'' + (ax^n + b)y' + anx^{n-1}y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓	2.000
12271	$xy'' + (ax^n + b)y' + a(b-1)x^{n-1}y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.016
12272	$xy'' + (ax^n + b)y' + a(n+b-1)x^{n-1}y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.569
12273	$xy'' + (ax^n + b)y' + c(ax^n - cx + b)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.790
12274	$xy'' + (abx^n + b - 3n + 1)y' + a^2n(b-n)x^{2n-1}y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.787
12275	$xy'' + (ax^n + b)y' + (cx^{2n-1} + dx^{n-1})y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.874
12276	$xy'' + (ax^n + bx^{n-1} + 2)y' + bx^{n-2}y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	1.108
12277	$xy'' + (ax^n + bx)y' + (abx^n + anx^{n-1} - b)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.648
12278	$xy'' + (abx^n + bx^{n-1} + ax - 1)y' + a^2bx^ny = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	1.237
12279	$xy'' + (ax^n + bx^m + c)y' + (c-1)(ax^{n-1} + bx^{m-1})y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.606
12280	$xy'' + (abx^{m+n} + anx^n + bx^m + 1 - 2n)y' + a^2bnx^{2n+m-1}y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	1.317
12281	$(x+a)y'' + (bx+c)y' + by = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	1.645
12282	$(a_1x+a_0)y'' + (b_1x+b_0)y' - mb_1y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	1.316
12283	$(ax+b)y'' + s(cx+d)y' - s^2((a+c)x+b+d)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	1.790
12284	$(a_2x+b_2)y'' + (a_1x+b_1)y' + (a_0x+b_0)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	6.064

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
Continued from previous page

#	ODE	CAS classification	Solved?	time (sec)
12285	$(x + \gamma) y'' + (a x^n + b x^m + c) y' + (a n x^{n-1} + b m x^{m-1}) y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓	1.524
12286	$x^2 y'' + a y = 0$	[[_Emden, _Fowler]]	✓	1.168
12287	$x^2 y'' + (a x + b) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.853
12288	$x^2 y'' + (a^2 x^2 - n(n + 1)) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.091
12289	$x^2 y'' - (a^2 x^2 + n(n + 1)) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.110
12290	$x^2 y'' - (a^2 x^2 + 2 a b x + b^2 - b) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.657
12291	$x^2 y'' + (x^2 a + b x + c) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.666
12292	$x^2 y'' - \left( a x^3 + \frac{5}{16} \right) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	5.327
12293	$x^2 y'' - (a^2 x^4 + a(2b - 1) x^2 + b(b + 1)) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.720
12294	$x^2 y'' + (a x^n + b) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.020
12295	$x^2 y'' - (a^2 x^{2n} + a(2b + n - 1) x^n + b(b - 1)) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.342
12296	$x^2 y'' + (a x^{2n} + b x^n + c) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.302
12297	$x^2 y'' + \left( a x^{3n} + b x^{2n} + \frac{1}{4} - \frac{n^2}{4} \right) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.329
12298	$x^2 y'' + \left( a x^{2n} (b x^n + c)^m + \frac{1}{4} - \frac{n^2}{4} \right) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.410
12299	$x^2 y'' + a x y' + b y = 0$	[[_Emden, _Fowler]]	✓	2.036

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
12300	$x^2y'' + xy' + \left(x^2 - \left(n + \frac{1}{2}\right)^2\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	3.111
12301	$x^2y'' + xy' - \left(x^2 + \left(n + \frac{1}{2}\right)^2\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	2.942
12302	$x^2y'' + xy' + (-\nu^2 + x^2)y = 0$	[_Bessel]	✓	2.134
12303	$x^2y'' + xy' - (\nu^2 + x^2)y = 0$	[[_Bessel, _modified]]	✓	2.237
12304	$x^2y'' + 2xy' - (a^2x^2 + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	5.665
12305	$x^2y'' - 2axy' + (b^2x^2 + a(a+1))y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	3.118
12306	$x^2y'' - 2axy' + (-b^2x^2 + a(a+1))y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	2.939
12307	$x^2y'' + \lambda xy' + (x^2a + bx + c)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.962
12308	$x^2y'' + axy' + (bx^n + c)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	4.463
12309	$x^2y'' + axy' + x^n(bx^n + c)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.516
12310	$x^2y'' + (ax + b)y' + cy = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.968
12311	$x^2y'' + ax^2y' + (bx^2 + cx + d)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	1.076
12312	$x^2y'' + (x^2a + b)y' + c((a - c)x^2 + b)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	1.442
12313	$x^2y'' + (x^2a + bx)y' - by = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.316
12314	$x^2y'' + (x^2a + bx)y' + (k(a - k)x^2 + (an + bk - 2kn)x + n(-n + b - 1))y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	1.519
12315	$a_2x^2y'' + (a_1x^2 + b_1x)y' + (a_0x^2 + b_0x + c_0)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	2.386

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
12316	$x^2 y'' + (x^2 a + (ab - 1)x + b) y' + a^2 b x y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	12.573
12317	$x^2 y'' - 2x(x^2 - a) y' + (2n x^2 + ((-1)^n - 1)a) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	1.447
12318	$x^2 y'' + x(x^2 a + bx + c) y' + (Ax^3 + Bx^2 + Cx + d) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	1.186
12319	$x^2 y'' + a x^n y' - (ab x^n + ac x^{n-1} + b^2 x^2 + 2bcx + c^2 - c) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	1.169
12320	$x^2 y'' + a x^n y' + (ab x^{n+2m} - b^2 x^{4m+2} + am x^{n-1} - m^2 - m) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	1.191
12321	$x^2 y'' + x(ax^n + b) y' + b(ax^n - 1) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.918
12322	$x^2 y'' + x(ax^n + b) y' + (\alpha x^{2n} + \beta x^n + \gamma) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.887
12323	$x^2 y'' + x(2a x^n + b) y' + (a^2 x^{2n} + a(n + b - 1) x^n + \alpha x^{2m} + \beta x^m + \gamma) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	1.113
12324	$x^2 y'' + (a x^{2+n} + b x^2 + c) y' + (an x^{n+1} + ac x^n + bc) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.952
12325	$(-x^2 + 1) y'' + n(n - 1) y = 0$	[_Gegenbauer]	✗	0.554
12326	$(-a^2 + x^2) y'' + by' - 6y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	1.260
12327	$(x^2 - 1) y'' + xy' + ay = 0$	[_Gegenbauer, _2nd_order, _linear, '_with_symmetry_[0,F(x)]']	✓	2.447
12328	$(-x^2 + 1) y'' - xy' + n^2 y = 0$	[_Gegenbauer, _2nd_order, _linear, '_with_symmetry_[0,F(x)]']	✓	1.736
12329	$(-x^2 + 1) y'' - 2xy' + n(n + 1) y = 0$	[_Gegenbauer]	✗	0.935

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
12330	$(-x^2 + 1)y'' - 2xy' + \nu(\nu + 1)y = 0$	[_Gegenbauer]	✗	0.934
12331	$(-x^2 + 1)y'' - 3xy' + n(2 + n)y = 0$	[_Gegenbauer]	✓	2.073
12332	$(x^2 - 1)y'' + 2(n + 1)xy' - (\nu + n + 1)(\nu - n)y = 0$	[_Gegenbauer]	✗	1.284
12333	$(x^2 - 1)y'' - 2(n - 1)xy' - (\nu - n + 1)(\nu + n)y = 0$	[_Gegenbauer]	✗	1.299
12334	$(x^2 - 1)y'' + (2a + 1)y' - b(2a + b)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	1.098
12335	$(-x^2 + 1)y'' + (2a - 3)xy' + (n + 1)(n + 2a - 1)y = 0$	[_Gegenbauer]	✗	1.286
12336	$(-x^2 + 1)y'' + (\beta - \alpha - (\alpha + \beta + 2)x)y' + n(n + \alpha + \beta + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	1.461
12337	$(-x^2 + 1)y'' + (\alpha - \beta + (\alpha + \beta - 2)x)y' + (n + 1)(n + \alpha + \beta)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	1.433
12338	$(x^2a + b)y'' + axy' + cy = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, ' _with_symmetry_[0,F(x)]']]	✓	271.231
12339	$(x^2 + a)y'' + 2bxy' + 2(b - 1)y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	1.799
12340	$(-a^2 + x^2)y'' + 2bxy' + b(b - 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	64.161
12341	$(a^2 + x^2)y'' + 2bxy' + b(b - 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	2.201
12342	$(x^2a + b)y'' + (2n + 1)axy' + cy = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	420.820
12343	$(-x^2 + 1)y'' - xy' + (2x^2a + b)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	1.000
12344	$(-x^2 + 1)y'' + (ax + b)y' + cy = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	1.275

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
12345	$(x^2a + b)y'' + (cx^2 + d)y' + \lambda((-a\lambda + c)x^2 + d - b\lambda)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	2.178
12346	$(x^2a + b)y'' + (\lambda(a + c)x^2 + (c - a)x + 2b\lambda)y' + \lambda^2(cx^2 + b)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	2.688
12347	$x(x - 1)y'' + ((\alpha + \beta + 1)x - \gamma)y' + \alpha\beta y = 0$	[_Jacobi]	✗	1.466
12348	$x(x + a)y'' + (bx + c)y' + dy = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	1.332
12349	$2x(x - 1)y'' + (2x - 1)y' + (ax + b)y = 0$	[_Jacobi]	✗	0.678
12350	$(2ax + x^2 + b)y'' + (x + a)y' - m^2y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]]	✓	1.939
12351	$(x^2a + bx + c)y'' + (dx + k)y' + (d - 2a)y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	36.026
12352	$(x^2a + bx + c)y'' + (kx + d)y' - ky = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	4.059
12353	$(x^2a + 2bx + c)y'' + (ax + b)y' + dy = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]]	✓	5.984
12354	$(x^2a + 2bx + c)y'' + 3(ax + b)y' + dy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	5.890
12355	$(a_2x^2 + b_2x + c_2)y'' + (b_1x + c_1)y' + c_0y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	3.743
12356	$(x^2a + bx + c)y'' - (-k^2 + x^2)y' + (x + k)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	3.378
12357	$(x^2a + bx + c)y'' + (k^3 + x^3)y' - (k^2 - kx + x^2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	4.224

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
12358	$x^3 y'' + (ax + b)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.841
12359	$x^3 y'' + (x^2 a + b)y' + cxy = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	1.101
12360	$x^3 y'' + (x^2 a + bx)y' + by = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.923
12361	$x^3 y'' + (x^2 a + bx)y' + cy = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.964
12362	$x^3 y'' + (x^2 a + bx)y' + (cx + d)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	1.036
12363	$x^3 y'' + (ax^3 + abx - x^2 + b)y' + a^2 bxy = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	1.162
12364	$x^3 y'' + x(ax^n + b)y' - (ax^n - abx^{n-1} + b)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.784
12365	$x(x^2 a + b)y'' + 2(x^2 a + b)y' - 2axy = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	4.045
12366	$x(x^2 + a)y'' + (bx^2 + c)y' + sxy = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	1.631
12367	$x^2(ax + b)y'' + (cx^2 + (a\lambda + 2b)x + b\lambda)y' + \lambda(c - 2a)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	1.585
12368	$x^2(ax + b)y'' - 2x(ax + 2b)y' + 2(ax + 3b)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.080
12369	$x^2(ax + b)y'' + (a(2 - n - m)x^2 - b(m + n)x)y' + (am(n - 1)x + bn(m + 1))y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.663
12370	$x^2(x + a_2)y'' + x(b_1x + a_1)y' + (b_0x + a_0)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	1.454
12371	$(ax^3 + bx^2 + cx)y'' + (\alpha x^2 + \beta x + 2c)y' + (\beta - 2b)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	4.533
12372	$(ax^3 + bx^2 + cx)y'' + (\alpha x^2 + \beta x + 2c)y' - (\alpha x + 2b - \beta)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	4.538

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
12373	$(ax^3 + bx^2 + cx)y'' + (-2x^2a - (b+1)x + k)y' + 2(ax+1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	3.839
12374	$(ax^3 + bx^2 + cx)y'' + (nx^2 + mx + k)y' + (k-1)((-ak+n)x + m - bk)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	4.524
12375	$(ax^3 + bx^2 + cx)y'' + ((m-a)x^2 + (2cm-1)x - c)y' + (-2mx+1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	532.500
12376	$(ax^3 + bx^2 + cx)y'' + (nx^2 + mx + k)y' + (-2(a+n)x+1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	52.614
12377	$(ax^3 + x^2 + b)y'' + a^2x(x^2 - b)y' - a^3bxy = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	9.914
12378	$2x(x^2a + bx + c)y'' + (x^2a - c)y' + \lambda x^2y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓	112.509
12379	$x(x^2a + bx + 1)y'' + (\alpha x^2 + \beta x + \gamma)y' + (nx + m)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	4.222
12380	$x(x-1)(x-a)y'' + ((\alpha + \beta + 1)x^2 - (\alpha + \beta + 1 + a(\gamma + d) - a)x + a\gamma)y' + (\alpha\beta x - q)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	2.622
12381	$(ax^3 + bx^2 + cx + d)y'' - (-\lambda^2 + x^2)y' + (x + \lambda)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	164.282
12382	$2(ax^3 + bx^2 + cx + d)y'' + (3x^2a + 2bx + c)y' + \lambda y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓	164.718

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
12383	$2(ax^3 + bx^2 + cx + d)y'' + 3(3x^2a + 2bx + c)y' + (6ax + 2b + \lambda)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	272.195
12384	$(ax^3 + bx^2 + cx + d)y'' + (\alpha x^2 + (\alpha\gamma + \beta)x + \beta\lambda)y' - (\alpha x + \beta)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	483.006
12385	$(ax^3 + bx^2 + cx + d)y'' + (\lambda^3 + x^3)y' - (\lambda^2 - \lambda x + x^2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	475.401
12386	$2x(x^2a + bx + c)y'' + (a(2 - k)x^2 + b(1 - k)x - ck)y' + \lambda x^{k+1}y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	1.138
12387	$x^4y'' + ay = 0$	[[_Emden, _Fowler]]	✓	3.467
12388	$x^4y'' + (x^2a + bx + c)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.600
12389	$x^4y'' - (a + b)x^2y' + (x(a + b) + ab)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.902
12390	$x^4y'' + 2x^2(x + a)y' + by = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	2.073
12391	$x^4y'' + ax^ny' - (ax^{n-1} + abx^{n-2} + b^2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	1.200
12392	$x^2(x - a)^2y'' + by = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	2.072
12393	$x^2(x - a)^2y'' + by = cx^2(x - a)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	2.298
12394	$ax^2(x - 1)^2y'' + (bx^2 + cx + d)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.849
12395	$x^2(x^2 + a)y'' + (bx^2 + c)xy' + dy = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	1.666
12396	$(x^2 + 1)^2y'' + ay = 0$	[_Halm]	✓	1.487
12397	$(x^2 - 1)^2y'' + ay = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.635
12398	$(a^2 + x^2)^2y'' + b^2y = 0$	[[_Emden, _Fowler]]	✓	1.830

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
12399	$(-a^2 + x^2)^2 y'' + b^2 y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	2.068
12400	$4(x^2 + 1)^2 y'' + (x^2 a + a - 3) y = 0$	[_Halm]	✓	1.625
12401	$(x^2 a + b)^2 y'' + 2ax(x^2 a + b) y' + cy = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]]	✓	2.332
12402	$(x^2 - 1)^2 y'' + 2x(x^2 - 1) y' - (\nu(\nu + 1)(x^2 - 1) + n^2) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	1.059
12403	$(-x^2 + 1)^2 y'' - 2x(-x^2 + 1) y' + (\nu(\nu + 1)(-x^2 + 1) - \mu^2) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	1.054
12404	$a(x^2 - 1)^2 y'' + bx(x^2 - 1) y' + (cx^2 + dx + e) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	1.394
12405	$(x^2 a + b)^2 y'' + (2ax + c)(x^2 a + b) y' + ky = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	3.486
12406	$(x^2 a + b)^2 y'' + (x^2 a + b)(cx^2 + d) y' + 2(-ad + bc) xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	2.263
12407	$(x^2 + a)^2 y'' + bx^n(x^2 + a) y' - (x^{n+1}b + a) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.838
12408	$(x^2 + a)^2 y'' + bx^n(x^2 + a) y' - m(x^{n+1}b + (m-1)x^2 + a) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.900
12409	$(x - a)^2 (x - b)^2 y'' - cy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	2.636
12410	$(x - a)^2 (x - b)^2 y'' + (x - a)(x - b)(2x + \lambda) y' + \mu y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	4.691
12411	$(x^2 a + bx + c)^2 y'' + Ay = 0$	[[_Emden, _Fowler]]	✓	3.497
12412	$(x^2 - 1)^2 y'' + 2x(x^2 - 1) y' + ((x^2 - 1)(a^2 x^2 - \lambda) - m^2) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	1.009

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
12413	$(x^2 + 1)^2 y'' + 2x(x^2 + 1) y' + ((x^2 + 1)(a^2 x^2 - \lambda) + m^2) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	1.033
12414	$(x^2 a + bx + c)^2 y'' + (2ax + k)(x^2 a + bx + c) y' + my = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	5.437
12415	$x^6 y'' - x^5 y' + ay = 0$	[[_Emden, _Fowler]]	✓	2.619
12416	$x^6 y'' + (3x^2 + a)x^3 y' + by = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.237
12417	$x^n y'' + c(ax + b)^{n-4} y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.320
12418	$x^n y'' + ax y' - (b^2 x^n + 2bx^{n-1} + abx + a) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	1.150
12419	$x^n y'' + (ax + b) y' - ay = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.177
12420	$x^n y'' + (ax^{n-1} + bx) y' + (a - 1) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	1.206
12421	$x^n y'' + (2x^{n-1} + x^2 a + bx) y' + by = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	1.123
12422	$x^n y'' + (ax^n + b) y' + c((a - c)x^n + b) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.833
12423	$x^n y'' + (ax^n - x^{n-1} + abx + b) y' + a^2 bxy = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	3.280
12424	$x^n y'' + (ax^{m+n} + 1) y' + ax^m(1 + mx^{n-1}) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.824
12425	$(ax^n + b) y'' + (cx^n + d) y' + \lambda((-a\lambda + c)x^n + d - b\lambda) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	1.375
12426	$(ax^n + bx + c) y'' = an(n - 1) x^{n-2} y$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓	3.908
12427	$x(x^n + 1) y'' + ((-b + a)x^n + a - n) y' + b(-a + 1) x^{n-1} y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	1.449

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
12428	$x(x^{2n} + a)y'' + (x^{2n} + a - an)y' - b^2x^{2n-1}y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓	1.439
12429	$x^2(a^2x^{2n} - 1)y'' + x(a^2(n+1)x^{2n} + n - 1)y' - \nu(\nu + 1)a^2n^2x^{2n}y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	1.664
12430	$x^2(a^2x^{2n} - 1)y'' + x(apx^n + q)y' + (arx^n + s)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	11.459
12431	$(x^n + a)^2y'' - bx^{n-2}((b-1)x^n + a(n-1))y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.484
12432	$(ax^n + b)^2y'' + (ax^n + b)(cx^n + d)y' + n(-ad + bc)x^{n-1}y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	1.280
12433	$(x^n + a)^2y'' + bx^m(x^n + a)y' - x^{n-2}(bx^{m+1} + an - a)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	1.805
12434	$(ax^n + b)^2y'' + cx^m(ax^n + b)y' + (cx^m - anx^{n-1} - 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	1.977
12435	$x^2(ax^n + b)^2y'' + (n+1)x(a^2x^{2n} - b^2)y' + cy = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	2.341
12436	$(ax^{n+1} + bx^n + c)^2y'' + (\alpha x^n + \beta x^{n-1} + \gamma)y' + (n(-an - a + \alpha)x^{n-1} + (n-1)(-bn + \beta)x^{n-2})y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	5.145
12437	$(ax^n + bx^m + c)y'' + (\lambda - x)y' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.354
12438	$(ax^n + bx^m + c)y'' + (\lambda^2 - x^2)y' + (x + \lambda)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	1.323
12439	$2(ax^n + bx^m + c)y'' + anx^{n-1}bmx^{m-1}y' + dy = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	1.447

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
12440	$(ax^n + b)^{m+1}y'' + (ax^n + b)y' - anmx^{n-1}y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓	1.369
12441	$y'' + ae^{\lambda x}y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.745
12442	$y'' + (ae^x - b)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.769
12443	$y'' + a(\lambda e^{\lambda x} - ae^{2\lambda x})y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.321
12444	$y'' - (a^2e^{2x} + a(2b + 1)e^x + b^2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.381
12445	$y'' - (ae^{2\lambda x} + be^{\lambda x} + c)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.315
12446	$y'' + \left( ae^{4\lambda x} + be^{3\lambda x} + ce^{2\lambda x} - \frac{\lambda^2}{4} \right) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.437
12447	$y'' + \left( ae^{2\lambda x}(be^{\lambda x} + c)^n - \frac{\lambda^2}{4} \right) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.430
12448	$y'' + ay' + be^{2ax}y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.399
12449	$y'' - ay' + be^{2ax}y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓	1.219
12450	$y'' + ay' + (be^{\lambda x} + c)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.100
12451	$y'' - y' + \left( ae^{3\lambda x} + be^{2\lambda x} + \frac{1}{4} - \frac{\lambda^2}{4} \right) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.552
12452	$y'' - y' + \left( ae^{2\lambda x}(be^{\lambda x} + c)^n + \frac{1}{4} - \frac{\lambda^2}{4} \right) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.641

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
12453	$y'' + 2a e^{\lambda x} y' + a e^{\lambda x} (a e^{\lambda x} + \lambda) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.072
12454	$y'' + (a + b) e^{\lambda x} y' + a e^{\lambda x} (b e^{\lambda x} + \lambda) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.598
12455	$y'' + a e^{\lambda x} y' - b e^{\mu x} (a e^{\lambda x} + b e^{\mu x} + \mu) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.753
12456	$y'' + 2k e^{\mu x} y' + (a e^{2\lambda x} + b e^{\lambda x} + k^2 e^{2\mu x} + k\mu e^{\mu x} + c) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.490
12457	$y'' - (a + 2b e^{ax}) y' + b^2 e^{2ax} y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.615
12458	$y'' + (a e^{2\lambda x} + \lambda) y' - a\lambda e^{2\lambda x} y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.560
12459	$y'' + (a e^{\lambda x} - \lambda) y' + b e^{2\lambda x} y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.168
12460	$y'' + (a e^{\lambda x} + b) y' + c(a e^{\lambda x} + b - c) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.585
12461	$y'' + (a + b e^{2\lambda x}) y' + \lambda(a - \lambda - b e^{2\lambda x}) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.491
12462	$y'' + (a + b e^{\lambda x} + b - 3\lambda) y' + a^2 \lambda (b - \lambda) e^{2\lambda x} y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.770
12463	$y'' + (2a e^{\lambda x} - \lambda) y' + (a^2 e^{2\lambda x} + c e^{\mu x}) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.497
12464	$y'' + (2a e^{\lambda x} + b) y' + (a^2 e^{2\lambda x} + a(b + \lambda) e^{\lambda x} + c) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.541
12465	$y'' + (a e^{\lambda x} + 2b - \lambda) y' + (c e^{2\lambda x} + a b e^{\lambda x} + b^2 - b\lambda) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.789
12466	$y'' + (a e^x + b) y' + (c(a - c) e^{2x} + (ak + bc - 2ck + c) e^x + k(b - k)) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.735
12467	$y'' + (a e^{\lambda x} + b) y' + (\alpha e^{2\lambda x} + \beta e^{\lambda x} + \gamma) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.648

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
12468	$y'' + (2a e^{\lambda x} - \lambda) y' + (a^2 e^{2\lambda x} + b e^{2\mu x} + c e^{\mu x} + k) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.543
12469	$y'' + (2a e^{\lambda x} + b - \lambda) y' + (a^2 e^{2\lambda x} + ab e^{\lambda x} + c e^{2\mu x} + d e^{\mu x} + k) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.609
12470	$y'' + (a e^{\lambda x} + b e^{\mu x}) y' + a e^{\lambda x} (b e^{\mu x} + \lambda) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.536
12471	$y'' + e^{\lambda x} (a e^{2\mu x} + b) y' + \mu (e^{\lambda x} (b - a e^{2\mu x}) - \mu) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.927
12472	$y'' + (a e^{\lambda x} + b e^{\mu x} + c) y' + (a \lambda e^{\lambda x} + b \mu e^{\mu x}) y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	2.097
12473	$y'' + (a e^{\lambda x} + b e^{\mu x} + c) y' + (ab e^{(\lambda+\mu)x} + e^{\lambda x} ac + b \mu e^{\mu x}) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.632
12474	$\frac{2xy + 1}{y} + \frac{(y - x) y'}{y^2} = 0$	[[_homogeneous, 'class D', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓	1.558
12475	$\frac{y^2 - 2x^2}{xy^2 - x^3} + \frac{(2y^2 - x^2) y'}{y^3 - x^2 y} = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]]	✓	114.465
12476	$\frac{1}{\sqrt{y^2 + x^2}} + \left( \frac{1}{y} - \frac{x}{y\sqrt{y^2 + x^2}} \right) y' = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]]	✓	8.092
12477	$y + x + xy' = 0$	[_linear]	✓	1.870
12478	$6x - 2y + 1 + (2y - 2x - 3) y' = 0$	[[_homogeneous, 'class C', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓	2.728
12479	$\sec(x) \cos(y)^2 - \cos(x) \sin(y) y' = 0$	[_separable]	✓	8.059
12480	$(x + 1) y^2 - x^3 y' = 0$	[_separable]	✓	1.385
12481	$2(1 - y^2) xy + (x^2 + 1) (1 + y^2) y' = 0$	[_separable]	✓	23.681

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
12482	$\sin(x) \cos(y)^2 + \cos(x)^2 y' = 0$	[_separable]	✓	3.499
12483	$x e^{\frac{y}{x}} + y - xy' = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓	10.182
12484	$2x^2y + 3y^3 - (x^3 + 2xy^2) y' = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	29.338
12485	$y^2 - xy + x^2y' = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓	1.840
12486	$2x^2y + y^3 - x^3y' = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓	101.037
12487	$y^3 + x^3y' = 0$	[_separable]	✓	3.668
12488	$x + y \cos\left(\frac{y}{x}\right) - x \cos\left(\frac{y}{x}\right) y' = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓	4.915
12489	$4x + 3y + 1 + (x + y + 1) y' = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	1.878
12490	$4x - y + 2 + (x + y + 3) y' = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	1.846
12491	$2x + y - (4x + 2y - 1) y' = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	1.550
12492	$y + 2xy^2 - x^2y^3 + 2x^2yy' = 0$	[[_homogeneous, 'class G'], _rational, _Riccati]	✓	1.689
12493	$2y + 3xy^2 + (x + 2x^2y) y' = 0$	[[_homogeneous, 'class G'], _rational, [_Abel, '2nd type', 'class B']]	✓	10.266
12494	$y + xy^2 + (x - x^2y) y' = 0$	[[_homogeneous, 'class G'], _rational, [_Abel, '2nd type', 'class B']]	✓	1.674
12495	$y' + y \cot(x) = \sec(x)$	[_linear]	✓	1.661
12496	$xy' + (x + 1)y = e^x$	[_linear]	✓	1.276
12497	$y' - \frac{2y}{x+1} = (x+1)^3$	[_linear]	✓	1.387

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
Continued from previous page

#	ODE	CAS classification	Solved?	time (sec)
12498	$(x^3 + x)y' + 4x^2y = 2$	[_linear]	✓	1.216
12499	$x^2y' + (-2x + 1)y = x^2$	[_linear]	✓	1.581
12500	$(-x^2 + 1)y' - 2(x + 1)y = y^{5/2}$	[_rational, _Bernoulli]	✓	1.945
12501	$yy' + xy^2 = x$	[_separable]	✓	1.796
12502	$\sin(y)y' + \sin(x)\cos(y) = \sin(x)$	[_separable]	✓	40.596
12503	$4xy' + 3y + e^x x^4 y^5 = 0$	[_Bernoulli]	✓	1.813
12504	$y' - \frac{1+y}{x+1} = \sqrt{1+y}$	[[_1st_order, _with_linear_symmetries]]	✓	3.872
12505	$x^4y(3y + 2xy') + x^2(4y + 3xy') = 0$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]]	✓	5.250
12506	$y^2(3y - 6xy') - x(y - 2xy') = 0$	[_separable]	✓	1.764
12507	$2x^3y - y^2 - (2x^4 + xy)y' = 0$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]]	✓	3.941
12508	$y^2 - xy + x^2y' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓	1.862
12509	$\frac{-y + xy'}{\sqrt{x^2 - y^2}} = xy'$	['y=_G(x,y)']	✓	2.013
12510	$x + y - (x - y)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓	2.776
12511	$x^2 + y^2 - 2xyy' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓	7.984
12512	$x - y^2 + 2xyy' = 0$	[[_homogeneous, 'class G', _rational, _Bernoulli]]	✓	1.669
12513	$-y + xy' = y^2 + x^2$	[[_homogeneous, 'class D', _rational, _Riccati]]	✓	1.457
12514	$3x^2 + 6xy + 3y^2 + (2x^2 + 3xy)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓	7.639

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
12515	$2x + (x^2 + y^2 + 2y) y' = 0$	[_rational, [_1st_order, ['_with_symmetry_[F(x)*G(y),0]']]	✓	1.224
12516	$y^4 + 2y + (xy^3 + 2y^4 - 4x) y' = 0$	[_rational, [_1st_order, ['_with_symmetry_[F(x)*G(y),0]']]	✓	2.972
12517	$x^3y - y^4 + (xy^3 - x^4) y' = 0$	[_separable]	✓	1.336
12518	$y^2 - x^2 + 2myx + (my^2 - mx^2 - 2xy) y' = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	9.985
12519	$xy' - y + 2x^2y - x^3 = 0$	[_linear]	✓	1.323
12520	$(x + y) y' - 1 = 0$	[[_homogeneous, 'class C'], [_Abel, '2nd type', 'class C'], _dAlembert]	✓	1.427
12521	$x + yy' + y - xy' = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓	2.773
12522	$xy' - ay + by^2 = cx^{2a}$	[_rational, _Riccati]	✓	1.973
12523	$x\sqrt{1-y^2} + y\sqrt{-x^2+1} y' = 0$	[_separable]	✓	3.111
12524	$\sqrt{1-y^2} + \sqrt{-x^2+1} y' = 0$	[_separable]	✓	18.627
12525	$y' - x^2y = x^5$	[_linear]	✓	1.957
12526	$(y - x)^2 y' = 1$	[[_homogeneous, 'class C'], _dAlembert]	✓	2.553
12527	$xy' + y + x^4y^4e^x = 0$	[_Bernoulli]	✓	3.522
12528	$(1 - x) y + (1 - y) xy' = 0$	[_separable]	✓	1.346
12529	$(y - x) y' + y = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓	2.516
12530	$-y + xy' = \sqrt{y^2 + x^2}$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	7.031
12531	$-y + xy' = \sqrt{x^2 - y^2}$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	80.707

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
12532	$x \sin\left(\frac{y}{x}\right) - y \cos\left(\frac{y}{x}\right) + x \cos\left(\frac{y}{x}\right) y' = 0$	[[_homogeneous, 'class A', _dAlembert]	✓	3.853
12533	$x - 2y + 5 + (2x - y + 4) y' = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓	3.333
12534	$y' + \frac{y}{(-x^2 + 1)^{3/2}} = \frac{x + \sqrt{-x^2 + 1}}{(-x^2 + 1)^2}$	[_linear]	✓	3.441
12535	$(-x^2 + 1) y' - xy = axy^2$	[_separable]	✓	2.288
12536	$xy^2(3y + xy') - 2y + xy' = 0$	[[_homogeneous, 'class G', _rational]	✓	5.292
12537	$(x^2 + 1) y' + y = \arctan(x)$	[_linear]	✓	1.805
12538	$5xy - 3y^3 + (3x^2 - 7xy^2) y' = 0$	[[_homogeneous, 'class G', _rational]	✓	2.341
12539	$y' + y \cos(x) = \frac{\sin(2x)}{2}$	[_linear]	✓	2.178
12540	$xy^2 + y - xy' = 0$	[[_homogeneous, 'class D', _rational, _Bernoulli]	✓	1.846
12541	$(1 - x) y - (1 + y) xy' = 0$	[_separable]	✓	1.286
12542	$3x^2y + (x^3 + x^3y^2) y' = 0$	[_separable]	✓	2.648
12543	$(y^2 + x^2)(x + yy')$ $= (x^2 + y^2 + x)(-y + xy')$	[_rational]	✗	2.856
12544	$2x + 3y - 1 + (2x + 3y - 5) y' = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓	1.386
12545	$y^3 - 2x^2y + (2xy^2 - x^3) y' = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓	43.260
12546	$2x^3y^2 - y + (2x^2y^3 - x) y' = 0$	[_rational]	✓	1.656
12547	$(y^2 + x^2)(x + yy')$ $+ \sqrt{1 + x^2 + y^2}(y - xy') = 0$	[[_1st_order, _with_linear_symmetries]]	✓	2.580

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
12548	$1 + e^{\frac{y}{x}} + e^{\frac{x}{y}} \left(1 - \frac{x}{y}\right) y' = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓	5.020
12549	$xy' + y - y^2 \ln(x) = 0$	[_Bernoulli]	✓	1.997
12550	$x^3y^4 + x^2y^3 + xy^2 + y + (x^4y^3 - x^3y^2 - x^3y + x) y' = 0$	[_rational]	✗	3.053
12551	$(2\sqrt{xy} - x) y' + y = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓	85.065
12552	$y'^2 + (x + y) y' + xy = 0$	[_quadrature]	✓	1.261
12553	$xy'^2 - 2yy' - x = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓	1.470
12554	$y^2 + y'^2 = 1$	[_quadrature]	✓	0.545
12555	$(2xy' - y)^2 = 8x^3$	[_linear]	✓	0.592
12556	$(x^2 + 1) y'^2 = 1$	[_quadrature]	✓	0.247
12557	$y'^3 - (2x + y^2) y'^2 + (x^2 - y^2 + 2xy^2) y' - (x^2 - y^2) y^2 = 0$	[_quadrature]	✓	2.461
12558	$2xy' - y + \ln(y') = 0$	[[_1st_order, _with_linear_symmetries], _dAlembert]	✓	2.636
12559	$4xy'^2 + 2xy' - y = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	2.264
12560	$xy'^2 - 2yy' - x = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓	1.435
12561	$y' + 2xy = y^2 + x^2$	[[_homogeneous, 'class C'], _Riccati]	✓	1.773
12562	$y = -xy' + x^4y'^2$	[[_homogeneous, 'class G'], _rational]	✓	2.041
12563	$y'^2 + 2xy' - y = 0$	[[_1st_order, _with_linear_symmetries], _dAlembert]	✓	0.398
12564	$x + y'y(2y'^2 + 3) = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓	5.137

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
12565	$a^2yy'^2 - 2xy' + y = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	1.503
12566	$xy'^2 - 2yy' - x = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	1.511
12567	$y^3 - 4xyy' + 8y^2 = 0$	[[_1st_order, _with_linear_symmetries]]	✓	7.747
12568	$(-y + xy')^2 = 1 + y'^2$	[[_1st_order, _with_linear_symmetries], _rational, _Clairaut]	✓	0.609
12569	$4e^{2y}y'^2 + 2xy' - 1 = 0$	[[_1st_order, '_with_symmetry_[F(x),G(y)]']]	✓	8.127
12570	$4e^{2y}y'^2 + 2e^{2x}y' - e^{2x} = 0$	[[_homogeneous, 'class C'], _dAlembert]	✓	1.103
12571	$e^{2y}y'^3 + (e^{2x} + e^{3x})y' - e^{3x} = 0$	['y=_G(x,y)']	✓	294.658
12572	$xy^2y'^2 - y^3y' + x = 0$	[[_homogeneous, 'class G'], _rational]	✓	11.013
12573	$(y^2 + x^2)(1 + y')^2 - 2(x + y)(1 + y')(x + yy') + (x + yy')^2 = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓	4.622
12574	$y = 2xy' + y^2y'^3$	[[_1st_order, _with_linear_symmetries]]	✓	105.284
12575	$a^2yy'^2 - 2xy' + y = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	1.505
12576	$(x - y' - y)^2 = x^2(2xy - x^2y')$	['y=_G(x,y)']	✓	79.704
12577	$y^2(1 + y'^2) = a^2$	[_quadrature]	✓	4.806
12578	$yy' = (x - b)y'^2 + a$	[[_1st_order, _with_linear_symmetries], _rational, _Clairaut]	✓	0.533
12579	$x^3y'^2 + x^2yy' + 1 = 0$	[[_homogeneous, 'class G']]	✓	4.806

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
12580	$3xy'^2 - 6yy' + x + 2y = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	2.628
12581	$y = y'^2(x + 1)$	[[_homogeneous, 'class C'], _rational, _dAlembert]	✓	0.756
12582	$(-y + xy')(x + yy') = a^2y'$	[_rational]	✓	118.201
12583	$y'^2 + 2y'y \cot(x) = y^2$	[_separable]	✓	1.090
12584	$(x^2 + 1)y'^2 - 2xyy' + y^2 - 1 = 0$	[[_1st_order, _with_linear_symmetries], _rational, _Clairaut]	✓	0.611
12585	$x^2y'^2 - 2(xy + 2y')y' + y^2 = 0$	[_separable]	✓	2.599
12586	$y = xy' + \frac{yy'^2}{x^2}$	[[_1st_order, _with_linear_symmetries]]	✓	3.267
12587	$x^2y'^2 - 2xyy' + y^2 = y^2x^2 + x^4$	[_rational, [_1st_order, 'with_symmetry_[F(x),G(x)*y+H(x)]]]	✓	9.795
12588	$y = xy' + \frac{1}{y'}$	[[_homogeneous, 'class G'], _rational, _Clairaut]	✓	0.455
12589	$xy'^2 - 2yy' - x = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	1.422
12590	$x^2y'^2 - 2(xy - 2)y' + y^2 = 0$	[[_homogeneous, 'class G'], _Clairaut]	✓	0.613
12591	$x^2y'^2 - (x - 1)^2 = 0$	[_quadrature]	✓	0.578
12592	$8(1 + y')^3 = 27(x + y)(1 - y')^3$	[[_homogeneous, 'class C'], _dAlembert]	✓	30.239
12593	$4y'^2 = 9x$	[_quadrature]	✓	0.264
12594	$y(3 - 4y)^2y'^2 = 4 - 4y$	[_quadrature]	✓	12.700
12595	$y'' - 3y' + 2y = 0$	[[_2nd_order, _missing_x]]	✓	0.819
12596	$y'' - 6y' + 25y = 0$	[[_2nd_order, _missing_x]]	✓	1.879

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
12597	$y''' - y' = 0$	[[_3rd_order, _missing_x]]	✓	0.063
12598	$y''' - 2y'' - y' + 2y = 0$	[[_3rd_order, _missing_x]]	✓	0.068
12599	$4y''' - 3y' + y = 0$	[[_3rd_order, _missing_x]]	✓	0.070
12600	$y''' - y'' - y' + y = 0$	[[_3rd_order, _missing_x]]	✓	0.073
12601	$y'''' + 2y''' - 2y' - y = 0$	[[_high_order, _missing_x]]	✓	0.075
12602	$y''' - 6y'' + 9y' = 0$	[[_3rd_order, _missing_x]]	✓	0.068
12603	$y'''' + 2y'' + y = 0$	[[_high_order, _missing_x]]	✓	0.083
12604	$y''' - y'' + y' = 0$	[[_3rd_order, _missing_x]]	✓	0.072
12605	$y''' - y'' - 2y' = e^{-x}$	[[_3rd_order, _missing_y]]	✓	0.114
12606	$y'' + 3y' + 2y = e^{e^x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.125
12607	$y''' + 3y'' + 3y' + y = 2e^{-x} - x^2e^{-x}$	[[_3rd_order, _linear, _nonhomogeneous]]	✓	0.161
12608	$y'' - 2y' + y = \frac{e^x}{(1-x)^2}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.913
12609	$y'' - 3y' + 2y = e^x$	[[_2nd_order, _with_linear_symmetries]]	✓	1.014
12610	$y''' - 3y'' - y' + 3y = x^2$	[[_3rd_order, _with_linear_symmetries]]	✓	0.119
12611	$y'' + y = \sec(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	2.704
12612	$y''' - 4y'' + 5y' - 2y = x$	[[_3rd_order, _with_linear_symmetries]]	✓	0.120
12613	$y'' + y = \sec(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	2.885
12614	$y'' + y = \tan(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.135

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
12615	$y'' + 4y = x^2 + \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	4.804
12616	$y'' - 2y' + y = 2x e^{2x} - \sin(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.773
12617	$y'' + y = 2e^x + x^3 - x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	2.230
12618	$y'' + 2y' + y = 3e^{2x} - \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.592
12619	$y''' - y = x^2$	[[_3rd_order, _with_linear_symmetries]]	✓	0.122
12620	$y''' - 2y'' - 3y' = 3x^2 + \sin(x)$	[[_3rd_order, _missing_y]]	✓	0.194
12621	$y'''' - 2y'' + y = e^x + 4$	[[_high_order, _with_linear_symmetries]]	✓	0.135
12622	$y'' - 2y' = e^{2x} + 1$	[[_2nd_order, _missing_y]]	✓	1.617
12623	$y'''' + 2y'' + y = \cos(x)$	[[_high_order, _linear, _nonhomogeneous]]	✓	1.082
12624	$x^3 y''' + xy' - y = x \ln(x)$	[[_3rd_order, _with_linear_symmetries]]	✓	0.259
12625	$x^3 y''' + 2x^2 y'' + 2y = 10x + \frac{10}{x}$	[[_3rd_order, _exact, _linear, _nonhomogeneous]]	✓	0.791
12626	$x^2 y'' + 3xy' + y = \frac{1}{(1-x)^2}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓	1.977
12627	$(x+1)^2 y'' - (x+1)y' + 6y = x$	[[_2nd_order, _with_linear_symmetries]]	✓	17.631
12628	$y'' - 5y' + 6y = \cos(x) - e^{2x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.746
12629	$y'''' - y = e^x \cos(x)$	[[_high_order, _linear, _nonhomogeneous]]	✓	0.142
12630	$y'' + 2y' + y = 2x^3 - x e^{3x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.204

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
12631	$y''' - 4y' = x^2 - 3e^{2x}$	[[_3rd_order, _missing_y]]	✓	0.143
12632	$y'''' - 2y'' + y = \cos(x)$	[[_high_order, _linear, _nonhomogeneous]]	✓	0.141
12633	$x^4 y'''' + 6x^3 y''' + 9x^2 y'' + 3xy' + y = (\ln(x) + 1)^2$	[[_high_order, _linear, _nonhomogeneous]]	✓	0.841
12634	$y''' + 2y'' + y' = x^2 - x$	[[_3rd_order, _missing_y]]	✓	0.121
12635	$y'' + 4y = \sin(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.524
12636	$y'' + 4y = \sec(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	4.532
12637	$y'''' - y''' - 3y'' + 5y' - 2y = e^{3x}$	[[_high_order, _with_linear_symmetries]]	✓	0.128
12638	$y'' + y = x \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.313
12639	$x^3 y''' + 2x^2 y'' - xy' + y = \frac{1}{x}$	[[_3rd_order, _exact, _linear, _nonhomogeneous]]	✓	0.307
12640	$y''' - y = x e^x + \cos(x)^2$	[[_3rd_order, _linear, _nonhomogeneous]]	✓	1.110
12641	$y'' - x^2 y' + xy = x$	[[_2nd_order, _with_linear_symmetries]]	✓	1.817
12642	$xy'' - (2x + 1)y' + (x + 1)y = x^2 - x - 1$	[[_2nd_order, _with_linear_symmetries]]	✓	1.140
12643	$(x^2 + 1)y'' + 2xy' - 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.755
12644	$(1 - x)y'' + xy' - y = (1 - x)^2$	[[_2nd_order, _with_linear_symmetries]]	✓	1.664
12645	$\sin(x)y'' + 2\cos(x)y' + 3\sin(x)y = e^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	9.576
12646	$y'' - 2\tan(x)y' - (a^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.674

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
12647	$4x^2y'' + 4x^3y' + (x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.636
12648	$xy'' + 2y' - xy = 2e^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	2.001
12649	$y'' + (2e^x - 1)y' + e^{2x}y = e^{4x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	2.141
12650	$(-x^2 + 1)y'' - xy' + 4y = 0$	[_Gegenbauer, [_2nd_order, _linear, 'with_symmetry_[0,F(x)']]	✓	1.573
12651	$y'' + \tan(x)y' + \cos(x)^2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	2.921
12652	$x^6y'' + 3x^5y' + y = \frac{1}{x^2}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.785
12653	$xy'' - (2x^2 + 1)y' - 8x^3y = 4x^3e^{-x^2}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.727
12654	$xy'' - (x + 3)y' + 3y = 0$	[_Laguerre]	✓	1.043
12655	$(x - 3)y'' - (4x - 9)y' + (3x - 6)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.243
12656	$x^2y'' + 4xy' + (-x^2 + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	2.421
12657	$(x^2 + 1)y'' - 2xy' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.215
12658	$xy'' - (2x - 1)y' + (x - 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.960
12659	$x^2y'' - 4xy' + (x^2 + 6)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	2.678
12660	$(2x^3 - 1)y'' - 6x^2y' + 6xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.685
12661	$x^2y'' - 2x(x + 1)y' + 2(x + 1)y = x^3$	[[_2nd_order, _with_linear_symmetries]]	✓	1.850
12662	$x^2y'' - 2nx(x + 1)y' + (a^2x^2 + n^2 + n)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	1.145
12663	$x^4y'' + 2x^3(x + 1)y' + n^2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.799

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
12664	$(x^2 + 1)y'' + 1 + y'^2 = 0$	[[_2nd_order, _missing_y], [_2nd_order, _reducible, _mu_y_y1]]	✓	0.756
12665	$(xy''' - y'')^2 = y'''^2 + 1$	[[_3rd_order, _missing_y], [_3rd_order, _with_linear_symmetries]]	✓	1.135
12666	$y'' + xy' = x$	[[_2nd_order, _missing_y]]	✓	1.408
12667	$y'' = x e^x$	[[_2nd_order, _quadrature]]	✓	1.296
12668	$(y' - xy'')^2 = 1 + y''^2$	[[_2nd_order, _missing_y]]	✓	0.726
12669	$yy'' - y'^2 - y^2y' = 0$	[[_2nd_order, _missing_x], [_2nd_order, _with_potential_symmetries], [_2nd_order, _reducible, _mu_xy]]	✓	0.424
12670	$yy'' - y'^2 + 1 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓	2.231
12671	$2y'' = e^y$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓	33.591
12672	$yy'' + 2y' - y'^2 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓	0.284
12673	$(x^2 - 2x + 2)y''' - x^2y'' + 2xy' - 2y = 0$	[[_3rd_order, _with_linear_symmetries]]	✗	0.052
12674	$xy''' - y'' - xy' + y = -x^2 + 1$	[[_3rd_order, _with_linear_symmetries]]	✗	0.054
12675	$(x + 2)^2 y''' + (x + 2)y'' + y' = 1$	[[_3rd_order, _missing_y]]	✓	0.607
12676	$x^2y'' + 3xy' + y = x$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓	1.787

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
Continued from previous page

#	ODE	CAS classification	Solved?	time (sec)
12677	$(x-1)^2 y'' + 4(x-1)y' + 2y = \cos(x)$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓	2.133
12678	$(x^3 - x)y''' + (8x^2 - 3)y'' + 14xy' + 4y = 0$	[[_3rd_order, _fully, _exact, _linear]]	✗	0.053
12679	$2x^3yy''' + 6x^3y'y'' + 18x^2yy'' + 18x^2y'^2 + 36xyy' + 6y^2 = 0$	[[_3rd_order, _exact, _nonlinear], [_3rd_order, _with_linear_symmetries]]	✗	0.055
12680	$x^5y'' + (2x^4 - x)y' - (2x^3 - 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.347
12681	$x^2(-x^3 + 1)y'' - x^3y' - 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	110.556
12682	$x^2y''' - 5xy'' + (4x^4 + 5)y' - 8x^3y = 0$	[[_3rd_order, _with_linear_symmetries]]	✗	0.050
12683	$y'' + 2 \cot(x)y' + 2 \tan(x)y'^2 = 0$	[[_2nd_order, _missing_y]]	✓	1.148
12684	$x^2yy'' + (-y + xy')^2 = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _reducible, _mu_y_y1], [_2nd_order, _reducible, _mu_xy]]	✗	0.147
12685	$x^3y'' - (-y + xy')^2 = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _reducible, _mu_xy]]	✗	0.159
12686	$yy'' - y'^2 = y^2 \ln(y) - y^2x^2$	[[_2nd_order, _reducible, _mu_xy]]	✗	0.153
12687	$\sin(x)^2 y'' - 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.702
12688	$y'' = 1 + y'^2$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_xy]]	✓	0.389
12689	$(-x^2 + 1)y'' - xy' = 2$	[[_2nd_order, _missing_y]]	✓	1.390

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
12690	$y'' + yy' = 0$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Lagerstrom, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓	0.499
12691	$(x^3 + 1)y''' + 9x^2y'' + 18xy' + 6y = 0$	[[_3rd_order, _fully, _exact, _linear]]	✗	0.053
12692	$(x^2 - x)y'' + (4x + 2)y' + 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	1.475
12693	$y(1 - \ln(y))y'' + (1 + \ln(y))y'^2 = 0$	[[_2nd_order, _missing_x], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓	0.485
12694	$y'' + \frac{y'}{x} = 0$	[[_2nd_order, _missing_y]]	✓	0.832
12695	$x(x + 2y)y'' + 2xy'^2 + 4(x + y)y' + 2y + x^2 = 0$	[[_2nd_order, _exact, _nonlinear], [_2nd_order, _reducible, _mu_xy]]	✓	0.892
12696	$y'' + y'^2 + 1 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_xy]]	✓	0.388
12697	$(-x^2 + 1)y'' - \frac{y'}{x} + x^2 = 0$	[[_2nd_order, _missing_y]]	✓	1.510
12698	$4x^2y''' + 8xy'' + y' = 0$	[[_3rd_order, _missing_y]]	✓	0.258
12699	$\sin(x)y'' - \cos(x)y' + 2\sin(x)y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	1.000
12700	$\begin{bmatrix} 3x' + 3x + 2y = e^t \\ 4x - 3y' + 3y = 3t \end{bmatrix}$	system_of_ODEs	✓	0.530
12701	$x' = \frac{2x}{t}$	[_separable]	✓	1.596

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
12702	$x' = -\frac{t}{x}$	[_separable]	✓	2.819
12703	$x' = -x^2$	[_quadrature]	✓	0.941
12704	$x'' + 2x' + 2x = 0$	[[_2nd_order, _missing_x]]	✓	1.291
12705	$x' = e^{-x}$	[_quadrature]	✓	0.937
12706	$x' + 2x = t^2 + 4t + 7$	[[_linear, 'class A']]	✓	1.085
12707	$2tx' = x$	[_separable]	✓	1.673
12708	$t^2x'' - 6x = 0$	[[_Emden, _Fowler]]	✓	0.722
12709	$2x'' - 5x' - 3x = 0$	[[_2nd_order, _missing_x]]	✓	0.854
12710	$x' = x\left(1 - \frac{x}{4}\right)$	[_quadrature]	✓	1.649
12711	$x' = x^2 + t^2$	[[_Riccati, _special]]	✓	1.017
12712	$x' = t \cos(t^2)$	[_quadrature]	✓	0.655
	i.c.			
12713	$x' = \frac{t+1}{\sqrt{t}}$	[_quadrature]	✓	0.577
	i.c.			
12714	$x'' = -3\sqrt{t}$	[[_2nd_order, _quadrature]]	✓	1.779
	i.c.			
12715	$x' = te^{-2t}$	[_quadrature]	✓	0.336
12716	$x' = \frac{1}{t \ln(t)}$	[_quadrature]	✓	0.286
12717	$\sqrt{t}x' = \cos(\sqrt{t})$	[_quadrature]	✓	0.431
12718	$x' = \frac{e^{-t}}{\sqrt{t}}$	[_quadrature]	✓	0.642
	i.c.			
12719	$x' + tx'' = 1$	[[_2nd_order, _missing_y]]	✓	1.545
	i.c.			
12720	$x' = \sqrt{x}$	[_quadrature]	✓	1.331
	i.c.			

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
12721	<i>i.c.</i> $x' = e^{-2x}$	[_quadrature]	✓	1.374
12722	$y' = 1 + y^2$	[_quadrature]	✓	1.016
12723	$u' = \frac{1}{5 - 2u}$	[_quadrature]	✓	1.014
12724	$x' = ax + b$	[_quadrature]	✓	0.778
12725	$Q' = \frac{Q}{4 + Q^2}$	[_quadrature]	✓	1.496
12726	$x' = e^{x^2}$	[_quadrature]	✓	0.951
12727	$y' = r(a - y)$	[_quadrature]	✓	0.709
12728	$x' = \frac{2x}{t + 1}$	[_separable]	✓	1.646
12729	$\theta' = t\sqrt{t^2 + 1} \sec(\theta)$	[_separable]	✓	1.820
12730	$(2u + 1)u' - t - 1 = 0$	[_separable]	✓	2.346
12731	$R' = (t + 1)(1 + R^2)$	[_separable]	✓	2.094
12732	$y' + y + \frac{1}{y} = 0$	[_quadrature]	✓	15.523
12733	$(t + 1)x' + x^2 = 0$	[_separable]	✓	1.158
12734	<i>i.c.</i> $y' = \frac{1}{2y + 1}$	[_quadrature]	✓	1.444
12735	<i>i.c.</i> $x' = (4t - x)^2$	[[_homogeneous, 'class C'], _Riccati]	✓	2.341
12736	<i>i.c.</i> $x' = 2tx^2$	[_separable]	✓	2.134
12737	<i>i.c.</i> $x' = t^2 e^{-x}$	[_separable]	✓	3.002
12738	<i>i.c.</i> $x' = x(4 + x)$	[_quadrature]	✓	2.297
12739	<i>i.c.</i> $x' = e^{t+x}$	[_separable]	✓	3.328

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
12740	$T' = 2at(T^2 - a^2)$ i.c.	[_separable]	✓	2.197
12741	$y' = t^2 \tan(y)$ i.c.	[_separable]	✓	1.858
12742	$x' = \frac{(4+2t)x}{\ln(x)}$ i.c.	[_separable]	✓	2.700
12743	$y' = \frac{2ty^2}{t^2+1}$ i.c.	[_separable]	✓	1.873
12744	$x' = \frac{t^2}{1-x^2}$ i.c.	[_separable]	✓	3.042
12745	$x' = 6t(x-1)^{2/3}$	[_separable]	✓	3.256
12746	$x' = \frac{4t^2+3x^2}{2xt}$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓	3.911
12747	$x'e^{2t} + 2xe^{2t} = e^{-t}$ i.c.	[[_linear, 'class A']]	✓	1.619
12748	$\frac{x' + tx''}{t} = -2$	[[_2nd_order, _missing_y]]	✓	1.021
12749	$y' = \frac{y^2 + 2ty}{t^2}$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓	2.368
12750	$y' = -y^2e^{-t^2}$ i.c.	[_separable]	✓	1.863
12751	$x' = 2t^3x - 6$	[_linear]	✓	1.393
12752	$\cos(t)x' - 2x \sin(x) = 0$	[_separable]	✓	2.408
12753	$x' = t - x^2$	[[_Riccati, _special]]	✓	0.961
12754	$7t^2x' = 3x - 2t$	[_linear]	✓	1.102
12755	$xx' = 1 - xt$	[_rational, [_Abel, '2nd type', 'class A']]	✗	0.657
12756	$x'^2 + xt = \sqrt{t+1}$	['y=_G(x,y)']	✓	3.862

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
12757	$x' = -\frac{2x}{t} + t$	[_linear]	✓	1.338
12758	$y' + y = e^t$	[[_linear, 'class A']]	✓	1.021
12759	$x' + 2xt = e^{-t^2}$	[_linear]	✓	1.378
12760	$tx' = -x + t^2$	[_linear]	✓	1.273
12761	$\theta' = -a\theta + e^{tb}$	[[_linear, 'class A']]	✓	0.925
12762	$(t^2 + 1)x' = -3xt + 6t$	[_separable]	✓	1.313
12763	$x' + \frac{5x}{t} = t + 1$	[_linear]	✓	1.528
	i.c.			
12764	$x' = \left(a + \frac{b}{t}\right)x$	[_separable]	✓	1.142
	i.c.			
12765	$R' + \frac{R}{t} = \frac{2}{t^2 + 1}$	[_linear]	✓	1.711
	i.c.			
12766	$N' = N - 9e^{-t}$	[[_linear, 'class A']]	✓	1.083
12767	$\cos(\theta)v' + v = 3$	[_separable]	✓	2.207
12768	$R' = \frac{R}{t} + te^{-t}$	[_linear]	✓	1.452
	i.c.			
12769	$y' + ay = \sqrt{t+1}$	[[_linear, 'class A']]	✓	1.255
12770	$x' = 2xt$	[_separable]	✓	1.165
12771	$x' + \frac{e^{-t}x}{t} = t$	[_linear]	✓	2.005
	i.c.			
12772	$x'' + x' = 3t$	[[_2nd_order, __missing_y]]	✓	1.511
12773	$x' = (t+x)^2$	[[_homogeneous, 'class C'], _Riccati]	✓	1.499
12774	$x' = ax + b$	[_quadrature]	✓	0.736
12775	$x' + p(t)x = 0$	[_separable]	✓	1.139

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
12776	$x' = \frac{2x}{3t} + \frac{2t}{x}$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓	3.968
12777	$x' = x(1 + xe^t)$	[[_1st_order, _with_linear_symmetries], _Bernoulli]	✓	1.348
12778	$x' = -\frac{x}{t} + \frac{1}{tx^2}$	[_separable]	✓	3.672
12779	$t^2y' + 2ty - y^2 = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓	2.587
12780	$x' = ax + bx^3$	[_quadrature]	✓	1.894
12781	$w' = tw + t^3w^3$	[_Bernoulli]	✓	1.221
12782	$x^3 + 3tx^2x' = 0$	[_separable]	✓	1.773
12783	$t^3 + \frac{x}{t} + (x^2 + \ln(t))x' = 0$	[_exact]	✓	1.520
12784	$x' = -\frac{\sin(x) - x \sin(t)}{t \cos(x) + \cos(t)}$	[NONE]	✓	28.273
12785	$x + 3tx^2x' = 0$	[_separable]	✓	1.533
12786	$x^2 - t^2x' = 0$	[_separable]	✓	2.194
12787	$t \cot(x)x' = -2$	[_separable]	✓	2.127
12788	<i>i.c.</i> $x'' - 4x' + 4x = 0$	[[_2nd_order, _missing_x]]	✓	1.158
12789	<i>i.c.</i> $x'' - 2x' = 0$	[[_2nd_order, _missing_x]]	✓	1.413
12790	<i>i.c.</i> $\frac{x''}{2} + x' + \frac{x}{2} = 0$	[[_2nd_order, _missing_x]]	✓	1.190
12791	<i>i.c.</i> $x'' + 4x' + 3x = 0$	[[_2nd_order, _missing_x]]	✓	1.412
12792	<i>i.c.</i> $x'' - 4x' + 4x = 0$	[[_2nd_order, _missing_x]]	✓	1.178
12793	<i>i.c.</i> $x'' - 2x' = 0$	[[_2nd_order, _missing_x]]	✓	1.750

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
12794	$\frac{x''}{2} + x' + \frac{x}{2} = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	1.197
12795	$x'' + 4x' + 3x = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	1.431
12796	$x'' + x' + 4x = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	3.148
12797	$x'' - 4x' + 6x = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	2.796
12798	$x'' + 9x = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	2.205
12799	$x'' - 12x = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	2.895
12800	$2x'' + 3x' + 3x = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	2.836
12801	$\frac{x''}{2} + \frac{5x'}{6} + \frac{2x}{9} = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	1.428
12802	$x'' + x' + x = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	2.913
12803	$x'' + \frac{x'}{8} + x = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	3.102
12804	$x'' + x' + x = 3t^3 - 1$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	30.466
12805	$x'' + x' + x = 3 \cos(t) - 2 \sin(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	73.901
12806	$x'' + x' + x = 12$	[[_2nd_order, _missing_x]]	✓	37.810
12807	$x'' + x' + x = t^2 e^{3t}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	36.170
12808	$x'' + x' + x = 5 \sin(7t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	75.533
12809	$x'' + x' + x = e^{2t} \cos(t) + t^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	78.485
12810	$x'' + x' + x = t e^{-t} \sin(\pi t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	80.365

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
12811	$x'' + x' + x = (t + 2) \sin(\pi t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	82.543
12812	$x'' + x' + x = 4t + 5e^{-t}$	[[_2nd_order, _with_linear_symmetries]]	✓	24.681
12813	$x'' + x' + x = 5 \sin(2t) + te^t$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	80.782
12814	$x'' + x' + x = t^3 + 1 - 4t \cos(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	77.950
12815	$x'' + x' + x = -6 + 2e^{2t} \sin(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	74.796
12816	$x'' + 7x = te^{3t}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.604
12817	$x'' - x' = 6 + e^{2t}$	[[_2nd_order, _missing_y]]	✓	1.566
12818	$x'' + x = t^2$	[[_2nd_order, _with_linear_symmetries]]	✓	2.030
12819	$x'' - 3x' - 4x = 2t^2$	[[_2nd_order, _with_linear_symmetries]]	✓	1.613
12820	$x'' + x = 9e^{-t}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.979
12821	$x'' - 4x = \cos(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.466
12822	$x'' + x' + 2x = t \sin(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	76.629
12823	$x'' - bx' + x = \sin(2t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	2.830
12824	$x'' - 3x' - 40x = 2e^{-t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	1.741
12825	$x'' - 2x' = 4$ i.c.	[[_2nd_order, _missing_x]]	✓	1.800
12826	$x'' + 2x = \cos(\sqrt{2}t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	4.508
12827	$x'' + \frac{x'}{100} + 4x = \cos(2t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	74.090

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
12828	$x'' + w^2x = \cos(\beta t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.422
12829	$x'' + 3025x = \cos(45t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	32.922
12830	$x'' = -\frac{x}{t^2}$	[[_Emden, _Fowler]]	✓	1.072
12831	$x'' = \frac{4x}{t^2}$	[[_Emden, _Fowler]]	✓	1.132
12832	$t^2x'' + 3tx' + x = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	1.356
12833	$tx'' + 4x' + \frac{2x}{t} = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓	1.190
12834	$t^2x'' - 7tx' + 16x = 0$	[[_Emden, _Fowler]]	✓	1.170
12835	$t^2x'' + 3tx' - 8x = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓	1.638
12836	$t^2x'' + tx' = 0$ i.c.	[[_2nd_order, _missing_y]]	✓	1.147
12837	$t^2x'' - tx' + 2x = 0$ i.c.	[[_Emden, _Fowler]]	✓	2.566
12838	$x'' + t^2x' = 0$ i.c.	[[_2nd_order, _missing_y]]	✓	2.049
12839	$x'' + x = \tan(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.062
12840	$x'' - x = te^t$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.146
12841	$x'' - x = \frac{1}{t}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.139
12842	$t^2x'' - 2x = t^3$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓	0.993
12843	$x'' + x = \frac{1}{t+1}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	5.176

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
12844	$x'' - 2x' + x = \frac{e^t}{2t}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.187
12845	$x'' + \frac{x'}{t} = a$	[[_2nd_order, _missing_y]]	✓	1.117
12846	$t^2x'' - 3tx' + 3x = 4t^7$	[[_2nd_order, _with_linear_symmetries]]	✓	1.796
12847	$x'' - x = \frac{e^t}{1 + e^t}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.422
12848	$x'' + tx' + x = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.351
12849	$x'' - tx' + x = 0$	[_Hermite]	✓	0.345
12850	$x'' - 2ax' + a^2x = 0$	[[_2nd_order, _missing_x]]	✓	0.341
12851	$x'' - \frac{(t+2)x'}{t} + \frac{(t+2)x}{t^2} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.332
12852	$t^2x'' + tx' + \left(t^2 - \frac{1}{4}\right)x = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.383
12853	$x''' + x' = 0$	[[_3rd_order, _missing_x]]	✓	0.066
12854	$x''' + x' = 1$	[[_3rd_order, _missing_x]]	✓	0.097
12855	$x''' + x'' = 0$	[[_3rd_order, _missing_x]]	✓	0.061
12856	$x''' - x' - 8x = 0$	[[_3rd_order, _missing_x]]	✓	0.115
12857	$x''' + x'' = 2e^t + 3t^2$	[[_3rd_order, _missing_y]]	✓	0.135
12858	$x''' - 8x = 0$	[[_3rd_order, _missing_x]]	✓	0.078
12859	<i>i.c.</i> $x''' + x'' - x' - 4x = 0$	[[_3rd_order, _missing_x]]	✓	0.590
12860	<i>i.c.</i> $x' + 5x = \text{Heaviside}(t - 2)$	[[_linear, 'class A']]	✓	0.443

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
12861	$x' + x = \sin(2t)$ i.c.	[[_linear, 'class A']]	✓	0.393
12862	$x'' - x' - 6x = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	0.279
12863	$x'' - 2x' + 2x = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	0.300
12864	$x'' - 2x' + 2x = e^{-t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	0.338
12865	$x'' - x' = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	0.204
12866	$x'' + \frac{2x'}{5} + 2x = 1 - \text{Heaviside}(t - 5)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	2.349
12867	$x'' + 9x = \sin(3t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.352
12868	$x'' - 2x = 1$ i.c.	[[_2nd_order, _missing_x]]	✓	0.298
12869	$x' = 2x + \text{Heaviside}(t - 1)$ i.c.	[[_linear, 'class A']]	✓	0.389
12870	$x'' + 4x = \cos(2t) \text{Heaviside}(2\pi - t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.661
12871	$x' = x - 2 \text{Heaviside}(t - 1)$ i.c.	[[_linear, 'class A']]	✓	0.437
12872	$x' = -x + \text{Heaviside}(t - 1) - \text{Heaviside}(t - 2)$ i.c.	[[_linear, 'class A']]	✓	0.563
12873	$x'' + \pi^2 x = \pi^2 \text{Heaviside}(-t + 1)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.707
12874	$x'' - 4x = 1 - \text{Heaviside}(t - 1)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.628
12875	$x'' + 3x' + 2x = e^{-4t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	0.315
12876	$x' + 3x = \delta(t - 1) + \text{Heaviside}(-4 + t)$ i.c.	[[_linear, 'class A']]	✓	0.597
12877	$x'' - x = \delta(t - 5)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.336

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
12878	$x'' + x = \delta(t - 2)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.345
12879	$x'' + 4x = \delta(t - 2) - \delta(t - 5)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.207
12880	$x'' + x = 3\delta(t - 2\pi)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.513
12881	$y'' + y' + y = \delta(t - 1)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.641
12882	$x'' + 4x = \frac{(t - 5) \text{Heaviside}(t - 5)}{5} + \left(2 - \frac{t}{5}\right) \text{Heaviside}(t - 10)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.061
12883	$\begin{bmatrix} x' = -3y \\ y' = 2x \end{bmatrix}$	system_of_ODEs	✓	0.413
12884	$\begin{bmatrix} x' = -2y \\ y' = -4x \end{bmatrix}$	system_of_ODEs	✓	0.408
12885	$\begin{bmatrix} x' = -3x \\ y' = 2y \end{bmatrix}$	system_of_ODEs	✓	0.264
12886	$\begin{bmatrix} x' = 4y \\ y' = 2y \end{bmatrix}$	system_of_ODEs	✓	0.273
12887	$\begin{bmatrix} x' = x \\ y' = x + 2y \end{bmatrix}$	system_of_ODEs	✓	0.297
12888	$\begin{bmatrix} x' = x - y \\ y' = x + y \end{bmatrix}$	system_of_ODEs	✓	0.354
12889	$\begin{bmatrix} x' = x + 2y \\ y' = x \end{bmatrix}$	system_of_ODEs	✓	0.322
12890	$\begin{bmatrix} x' = -x - 2y \\ y' = 2x - y \end{bmatrix}$	system_of_ODEs	✓	0.379
12891	$\begin{bmatrix} x' = -2x - 3y \\ y' = -x + 4y \end{bmatrix}$	system_of_ODEs	✓	0.559

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
12892	$\begin{bmatrix} x' = -3y \\ y' = -2x + y \end{bmatrix}$	system_of_ODEs	✓	0.374
12893	$\begin{bmatrix} x' = -2x \\ y' = x \end{bmatrix}$	system_of_ODEs	✓	0.297
12894	$\begin{bmatrix} x' = -2x - y \\ y' = -4y \end{bmatrix}$	system_of_ODEs	✓	0.316
12895	$\begin{bmatrix} x' = x - 2y \\ y' = -2x + 4y \end{bmatrix}$	system_of_ODEs	✓	0.333
12896	$\begin{bmatrix} x' = -6y \\ y' = 6y \end{bmatrix}$	system_of_ODEs	✓	0.289
12897	$\begin{bmatrix} x' = 2x + 3y \\ y' = -x - 14 \end{bmatrix}$	system_of_ODEs	✓	1.035
12898	$\begin{bmatrix} x' = 3y - 3x \\ y' = x + 2y - 1 \end{bmatrix}$	system_of_ODEs	✓	0.826
12899	$\begin{bmatrix} x' = y - x \\ y' = -3y \end{bmatrix}$	system_of_ODEs	✓	0.320
12900	$\begin{bmatrix} x' = x \\ y' = 3x - 4y \end{bmatrix}$	system_of_ODEs	✓	0.326
12901	$\begin{bmatrix} x' = y - x \\ y' = x - 2y \end{bmatrix}$	system_of_ODEs	✓	0.531
12902	$\begin{bmatrix} x' = x + y \\ y' = 3y - 3x \end{bmatrix}$	system_of_ODEs	✓	0.631
12903	$\begin{bmatrix} x' = x - 2y \\ y' = 3x - 4y \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.463
12904	$\begin{bmatrix} x' = 5x - y \\ y' = 3x + y \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.516

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
12905	$\begin{bmatrix} x' = -3x + y \\ y' = -3y \end{bmatrix}$	system_of_ODEs	✓	0.284
12906	$\begin{bmatrix} x' = x - y \\ y' = x + 3y \end{bmatrix}$	system_of_ODEs	✓	0.314
12907	$\begin{bmatrix} x' = x + 2y \\ y' = 3x + 2y \end{bmatrix}$	system_of_ODEs	✓	0.339
12908	$\begin{bmatrix} x' = -3x + 4y \\ y' = -3y \end{bmatrix}$	system_of_ODEs	✓	0.283
12909	$\begin{bmatrix} x' = 2x + 2y \\ y' = 6x + 3y \end{bmatrix}$	system_of_ODEs	✓	0.365
12910	$\begin{bmatrix} x' = -5x + 3y \\ y' = 2x - 10y \end{bmatrix}$	system_of_ODEs	✓	0.350
12911	$\begin{bmatrix} x' = 2x \\ y' = 2y \end{bmatrix}$	system_of_ODEs	✓	0.237
12912	$\begin{bmatrix} x' = 3x - 2y \\ y' = 4x - y \end{bmatrix}$	system_of_ODEs	✓	0.436
12913	$\begin{bmatrix} x' = 5x - 4y \\ y' = x + y \end{bmatrix}$	system_of_ODEs	✓	0.318
12914	$\begin{bmatrix} x' = 9y \\ y' = -x \end{bmatrix}$	system_of_ODEs	✓	0.375
12915	$\begin{bmatrix} x' = 2x + y \\ y' = -x \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.422
12916	$\begin{bmatrix} x' = x - 2y \\ y' = -2x + 4y \end{bmatrix}$	system_of_ODEs	✓	0.319
12917	$\begin{bmatrix} x' = 3x - y + 1 \\ y' = x + y + 2 \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.637

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
12918	$\begin{bmatrix} x' = -5x + 3y + e^{-t} \\ y' = 2x - 10y \end{bmatrix}$	system_of_ODEs	✓	0.541
12919	$\begin{bmatrix} x' = y \\ y' = -x + \cos(wt) \end{bmatrix}$	system_of_ODEs	✓	0.710
12920	$\begin{bmatrix} x' = 3x + 2y + 3 \\ y' = 7x + 5y + 2t \end{bmatrix}$	system_of_ODEs	✓	0.934
12921	$\begin{bmatrix} x' = x - 3y \\ y' = 3x + 7y \end{bmatrix}$	system_of_ODEs	✓	0.308
12922	$y' + y = x + 1$	[[_linear, 'class A']]	✓	1.109
12923	$y'' - 7y' + 12y = 0$	[[_2nd_order, _missing_x]]	✓	0.827
12924	$y'' - 3y' + 2y = 4x^2$	[[_2nd_order, _with_linear_symmetries]]	✓	1.168
12925	$(x^2 + 1)y'' + 4xy' + 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	1.117
12926	$2xyy' + x^2 + y^2 = 0$	[[_homogeneous, 'class A'], _exact, _rational, _Bernoulli]	✓	4.052
12927	$xy' + y = x^3y^3$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓	2.645
12928	$y' + 3y = 3x^2e^{-3x}$	[[_linear, 'class A']]	✓	1.550
12929	$y' + 4xy = 8x$	[_separable]	✓	1.144
12930	$y'' - 2y' - 8y = 0$	[[_2nd_order, _missing_x]]	✓	0.834
12931	$y''' - 2y'' - 4y' + 8y = 0$	[[_3rd_order, _missing_x]]	✓	0.070
12932	$y''' - 3y'' - 4y' + 12y = 0$	[[_3rd_order, _missing_x]]	✓	0.072
12933	$x^3y''' + 2x^2y'' - 10xy' - 8y = 0$	[[_3rd_order, _fully, _exact, _linear]]	✓	0.128
12934	$y' + 2y = 6e^x + 4xe^{-2x}$	[[_linear, 'class A']]	✓	1.507

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
12935	$y'' - 4y' + 4y = -8 \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.358
12936	$y'^2 - 4y = 0$	[_quadrature]	✓	0.622
12937	i.c. $y'' + y' - 6y = 0$	[[_2nd_order, _missing_x]]	✓	1.460
12938	i.c. $y' + y = 2x e^{-x}$	[[_linear, 'class A']]	✓	1.811
12939	i.c. $y' + y = 2x e^{-x}$	[[_linear, 'class A']]	✓	1.894
12940	i.c. $y'' - y' - 12y = 0$	[[_2nd_order, _missing_x]]	✓	1.472
12941	i.c. $y'' + y = 0$	[[_2nd_order, _missing_x]]	✗	1.576
12942	i.c. $y'' + y = 0$	[[_2nd_order, _missing_x]]	✗	1.583
12943	i.c. $y'' + y = 0$	[[_2nd_order, _missing_x]]	✓	2.391
12944	i.c. $x^3 y''' - 3x^2 y'' + 6xy' - 6y = 0$	[[_3rd_order, _with_linear_symmetries]]	✓	0.216
12945	i.c. $y' = x^2 \sin(y)$	[_separable]	✓	3.565
12946	i.c. $y' = \frac{y^2}{-2 + x}$	[_separable]	✓	2.224
12947	i.c. $y' = y^{1/3}$	[_quadrature]	✓	1.664
12948	$3x + 2y + (2x + y)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓	3.977
12949	$y^2 + 3 + (2xy - 4)y' = 0$	[_exact, _rational, [_1st_order, 'with_symmetry_[F(x)*G(y),0]'], [_Abel, '2nd type', 'class B']]]	✓	1.445

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
12950	$2xy + 1 + (x^2 + 4y) y' = 0$	[_exact, _rational, [_1st_order, '_with_symmetry_[F(x),G(x)]'], [_Abel, '2nd type', 'class A']]	✓	1.277
12951	$3x^2y + 2 - (x^3 + y) y' = 0$	[_rational, [_Abel, '2nd type', 'class A']]	✗	1.230
12952	$6xy + 2y^2 - 5 + (3x^2 + 4xy - 6) y' = 0$	[_exact, _rational, [_Abel, '2nd type', 'class B']]	✓	1.587
12953	$y \sec(x)^2 + \sec(x) \tan(x) + (\tan(x) + 2y) y' = 0$	[_exact, [_Abel, '2nd type', 'class A']]	✓	10.253
12954	$\frac{x}{y^2} + x + \left(\frac{x^2}{y^3} + y\right) y' = 0$	[_rational, [_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓	2.352
12955	$\frac{(2s-1)s'}{t} + \frac{s-s^2}{t^2} = 0$	[_separable]	✓	3.338
12956	$\frac{2y^{3/2} + 1}{\sqrt{x}} + (3\sqrt{x}\sqrt{y} - 1) y' = 0$	[_rational, [_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓	2.892
12957 i.c.	$2xy - 3 + (x^2 + 4y) y' = 0$	[_exact, _rational, [_1st_order, '_with_symmetry_[F(x),G(x)]'], [_Abel, '2nd type', 'class A']]	✓	1.631
12958 i.c.	$3y^2x^2 - y^3 + 2x + (2x^3y - 3xy^2 + 1) y' = 0$	[_exact, _rational]	✓	5.537
12959 i.c.	$2y \sin(x) \cos(x) + y^2 \sin(x) + (\sin(x)^2 - 2y \cos(x)) y' = 0$	[_exact, [_Abel, '2nd type', 'class B']]	✓	77.280
12960 i.c.	$y e^x + 2 e^x + y^2 + (e^x + 2xy) y' = 0$	[_exact, [_Abel, '2nd type', 'class B']]	✓	3.225

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
12961	$\frac{3-y}{x^2} + \frac{(y^2-2x)y'}{xy^2} = 0$ i.c.	[_exact, _rational, [_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓	3.288
12962	$\frac{1+8xy^{2/3}}{x^{2/3}y^{1/3}} + \frac{(2x^{4/3}y^{2/3}-x^{1/3})y'}{y^{4/3}} = 0$ i.c.	[[_homogeneous, 'class G'], _exact, _rational]	✓	4.467
12963	$4x + 3y^2 + 2xyy' = 0$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓	2.179
12964	$y^2 + 2xy - x^2y' = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓	2.228
12965	$y + x(y^2 + x^2)^2 + (y(y^2 + x^2)^2 - x)y' = 0$	[[_1st_order, _with_linear_symmetries], _rational]	✓	1.835
12966	$4xy + (x^2 + 1)y' = 0$	[_separable]	✓	1.371
12967	$xy + 2x + y + 2 + (x^2 + 2x)y' = 0$	[_separable]	✓	1.358
12968	$2r(s^2 + 1) + (r^4 + 1)s' = 0$	[_separable]	✓	2.273
12969	$\csc(y) + \sec(x)y' = 0$	[_separable]	✓	2.328
12970	$\tan(\theta) + 2r\theta' = 0$	[_separable]	✓	2.495
12971	$(e^v + 1)\cos(u) + e^v(1 + \sin(u))v' = 0$	[_separable]	✓	2.538
12972	$(4+x)(1+y^2) + y(x^2+3x+2)y' = 0$	[_separable]	✓	2.219
12973	$x + y - xy' = 0$	[_linear]	✓	1.188
12974	$2xy + 3y^2 - (2xy + x^2)y' = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓	3.914
12975	$v^3 + (u^3 - uv^2)v' = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	12.676

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
12976	$x \tan\left(\frac{y}{x}\right) + y - xy' = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓	4.095
12977	$(2s^2 + 2st + t^2) s' + s^2 + 2st - t^2 = 0$	[[_homogeneous, 'class A'], _exact, _rational, _dAlembert]	✓	8.107
12978	$x^3 + y^2\sqrt{y^2 + x^2} - xy\sqrt{y^2 + x^2} y' = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓	7.020
12979	$\frac{\sqrt{x+y} + \sqrt{x-y}}{+ (\sqrt{x-y} - \sqrt{x+y})} y' = 0$	[[_homogeneous, 'class C'], _dAlembert]	✓	18.233
12980	<i>i.c.</i> $y + 2 + y(4+x) y' = 0$	[_separable]	✓	2.718
12981	<i>i.c.</i> $8 \cos(y)^2 + \csc(x)^2 y' = 0$	[_separable]	✓	3.181
12982	<i>i.c.</i> $(3x+8)(y^2+4) - 4y(x^2+5x+6) y' = 0$	[_separable]	✓	3.121
12983	<i>i.c.</i> $x^2 + 3y^2 - 2xyy' = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓	5.834
12984	<i>i.c.</i> $2x - 5y + (4x - y) y' = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓	4.626
12985	<i>i.c.</i> $3x^2 + 9xy + 5y^2 - (6x^2 + 4xy) y' = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓	130.185
12986	$x + 2y + (2x - y) y' = 0$	[[_homogeneous, 'class A'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓	3.738
12987	$3x - y - (x + y) y' = 0$	[[_homogeneous, 'class A'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓	3.910
12988	$x^2 + 2y^2 + (4xy - y^2) y' = 0$	[[_homogeneous, 'class A'], _exact, _rational, _dAlembert]	✓	54.919

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
Continued from previous page

#	ODE	CAS classification	Solved?	time (sec)
12989	$2x^2 + 2xy + y^2 + (2xy + x^2) y' = 0$	[[_homogeneous, 'class A'], _exact, _rational, [_Abel, '2nd type', 'class B']]	✓	5.031
12990	$y' + \frac{3y}{x} = 6x^2$	[_linear]	✓	1.381
12991	$x^4 y' + 2x^3 y = 1$	[_linear]	✓	1.240
12992	$y' + 3y = 3x^2 e^{-3x}$	[[_linear, 'class A']]	✓	1.544
12993	$y' + 4xy = 8x$	[_separable]	✓	1.143
12994	$x' + \frac{x}{t^2} = \frac{1}{t^2}$	[_separable]	✓	1.181
12995	$(u^2 + 1) v' + 4vu = 3u$	[_separable]	✓	1.312
12996	$xy' + \frac{(2x+1)y}{x+1} = x-1$	[_linear]	✓	1.334
12997	$(x^2 + x - 2) y' + 3(x+1) y = x-1$	[_linear]	✓	1.509
12998	$xy' + xy + y - 1 = 0$	[_linear]	✓	1.035
12999	$y + (xy^2 + x - y) y' = 0$	[_rational, [_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓	1.213
13000	$r' + r \tan(t) = \cos(t)$	[_linear]	✓	1.527
13001	$\cos(t) r' + r \sin(t) - \cos(t)^4 = 0$	[_linear]	✓	3.116
13002	$\cos(x)^2 - y \cos(x) - (\sin(x) + 1) y' = 0$	[_linear]	✓	2.879
13003	$y \sin(2x) - \cos(x) + (1 + \sin(x)^2) y' = 0$	[_linear]	✓	4.310
13004	$y' - \frac{y}{x} = -\frac{y^2}{x}$	[_separable]	✓	1.993
13005	$xy' + y = -2x^6 y^4$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓	3.390
13006	$y' + \left(4y - \frac{8}{y^3}\right) x = 0$	[_separable]	✓	2.633

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
13007	$x' + \frac{(t+1)x}{2t} = \frac{t+1}{xt}$	[_separable]	✓	2.034
13008	$xy' - 2y = 2x^4$ i.c.	[_linear]	✓	1.720
13009	$y' + 3x^2y = x^2$ i.c.	[_separable]	✓	1.334
13010	$e^x(y - 3(1 + e^x)^2) + (1 + e^x)y' = 0$ i.c.	[_linear]	✓	1.871
13011	$2x(1 + y) - (x^2 + 1)y' = 0$ i.c.	[_separable]	✓	1.535
13012	$r' + r \tan(t) = \cos(t)^2$ i.c.	[_linear]	✓	2.118
13013	$x' - x = \sin(2t)$ i.c.	[[_linear, 'class A']]	✓	1.578
13014	$y' + \frac{y}{2x} = \frac{x}{y^3}$ i.c.	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓	4.394
13015	$xy' + y = (xy)^{3/2}$ i.c.	[[_homogeneous, 'class G'], _rational]	✓	11.519
13016	$y' + y = \begin{cases} 2 & 0 \leq x < 1 \\ 0 & 1 \leq x \end{cases}$ i.c.	[[_linear, 'class A']]	✓	0.631
13017	$y' + y = \begin{cases} 5 & 0 \leq x < 10 \\ 1 & 10 \leq x \end{cases}$ i.c.	[[_linear, 'class A']]	✓	0.776
13018	$y' + y = \begin{cases} e^{-x} & 0 \leq x < 2 \\ e^{-2} & 2 \leq x \end{cases}$ i.c.	[[_linear, 'class A']]	✓	0.643
13019	$(x+2)y' + y = \begin{cases} 2x & 0 \leq x < 2 \\ 4 & 2 \leq x \end{cases}$ i.c.	[_linear]	✓	0.625
13020	$ay' + by = ke^{-\lambda x}$	[[_linear, 'class A']]	✓	1.162
13021	$y' + y = 2 \sin(x) + 5 \sin(2x)$	[[_linear, 'class A']]	✓	1.947

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
13022	$\cos(y)y' + \frac{\sin(y)}{x} = 1$	['y=_G(x,y)']	✓	1.758
13023	$(1+y)y' + x(2y+y^2) = x$	[_separable]	✓	1.853
13024	$y' = (1-x)y^2 + (2x-1)y - x$	[_Riccati]	✓	2.094
13025	$y' = -y^2 + xy + 1$	[_Riccati]	✓	1.344
13026	$y' = -8xy^2 + 4x(1+4x)y - 8x^3 - 4x^2 + 1$	[[_1st_order, '_with_symmetry_[F(x),G(x)]'], _Riccati]	✓	2.437
13027	$6x^2y - (x^3+1)y' = 0$	[_separable]	✓	1.467
13028	$(3y^2x^2 - x)y' + 2xy^3 - y = 0$	[[_homogeneous, 'class G'], _exact, _rational]	✓	2.739
13029	$y - 1 + x(x+1)y' = 0$	[_separable]	✓	1.397
13030	$x^2 - 2y + xy' = 0$	[_linear]	✓	1.046
13031	$3x - 5y + (x+y)y' = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓	6.379
13032	$e^{2x}y^2 + (e^{2x}y - 2y)y' = 0$	[_separable]	✓	2.017
13033	$8x^3y - 12x^3 + (x^4+1)y' = 0$	[_separable]	✓	1.376
13034	$2x^2 + xy + y^2 + 2x^2y' = 0$	[[_homogeneous, 'class A'], _rational, _Riccati]	✓	3.781
13035	$y' = \frac{4x^3y^2 - 3x^2y}{x^3 - 2x^4y}$	[[_homogeneous, 'class G'], _rational, [_Abel, '2nd type', 'class B']]	✓	3.579
13036	$(x+1)y' + xy = e^{-x}$	[_linear]	✓	1.987
13037	$y' = \frac{2x-7y}{3y-8x}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓	3.784
13038	$x^2y' + xy = xy^3$	[_separable]	✓	4.464
13039	$(x^3+1)y' + 6x^2y = 6x^2$	[_separable]	✓	1.410

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
13040	$y' = \frac{2x^2 + y^2}{2xy - x^2}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓	16.664
13041	<i>i.c.</i> $x^2 + y^2 - 2xyy' = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓	10.146
13042	<i>i.c.</i> $2y^2 + 8 + (-x^2 + 1)yy' = 0$	[_separable]	✓	3.224
13043	<i>i.c.</i> $e^{2x}y^2 - 2x + e^{2x}yy' = 0$	[_exact, _Bernoulli]	✓	3.383
13044	<i>i.c.</i> $3x^2 + 2xy^2 + (2x^2y + 6y^2)y' = 0$	[_exact, _rational]	✓	22.013
13045	<i>i.c.</i> $4xyy' = 1 + y^2$	[_separable]	✓	4.117
13046	<i>i.c.</i> $y' = \frac{2x + 7y}{2x - 2y}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓	5.955
13047	<i>i.c.</i> $y' = \frac{xy}{x^2 + 1}$	[_separable]	✓	2.158
13048	<i>i.c.</i> $y' + y = \begin{cases} 1 & 0 \leq x < 2 \\ 0 & 0 < x \end{cases}$	[[_linear, 'class A']]	✓	0.629
13049	<i>i.c.</i> $(x + 2)y' + y = \begin{cases} 2x & 0 \leq x \leq 2 \\ 4 & 2 < x \end{cases}$	[_linear]	✓	0.638
13050	<i>i.c.</i> $x^2y' + xy = \frac{y^3}{x}$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓	171.098
13051	$5xy + 4y^2 + 1 + (2xy + x^2)y' = 0$	[_rational, [_Abel, '2nd type', 'class B']]	✓	1.543
13052	$2x + \tan(y) + (x - x^2 \tan(y))y' = 0$	[[_1st_order, '_with_symmetry_[F(x),G(x)']]	✓	2.190
13053	$y^2(x + 1) + y + (2xy + 1)y' = 0$	[_rational, [_Abel, '2nd type', 'class B']]	✓	1.268

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

















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#	ODE	CAS classification	Solved?	time (sec)
13054	$2xy^2 + y + (2y^3 - x)y' = 0$	[_rational]	✓	2.301
13055	$4xy^2 + 6y + (5x^2y + 8x)y' = 0$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]]	✓	2.130
13056	$8x^2y^3 - 2y^4 + (5x^3y^2 - 8xy^3)y' = 0$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]]	✓	1.850
13057	$5x + 2y + 1 + (2x + y + 1)y' = 0$	[[_homogeneous, 'class C', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓	2.520
13058	$3x - y + 1 - (6x - 2y - 3)y' = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓	1.421
13059	$x - 2y - 3 + (2x + y - 1)y' = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓	1.990
13060	$10x - 4y + 12 - (x + 5y + 3)y' = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓	3.546
13061	$6x + 4y + 1 + (4x + 2y + 2)y' = 0$ i.c.	[[_homogeneous, 'class C', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓	4.235
13062	$3x - y - 6 + (x + y + 2)y' = 0$ i.c.	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓	13.414
13063	$2x + 3y + 1 + (4x + 6y + 1)y' = 0$ i.c.	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓	1.733
13064	$4x + 3y + 1 + (x + y + 1)y' = 0$ i.c.	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓	2.574
13065	$y'' + 5y' + 6y = e^x$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	1.342
13066	$y'' + 5y' + 6y = e^x$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	298.484

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
13067	<i>i.c.</i> $y'' + xy' + x^2y = 0$	[[_2nd_order, _with_linear_symmetries]]		0.589
13068	$y'' - 4y' + 3y = 0$	[[_2nd_order, _missing_x]]		0.840
13069	<i>i.c.</i> $y'' - 2y' + y = 0$	[[_2nd_order, _missing_x]]		1.164
13070	<i>i.c.</i> $x^2y'' - 2xy' + 2y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]		2.184
13071	<i>i.c.</i> $x^2y'' + xy' - 4y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]		1.587
13072	$y'' - 5y' + 4y = 0$	[[_2nd_order, _missing_x]]		0.838
13073	$y''' - 6y'' + 5y' + 12y = 0$	[[_3rd_order, _missing_x]]		0.068
13074	$x^3y''' - 4x^2y'' + 8xy' - 8y = 0$	[[_3rd_order, _with_linear_symmetries]]		0.124
13075	$x^2y'' - 4xy' + 4y = 0$	[[_Emden, _Fowler]]		0.311
13076	$(x + 1)^2 y'' - 3(x + 1) y' + 3y = 0$	[[_2nd_order, _with_linear_symmetries]]		0.314
13077	$(x^2 - 1) y'' - 2xy' + 2y = 0$	[_Gegenbauer]		0.331
13078	$(x^2 - x + 1) y'' - (x^2 + x) y' + (x + 1) y = 0$	[[_2nd_order, _with_linear_symmetries]]		0.347
13079	$(2x + 1) y'' - 4(x + 1) y' + 4y = 0$	[[_2nd_order, _with_linear_symmetries]]		0.346
13080	$(x^3 - x^2) y'' - (x^3 + 2x^2 - 2x) y' + (2x^2 + 2x - 2) y = 0$	[[_2nd_order, _with_linear_symmetries]]		0.348
13081	$y'' - 3y' + 2y = 4x^2$	[[_2nd_order, _with_linear_symmetries]]		1.136
13082	$y'' - 5y' + 6y = 2 - 12x + 6e^x$	[[_2nd_order, _with_linear_symmetries]]		1.103

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
13083	$y'' - 5y' + 6y = 0$	[[_2nd_order, _missing_x]]	✓	0.804
13084	$y'' - 2y' - 3y = 0$	[[_2nd_order, _missing_x]]	✓	0.829
13085	$4y'' - 12y' + 5y = 0$	[[_2nd_order, _missing_x]]	✓	0.846
13086	$3y'' - 14y' - 5y = 0$	[[_2nd_order, _missing_x]]	✓	0.849
13087	$y''' - 3y'' - y' + 3y = 0$	[[_3rd_order, _missing_x]]	✓	0.074
13088	$y''' - 6y'' + 5y' + 12y = 0$	[[_3rd_order, _missing_x]]	✓	0.069
13089	$y'' - 8y' + 16y = 0$	[[_2nd_order, _missing_x]]	✓	0.819
13090	$4y'' + 4y' + y = 0$	[[_2nd_order, _missing_x]]	✓	0.845
13091	$y'' - 4y' + 13y = 0$	[[_2nd_order, _missing_x]]	✓	1.878
13092	$y'' + 6y' + 25y = 0$	[[_2nd_order, _missing_x]]	✓	1.786
13093	$y'' + 9y = 0$	[[_2nd_order, _missing_x]]	✓	1.973
13094	$4y'' + y = 0$	[[_2nd_order, _missing_x]]	✓	1.963
13095	$y''' - 5y'' + 7y' - 3y = 0$	[[_3rd_order, _missing_x]]	✓	0.070
13096	$4y''' + 4y'' - 7y' + 2y = 0$	[[_3rd_order, _missing_x]]	✓	0.073
13097	$y''' - 6y'' + 12y' - 8y = 0$	[[_3rd_order, _missing_x]]	✓	0.067
13098	$y''' + 4y'' + 5y' + 6y = 0$	[[_3rd_order, _missing_x]]	✓	0.075
13099	$y''' - y'' + y' - y = 0$	[[_3rd_order, _missing_x]]	✓	0.073
13100	$y'''' + 8y'' + 16y = 0$	[[_high_order, _missing_x]]	✓	0.084

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
13101	$y^{(5)} - 2y'''' + y''' = 0$	[[_high_order, _missing_x]]	✓	0.069
13102	$y'''' - y''' - 3y'' + y' + 2y = 0$	[[_high_order, _missing_x]]	✓	0.076
13103	$y'''' - 3y''' - 2y'' + 2y' + 12y = 0$	[[_high_order, _missing_x]]	✓	0.080
13104	$y'''' + 6y''' + 15y'' + 20y' + 12y = 0$	[[_high_order, _missing_x]]	✓	0.082
13105	$y'''' + y = 0$	[[_high_order, _missing_x]]	✓	0.087
13106	$y^{(5)} = 0$	[[_high_order, _quadrature]]	✓	0.037
13107	$y'' - y' - 12y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	1.431
13108	$y'' + 7y' + 10y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	1.339
13109	$y'' - 6y' + 8y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	1.060
13110	$3y'' + 4y' - 4y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	1.437
13111	$y'' + 6y' + 9y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	1.202
13112	$4y'' - 12y' + 9y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	1.190
13113	$y'' + 4y' + 4y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	1.187
13114	$9y'' - 6y' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	1.208
13115	$y'' - 4y' + 29y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	2.125
13116	$y'' + 6y' + 58y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	2.772
13117	$y'' + 6y' + 13y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	2.555
13118	$y'' + 2y' + 5y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	2.552

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
13119	<i>i.c.</i> $9y'' + 6y' + 5y = 0$	[[_2nd_order, _missing_x]]	✓	2.329
13120	<i>i.c.</i> $4y'' + 4y' + 37y = 0$	[[_2nd_order, _missing_x]]	✓	2.656
13121	<i>i.c.</i> $y''' - 6y'' + 11y' - 6y = 0$	[[_3rd_order, _missing_x]]	✓	0.138
13122	<i>i.c.</i> $y''' - 2y'' + 4y' - 8y = 0$	[[_3rd_order, _missing_x]]	✓	0.085
13123	<i>i.c.</i> $y''' - 3y'' + 4y = 0$	[[_3rd_order, _missing_x]]	✓	0.152
13124	<i>i.c.</i> $y''' - 5y'' + 9y' - 5y = 0$	[[_3rd_order, _missing_x]]	✓	0.085
13125	$y'''' + 2y''' + 6y'' + 2y' + 5y = 0$	[[_high_order, _missing_x]]	✓	0.080
13126	$y'''' + 3y''' + y'' + 13y' + 30y = 0$	[[_high_order, _missing_x]]	✓	0.082
13127	$y'' - 3y' + 8y = 4x^2$	[[_2nd_order, _with_linear_symmetries]]	✓	22.157
13128	$y'' - 2y' - 8y = 4e^{2x} - 21e^{-3x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.203
13129	$y'' + 2y' + 5y = 6\sin(2x) + 7\cos(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	12.491
13130	$y'' + 2y' + 2y = 10\sin(4x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	12.330
13131	$y'' + 2y' + 4y = \cos(4x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	36.953
13132	$y'' - 3y' - 4y = 16x - 12e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.653
13133	$y'' + 6y' + 5y = 2e^x + 10e^{5x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.173
13134	$y'' + 2y' + 10y = 5xe^{-2x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	12.720
13135	$y''' + 4y'' + y' - 6y = -18x^2 + 1$	[[_3rd_order, _with_linear_symmetries]]	✓	0.118
13136	$y''' + 2y'' - 3y' - 10y = 8xe^{-2x}$	[[_3rd_order, _linear, _nonhomogeneous]]	✓	0.138

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
13137	$y''' + y'' + 3y' - 5y = 5 \sin(2x) + 10x^2 + 3x + 7$	[[_3rd_order, _linear, _nonhomogeneous]]	✓	0.246
13138	$4y''' - 4y'' - 5y' + 3y = 3x^3 - 8x$	[[_3rd_order, _linear, _nonhomogeneous]]	✓	0.127
13139	$y'' + y' - 6y = 10e^{2x} - 18e^{3x} - 6x - 11$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.825
13140	$y'' + y' - 2y = 6e^{-2x} + 3e^x - 4x^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.386
13141	$y''' - 3y'' + 4y = 4e^x - 18e^{-x}$	[[_3rd_order, _linear, _nonhomogeneous]]	✓	0.145
13142	$y''' - 2y'' - y' + 2y = 9e^{2x} - 8e^{3x}$	[[_3rd_order, _linear, _nonhomogeneous]]	✓	0.192
13143	$y''' + y' = 2x^2 + 4 \sin(x)$	[[_3rd_order, _missing_y]]	✓	0.895
13144	$y'''' - 3y''' + 2y'' = 3e^{-x} + 6e^{2x} - 6x$	[[_high_order, _missing_y]]	✓	0.168
13145	$y''' - 6y'' + 11y' - 6y = xe^x - 4e^{2x} + 6e^{4x}$	[[_3rd_order, _linear, _nonhomogeneous]]	✓	0.187
13146	$y''' - 4y'' + 5y' - 2y = 3e^x x^2 - 7e^x$	[[_3rd_order, _linear, _nonhomogeneous]]	✓	0.154
13147	$y'' + y = x \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.196
13148	$y'' + 4y = 12x^2 - 16x \cos(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	5.575
13149	$y'''' + 2y''' - 3y'' = 18x^2 + 16xe^x + 4e^{3x} - 9$	[[_high_order, _missing_y]]	✓	0.184
13150	$y'''' - 5y''' + 7y'' - 5y' + 6y = 5 \sin(x) - 12 \sin(2x)$	[[_high_order, _linear, _nonhomogeneous]]	✓	1.203
13151	<i>i.c.</i> $y'' - 4y' + 3y = 9x^2 + 4$	[[_2nd_order, _with_linear_symmetries]]	✓	1.333
13152	<i>i.c.</i> $y'' + 5y' + 4y = 16x + 20e^x$	[[_2nd_order, _with_linear_symmetries]]	✓	1.710
13153	<i>i.c.</i> $y'' - 8y' + 15y = 9xe^{2x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.345

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
13154	<i>i.c.</i> $y'' + 7y' + 10y = 4x e^{-3x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.281
13155	<i>i.c.</i> $y'' + 8y' + 16y = 8e^{-2x}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.448
13156	<i>i.c.</i> $y'' + 6y' + 9y = 27e^{-6x}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.451
13157	<i>i.c.</i> $y'' + 4y' + 13y = 18e^{-2x}$	[[_2nd_order, _with_linear_symmetries]]	✓	5.942
13158	<i>i.c.</i> $y'' - 10y' + 29y = 8e^{5x}$	[[_2nd_order, _with_linear_symmetries]]	✓	5.771
13159	<i>i.c.</i> $y'' - 4y' + 13y = 8 \sin(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	13.431
13160	<i>i.c.</i> $y'' - y' - 6y = 8e^{2x} - 5e^{3x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.849
13161	<i>i.c.</i> $y'' - 2y' + y = 2xe^{2x} + 6e^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.411
13162	<i>i.c.</i> $y'' - y = 3e^x x^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.806
13163	<i>i.c.</i> $y'' + y = 3x^2 - 4 \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.312
13164	<i>i.c.</i> $y'' + 4y = 8 \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	4.078
13165	<i>i.c.</i> $y''' - 4y'' + y' + 6y = 3xe^x + 2e^x - \sin(x)$	[[_3rd_order, _linear, _nonhomogeneous]]	✓	0.336
13166	<i>i.c.</i> $y''' - 6y'' + 9y' - 4y = 8x^2 + 3 - 6e^{2x}$	[[_3rd_order, _linear, _nonhomogeneous]]	✓	0.219
13167	$y'' - 6y' + 8y = x^3 + x + e^{-2x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.279
13168	$y'' + 9y = e^{3x} + e^{-3x} + e^{3x} \sin(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	6.353
13169	$y'' + 4y' + 5y = e^{-2x}(\cos(x) + 1)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	6.796
13170	$y'' - 6y' + 9y = x^4 e^x + x^3 e^{2x} + x^2 e^{3x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	65.326

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
13171	$y'' + 6y' + 13y = x e^{-3x} \sin(2x) + x^2 e^{-2x} \sin(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	99.947
13172	$y''' - 3y'' + 2y' = e^x x^2 + 3x e^{2x} + 5x^2$	[[_3rd_order, _missing_y]]	✓	0.256
13173	$y''' - 6y'' + 12y' - 8y = x e^{2x} + x^2 e^{3x}$	[[_3rd_order, _linear, _nonhomogeneous]]	✓	0.253
13174	$y'''' + 3y''' + 4y'' + 3y' + y = x^2 e^{-x} + 3 e^{-\frac{x}{2}} \cos\left(\frac{\sqrt{3}x}{2}\right)$	[[_high_order, _linear, _nonhomogeneous]]	✓	1.190
13175	$y'''' - 16y = x^2 \sin(2x) + x^4 e^{2x}$	[[_high_order, _linear, _nonhomogeneous]]	✓	34.312
13176	$y^{(6)} + 2y^{(5)} + 5y'''' = x^3 + x^2 e^{-x} + e^{-x} \sin(2x)$	[[_high_order, _missing_y]]	✓	34.859
13177	$y'''' + 2y'' + y = x^2 \cos(x)$	[[_high_order, _linear, _nonhomogeneous]]	✓	1.184
13178	$y'''' + 16y = x e^{x\sqrt{2}} \sin(x\sqrt{2}) + e^{-x\sqrt{2}} \cos(x\sqrt{2})$	[[_high_order, _linear, _nonhomogeneous]]	✓	2.705
13179	$y'''' + 3y'' - 4y = \cos(x)^2 - \cosh(x)$	[[_high_order, _linear, _nonhomogeneous]]	✓	0.992
13180	$y'''' + 10y'' + 9y = \sin(x) \sin(2x)$	[[_high_order, _linear, _nonhomogeneous]]	✓	1.253
13181	$y'' + y = \cot(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	2.073
13182	$y'' + y = \tan(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.364
13183	$y'' + y = \sec(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	2.813
13184	$y'' + y = \sec(x)^3$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.942
13185	$y'' + 4y = \sec(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	4.434
13186	$y'' + y = \sec(x) \tan(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.648

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
13187	$y'' + 4y' + 5y = e^{-2x} \sec(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	4.661
13188	$y'' - 2y' + 5y = e^x \tan(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	14.611
13189	$y'' + 6y' + 9y = \frac{e^{-3x}}{x^3}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.128
13190	$y'' - 2y' + y = x e^x \ln(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.188
13191	$y'' + y = \sec(x) \csc(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.245
13192	$y'' + y = \tan(x)^3$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.858
13193	$y'' + 3y' + 2y = \frac{1}{1 + e^x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.914
13194	$y'' + 3y' + 2y = \frac{1}{1 + e^{2x}}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	4.599
13195	$y'' + y = \frac{1}{\sin(x) + 1}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	36.644
13196	$y'' - 2y' + y = e^x \arcsin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.256
13197	$y'' + 3y' + 2y = \frac{e^{-x}}{x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.305
13198	$y'' - 2y' + y = x \ln(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.410
13199	$x^2 y'' - 6xy' + 10y = 3x^4 + 6x^3$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.600
13200	$(x + 1)^2 y'' - 2(x + 1)y' + 2y = 1$	[[_2nd_order, _with_linear_symmetries]]	✓	1.678
13201	$(x^2 + 2x)y'' - 2(x + 1)y' + 2y = (x + 2)^2$	[[_2nd_order, _with_linear_symmetries]]	✓	1.590
13202	$x^2 y'' - x(x + 2)y' + (x + 2)y = x^3$	[[_2nd_order, _with_linear_symmetries]]	✓	1.580
13203	$x(-2 + x)y'' - (x^2 - 2)y' + 2(x - 1)y = 3x^2(-2 + x)^2 e^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.757

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
13204	$(2x + 1)(x + 1)y'' + 2xy' - 2y = (2x + 1)^2$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓	1.826
13205	$\sin(x)^2 y'' - 2 \sin(x) \cos(x) y' + (\cos(x)^2 + 1) y = \sin(x)^3$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	2.272
13206	$y''' - 3y'' - y' + 3y = e^x x^2$	[[_3rd_order, _linear, _nonhomogeneous]]	✓	0.137
13207	$x^2 y'' - 3xy' + 3y = 0$	[[_Emden, _Fowler]]	✓	1.346
13208	$x^2 y'' + xy' - 4y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]]']	✓	0.966
13209	$4x^2 y'' - 4xy' + 3y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]]']	✓	1.197
13210	$x^2 y'' - 3xy' + 4y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]]']	✓	1.164
13211	$x^2 y'' + xy' + 4y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]]']	✓	1.440
13212	$x^2 y'' - 3xy' + 13y = 0$	[[_Emden, _Fowler]]	✓	2.605
13213	$3x^2 y'' - 4xy' + 2y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]]']	✓	1.201
13214	$x^2 y'' + xy' + 9y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]]']	✓	1.411
13215	$9x^2 y'' + 3xy' + y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]]']	✓	1.185
13216	$x^2 y'' - 5xy' + 10y = 0$	[[_Emden, _Fowler]]	✓	2.034

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
13217	$x^3y''' - 3x^2y'' + 6xy' - 6y = 0$	[[_3rd_order, _with_linear_symmetries]]	✓	0.124
13218	$x^3y''' + 2x^2y'' - 10xy' - 8y = 0$	[[_3rd_order, _fully_exact, _linear]]	✓	0.128
13219	$x^3y''' - x^2y'' - 6xy' + 18y = 0$	[[_3rd_order, _with_linear_symmetries]]	✓	0.125
13220	$x^2y'' - 4xy' + 6y = 4x - 6$	[[_2nd_order, _with_linear_symmetries]]	✓	1.665
13221	$x^2y'' - 5xy' + 8y = 2x^3$	[[_2nd_order, _with_linear_symmetries]]	✓	1.503
13222	$x^2y'' + 4xy' + 2y = 4 \ln(x)$	[[_2nd_order, _exact_linear, _nonhomogeneous]]	✓	2.258
13223	$x^2y'' + xy' + 4y = 2x \ln(x)$	[[_2nd_order, _with_linear_symmetries]]	✓	5.255
13224	$x^2y'' + xy' + 4y = 4 \sin(\ln(x))$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	5.182
13225	$x^3y''' - x^2y'' + 2xy' - 2y = x^3$	[[_3rd_order, _with_linear_symmetries]]	✓	0.255
13226	<i>i.c.</i> $x^2y'' - 2xy' - 10y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓	1.717
13227	<i>i.c.</i> $x^2y'' - 4xy' + 6y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓	2.165
13228	<i>i.c.</i> $x^2y'' + 5xy' + 3y = 0$	[[_2nd_order, _exact_linear, _homogeneous]]	✓	1.942
13229	<i>i.c.</i> $x^2y'' - 2y = 4x - 8$	[[_2nd_order, _exact_linear, _nonhomogeneous]]	✓	1.385
13230	<i>i.c.</i> $x^2y'' - 4xy' + 4y = -6x^3 + 4x^2$	[[_2nd_order, _with_linear_symmetries]]	✓	2.406
13231	<i>i.c.</i> $x^2y'' + 2xy' - 6y = 10x^2$	[[_2nd_order, _with_linear_symmetries]]	✓	1.914

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
13232	$x^2 y'' - 5xy' + 8y = 2x^3$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	1.951
13233	$x^2 y'' - 6y = \ln(x)$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	1.359
13234	$(x+2)^2 y'' - (x+2)y' - 3y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	1.054
13235	$(2x-3)^2 y'' - 6(2x-3)y' + 12y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.214
13236	$y'' + xy' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.508
13237	$y'' + 8xy' - 4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.555
13238	$y'' + xy' + (2x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.573
13239	$y'' + xy' + (x^2 - 4)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.571
13240	$y'' + xy' + (2 + 3x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.599
13241	$y'' - xy' + (3x - 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.609
13242	$(x^2 + 1)y'' + xy' + xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.621
13243	$(x-1)y'' - (3x-2)y' + 2xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.635
13244	$(x^3 - 1)y'' + x^2 y' + xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.615
13245	$(x+3)y'' + (x+2)y' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.633
13246	$y'' - xy' - y = 0$ i.c.	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.503
13247	$y'' + xy' - 2y = 0$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	0.544
13248	$(x^2 + 1)y'' + xy' + 2xy = 0$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	0.631

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
13249	$(2x^2 - 3)y'' - 2xy' + y = 0$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	0.608
13250	$x^2y'' + xy' + y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓	0.644
13251	$x^2y'' + 3xy' - y = 0$	[[_Emden, _Fowler]]	✓	0.675
13252	$xy'' + y' + 2y = 0$ i.c.	[[_Emden, _Fowler]]	✓	0.634
13253	$(-x^2 + 1)y'' - 2xy' + n(n + 1)y = 0$	[_Gegenbauer]	✓	0.742
13254	$(x^2 - 3x)y'' + (x + 2)y' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.921
13255	$(x^3 + x^2)y'' + (x^2 - 2x)y' + 4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.099
13256	$(x^4 - 2x^3 + x^2)y'' + 2(x - 1)y' + x^2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.174
13257	$(x^5 + x^4 - 6x^3)y'' + x^2y' + (-2 + x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.140
13258	$2x^2y'' + xy' + (x^2 - 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.792
13259	$2x^2y'' + xy' + (2x^2 - 3)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.800
13260	$x^2y'' - xy' + \left(x^2 + \frac{8}{9}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.826
13261	$x^2y'' - xy' + \left(2x^2 + \frac{5}{9}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.817
13262	$x^2y'' + xy' + \left(x^2 - \frac{1}{9}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.816
13263	$2xy'' + y' + 2y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓	0.828
13264	$3xy'' - (-2 + x)y' - 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.845

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
13265	$xy'' + 2y' + xy = 0$	[_Lienard]	✓	0.765
13266	$x^2y'' + xy' + \left(x^2 - \frac{1}{4}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.836
13267	$x^2y'' + (x^4 + x)y' - y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.803
13268	$xy'' - (x^2 + 2)y' + xy = 0$	[_Lienard]	✓	0.785
13269	$x^2y'' + x^2y' - 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.965
13270	$(2x^2 - x)y'' + (2x - 2)y' + (-2x^2 + 3x - 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.913
13271	$x^2y'' - xy' + \frac{3y}{4} = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)][']]	✓	0.779
13272	$x^2y'' + xy' + (x - 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.252
13273	$x^2y'' + (x^3 - x)y' - 3y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.280
13274	$x^2y'' - xy' + 8(x^2 - 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.269
13275	$x^2y'' + x^2y' - \frac{3y}{4} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.347
13276	$xy'' + y' + 2y = 0$	[[_Emden, _Fowler]]	✓	0.746
13277	$2xy'' + 6y' + y = 0$	[[_Emden, _Fowler]]	✓	1.227
13278	$x^2y'' - xy' + (x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.759
13279	$x^2y'' - xy' + (x^2 - 3)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.203
13280	$\begin{bmatrix} x' + y' - 2x - 4y = e^t \\ x' + y' - y = e^{4t} \end{bmatrix}$	system_of_ODEs	✓	0.232
13281	$\begin{bmatrix} x' + y' - x = -2t \\ x' + y' - 3x - y = t^2 \end{bmatrix}$	system_of_ODEs	✓	0.190

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
13282	$\begin{bmatrix} x' + y' - x - 3y = e^t \\ x' + y' + x = e^{3t} \end{bmatrix}$	system_of_ODEs	✓	0.169
13283	$\begin{bmatrix} x' + y' - x - 2y = 2e^t \\ x' + y' - 3x - 4y = e^{2t} \end{bmatrix}$	system_of_ODEs	✓	0.108
13284	$\begin{bmatrix} 2x' + y' - x - y = e^{-t} \\ x' + 2x + y' + y = e^t \end{bmatrix}$	system_of_ODEs	✓	0.685
13285	$\begin{bmatrix} 2x' + y' - 3x - y = t \\ x' + y' - 4x - y = e^t \end{bmatrix}$	system_of_ODEs	✓	0.496
13286	$\begin{bmatrix} x' + y' - x - 6y = e^{3t} \\ x' + 2y' - 2x - 6y = t \end{bmatrix}$	system_of_ODEs	✓	0.655
13287	$\begin{bmatrix} x' + y' - x - 3y = 3t \\ x' + 2y' - 2x - 3y = 1 \end{bmatrix}$	system_of_ODEs	✓	0.653
13288	$\begin{bmatrix} x' + y' + 2y = \sin(t) \\ x' + y' - x - y = 0 \end{bmatrix}$	system_of_ODEs	✓	0.220
13289	$\begin{bmatrix} x' - y' - 2x + 4y = t \\ x' + y' - x - y = 1 \end{bmatrix}$	system_of_ODEs	✓	0.490
13290	$\begin{bmatrix} 2x' + y' + x + 5y = 4t \\ x' + y' + 2x + 2y = 2 \end{bmatrix}$	system_of_ODEs	✓	0.483
13291	$\begin{bmatrix} x' + y' - x + 5y = t^2 \\ x' + 2y' - 2x + 4y = 2t + 1 \end{bmatrix}$	system_of_ODEs	✓	1.420
13292	$\begin{bmatrix} 2x' + y' + x + y = t^2 + 4t \\ x' + y' + 2x + 2y = 2t^2 - 2t \end{bmatrix}$	system_of_ODEs	✓	0.484
13293	$\begin{bmatrix} 3x' + 2y' - x + y = t - 1 \\ x' + y' - x = t + 2 \end{bmatrix}$	system_of_ODEs	✓	0.628
13294	$\begin{bmatrix} 2x' + 4y' + x - y = 3e^t \\ x' + y' + 2x + 2y = e^t \end{bmatrix}$	system_of_ODEs	✓	0.500
13295	$\begin{bmatrix} 2x' + y' - x - y = -2t \\ x' + y' + x - y = t^2 \end{bmatrix}$	system_of_ODEs	✓	0.494

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
13296	$\begin{bmatrix} 2x' + y' - x - y = 1 \\ x' + y' + 2x - y = t \end{bmatrix}$	system_of_ODEs	✓	0.482
13297	$\begin{bmatrix} x' = 3x + 4y \\ y' = 2x + y \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.460
13298	$\begin{bmatrix} x' = 5x + 3y \\ y' = 4x + y \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.462
13299	$\begin{bmatrix} x' = 5x + 2y + 5t \\ y' = 3x + 4y + 17t \end{bmatrix}$	system_of_ODEs	✓	0.513
13300	$\begin{bmatrix} x' = 5x - 2y \\ y' = 4x - y \end{bmatrix}$	system_of_ODEs	✓	0.316
13301	$\begin{bmatrix} x' = 5x - y \\ y' = 3x + y \end{bmatrix}$	system_of_ODEs	✓	0.329
13302	$\begin{bmatrix} x' = -2x + 7y \\ y' = 3x + 2y \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.512
13303	$\begin{bmatrix} x' = -2x + y \\ y' = 7x + 4y \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.552
13304	$\begin{bmatrix} 1 & 2 \\ 3 & 2 \end{bmatrix}$	Eigenvectors	✓	0.144
13305	$\begin{bmatrix} 3 & 2 \\ 6 & -1 \end{bmatrix}$	Eigenvectors	✓	0.157
13306	$\begin{bmatrix} 3 & 1 \\ 12 & 2 \end{bmatrix}$	Eigenvectors	✓	0.153
13307	$\begin{bmatrix} -2 & 7 \\ 3 & 2 \end{bmatrix}$	Eigenvectors	✓	0.146
13308	$\begin{bmatrix} 3 & 4 \\ 5 & 2 \end{bmatrix}$	Eigenvectors	✓	0.148
13309	$\begin{bmatrix} 3 & -5 \\ -4 & 2 \end{bmatrix}$	Eigenvectors	✓	0.147
13310	$\begin{bmatrix} 1 & 1 & -1 \\ 2 & 3 & -4 \\ 4 & 1 & -4 \end{bmatrix}$	Eigenvectors	✓	0.249

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
13311	$\begin{bmatrix} 1 & -1 & -1 \\ 1 & 3 & 1 \\ -3 & -6 & 6 \end{bmatrix}$	Eigenvectors	✓	0.254
13312	$\begin{bmatrix} 1 & -1 & -1 \\ 1 & 3 & 1 \\ -3 & 1 & -1 \end{bmatrix}$	Eigenvectors	✓	0.269
13313	$\begin{bmatrix} 1 & 1 & 0 \\ 1 & 0 & 1 \\ 0 & 1 & 1 \end{bmatrix}$	Eigenvectors	✓	0.236
13314	$\begin{bmatrix} 1 & 3 & -6 \\ 0 & 2 & 2 \\ 0 & -1 & 5 \end{bmatrix}$	Eigenvectors	✓	0.222
13315	$\begin{bmatrix} -5 & -12 & 6 \\ 1 & 5 & -1 \\ -7 & -10 & 8 \end{bmatrix}$	Eigenvectors	✓	0.252
13316	$\begin{bmatrix} -2 & 5 & 5 \\ -1 & 4 & 5 \\ 3 & -3 & 2 \end{bmatrix}$	Eigenvectors	✓	0.262
13317	$\begin{bmatrix} -2 & 6 & -18 \\ 12 & -23 & 66 \\ 5 & -10 & 29 \end{bmatrix}$	Eigenvectors	✓	0.267
13318	$\begin{bmatrix} x' = x + y - z \\ y' = 2x + 3y - 4z \\ z' = 4x + y - 4z \end{bmatrix}$	system_of_ODEs	✓	0.546
13319	$\begin{bmatrix} x' = x - y - z \\ y' = x + 3y + z \\ z' = -3x - 6y + 6z \end{bmatrix}$	system_of_ODEs	✓	0.515
13320	<i>i.c.</i> $y' - y = e^{3t}$	[[_linear, 'class A']]	✓	0.345
13321	<i>i.c.</i> $y' + y = 2 \sin(t)$	[[_linear, 'class A']]	✓	0.360
13322	<i>i.c.</i> $y'' - 5y' + 6y = 0$	[[_2nd_order, _missing_x]]	✓	0.215
13323	<i>i.c.</i> $y'' + y' - 12y = 0$	[[_2nd_order, _missing_x]]	✓	0.263
13324	<i>i.c.</i> $y'' + 4y = 8$	[[_2nd_order, _missing_x]]	✓	0.319

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
13325	$y'' + 2y' + 5y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	0.325
13326	$y'' - y' - 2y = 18e^{-t} \sin(3t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.442
13327	$y'' + 2y' + y = te^{-2t}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.280
13328	$y'' + 7y' + 10y = 4te^{-3t}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.271
13329	$y'' - 8y' + 15y = 9te^{2t}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.296
13330	$y''' - 5y'' + 7y' - 3y = 20 \sin(t)$ i.c.	[[_3rd_order, _linear, _nonhomogeneous]]	✓	0.377
13331	$y''' - 6y'' + 11y' - 6y = 36te^{4t}$ i.c.	[[_3rd_order, _linear, _nonhomogeneous]]	✓	0.335
13332	$y'' - 3y' + 2y = \begin{cases} 2 & 0 < t < 4 \\ 0 & 4 < t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.561
13333	$y'' + 5y' + 6y = \begin{cases} 6 & 0 < t < 2 \\ 0 & 2 < t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.636
13334	$y'' + 4y' + 5y = \begin{cases} 1 & 0 < t < \frac{\pi}{2} \\ 0 & \frac{\pi}{2} < t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.644
13335	$y'' + 6y' + 8y = \begin{cases} 3 & 0 < t < 2\pi \\ 0 & 2\pi < t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.372
13336	$y'' + 4y = \begin{cases} -4t + 8\pi & 0 < t < 2\pi \\ 0 & 2 < t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.734
13337	$y'' + y = \begin{cases} t & 0 < t < \pi \\ \pi & \pi < t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.584
13338	$tx'' - 2x' + 9t^5x = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)']]]	✓	1.375

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
13339	$t^3 x''' - 3t^2 x'' + 6tx' - 6x = 0$	[[_3rd_order, _with_linear_symmetries]]	✓	0.132
13340	$(t^3 - 2t^2) x'' - (t^3 + 2t^2 - 6t) x' + (3t^2 - 6) x = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.497
13341	$t^3 x''' - (3 + t) t^2 x'' + 2t(3 + t) x' - 2(3 + t) x = 0$	[[_3rd_order, _with_linear_symmetries]]	✗	0.056
13342	$t^2 x'' + 3tx' + 3x = 0$	[[_Emden, _Fowler]]	✓	2.460
13343	$(2t + 1) x'' + t^3 x' + x = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.737
13344	$t^2 x'' + (2t^3 + 7t) x' + (8t^2 + 8) x = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.360
13345	$t^3 x'' - (t^3 + 2t^2 - t) x' + (t^2 + t - 1) x = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.529
13346	$t^3 x'' + 3t^2 x' + x = 0$	[[_Emden, _Fowler]]	✓	0.884
13347	$\sin(t) x'' + \cos(t) x' + 2x = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	1.680
13348	$\frac{(t+1)x''}{t} - \frac{x'}{t^2} + \frac{x}{t^3} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.211
13349	$t^2 x'' + tx' + x = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, ' _with_symmetry_[0,F(x)]']]	✓	1.297
13350	$(t^4 + t^2) x'' + 2t^3 x' + 3x = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.969
13351	$x'' - \tan(t) x' + x = 0$	[_Lienard]	✗	1.205
13352	$f(t) x'' + xg(t) = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.141
13353	$x'' + (t + 1) x = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.583
13354	<i>i.c.</i> $y'' + \lambda y = 0$	[[_2nd_order, _missing_x]]	✓	1.599
13355	<i>i.c.</i> $y'' + \lambda y = 0$	[[_2nd_order, _missing_x]]	✓	1.581

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
13356	$y'' + \lambda y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	1.574
13357	$y'' + \lambda y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	1.729
13358	$y' + xy'' + \frac{\lambda y}{x} = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓	1.559
13359	$y' + xy'' + \frac{\lambda y}{x} = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓	1.572
13360	$2xy' + (x^2 + 1)y'' + \frac{\lambda y}{x^2 + 1} = 0$ i.c.	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓	1.719
13361	$-\frac{6y'x}{(3x^2 + 1)^2} + \frac{y''}{3x^2 + 1} + \lambda(3x^2 + 1)y = 0$ i.c.	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓	2.358
13362	$\begin{cases} x' = x + 3y \\ y' = 3x + y \end{cases}$	system_of_ODEs	✓	0.309
13363	$\begin{cases} x' = 3x + 2y \\ y' = x + 2y \end{cases}$	system_of_ODEs	✓	0.320
13364	$\begin{cases} x' = 3x + 4y \\ y' = 3x + 2y \end{cases}$	system_of_ODEs	✓	0.315
13365	$\begin{cases} x' = 2x + 5y \\ y' = x - 2y \end{cases}$	system_of_ODEs	✓	0.320
13366	$\begin{cases} x' = 2x - 4y \\ y' = 2x - 2y \end{cases}$	system_of_ODEs	✓	0.379

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
13367	$\begin{bmatrix} x' = x - 2y \\ y' = 4x + 5y \end{bmatrix}$	system_of_ODEs	✓	0.479
13368	$\begin{bmatrix} x' = x - y \\ y' = x + 5y \end{bmatrix}$	system_of_ODEs	✓	0.520
13369	$\begin{bmatrix} x' = x + 7y \\ y' = 3x + 5y \end{bmatrix}$	system_of_ODEs	✓	0.323
13370	$\begin{bmatrix} x' = x + y \\ y' = 3x - y \end{bmatrix}$	system_of_ODEs	✓	0.317
13371	$\begin{bmatrix} x' = ax + by \\ y' = cx + dy \end{bmatrix}$	system_of_ODEs	✓	0.687
13372	$\begin{bmatrix} x' = 4x - 4y - x(x^2 + y^2) \\ y' = 4x + 4y - y(x^2 + y^2) \end{bmatrix}$	system_of_ODEs	✗	0.055
13373	$\begin{bmatrix} x' = y + \frac{x(1-x^2-y^2)}{\sqrt{x^2+y^2}} \\ y' = -x + \frac{y(1-x^2-y^2)}{\sqrt{x^2+y^2}} \end{bmatrix}$	system_of_ODEs	✗	0.087
13374	$x'' + x^4 x' - x' + x = 0$	[[_2nd_order, _missing_x]]	✗	0.534
13375	$x'' + x' + x'^3 + x = 0$	[[_2nd_order, _missing_x]]	✗	0.583
13376	$x'' + (x^4 + x^2) x' + x^3 + x = 0$	[[_2nd_order, _missing_x]]	✗	0.615
13377	$x'' + (5x^4 - 6x^2) x' + x^3 = 0$	[[_2nd_order, _missing_x]]	✗	0.552
13378	$x'' + (x^2 + 1) x' + x^3 = 0$	[[_2nd_order, _missing_x]]	✗	0.507
13379	$\begin{bmatrix} x' = x - x^2 \\ y' = 2y - y^2 \end{bmatrix}$	system_of_ODEs	✗	0.052
13380	$x' = \sin(t) + \cos(t)$	[_quadrature]	✓	0.361
13381	$y' = \frac{1}{x^2 - 1}$	[_quadrature]	✓	0.311
13382	$u' = 4t \ln(t)$	[_quadrature]	✓	0.325

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
13383	$z' = x e^{-2x}$	[_quadrature]	✓	0.331
13384	$T' = e^{-t} \sin(2t)$	[_quadrature]	✓	0.428
13385	$x' = \sec(t)^2$ i.c.	[_quadrature]	✓	0.685
13386	$y' = x - \frac{1}{3}x^3$ i.c.	[_quadrature]	✓	0.465
13387	$x' = 2 \sin(t)^2$ i.c.	[_quadrature]	✓	0.671
13388	$xV' = x^2 + 1$ i.c.	[_quadrature]	✓	0.551
13389	$x'e^{3t} + 3xe^{3t} = e^{-t}$ i.c.	[[_linear, 'class A']]	✓	1.619
13390	$x' = -x + 1$	[_quadrature]	✓	0.897
13391	$x' = x(2 - x)$	[_quadrature]	✓	1.869
13392	$x' = (1 + x)(2 - x) \sin(x)$	[_quadrature]	✓	5.399
13393	$x' = -x(-x + 1)(2 - x)$	[_quadrature]	✓	219.470
13394	$x' = x^2 - x^4$	[_quadrature]	✓	1.382
13395	$x' = t^3(-x + 1)$ i.c.	[_separable]	✓	1.454
13396	$y' = (1 + y^2) \tan(x)$ i.c.	[_separable]	✓	3.577
13397	$x' = t^2x$	[_separable]	✓	1.168
13398	$x' = -x^2$	[_quadrature]	✓	0.921
13399	$y' = e^{-t^2}y^2$	[_separable]	✓	1.473
13400	$x' + px = q$	[_quadrature]	✓	0.737
13401	$xy' = ky$	[_separable]	✓	1.349
13402	$i' = p(t)i$	[_separable]	✓	1.086
13403	$x' = \lambda x$	[_quadrature]	✓	0.728
13404	$mv' = -mg + kv^2$	[_quadrature]	✓	0.819

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
13405	$x' = kx - x^2$ i.c.	[_quadrature]	✓	1.750
13406	$x' = -x(k^2 + x^2)$ i.c.	[_quadrature]	✓	11.521
13407	$y' + \frac{y}{x} = x^2$	[_linear]	✓	1.284
13408	$x' + xt = 4t$ i.c.	[_separable]	✓	1.841
13409	$z' = z \tan(y) + \sin(y)$	[_linear]	✓	1.633
13410	$y' + e^{-x}y = 1$ i.c.	[_linear]	✓	1.292
13411	$x' + x \tanh(t) = 3$	[_linear]	✓	1.170
13412	$y' + 2y \cot(x) = 5$ i.c.	[_linear]	✓	1.566
13413	$x' + 5x = t$	[[_linear, 'class A']]	✓	0.993
13414	$x' + \left(a + \frac{1}{t}\right)x = b$ i.c.	[_linear]	✓	1.156
13415	$T' = -k(T - \mu - a \cos(\omega(t - \phi)))$	[[_linear, 'class A']]	✓	1.672
13416	$2xy - \sec(x)^2 + (x^2 + 2y)y' = 0$	[_exact, [_1st_order, '_with_symmetry_[F(x),G(x)]'], [_Abel, '2nd type', 'class A']]	✓	5.230
13417	$1 + ye^x + xe^xy + (xe^x + 2)y' = 0$	[_linear]	✓	1.654
13418	$(x \cos(y) + \cos(x))y' + \sin(y) - y \sin(x) = 0$	[_exact]	✓	28.484
13419	$e^x \sin(y) + y + (e^x \cos(y) + x + e^y)y' = 0$	[_exact]	✓	2.482
13420	$e^{-y} \sec(x) + 2 \cos(x) - e^{-y}y' = 0$	[[_1st_order, '_with_symmetry_[F(x),G(x)]']]	✓	2.984
13421	$V'(x) + 2yy' = 0$	[_separable]	✓	0.622

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
13422	$\left(\frac{1}{y} - a\right) y' + \frac{2}{x} - b = 0$	[_separable]	✓	1.481
13423	$xy + y^2 + x^2 - x^2y' = 0$	[[_homogeneous, 'class A'], _rational, _Riccati]	✓	2.121
13424	$x' = \frac{x^2 + t\sqrt{x^2 + t^2}}{xt}$	[[_homogeneous, 'class A'], _dAlembert]	✓	39.153
13425	$x' = kx - x^2$	[_quadrature]	✓	1.412
13426	<i>i.c.</i> $x'' - 3x' + 2x = 0$	[[_2nd_order, _missing_x]]	✓	1.079
13427	<i>i.c.</i> $y'' - 4y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓	1.155
13428	<i>i.c.</i> $z'' - 4z' + 13z = 0$	[[_2nd_order, _missing_x]]	✓	2.700
13429	<i>i.c.</i> $y'' + y' - 6y = 0$	[[_2nd_order, _missing_x]]	✓	1.420
13430	<i>i.c.</i> $y'' - 4y' = 0$	[[_2nd_order, _missing_x]]	✓	1.381
13431	<i>i.c.</i> $\theta'' + 4\theta = 0$	[[_2nd_order, _missing_x]]	✓	2.660
13432	<i>i.c.</i> $y'' + 2y' + 10y = 0$	[[_2nd_order, _missing_x]]	✓	2.622
13433	<i>i.c.</i> $2z'' + 7z' - 4z = 0$	[[_2nd_order, _missing_x]]	✓	1.415
13434	<i>i.c.</i> $y'' + 2y' + y = 0$	[[_2nd_order, _missing_x]]	✓	1.155
13435	<i>i.c.</i> $x'' + 6x' + 10x = 0$	[[_2nd_order, _missing_x]]	✓	2.117
13436	<i>i.c.</i> $4x'' - 20x' + 21x = 0$	[[_2nd_order, _missing_x]]	✓	1.414
13437	<i>i.c.</i> $y'' + y' - 2y = 0$	[[_2nd_order, _missing_x]]	✓	1.417
13438	<i>i.c.</i> $y'' - 4y = 0$	[[_2nd_order, _missing_x]]	✓	2.583
13439	<i>i.c.</i> $y'' + 4y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓	1.152

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
13440	<i>i.c.</i> $y'' + \omega^2 y = 0$	[[_2nd_order, _missing_x]]	✓	1.864
13441	$x'' - 4x = t^2$	[[_2nd_order, _with_linear_symmetries]]	✓	1.143
13442	$x'' - 4x' = t^2$	[[_2nd_order, _missing_y]]	✓	1.628
13443	$x'' + x' - 2x = 3e^{-t}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.126
13444	$x'' + x' - 2x = e^t$	[[_2nd_order, _with_linear_symmetries]]	✓	1.104
13445	$x'' + 2x' + x = e^{-t}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.010
13446	$x'' + \omega^2 x = \sin(\alpha t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.408
13447	$x'' + \omega^2 x = \sin(\omega t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.799
13448	$x'' + 2x' + 10x = e^{-t}$	[[_2nd_order, _with_linear_symmetries]]	✓	4.024
13449	$x'' + 2x' + 10x = e^{-t} \cos(3t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	18.664
13450	$x'' + 6x' + 10x = e^{-2t} \cos(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	7.251
13451	$x'' + 4x' + 4x = e^{2t}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.060
13452	$x'' + x' - 2x = 12e^{-t} - 6e^t$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.264
13453	$x'' + 4x = 289t e^t \sin(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.762
13454	<i>i.c.</i> $x'' + \omega^2 x = \cos(\alpha t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.395
13455	<i>i.c.</i> $x'' + \omega^2 x = \cos(\omega t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.943
13456	$x''' - 6x'' + 11x' - 6x = e^{-t}$	[[_3rd_order, _with_linear_symmetries]]	✓	0.115
13457	$y''' - 3y'' + 2y = \sin(x)$	[[_3rd_order, _linear, _nonhomogeneous]]	✓	0.139

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
13458	$x'''' - 4x''' + 8x'' - 8x' + 4x = \sin(t)$	[[_high_order, _linear, _nonhomogeneous]]	✓	0.163
13459	$x'''' - 5x''' + 4x = e^t$	[[_high_order, _with_linear_symmetries]]	✓	0.121
13460	$t^2 y'' - (t^2 + 2t) y' + (t + 2) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.335
13461	$(x - 1) y'' - xy' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.336
13462	$(t \cos(t) - \sin(t)) x'' - x' t \sin(t) - x \sin(t) = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.530
13463	$(-t^2 + t) x'' + (-t^2 + 2) x' + (2 - t) x = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.348
13464	$y'' - xy' + y = 0$	[_Hermite]	✓	0.343
13465	$\tan(t) x'' - 3x' + (\tan(t) + 3 \cot(t)) x = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.325
13466	$y'' - y' - 6y = e^x$	[[_2nd_order, _with_linear_symmetries]]	✓	1.090
13467	$x'' - x = \frac{1}{t}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.156
13468	$y'' + 4y = \cot(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	5.386
13469	$t^2 x'' - 2x = t^3$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓	0.981
13470	$x'' - 4x' = \tan(t)$	[[_2nd_order, _missing_y]]	✓	2.629
13471	$(\tan(x)^2 - 1) y'' - 4 \tan(x)^3 y' + 2y \sec(x)^4 = (\tan(x)^2 - 1) (1 - 2 \sin(x)^2)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.627
13472	<i>i.c.</i> $x^2 y'' - 4xy' + 6y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, _with_symmetry_[0,F(x)]]]	✓	1.999

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
13473	$4x^2y'' + y = 0$ i.c.	[[_Emden, _Fowler]]	✓	0.977
13474	$t^2x'' - 5tx' + 10x = 0$ i.c.	[[_Emden, _Fowler]]	✓	4.508
13475	$t^2x'' + tx' - x = 0$ i.c.	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	1.681
13476	$x^2z'' + 3xz' + 4z = 0$ i.c.	[[_Emden, _Fowler]]	✓	4.145
13477	$x^2y'' - xy' - 3y = 0$ i.c.	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	1.991
13478	$4t^2x'' + 8tx' + 5x = 0$ i.c.	[[_Emden, _Fowler]]	✓	3.916
13479	$x^2y'' - 5xy' + 5y = 0$ i.c.	[[_Emden, _Fowler]]	✓	2.117
13480	$3x^2z'' + 5xz' - z = 0$ i.c.	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	1.973
13481	$t^2x'' + 3tx' + 13x = 0$ i.c.	[[_Emden, _Fowler]]	✓	5.130
13482	$ay'' + (b - a)y' + cy = 0$	[[_2nd_order, _missing_x]]	✓	1.740
13483	$(-x^2 + 1)y'' - 2xy' + n(n + 1)y = 0$	[_Gegenbauer]	✓	0.745
13484	$y'' - xy' + y = 0$	[_Hermite]	✓	0.478
13485	$(x^2 + 1)y'' + y = 0$	[[_Emden, _Fowler]]	✓	0.588
13486	$2xy'' + y' - 2y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)']]]	✓	0.813
13487	$y'' - 2xy' - 4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.509
13488	$y'' - 2xy' + 4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.497
13489	$x(1 - x)y'' - 3xy' - y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	1.257
13490	$x^2y'' + xy' - x^2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.674

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
13491	$x^2 y'' + xy' + (x^2 - 1)y = 0$	[_Bessel]	✓	1.202
13492	$x^2 y'' + xy' + (-n^2 + x^2)y = 0$	[_Bessel]	✓	0.806
13493	$\begin{bmatrix} x' = 4x - y \\ y' = 2x + y + t^2 \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.625
13494	$\begin{bmatrix} x' = x - 4y + \cos(2t) \\ y' = x + y \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.835
13495	$\begin{bmatrix} x' = 2x + 2y \\ y' = 6x + 3y + e^t \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.664
13496	$\begin{bmatrix} x' = 5x - 4y + e^{3t} \\ y' = x + y \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.582
13497	$\begin{bmatrix} x' = 2x + 5y \\ y' = -2x + \cos(3t) \end{bmatrix}$ i.c.	system_of_ODEs	✓	1.012
13498	$\begin{bmatrix} x' = x + y + e^{-t} \\ y' = 4x - 2y + e^{2t} \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.661
13499	$\begin{bmatrix} x' = 8x + 14y \\ y' = 7x + y \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.447
13500	$\begin{bmatrix} 2 & 2 \\ 0 & -4 \end{bmatrix}$	Eigenvectors	✓	0.145
13501	$\begin{bmatrix} 7 & -2 \\ 26 & -1 \end{bmatrix}$	Eigenvectors	✓	0.207
13502	$\begin{bmatrix} 9 & 2 \\ 2 & 6 \end{bmatrix}$	Eigenvectors	✓	0.163
13503	$\begin{bmatrix} 7 & 1 \\ -4 & 11 \end{bmatrix}$	Eigenvectors	✓	0.116
13504	$\begin{bmatrix} 2 & -3 \\ 3 & 2 \end{bmatrix}$	Eigenvectors	✓	0.190
13505	$\begin{bmatrix} 6 & 0 \\ 0 & -13 \end{bmatrix}$	Eigenvectors	✓	0.142

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
13506	$\begin{bmatrix} 4 & -2 \\ 1 & 2 \end{bmatrix}$	Eigenvectors	✓	0.184
13507	$\begin{bmatrix} 3 & -1 \\ 1 & 1 \end{bmatrix}$	Eigenvectors	✓	0.102
13508	$\begin{bmatrix} -7 & 6 \\ 12 & -1 \end{bmatrix}$	Eigenvectors	✓	0.146
13509	$\begin{cases} x' = 8x + 14y \\ y' = 7x + y \end{cases}$	system_of_ODEs	✓	0.346
13510	$\begin{cases} x' = 2x \\ y' = -5x - 3y \end{cases}$	system_of_ODEs	✓	0.305
13511	$\begin{cases} x' = 11x - 2y \\ y' = 3x + 4y \end{cases}$	system_of_ODEs	✓	0.385
13512	$\begin{cases} x' = x + 20y \\ y' = 40x - 19y \end{cases}$	system_of_ODEs	✓	0.340
13513	$\begin{cases} x' = -2x + 2y \\ y' = x - y \end{cases}$	system_of_ODEs	✓	0.296
13514	$\begin{cases} x' = -y \\ y' = x - y \end{cases}$	system_of_ODEs	✓	0.617
13515	$\begin{cases} x' = -2x + 3y \\ y' = -6x + 4y \end{cases}$	system_of_ODEs	✓	0.414
13516	$\begin{cases} x' = -11x - 2y \\ y' = 13x - 9y \end{cases}$	system_of_ODEs	✓	0.435
13517	$\begin{cases} x' = 7x - 5y \\ y' = 10x - 3y \end{cases}$	system_of_ODEs	✓	0.411
13518	$\begin{cases} x' = 5x - 4y \\ y' = x + y \end{cases}$	system_of_ODEs	✓	0.288
13519	$\begin{cases} x' = -6x + 2y \\ y' = -2x - 2y \end{cases}$	system_of_ODEs	✓	0.305
13520	$\begin{cases} x' = -3x - y \\ y' = x - 5y \end{cases}$	system_of_ODEs	✓	0.295

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
13521	$\begin{cases} x' = 13x \\ y' = 13y \end{cases}$	system_of_ODEs	✓	0.217
13522	$\begin{cases} x' = 7x - 4y \\ y' = x + 3y \end{cases}$	system_of_ODEs	✓	0.309
13523	$\begin{cases} x' = y - x \\ y' = y - x \end{cases}$	system_of_ODEs	✓	0.243
13524	$\tan(y) - \cot(x) y' = 0$	[_separable]	✓	2.261
13525	$12x + 6y - 9 + (5x + 2y - 3) y' = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	3.335
13526	$xy' = y + \sqrt{y^2 + x^2}$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	7.128
13527	$xy' + y = x^3$	[_linear]	✓	1.300
13528	$y - xy' = x^2 yy'$	[[_homogeneous, 'class G'], _rational, [_Abel, '2nd type', 'class B']]	✓	3.825
13529	$x' + 3x = e^{2t}$	[[_linear, 'class A']]	✓	1.112
13530	$y \sin(x) + y' \cos(x) = 1$	[_linear]	✓	1.933
13531	$y' = e^{x-y}$	[_separable]	✓	1.558
13532	$x' = x + \sin(t)$	[[_linear, 'class A']]	✓	1.326
13533	$x(\ln(x) - \ln(y)) y' - y = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓	6.721
13534	$xyy'^2 - (y^2 + x^2) y' + xy = 0$	[_separable]	✓	4.377
13535	$y'^2 = 9y^4$	[_quadrature]	✓	1.745
13536	$x' = e^{\frac{x}{t}} + \frac{x}{t}$	[[_homogeneous, 'class A'], _dAlembert]	✓	11.203
13537	$x^2 + y'^2 = 1$	[_quadrature]	✓	0.280
13538	$y = xy' + \frac{1}{y}$	[_separable]	✓	4.437

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
13539	$x = y^3 - y' + 2$	[_quadrature]	✓	0.840
13540	$y' = \frac{y}{x + y^3}$	[[_homogeneous, 'class G'], _rational]	✓	5.937
13541	$y = y'^4 - y'^3 - 2$	[_quadrature]	✓	2.208
13542	$y'^2 + y^2 = 4$	[_quadrature]	✓	0.632
13543	$y' = \frac{2y - x - 4}{2x - y + 5}$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	3.577
13544	$y' - \frac{y}{x + 1} + y^2 = 0$	[[_1st_order, _with_linear_symmetries], _rational, _Bernoulli]	✓	1.627
13545	<i>i.c.</i> $y' = x + y^2$	[[_Riccati, _special]]	✓	15.441
13546	<i>i.c.</i> $y' = xy^3 + x^2$	[_Abel]	✗	0.838
13547	$y' = x^2 - y^2$	[_Riccati]	✓	1.068
13548	$2x + 2y - 1 + (x + y - 2)y' = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	1.349
13549	$y'^3 - y'e^{2x} = 0$	[_quadrature]	✓	0.655
13550	$y = 5xy' - y'^2$	[[_1st_order, _with_linear_symmetries], _dAlembert]	✓	0.471
13551	<i>i.c.</i> $y' = x - y^2$	[[_Riccati, _special]]	✓	17.834
13552	$y' = (x - 5y)^{1/3} + 2$	[[_homogeneous, 'class C'], _dAlembert]	✓	1.924
13553	$(x - y)y - x^2y' = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓	1.823
13554	<i>i.c.</i> $x' + 5x = 10t + 2$	[[_linear, 'class A']]	✓	1.459

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
13555	$x' = \frac{x}{t} + \frac{x^2}{t^3}$ i.c.	[[_homogeneous, 'class D', _rational, _Bernoulli]	✓	2.136
13556	$y = xy' + y^2$ i.c.	[[_1st_order, _with_linear_symmetries], _Clairaut]	✓	0.530
13557	$y = xy' + y^2$ i.c.	[[_1st_order, _with_linear_symmetries], _Clairaut]	✓	0.431
13558	$y' = \frac{3x - 4y - 2}{3x - 4y - 3}$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓	1.365
13559	$x' - x \cot(t) = 4 \sin(t)$	[_linear]	✓	1.793
13560	$y = x^2 + 2xy' + \frac{y'^2}{2}$	[[_homogeneous, 'class G']]	✓	10.630
13561	$y' - \frac{3y}{x} + x^3y^2 = 0$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓	1.694
13562	$y(1 + y'^2) = a$	[_quadrature]	✓	0.507
13563	$x^2 - y + (y^2x^2 + x)y' = 0$	[_rational]	✓	1.196
13564	$3y^2 - x + 2y(y^2 - 3x)y' = 0$	[[_homogeneous, 'class G', _rational]	✓	4.486
13565	$(x - y)y - x^2y' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓	1.837
13566	$y' = \frac{x + y - 3}{y - x + 1}$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓	2.596
13567	$xy' - y^2 \ln(x) + y = 0$	[_Bernoulli]	✓	1.993
13568	$(x^2 - 1)y' + 2xy - \cos(x) = 0$	[_linear]	✓	2.530
13569	$(4y + 2x + 3)y' - 2y - x - 1 = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓	1.379

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
13570	$(y^2 - x)y' - y + x^2 = 0$	[_exact, _rational]	✓	1.145
13571	$(y^2 - x^2)y' + 2xy = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	4.523
13572	$3xy^2y' + y^3 - 2x = 0$	[[_homogeneous, 'class G'], _exact, _rational, _Bernoulli]	✓	2.358
13573	$y'^2 + (x + a)y' - y = 0$	[[_1st_order, _with_linear_symmetries], _Clairaut]	✓	0.502
13574	$y'^2 - 2xy' + y = 0$	[[_1st_order, _with_linear_symmetries], _dAlembert]	✓	0.383
13575	$y'^2 + 2yy' \cot(x) - y^2 = 0$	[_separable]	✓	1.126
13576	<i>i.c.</i> $y'' - 6y' + 10y = 100$	[[_2nd_order, _missing_x]]	✓	2.359
13577	$x'' + x = \sin(t) - \cos(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	2.945
13578	$y' + y''' - 3y'' = 0$	[[_3rd_order, _missing_x]]	✓	0.067
13579	$y'' + y = \frac{1}{\sin(x)^3}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.921
13580	$x^2y'' - 4xy' + 6y = 2$	[[_2nd_order, _with_linear_symmetries]]	✓	1.602
13581	$y'' + y = \cosh(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	2.398
13582	$y'' + \frac{2y'^2}{1-y} = 0$	[[_2nd_order, _missing_x], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓	0.207
13583	$x'' - 4x' + 4x = e^t + e^{2t} + 1$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.151

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
13584	$(x^2 + 1)y'' + y'^2 + 1 = 0$	[[_2nd_order, _missing_y], [_2nd_order, _reducible, _mu_y_y1]]	✓	0.738
13585	$x^3x'' + 1 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓	1.157
13586	$y'''' - 16y = x^2 - e^x$	[[_high_order, _linear, _nonhomogeneous]]	✓	0.133
13587	$y'''^2 + y''^2 = 1$	[[_3rd_order, _missing_x], [_3rd_order, _missing_y], [_3rd_order, _with_linear_symmetries], [_3rd_order, _reducible, _mu_y2]]	✗	0.570
13588	$x^{(6)} - x'''' = 1$	[[_high_order, _missing_x]]	✓	0.115
13589	$x'''' - 2x'' + x = t^2 - 3$	[[_high_order, _with_linear_symmetries]]	✓	0.122
13590	$y'' + 4xy = 0$	[[_Emden, _Fowler]]	✓	0.467
13591	$x^2y'' + xy' + \left(9x^2 - \frac{1}{25}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	2.119
13592	i.c. $y'' + y'^2 = 1$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_xy]]	✓	0.224
13593	i.c. $y'' = 3\sqrt{y}$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓	3.263
13594	$y'' + y = 1 - \frac{1}{\sin(x)}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.000
13595	$u'' + \frac{2u'}{r} = 0$	[[_2nd_order, _missing_y]]	✓	0.682

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
13596	$yy'' + y'^2 = \frac{yy'}{\sqrt{x^2 + 1}}$	[_Liouville, [_2nd_order, _with_linear_symmetries], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓	0.381
13597	$yy'y'' = y'^3 + y''^2$	[[_2nd_order, _missing_x]]	✓	1.553
13598	$x'' + 9x = t \sin(3t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	4.888
13599	$y'' + 2y' + y = \sinh(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	2.504
13600	$y''' - y = e^x$	[[_3rd_order, _with_linear_symmetries]]	✓	0.120
13601	$y'' - 2y' + 2y = x e^x \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	6.674
13602	$(x^2 - 1)y'' - 6y = 1$	[[_2nd_order, _with_linear_symmetries]]	✓	1.240
13603	$mx'' = f(x)$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓	1.205
13604	$mx'' = f(x')$	[[_2nd_order, _missing_x]]	✓	0.609
13605	$y^{(6)} - 3y^{(5)} + 3y'''' - y''' = x$	[[_high_order, _missing_y]]	✓	0.131
13606	$x'''' + 2x'' + x = \cos(t)$	[[_high_order, _linear, _nonhomogeneous]]	✓	1.037
13607	$(x + 1)^2 y'' + (x + 1)y' + y = 2 \cos(\ln(x + 1))$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	5.561
13608	$x^3 y'' - xy' + y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, ' _with_symmetry_[0,F(x)]']]	✓	0.334
13609	$x'''' + x = t^3$	[[_high_order, _linear, _nonhomogeneous]]	✓	0.131

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
13610	$y''^3 + y'' + 1 = x$	[[_2nd_order, _quadrature]]	✓	1.520
13611	$x'' + 10x' + 25x = 2^t + t e^{-5t}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.490
13612	$xyy'' - xy'^2 - yy' = 0$	[_Liouville, [_2nd_order, _with_linear_symmetries], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓	0.268
13613	$y^{(6)} - y = e^{2x}$	[[_high_order, _with_linear_symmetries]]	✓	0.163
13614	$y^{(6)} + 2y'''' + y'' = x + e^x$	[[_high_order, _missing_y]]	✓	0.158
13615	$6y''y'''' - 5y''''^2 = 0$	[[_high_order, _missing_x], [_high_order, _missing_y], [_high_order, _with_linear_symmetries], [_high_order, _reducible, _mu_poly_yn]]	✓	0.319
13616	$xy'' = y' \ln\left(\frac{y'}{x}\right)$	[[_2nd_order, _missing_y]]	✓	0.596
13617	$y'' + y = \sin(3x) \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	2.368
13618	<i>i.c.</i> $y'' = 2y^3$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓	1.349
13619	$yy'' - y'^2 = y'$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓	0.273
13620	<i>i.c.</i> $\begin{bmatrix} x' = y \\ y' = -x \end{bmatrix}$	system_of_ODEs	✓	0.396

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
13621	$\begin{bmatrix} x' + 5x + y = e^t \\ y' - x - 3y = e^{2t} \end{bmatrix}$	system_of_ODEs	✓	0.885
13622	$\begin{bmatrix} x' = y \\ y' = z \\ z' = x \end{bmatrix}$	system_of_ODEs	✓	0.844
13623	$\begin{bmatrix} x' = y \\ y' = \frac{y^2}{x} \end{bmatrix}$	system_of_ODEs	✗	0.049
13624	$y' = y e^{x+y}(x^2 + 1)$	[_separable]	✓	1.539
13625	$x^2 y' = 1 + y^2$	[_separable]	✓	1.808
13626	$y' = \sin(xy)$	['y=_G(x,y)']	✗	1.415
13627	$x(e^y + 4) = e^{x+y} y'$	[_separable]	✓	2.281
13628	$y' = \cos(x + y)$	[[_homogeneous, 'class C'], _dAlembert]	✓	2.435
13629	$xy' + y = xy^2$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓	1.273
13630	$y' = t \ln(y^{2t}) + t^2$	['y=_G(x,y)']	✗	1.846
13631	$y' = x e^{y^2-x}$	[_separable]	✓	1.263
13632	$y' = \ln(xy)$	['y=_G(x,y)']	✗	0.700
13633	$x(1 + y)^2 = (x^2 + 1) y e^y y'$	[_separable]	✓	2.386
13634	$y'' + x^2 y = 0$	[[_Emden, _Fowler]]	✓	0.881
13635	$y''' + xy = \sin(x)$	[[_3rd_order, _linear, _nonhomogeneous]]	✗	0.048
13636	$y'' + yy' = 1$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✗	5.481
13637	$y^{(5)} - y'''' + y' = 2x^2 + 3$	[[_high_order, _missing_y]]	✓	0.155

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
13638	$y'' + yy'''' = 1$	[[_high_order, _missing_x], [_high_order, _with_linear_symmetries]]	✗	0.046
13639	$y''' + xy = \cosh(x)$	[[_3rd_order, _linear, _nonhomogeneous]]	✗	0.047
13640	$y' \cos(x) + y e^{x^2} = \sinh(x)$	[_linear]	✓	39.327
13641	$y''' + xy = \cosh(x)$	[[_3rd_order, _linear, _nonhomogeneous]]	✗	0.048
13642	$yy' = 1$	[_quadrature]	✓	1.300
13643	$\sinh(x) y'^2 + 3y = 0$	['y=_G(x,y)']	✓	1.551
13644	$5y' - xy = 0$	[_separable]	✓	1.199
13645	$y'^2 \sqrt{y} = \sin(x)$	[[_1st_order, _with_symmetry_[F(x),G(x)*y+H(x)]]]	✓	2.325
13646	$2y'' + 3y' + 4x^2y = 1$	[[_2nd_order, _linear, _nonhomogeneous]]	✗	0.555
13647	$y''' = 1$	[[_3rd_order, _quadrature]]	✓	0.095
13648	$x^2y'' - y = \sin(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	5.495
13649	$y'' = y + x^2$	[[_2nd_order, _with_linear_symmetries]]	✓	1.020
13650	$y''' + xy'' - y^2 = \sin(x)$	[NONE]	✗	0.052
13651	$y'^2 + xyy'^2 = \ln(x)$	['y=_G(x,y)']	✓	6.103
13652	$\sin(y'') + yy'''' = 1$	[[_high_order, _missing_x], [_high_order, _with_linear_symmetries]]	✗	0.051
13653	$\sinh(x) y'^2 + y'' = xy$	[NONE]	✗	0.133
13654	$yy'' = 1$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓	0.481

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
13655	$y'''^2 + \sqrt{y} = \sin(x)$	[NONE]	✗	0.023
13656	$y'' + 4y' + y = 0$	[[_2nd_order, _missing_x]]	✓	1.114
13657	$y''' - 5y'' + y' - y = 0$	[[_3rd_order, _missing_x]]	✓	0.114
13658	$2y'' - 3y' - 2y = 0$	[[_2nd_order, _missing_x]]	✓	0.831
13659	$3y''' - 2y'' + y' = 0$	[[_high_order, _missing_x]]	✓	0.077
13660	<i>i.c.</i> $(x - 3)y'' + y \ln(x) = x^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✗	0.208
13661	<i>i.c.</i> $y'' + \tan(x)y' + y \cot(x) = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	2.148
13662	<i>i.c.</i> $(x^2 + 1)y'' + (x - 1)y' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	1.066
13663	<i>i.c.</i> $xy'' + 2x^2y' + y \sin(x) = \sinh(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✗	0.546
13664	<i>i.c.</i> $\sin(x)y'' + xy' + 7y = 1$	[[_2nd_order, _with_linear_symmetries]]	✗	1.013
13665	<i>i.c.</i> $y'' - (x - 1)y' + x^2y = \tan(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✗	0.775
13666	$(x - 1)y'' - xy' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.281
13667	$x^2y'' - 4x^2y' + (x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.625
13668	$y'' + \frac{kx}{y^4} = 0$	[[_Emden, _Fowler], [_2nd_order, _with_linear_symmetries]]	✗	0.127
13669	$y'' + 2xy' + 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	1.030
13670	$xy'' + \sin(x)y' + y \cos(x) = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	1.854
13671	$y'' + 2x^2y' + 4xy = 2x$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓	1.591

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
13672	$(-x^2+1)y'' + (1-x)y' + y = -2x+1$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓	1.905
13673	$y'' + 4xy' + (4x^2 + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.701
13674	$x^2y'' + x^2y' + 2(1-x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.606
13675	$y'' + x^2y' + 2xy = 2x$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓	1.529
13676	$\ln(x^2+1)y'' + \frac{4xy'}{x^2+1} + \frac{(-x^2+1)y}{(x^2+1)^2} = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.643
13677	$xy'' + x^2y' + 2xy = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	1.468
13678	$y'' + \sin(x)y' + y \cos(x) = \cos(x)$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓	1.231
13679	$y'' + \cot(x)y' - \csc(x)^2 y = \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	7.352
13680	$x \ln(x)y'' + 2y' - \frac{y}{x} = 1$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓	1.162
13681	$xy'' + (6xy^2 + 1)y' + 2y^3 + 1 = 0$	[[_2nd_order, _exact, _nonlinear], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_y_y1], [_2nd_order, _reducible, _mu_xy]]	✗	1.128
13682	$\frac{xy''}{1+y} + \frac{yy' - xy'^2 + y'}{(1+y)^2} = x \sin(x)$	[[_2nd_order, _exact, _nonlinear], [_2nd_order, _with_linear_symmetries], [_2nd_order, _reducible, _mu_xy]]	✓	1.451

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Table 2.2 Main lookup table. Sorted sequentially by problem number.


















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#	ODE	CAS classification	Solved?	time (sec)
13683	$(x \cos(y) + \sin(x))y'' - xy'^2 \sin(y) + 2(\cos(y) + \cos(x))y' = y \sin(x)$	[[_2nd_order, _exact, _nonlinear], [_2nd_order, _reducible, _mu_xy]]	✓	79.734
13684	$yy'' \sin(x) + (\sin(x)y' + y \cos(x))y' = \cos(x)$	[[_2nd_order, _exact, _nonlinear], [_2nd_order, _reducible, _mu_y_y1], [_2nd_order, _reducible, _mu_xy]]	✓	0.661
13685	$(1 - y)y'' - y'^2 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓	0.546
13686	$(\cos(y) - y \sin(y))y'' - y'^2(2 \sin(y) + y \cos(y)) = \sin(x)$	[[_2nd_order, _exact, _nonlinear], [_2nd_order, _reducible, _mu_y_y1], [_2nd_order, _reducible, _mu_xy]]	✓	0.974
13687	$y'' + \frac{2xy'}{2x-1} - \frac{4xy}{(2x-1)^2} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.922
13688	$(x^2 + 2x)y'' + (x^2 + x + 10)y' = (25 - 6x)y$	[[_2nd_order, _with_linear_symmetries]]	✓	3.451
13689	$y'' + \frac{y'}{x+1} - \frac{(x+2)y}{x^2(x+1)} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.285
13690	$(x^2 - x)y'' + (2x^2 + 4x - 3)y' + 8xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.351
13691	$\frac{(x^2 - x)y''}{x} + \frac{(3x + 1)y'}{x} + \frac{y}{x} = 3x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.433
13692	$(2 \sin(x) - \cos(x))y'' + (7 \sin(x) + 4 \cos(x))y' + 10y \cos(x) = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	9.389

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
13693	$y'' + \frac{(x-1)y'}{x} + \frac{y}{x^3} = \frac{e^{-\frac{1}{x}}}{x^3}$	[[_2nd_order, _linear, _nonhomogeneous]]		0.327
13694	$y'' + (2x+5)y' + (4x+8)y = e^{-2x}$	[[_2nd_order, _linear, _nonhomogeneous]]		1.754
13695	<i>i.c.</i> $y'' + 9y = 0$	[[_2nd_order, _missing_x]]		0.294
13696	<i>i.c.</i> $4y'' - 4y' + 5y = 0$	[[_2nd_order, _missing_x]]		0.311
13697	<i>i.c.</i> $y'' + 2y' + y = 0$	[[_2nd_order, _missing_x]]		0.234
13698	<i>i.c.</i> $y'' - 4y' + 5y = 0$	[[_2nd_order, _missing_x]]		0.289
13699	<i>i.c.</i> $y'' - y' - 6y = 0$	[[_2nd_order, _missing_x]]		0.247
13700	<i>i.c.</i> $4y'' - 4y' + 37y = 0$	[[_2nd_order, _missing_x]]		0.340
13701	<i>i.c.</i> $y'' + 3y' + 2y = 0$	[[_2nd_order, _missing_x]]		0.255
13702	<i>i.c.</i> $y'' + 2y' + 5y = 0$	[[_2nd_order, _missing_x]]		0.291
13703	<i>i.c.</i> $4y'' - 12y' + 13y = 0$	[[_2nd_order, _missing_x]]		0.289
13704	<i>i.c.</i> $y'' + 4y' + 13y = 0$	[[_2nd_order, _missing_x]]		0.331
13705	<i>i.c.</i> $y'' + 6y' + 9y = 0$	[[_2nd_order, _missing_x]]		0.224
13706	<i>i.c.</i> $y'''' + y = 0$	[[_high_order, _missing_x]]		0.646
13707	<i>i.c.</i> $y'' - 2y' + 5y = 0$	[[_2nd_order, _missing_x]]		0.297
13708	<i>i.c.</i> $y'' - 20y' + 51y = 0$	[[_2nd_order, _missing_x]]		0.260
13709	<i>i.c.</i> $2y'' + 3y' + y = 0$	[[_2nd_order, _missing_x]]		0.270

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
13710	<i>i.c.</i> $3y'' + 8y' - 3y = 0$	[[_2nd_order, _missing_x]]	✓	0.306
13711	<i>i.c.</i> $2y'' + 20y' + 51y = 0$	[[_2nd_order, _missing_x]]	✓	0.330
13712	<i>i.c.</i> $4y'' + 40y' + 101y = 0$	[[_2nd_order, _missing_x]]	✓	0.282
13713	<i>i.c.</i> $y'' + 6y' + 34y = 0$	[[_2nd_order, _missing_x]]	✓	0.332
13714	<i>i.c.</i> $y''' + 8y'' + 16y' = 0$	[[_3rd_order, _missing_x]]	✓	0.277
13715	<i>i.c.</i> $y''' + 6y'' + 13y' = 0$	[[_3rd_order, _missing_x]]	✓	0.404
13716	<i>i.c.</i> $y''' - 6y'' + 13y' = 0$	[[_3rd_order, _missing_x]]	✓	0.354
13717	<i>i.c.</i> $y''' + 4y'' + 29y' = 0$	[[_3rd_order, _missing_x]]	✓	0.368
13718	<i>i.c.</i> $y''' + 6y'' + 25y' = 0$	[[_3rd_order, _missing_x]]	✓	0.349
13719	<i>i.c.</i> $y''' - 6y'' + 10y' = 0$	[[_3rd_order, _missing_x]]	✓	0.363
13720	<i>i.c.</i> $y'''' + 13y'' + 36y = 0$	[[_high_order, _missing_x]]	✓	0.493
13721	<i>i.c.</i> $y'' + 2y' + 3y = 9t$	[[_2nd_order, _with_linear_symmetries]]	✓	0.355
13722	<i>i.c.</i> $4y'' + 16y' + 17y = 17t - 1$	[[_2nd_order, _with_linear_symmetries]]	✓	0.315
13723	<i>i.c.</i> $4y'' + 5y' + 4y = 3e^{-t}$	[[_2nd_order, _with_linear_symmetries]]	✓	0.516
13724	<i>i.c.</i> $y'' - 4y' + 4y = t^2e^{2t}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.272
13725	<i>i.c.</i> $y'' + 9y = e^{-2t}$	[[_2nd_order, _with_linear_symmetries]]	✓	0.368
13726	<i>i.c.</i> $2y'' - 3y' + 17y = 17t - 1$	[[_2nd_order, _with_linear_symmetries]]	✓	0.563

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
13727	$y'' + 2y' + y = e^{-t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	0.258
13728	$y'' - 2y' + 5y = t + 2$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	0.370
13729	$2y' + y = e^{-\frac{t}{2}}$ i.c.	[[_linear, 'class A']]	✓	0.317
13730	$y'' + 8y' + 20y = \sin(2t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.426
13731	$4y'' - 4y' + y = t^2$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	0.297
13732	$2y'' + y' - y = 4 \sin(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.417
13733	$y' - y = e^{2t}$ i.c.	[[_linear, 'class A']]	✓	0.278
13734	$3y'' + 5y' - 2y = 7e^{-2t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	0.276
13735	$y' + y = \text{Heaviside}(t) - \text{Heaviside}(t - 2)$ i.c.	[[_linear, 'class A']]	✓	0.398
13736	$y' - 2y = 4t(\text{Heaviside}(t) - \text{Heaviside}(t - 2))$ i.c.	[[_linear, 'class A']]	✓	0.719
13737	$y'' + 9y = 24 \sin(t) (\text{Heaviside}(t) + \text{Heaviside}(t - \pi))$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.514
13738	$y'' + 2y' + y = \text{Heaviside}(t) - \text{Heaviside}(t - 1)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.670
13739	$y'' + 2y' + 2y = 5 \cos(t) \left( \text{Heaviside}(t) - \text{Heaviside}\left(t - \frac{\pi}{2}\right) \right)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.489
13740	$y'' + 5y' + 6y = 36t(\text{Heaviside}(t) - \text{Heaviside}(t - 1))$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.773

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
13741	$y'' + 4y' + 13y = 39 \operatorname{Heaviside}(t) - 507(t - 2) \operatorname{Heaviside}(t - 2)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.308
13742	$y'' + 4y = 3 \operatorname{Heaviside}(t) - 3 \operatorname{Heaviside}(-4+t) + (2t - 5) \operatorname{Heaviside}(-4+t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.611
13743	$4y'' + 4y' + 5y = 25t \left( \operatorname{Heaviside}(t) - \operatorname{Heaviside}\left(t - \frac{\pi}{2}\right) \right)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	2.940
13744	$y'' + 4y' + 3y = \operatorname{Heaviside}(t) - \operatorname{Heaviside}(t - 1) + \operatorname{Heaviside}(t - 2) - \operatorname{Heaviside}(t - 3)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.144
13745	$y'' - 2y' = \begin{cases} 4 & 0 \leq t < 1 \\ 6 & 1 \leq t \end{cases}$ i.c.	[[_2nd_order, _missing_y]]	✓	0.634
13746	$y'' - 3y' + 2y = \begin{cases} 0 & 0 \leq t < 1 \\ 1 & 1 \leq t < 2 \\ -1 & 2 \leq t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.770
13747	$y'' + 3y' + 2y = \begin{cases} 1 & 0 \leq t < 2 \\ -1 & 2 \leq t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.639
13748	$y'' + y = \begin{cases} t & 0 \leq t < \pi \\ -t & \pi \leq t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.687
13749	$y'' + 4y = \begin{cases} 8t & 0 \leq t < \frac{\pi}{2} \\ 8\pi & \frac{\pi}{2} \leq t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.357
13750	$y'' + 4\pi^2 y = 3\delta\left(t - \frac{1}{3}\right) - \delta(t - 1)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.725

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
13751	$y'' + 2y' + 2y = 3\delta(t - 1)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.523
13752	$y'' + 4y' + 29y = 5\delta(t - \pi) - 5\delta(t - 2\pi)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.156
13753	$y'' + 3y' + 2y = 1 - \delta(t - 1)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.506
13754	$4y'' + 4y' + y = e^{-\frac{t}{2}}\delta(t - 1)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.351
13755	$y'' - 7y' + 6y = \delta(t - 1)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.369
13756	$10Q' + 100Q = \text{Heaviside}(t - 1) - \text{Heaviside}(t - 2)$ i.c.	[[_linear, 'class A']]	✓	0.595
13757	$y''' + y'' + 4y' + 4y = 8$ i.c.	[[_3rd_order, _missing_x]]	✓	0.426
13758	$y''' - 2y'' - y' + 2y = 4t$ i.c.	[[_3rd_order, _with_linear_symmetries]]	✓	0.348
13759	$y''' - y'' + 4y' - 4y = 8e^{2t} - 5e^t$ i.c.	[[_3rd_order, _linear, _nonhomogeneous]]	✓	0.375
13760	$y''' - 5y'' + y' - y = -t^2 + 2t - 10$ i.c.	[[_3rd_order, _with_linear_symmetries]]	✗	1.844
13761	$y'''' - 5y'' + 4y = 12 \text{Heaviside}(t) - 12 \text{Heaviside}(t - 1)$ i.c.	[[_high_order, _linear, _nonhomogeneous]]	✓	9.901
13762	$y'''' - 16y = 32 \text{Heaviside}(t) - 32 \text{Heaviside}(t - \pi)$ i.c.	[[_high_order, _linear, _nonhomogeneous]]	✓	5.250
13763	$t^2y'' + 3ty' + y = t^7$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓	1.805
13764	$t^2y'' - 6ty' + \sin(2t)y = \ln(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✗	476.443
13765	$y'' + 3y' + \frac{y}{t} = t$	[[_2nd_order, _linear, _nonhomogeneous]]	✗	0.512

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
13766	$y'' + ty' - y \ln(t) = \cos(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✗	0.258
13767	$t^3y'' - 2ty' + y = t^4$	[[_2nd_order, _linear, _nonhomogeneous]]	✗	0.532
13768	$y'' + 2y' + y = 1$	[[_2nd_order, _missing_x]]	✓	0.957
13769	$y'' - 2y' + 5y = e^t$	[[_2nd_order, _with_linear_symmetries]]	✓	4.653
13770	$y'' - 3y' - 7y = 4$	[[_2nd_order, _missing_x]]	✓	1.588
13771	$y''' + 3y'' + 3y' + y = 5$	[[_3rd_order, _missing_x]]	✓	0.099
13772	$3y'' + 5y' - 2y = 3t^2$	[[_2nd_order, _with_linear_symmetries]]	✓	1.380
13773	$y''' = 2y'' - 4y' + \sin(t)$	[[_3rd_order, _missing_y]]	✓	0.141
13774	$\begin{bmatrix} x' = x - 2y \\ y' = 3x - 4y \end{bmatrix}$	system_of_ODEs	✓	0.333
13775	$\begin{bmatrix} x' = \frac{5x}{4} + \frac{3y}{4} \\ y' = \frac{x}{2} - \frac{3y}{2} \end{bmatrix}$	system_of_ODEs	✓	0.530
13776	$\begin{bmatrix} x' - x + 2y = 0 \\ y' + y - x = 0 \end{bmatrix}$	system_of_ODEs	✓	0.368
13777	$\begin{bmatrix} x' + 5x - 2y = 0 \\ 2x + y' - y = 0 \end{bmatrix}$	system_of_ODEs	✓	0.525
13778	$\begin{bmatrix} x' - 3x + 2y = 0 \\ y' - x + 3y = 0 \end{bmatrix}$	system_of_ODEs	✓	0.491
13779	$\begin{bmatrix} x' + x - z = 0 \\ x + y' - y = 0 \\ z' + x + 2y - 3z = 0 \end{bmatrix}$	system_of_ODEs	✓	0.349
13780	$\begin{bmatrix} x' = -\frac{x}{2} + 2y - 3z \\ y' = y - \frac{z}{2} \\ z' = -2x + z \end{bmatrix}$	system_of_ODEs	✓	0.889

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
13781	$\begin{bmatrix} x' + y' = y \\ x' - y' = x \end{bmatrix}$	system_of_ODEs	✓	0.353
13782	$\begin{bmatrix} x' + 2y' = t \\ x' - y' = x + y \end{bmatrix}$	system_of_ODEs	✓	0.459
13783	$\begin{bmatrix} x' - y' = x + y - t \\ 2x' + 3y' = 2x + 6 \end{bmatrix}$	system_of_ODEs	✓	0.490
13784	$\begin{bmatrix} 2x' - y' = t \\ 3x' + 2y' = y \end{bmatrix}$	system_of_ODEs	✓	0.375
13785	$\begin{bmatrix} 5x' - 3y' = x + y \\ 3x' - y' = t \end{bmatrix}$	system_of_ODEs	✓	0.469
13786	$\begin{bmatrix} x' - 4y' = 0 \\ 2x' - 3y' = y + t \end{bmatrix}$	system_of_ODEs	✓	0.361
13787	$\begin{bmatrix} 3x' + 2y' = \sin(t) \\ x' - 2y' = x + y + t \end{bmatrix}$	system_of_ODEs	✓	0.631
13788	$\begin{bmatrix} x' = -4x + 9y + 12e^{-t} \\ y' = -5x + 2y \end{bmatrix}$	system_of_ODEs	✓	0.661
13789	$\begin{bmatrix} x' = -7x + 6y + 6e^{-t} \\ y' = -12x + 5y + 37 \end{bmatrix}$	system_of_ODEs	✓	0.743
13790	$\begin{bmatrix} x' = -7x + 10y + 18e^t \\ y' = -10x + 9y + 37 \end{bmatrix}$	system_of_ODEs	✓	1.002
13791	$\begin{bmatrix} x' = -14x + 39y + 78 \sinh(t) \\ y' = -6x + 16y + 6 \cosh(t) \end{bmatrix}$	system_of_ODEs	✓	1.223
13792	$\begin{bmatrix} x' = 2x + 4y - 2z - 2 \sinh(t) \\ y' = 4x + 2y - 2z + 10 \cosh(t) \\ z' = -x + 3y + z + 5 \end{bmatrix}$	system_of_ODEs	✓	2.034
13793	$\begin{bmatrix} x' = 2x + 6y - 2z + 50e^t \\ y' = 6x + 2y - 2z + 21e^{-t} \\ z' = -x + 6y + z + 9 \end{bmatrix}$	system_of_ODEs	✓	0.918

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
13794	$\begin{bmatrix} x' = -2x - 2y + 4z \\ y' = -2x + y + 2z \\ z' = -4x - 2y + 6z + e^{2t} \end{bmatrix}$	system_of_ODEs	✓	0.622
13795	$\begin{bmatrix} x' = 3x - 2y + 3z \\ y' = x - y + 2z + 2e^{-t} \\ z' = -2x + 2y - 2z \end{bmatrix}$	system_of_ODEs	✓	0.835
13796	$\begin{bmatrix} x' = 7x + y - 1 - 6e^t \\ y' = -4x + 3y + 4e^t - 3 \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.617
13797	$\begin{bmatrix} x' = 3x - 2y + 24 \sin(t) \\ y' = 9x - 3y + 12 \cos(t) \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.922
13798	$\begin{bmatrix} x' = 7x - 4y + 10e^t \\ y' = 3x + 14y + 6e^{2t} \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.635
13799	$\begin{bmatrix} x' = -7x + 4y + 6e^{3t} \\ y' = -5x + 2y + 6e^{2t} \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.638
13800	$\begin{bmatrix} x' = -3x - 3y + z \\ y' = 2y + 2z + 29e^{-t} \\ z' = 5x + y + z + 39e^t \end{bmatrix}$ i.c.	system_of_ODEs	✓	25.812
13801	$\begin{bmatrix} x' = 2x + y - z + 5 \sin(t) \\ y' = y + z - 10 \cos(t) \\ z' = x + z + 2 \end{bmatrix}$ i.c.	system_of_ODEs	✓	1.529
13802	$\begin{bmatrix} x' = -3x + 3y + z + 5 \sin(2t) \\ y' = x - 5y - 3z + 5 \cos(2t) \\ z' = -3x + 7y + 3z + 23e^t \end{bmatrix}$ i.c.	system_of_ODEs	✓	2.445
13803	$\begin{bmatrix} x' = -3x + y - 3z + 2e^t \\ y' = 4x - y + 2z + 4e^t \\ z' = 4x - 2y + 3z + 4e^t \end{bmatrix}$ i.c.	system_of_ODEs	✓	1.485

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
13804	$\begin{bmatrix} x' = x + 5y + 10 \sinh(t) \\ y' = 19x - 13y + 24 \sinh(t) \end{bmatrix}$	system_of_ODEs	✓	1.328
13805	$\begin{bmatrix} x' = 9x - 3y - 6t \\ y' = -x + 11y + 10t \end{bmatrix}$	system_of_ODEs	✓	0.506
13806	$(x - 1)y'' - xy' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.336
13807	$xy'' + 2y' + xy = 0$	[_Lienard]	✓	0.391
13808	$y'' - 2y' + y = x^{3/2}e^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.137
13809	$y'' + 4y = 2 \sec(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.328
13810	$y'' + \frac{y'}{x} + \left(1 - \frac{1}{4x^2}\right)y = x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	9.547
13811	<i>i.c.</i> $y'' + y = f(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.905
13812	$x^2y'' + x\left(-\frac{1}{2} + x\right)y' + \frac{y}{2} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.026
13813	$x^2y'' + x(x + 1)y' - y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.846
13814	$x(1 - x)y'' + (1 - 5x)y' - 4y = 0$	[_Jacobi]	✓	0.768
13815	$(x^2 - 1)^2y'' + (x + 1)y' - y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.669
13816	$xy'' + 4y' - xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.754
13817	$2xy'' + (x + 1)y' - ky = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.993
13818	$x^3y'' + x^2y' + y = 0$	[[_Emden, _Fowler]]	✗	0.118
13819	$x^2y'' + y' - 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✗	0.171
13820	$2x^2y'' + x(1 - x)y' - y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.919
13821	$x(x - 1)y'' + 3xy' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	1.229

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
13822	$y'' - x^2y = 0$	[[_Emden, _Fowler]]	✓	0.918
13823	$xy'' + y' + y = 0$	[[_Emden, _Fowler]]	✓	0.724
13824	$xy'' + x^2y = 0$	[[_Emden, _Fowler]]	✓	0.665
13825	$y'' + \alpha^2y = 0$	[[_2nd_order, _missing_x]]	✓	1.626
13826	$y'' - \alpha^2y = 0$	[[_2nd_order, _missing_x]]	✓	3.317
13827	$y'' + \beta y' + \gamma y = 0$	[[_2nd_order, _missing_x]]	✓	1.067
13828	$(-x^2 + 1)y'' - 2xy' + n(n + 1)y = 0$	[_Gegenbauer]	✗	0.945
13829	$x^2y'' + xy' + (-\nu^2 + x^2)y = \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	13.335
13830	$y' + y \cos(x) = \frac{\sin(2x)}{2}$	[_linear]	✓	2.164
13831	$y'^2 - y' - xy' + y = 0$	[[_1st_order, _with_linear_symmetries], _Clairaut]	✓	0.402
13832	$yy'^2 + 2xy' - y = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	2.005
13833	$xy(1 - y'^2) = (x^2 - y^2 - a^2)y'$	[_rational]	✓	117.937
13834	$y''' + \frac{3y''}{x} = 0$	[[_3rd_order, _missing_y]]	✓	0.174
13835	$y'' - 2ky' + k^2y = e^x$	[[_2nd_order, _with_linear_symmetries]]	✓	0.873
13836	$(-x^2 + 1)y'' - xy' - a^2y = 0$	[_Gegenbauer, [_2nd_order, _linear, 'with_symmetry_[0,F(x)']]	✓	2.073
13837	$y'' + \frac{2y'}{x} = 0$	[[_2nd_order, _missing_y]]	✓	0.687
13838	$y - xy' = 0$	[_separable]	✓	1.270
13839	$(1 + u)v + (1 - v)uv' = 0$	[_separable]	✓	1.377

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
13840	$1 + y - (1 - x)y' = 0$	[_separable]	✓	1.496
13841	$(t^2 + xt^2)x' + x^2 + tx^2 = 0$	[_separable]	✓	1.631
13842	$y - a + x^2y' = 0$	[_separable]	✓	0.915
13843	$z - (-a^2 + t^2)z' = 0$	[_separable]	✓	1.546
13844	$y' = \frac{1 + y^2}{x^2 + 1}$	[_separable]	✓	1.825
13845	$1 + s^2 - \sqrt{t}s' = 0$	[_separable]	✓	2.017
13846	$r' + r \tan(t) = 0$	[_separable]	✓	1.338
13847	$(x^2 + 1)y' - \sqrt{1 - y^2} = 0$	[_separable]	✓	2.023
13848	$\sqrt{-x^2 + 1}y' - \sqrt{1 - y^2} = 0$	[_separable]	✓	4.750
13849	$3e^x \tan(y) + (1 - e^x) \sec(y)^2 y' = 0$	[_separable]	✓	3.141
13850	$x - xy^2 + (y - x^2y)y' = 0$	[_separable]	✓	1.877
13851	$y - x + (x + y)y' = 0$	[[_homogeneous, 'class A'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓	3.719
13852	$x + y + xy' = 0$	[_linear]	✓	1.879
13853	$x + y + (y - x)y' = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓	2.734
13854	$-y + xy' = \sqrt{y^2 + x^2}$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	6.910
13855	$8y + 10x + (5y + 7x)y' = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓	3.266
13856	$2\sqrt{st} - s + ts' = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓	6.562
13857	$t - s + ts' = 0$	[_linear]	✓	1.253

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
13858	$xy^2y' = x^3 + y^3$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓	7.945
13859	$x \cos\left(\frac{y}{x}\right)(xy' + y)$ $= y \sin\left(\frac{y}{x}\right)(-y + xy')$	[[_homogeneous, 'class A'], _dAlembert]	✓	6.721
13860	$3y - 7x + 7 - (3x - 7y - 3)y' = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	3.632
13861	$x + 2y + 1 - (4y + 2x + 3)y' = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	1.406
13862	$x + 2y + 1 - (2x - 3)y' = 0$	[_linear]	✓	1.222
13863	$\frac{y - xy'}{\sqrt{y^2 + x^2}} = m$	[[_homogeneous, 'class A'], _dAlembert]	✓	15.253
13864	$\frac{x + yy'}{\sqrt{y^2 + x^2}} = m$	[[_homogeneous, 'class A'], _exact, _dAlembert]	✓	72.728
13865	$y + \frac{x}{y'} = \sqrt{y^2 + x^2}$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	6.286
13866	$yy' = -x + \sqrt{y^2 + x^2}$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	5.615
13867	$y' - \frac{2y}{x+1} = (x+1)^3$	[_linear]	✓	1.330
13868	$y' - \frac{ay}{x} = \frac{x+1}{x}$	[_linear]	✓	1.306
13869	$(-x^2 + x)y' + (2x^2 - 1)y - ax^3 = 0$	[_linear]	✓	1.457
13870	$s' \cos(t) + s \sin(t) = 1$	[_linear]	✓	1.848
13871	$s' + s \cos(t) = \frac{\sin(2t)}{2}$	[_linear]	✓	2.144
13872	$y' - \frac{ny}{x} = e^x x^n$	[_linear]	✓	1.355
13873	$y' + \frac{ny}{x} = ax^{-n}$	[_linear]	✓	1.000

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
13874	$y' + y = e^{-x}$	[[_linear, 'class A']]	✓	0.964
13875	$y' + \frac{(-2x+1)y}{x^2} - 1 = 0$	[_linear]	✓	1.464
13876	$y' + xy = x^3y^3$	[_Bernoulli]	✓	1.198
13877	$(-x^2 + 1)y' - xy + axy^2 = 0$	[_separable]	✓	2.261
13878	$3y^2y' - ay^3 - x - 1 = 0$	[_rational, _Bernoulli]	✓	1.683
13879	$y'(x^2y^3 + xy) = 1$	[[_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓	1.457
13880	$xy' = (y \ln(x) - 2)y$	[_Bernoulli]	✓	1.936
13881	$y - y' \cos(x) = y^2 \cos(x) (-\sin(x) + 1)$	[_Bernoulli]	✓	6.039
13882	$x^2 + y + (x - 2y)y' = 0$	[_exact, _rational, [_1st_order, '_with_symmetry_[F(x),G(x)]'], [_Abel, '2nd type', 'class A']]	✓	1.152
13883	$y - 3x^2 - (4y - x)y' = 0$	[_exact, _rational, [_1st_order, '_with_symmetry_[F(x),G(x)]'], [_Abel, '2nd type', 'class A']]	✓	1.194
13884	$(y^3 - x)y' = y$	[[_homogeneous, 'class G'], _exact, _rational]	✓	6.652
13885	$\frac{y^2}{(x-y)^2} - \frac{1}{x} + \left(\frac{1}{y} - \frac{x^2}{(x-y)^2}\right)y' = 0$	[_exact, _rational]	✓	1.961
13886	$6xy^2 + 4x^3 + 3(2x^2y + y^2)y' = 0$	[_exact, _rational]	✓	1.379
13887	$\frac{x}{(x+y)^2} + \frac{(2x+y)y'}{(x+y)^2} = 0$	[[_homogeneous, 'class A'], _exact, _rational, [_Abel, '2nd type', 'class C'], _dAlembert]	✓	2.302

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
13888	$\frac{1}{x^2} + \frac{3y^2}{x^4} = \frac{2yy'}{x^3}$	[[_homogeneous, 'class A'], _exact, _rational, _Bernoulli]	✓	3.931
13889	$\frac{x^2y'}{(x-y)^2} - \frac{y^2}{(x-y)^2} = 0$	[_separable]	✓	2.339
13890	$x + yy' = \frac{y}{y^2 + x^2} - \frac{xy'}{y^2 + x^2}$	[[_1st_order, _with_linear_symmetries], _exact, _rational]	✓	1.684
13891	$y = 2xy' + y'^2$	[[_1st_order, _with_linear_symmetries], _dAlembert]	✓	0.436
13892	$y = xy'^2 + y'^2$	[[_homogeneous, 'class C'], _rational, _dAlembert]	✓	0.507
13893	$y = x(1 + y') + y'^2$	[[_1st_order, _with_linear_symmetries], _dAlembert]	✓	0.496
13894	$y = yy'^2 + 2xy'$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	1.958
13895	$y = yy' + y' - y'^2$	[_quadrature]	✓	1.353
13896	$y = xy' + \sqrt{1 - y'^2}$	[[_1st_order, _with_linear_symmetries], _rational, _Clairaut]	✓	1.583
13897	$y = xy' + y'$	[_separable]	✓	1.371
13898	$y = xy' + \frac{1}{y'}$	[[_homogeneous, 'class G'], _rational, _Clairaut]	✓	0.394
13899	$y = xy' - \frac{1}{y'^2}$	[[_1st_order, _with_linear_symmetries], _Clairaut]	✓	0.701
13900	$y' = \frac{2y}{x} - \sqrt{3}$	[_linear]	✓	2.026
13901	$y''' - 2y'' - y' + 2y = 0$	[[_3rd_order, _missing_x]]	✓	0.068

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
13902	$y'' = \frac{1}{2y'}$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_poly_yn]]	✓	1.619
13903	$xy''' = 2$	[[_3rd_order, _quadrature]]	✓	0.198
13904	$y'' = a^2y$	[[_2nd_order, _missing_x]]	✓	3.299
13905	$y'' = \frac{a}{y^3}$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓	1.131
13906	<i>i.c.</i> $xy'' - y' = e^x x^2$	[[_2nd_order, _missing_y]]	✓	1.352
13907	<i>i.c.</i> $yy'' - y'^2 + y'^3 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_y_y1]]	✓	0.434
13908	<i>i.c.</i> $y'' + \tan(x)y' = \sin(2x)$	[[_2nd_order, _missing_y]]	✓	1.676
13909	<i>i.c.</i> $y''^2 + y'^2 = a^2$	[[_2nd_order, _missing_x]]	✓	1.074
13910	$y'' = \frac{1}{2y'}$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_poly_yn]]	✓	1.631
13911	$y''' = y''^2$	[[_3rd_order, _missing_x], [_3rd_order, _missing_y], [_3rd_order, _with_linear_symmetries], [_3rd_order, _reducible, _mu_y2], [_3rd_order, _reducible, _mu_poly_yn]]	✓	0.199

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
13912	$y'y''' - 3y''^2 = 0$	[[_3rd_order, _missing_x], [_3rd_order, _missing_y], [_3rd_order, _with_linear_symmetries], [_3rd_order, _reducible, _mu_y2], [_3rd_order, _reducible, _mu_poly_yn]]	✓	0.354
13913	$y'' = 9y$	[[_2nd_order, _missing_x]]	✓	2.119
13914	$y'' + y = 0$	[[_2nd_order, _missing_x]]	✓	1.832
13915	$y'' - y = 0$	[[_2nd_order, _missing_x]]	✓	1.930
13916	$y'' + 12y = 7y'$	[[_2nd_order, _missing_x]]	✓	0.799
13917	$y'' - 4y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓	0.843
13918	$y'' + 2y' + 10y = 0$	[[_2nd_order, _missing_x]]	✓	1.791
13919	$y'' + 3y' - 2y = 0$	[[_2nd_order, _missing_x]]	✓	1.086
13920	$4y'' - 12y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓	0.868
13921	$y'' + y' + y = 0$	[[_2nd_order, _missing_x]]	✓	2.082
13922	$y'''' - 5y'' + 4y = 0$	[[_high_order, _missing_x]]	✓	0.070
13923	$y''' - 2y'' - y' + 2y = 0$	[[_3rd_order, _missing_x]]	✓	0.109
13924	$y''' - 3ay'' + 3a^2y' - a^3y = 0$	[[_3rd_order, _missing_x]]	✓	0.073
13925	$y^{(5)} - 4y''' = 0$	[[_high_order, _missing_x]]	✓	0.069
13926	$y'''' + 2y'' + 9y = 0$	[[_high_order, _missing_x]]	✓	0.088
13927	$y'''' - 8y'' + 16y = 0$	[[_high_order, _missing_x]]	✓	0.072

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
13928	$y'''' + y = 0$	[[_high_order, _missing_x]]	✓	0.087
13929	$y'''' - a^4y = 0$	[[_high_order, _missing_x]]	✓	0.083
13930	$y'' - 7y' + 12y = x$	[[_2nd_order, _with_linear_symmetries]]	✓	1.052
13931	$s'' - a^2s = t + 1$	[[_2nd_order, _with_linear_symmetries]]	✓	1.167
13932	$y'' + y' - 2y = 8 \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.514
13933	$y'' - y = 5x + 2$	[[_2nd_order, _with_linear_symmetries]]	✓	1.119
13934	$y'' - 2ay' + a^2y = e^x$	[[_2nd_order, _with_linear_symmetries]]	✓	0.872
13935	$y'' + 6y' + 5y = e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.031
13936	$y'' + 9y = 6e^{3x}$	[[_2nd_order, _with_linear_symmetries]]	✓	2.776
13937	$y'' - 3y' = 2 - 6x$	[[_2nd_order, _missing_y]]	✓	1.568
13938	$y'' - 2y' + 3y = e^{-x} \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	74.021
13939	$y'' + 4y = 2 \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.698
13940	$y''' - 4y'' + 5y' - 2y = 2x + 3$	[[_3rd_order, _with_linear_symmetries]]	✓	0.109
13941	$y'''' - a^4y = 5a^4e^{ax} \sin(ax)$	[[_high_order, _linear, _nonhomogeneous]]	✓	0.164
13942	$y'''' + 2a^2y'' + a^4y = 8 \cos(ax)$	[[_high_order, _linear, _nonhomogeneous]]	✓	1.093
13943	$y'' + 2hy' + n^2y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	1.212
13944	$y'' + n^2y = h \sin(rx)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.651
13945	$y'' - 7y' + 6y = \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.352

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
13946	$y'' + y = \sec(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	2.785
13947	$y'' + y = \frac{1}{\cos(2x)^{3/2}}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	2.353
13948	$\begin{bmatrix} x' = y + 1 \\ y' = 1 + x \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.573
13949	$\begin{bmatrix} x' = x - 2y \\ y' = x - y \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.418
13950	$\begin{bmatrix} 4x' - y' + 3x = \sin(t) \\ x' + y = \cos(t) \end{bmatrix}$	system_of_ODEs	✓	0.614
13951	$yy'' = 1 + y^2$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓	3.018
13952	$\frac{x^2 y'}{(x-y)^2} - \frac{y^2}{(x-y)^2} = 0$	[_separable]	✓	2.243
13953	$y = xy'^2 + y'^2$	[[_homogeneous, 'class C'], _rational, _dAlembert]	✓	0.509
13954	$y'' + y = \sec(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	2.702
13955	$(x^2 + 1)y' - xy - \alpha = 0$	[_linear]	✓	1.923
13956	$x \cos\left(\frac{y}{x}\right) y' = y \cos\left(\frac{y}{x}\right) - x$	[[_homogeneous, 'class A'], _dAlembert]	✓	4.721
13957	$y'' - 4y = e^{2x} \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.783
13958	$xy' + y - y^2 \ln(x) = 0$	[_Bernoulli]	✓	1.990
13959	$2x + 2y - 1 + (x + y - 2)y' = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	1.306
13960	$3e^x \tan(y) + (1 - e^x) \sec(y)^2 y' = 0$	[_separable]	✓	3.089

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
13961	$\begin{bmatrix} x' = 2x - 3y \\ y' = 5x + 6y \end{bmatrix}$	system_of_ODEs	✓	0.622
13962	$\begin{bmatrix} x' = -4x - 10y \\ y' = x - 2y \end{bmatrix}$	system_of_ODEs	✓	0.426
13963	$\begin{bmatrix} x' = 12x + 18y \\ y' = -8x - 12y \end{bmatrix}$	system_of_ODEs	✓	0.268
13964	$y' = x + y^2$	[[_Riccati, _special]]	✓	1.797
13965	$y' + \frac{y}{x} = e^x$	[_linear]	✓	1.338
13966	$\begin{bmatrix} x' = y - x \\ y' = -x - 3y \end{bmatrix}$	system_of_ODEs	✓	0.430
13967	$\begin{bmatrix} x' = x - 5y \\ y' = x - y \end{bmatrix}$	system_of_ODEs	✓	0.375
13968	$\begin{bmatrix} x' = x + y \\ y' = x - 2y \end{bmatrix}$	system_of_ODEs	✓	0.519
13969	$\begin{bmatrix} x' = -4x + 2y \\ y' = 3x - 2y \end{bmatrix}$	system_of_ODEs	✓	0.533
13970	$\begin{bmatrix} x' = x + 2y \\ y' = 2x + 2y \end{bmatrix}$	system_of_ODEs	✓	0.514
13971	$\begin{bmatrix} x' = 4x - 2y \\ y' = 3x - y \end{bmatrix}$	system_of_ODEs	✓	0.324
13972	$\begin{bmatrix} x' = 2x + y \\ y' = y - x \end{bmatrix}$	system_of_ODEs	✓	0.614
13973	$\begin{bmatrix} x' = 3x - y \\ y' = x + y \end{bmatrix}$	system_of_ODEs	✓	0.287
13974	$\begin{bmatrix} x' = x - y \\ y' = 2x - 2y \end{bmatrix}$	system_of_ODEs	✓	0.310

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
13975	$\begin{bmatrix} x' = x \\ y' = 2x - 3y \end{bmatrix}$	system_of_ODEs	✓	0.304
13976	$\begin{bmatrix} x' = x \\ y' = x + 3y \end{bmatrix}$	system_of_ODEs	✓	0.344
13977	$\begin{bmatrix} x' = -y \\ y' = 2x - 4y \end{bmatrix}$	system_of_ODEs	✓	0.453
13978	$\begin{bmatrix} x' = x \\ y' = y \end{bmatrix}$	system_of_ODEs	✓	0.211
13979	$\begin{bmatrix} x' = 0 \\ y' = x \end{bmatrix}$	system_of_ODEs	✓	0.262
13980	$x'' + x - x^3 = 0$	[[_2nd_order, _missing_x], _Duffing, [_2nd_order, _reducible, _mu_x_y1]]	✓	2.368
13981	$x'' + x + x^3 = 0$	[[_2nd_order, _missing_x], _Duffing, [_2nd_order, _reducible, _mu_x_y1]]	✓	2.749
13982	$x'' + x' + x - x^3 = 0$	[[_2nd_order, _missing_x]]	✗	0.490
13983	$x'' + x' + x + x^3 = 0$	[[_2nd_order, _missing_x]]	✗	0.482
13984	$x'' = (2 \cos(x) - 1) \sin(x)$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓	2.589
13985	$\begin{bmatrix} x' = x - 5y \\ y' = x - y \end{bmatrix}$	system_of_ODEs	✓	0.383
13986	$x^2 y'' + x y' - y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	1.253
13987	$-y + x y' = 0$	[_separable]	✓	1.248
13988	$2x^2 y'' + 3x y' - y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	1.229
13989	$y'' - 3y' + 2y = 0$	[[_2nd_order, _missing_x]]	✓	0.790

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
13990	$x^2y'' - 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.864
13991	$y' + \frac{1}{2y} = 0$	[_quadrature]	✓	1.317
13992	$y' - \frac{y}{x} = 1$	[_linear]	✓	1.213
13993	$y' - 2\sqrt{ y } = 0$	[_quadrature]	✓	1.543
13994	$x^2y' + 2xy = 0$	[_separable]	✓	1.651
13995	$y' - y^2 = 1$	[_quadrature]	✓	0.953
13996	$2x^2y'' + xy' - y = 0$	[[_Emden, _Fowler]]	✓	1.186
13997	$xy' - \sin(x) = 0$	[_quadrature]	✓	0.355
13998	$y' + 3y = 0$	[_quadrature]	✓	1.033
13999	$y'' - 3y' - 10y = 0$	[[_2nd_order, _missing_x]]	✓	0.829
14000	$y'' + 2y' + y = 0$	[[_2nd_order, _missing_x]]	✓	0.823
14001	$y''' - 7y'' + 12y' = 0$	[[_3rd_order, _missing_x]]	✓	0.066
14002	$2xy' - y = 0$	[_separable]	✓	1.692
14003	$x^2y'' - xy' = 0$	[[_2nd_order, _missing_y]]	✓	0.754
14004	$x^2y'' + 6xy' + 4y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	1.279
14005	$x^2y'' - 5xy' + 9y = 0$	[[_Emden, _Fowler]]	✓	1.200
14006	$y'^2 - 4y = 0$	[_quadrature]	✓	0.582
14007	$y'^2 - 9xy = 0$	[[_homogeneous, 'class G']]	✓	0.553
14008	$y'^2 = x^6$	[_quadrature]	✓	0.464
14009	$y' - 2xy = 0$	[_separable]	✓	1.190
14010	$y' + y = x^2 + 2x - 1$	[[_linear, 'class A']]	✓	1.056

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
14011	$y'' - y' - 6y = 0$	[[_2nd_order, __missing_x]]	✓	0.846
14012	$y' = x\sqrt{y}$	[_separable]	✓	3.124
14013	$y'' - y = 0$	[[_2nd_order, __missing_x]]	✓	1.970
14014	$y' = 3y^{2/3}$	[_quadrature]	✓	1.403
14015	$x \ln(x) y' - (\ln(x) + 1) y = 0$	[_separable]	✓	1.560
14016	<i>i.c.</i> $y'' - y' - 2y = 0$	[[_2nd_order, __missing_x]]	✓	1.423
14017	<i>i.c.</i> $y'' - y' - 2y = 0$	[[_2nd_order, __missing_x]]	✓	1.444
14018	<i>i.c.</i> $y'' - y' - 2y = 0$	[[_2nd_order, __missing_x]]	✓	1.197
14019	<i>i.c.</i> $y'' - y' - 2y = 0$	[[_2nd_order, __missing_x]]	✓	1.168
14020	$x^3 y''' - 3x^2 y'' + 6xy' - 6y = 0$	[[_3rd_order, _with_linear_symmetries]]	✓	0.124
14021	<i>i.c.</i> $x^2 y'' - 4xy' + 6y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓	2.054
14022	<i>i.c.</i> $x^2 y'' - 4xy' + 6y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓	2.078
14023	<i>i.c.</i> $x^2 y'' - 4xy' + 6y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓	2.036
14024	<i>i.c.</i> $x^2 y'' - 4xy' + 6y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓	2.015
14025	<i>i.c.</i> $x^2 y'' - 4xy' + 6y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓	1.483

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
14026	<i>i.c.</i> $x^2y'' - 4xy' + 6y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)']]]	✗	1.151
14027	$y' = 1 - x$	[_quadrature]	✓	0.260
14028	$y' = x - 1$	[_quadrature]	✓	0.257
14029	$y' = 1 - y$	[_quadrature]	✓	0.934
14030	$y' = 1 + y$	[_quadrature]	✓	0.919
14031	$y' = y^2 - 4$	[_quadrature]	✓	1.402
14032	$y' = 4 - y^2$	[_quadrature]	✓	1.348
14033	$y' = xy$	[_separable]	✓	1.151
14034	$y' = -xy$	[_separable]	✓	1.402
14035	$y' = x^2 - y^2$	[_Riccati]	✓	1.024
14036	$y' = y^2 - x^2$	[_Riccati]	✓	1.026
14037	$y' = x + y$	[[_linear, 'class A']]	✓	0.968
14038	$y' = xy$	[_separable]	✓	1.250
14039	$y' = \frac{x}{y}$	[_separable]	✓	3.010
14040	$y' = \frac{y}{x}$	[_separable]	✓	1.236
14041	$y' = 1 + y^2$	[_quadrature]	✓	0.994
14042	$y' = y^2 - 3y$	[_quadrature]	✓	1.462
14043	$y' = x^3 + y^3$	[_Abel]	✗	0.665
14044	$y' =  y $	[_quadrature]	✓	0.937
14045	$y' = e^{x-y}$	[_separable]	✓	1.555
14046	$y' = \ln(x + y)$	[[_homogeneous, 'class C'], _dAlembert]	✓	1.306

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
14047	$y' = \frac{2x - y}{3y + x}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓	3.546
14048	$y' = \frac{1}{\sqrt{15 - x^2 - y^2}}$	['y=_G(x,y)']	✗	1.421
14049	$y' = \frac{3y}{(x - 5)(x + 3)} + e^{-x}$	[_linear]	✓	2.197
14050	$y' = \frac{xy}{y^2 + x^2}$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	2.875
14051	$y' = \frac{1}{xy}$	[_separable]	✓	1.405
14052	$y' = \ln(y - 1)$	[_quadrature]	✓	0.902
14053	$y' = \sqrt{(y + 2)(y - 1)}$	[_quadrature]	✓	30.253
14054	$y' = \frac{y}{y - x}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓	3.888
14055	$y' = \frac{x}{y^2}$	[_separable]	✓	2.120
14056	$y' = \frac{\sqrt{y}}{x}$	[_separable]	✓	3.885
14057	$y' = \frac{xy}{1 - y}$	[_separable]	✓	1.147
14058	$y' = (xy)^{1/3}$	[[_homogeneous, 'class G']]	✓	3.680
14059	$y' = \sqrt{\frac{y - 4}{x}}$	[[_homogeneous, 'class C'], _dAlembert]	✓	5.368
14060	$y' = -\frac{y}{x} + y^{1/4}$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓	10.407
14061	$y' = 4y - 5$	[_quadrature]	✓	1.359
	<i>i.c.</i>			
14062	$y' + 3y = 1$	[_quadrature]	✓	1.344
	<i>i.c.</i>			

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
14063	$y' = ay + b$ i.c.	[_quadrature]	✓	0.875
14064	$y' = x^2 + e^x - \sin(x)$ i.c.	[_quadrature]	✓	0.665
14065	$y' = xy + \frac{1}{x^2 + 1}$ i.c.	[_linear]	✓	2.084
14066	$y' = \frac{y}{x} + \cos(x)$ i.c.	[_linear]	✓	1.315
14067	$y' = \frac{y}{x} + \tan(x)$ i.c.	[_linear]	✓	2.115
14068	$y' = \frac{y}{-x^2 + 4} + \sqrt{x}$ i.c.	[_linear]	✓	2.991
14069	$y' = \frac{y}{-x^2 + 4} + \sqrt{x}$ i.c.	[_linear]	✓	2.844
14070	$y' = y \cot(x) + \csc(x)$ i.c.	[_linear]	✓	1.799
14071	$y' = -x\sqrt{1 - y^2}$ i.c.	[_separable]	✓	4.309
14072	$y' = -\frac{x}{2} + \frac{\sqrt{x^2 + 4y}}{2}$ i.c.	[[_1st_order, _with_linear_symmetries], _Clairaut]	✓	2.394
14073	$y' = 3x + 1$ i.c.	[_quadrature]	✓	0.422
14074	$y' = x + \frac{1}{x}$ i.c.	[_quadrature]	✓	0.517
14075	$y' = 2 \sin(x)$ i.c.	[_quadrature]	✓	0.530
14076	$y' = x \sin(x)$ i.c.	[_quadrature]	✓	0.599
14077	$y' = \frac{1}{x - 1}$ i.c.	[_quadrature]	✓	0.542

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
14078	$y' = \frac{1}{x-1}$ i.c.	[_quadrature]	✓	0.407
14079	$y' = \frac{1}{x^2-1}$ i.c.	[_quadrature]	✓	0.429
14080	$y' = \frac{1}{x^2-1}$ i.c.	[_quadrature]	✓	0.586
14081	$y' = \tan(x)$ i.c.	[_quadrature]	✓	0.888
14082	$y' = \tan(x)$ i.c.	[_quadrature]	✓	0.472
14083	$y' = 3y$ i.c.	[_quadrature]	✓	1.411
14084	$y' = 1 - y$ i.c.	[_quadrature]	✓	1.044
14085	$y' = 1 - y$ i.c.	[_quadrature]	✓	1.180
14086	$y' = x e^{y-x^2}$ i.c.	[_separable]	✓	1.888
14087	$y' = \frac{y}{x}$ i.c.	[_separable]	✓	1.523
14088	$y' = \frac{2x}{y}$ i.c.	[_separable]	✓	5.006
14089	$y' = -2y + y^2$ i.c.	[_quadrature]	✓	1.939
14090	$y' = xy + x$ i.c.	[_separable]	✓	1.461
14091	$x e^y + y' = 0$ i.c.	[_separable]	✓	2.351
14092	$y - x^2 y' = 0$ i.c.	[_separable]	✓	1.763
14093	$2yy' = 1$	[_quadrature]	✓	1.321

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
14094	$2xyy' + y^2 = -1$	[_separable]	✓	1.929
14095	$y' = \frac{1 - xy}{x^2}$	[_linear]	✓	0.960
14096	$y' = -\frac{y(2x + y)}{x(x + 2y)}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓	4.332
14097	$y' = \frac{y^2}{1 - xy}$	[[_homogeneous, 'class G'], _rational, [_Abel, '2nd type', 'class B']]	✓	1.335
14098	$y' = 4y + 1$	[_quadrature]	✓	1.292
14099	$y' = xy + 2$	[_linear]	✓	1.164
14100	$y' = \frac{y}{x}$	[_separable]	✓	1.486
14101	$y' = \frac{y}{x - 1} + x^2$	[_linear]	✓	1.188
14102	$y' = \frac{y}{x} + \sin(x^2)$	[_linear]	✓	1.796
14103	$y' = \frac{2y}{x} + e^x$	[_linear]	✓	1.820
14104	$y' = y \cot(x) + \sin(x)$	[_linear]	✓	1.897
14105	$x - yy' = 0$	[_separable]	✓	3.075
14106	$y - xy' = 0$	[_separable]	✓	1.271
14107	$x^2 - y + xy' = 0$	[_linear]	✓	1.146
14108	$xy(1 - y) - 2y' = 0$	[_separable]	✓	1.921
14109	$x(1 - y^3) - 3y^2y' = 0$	[_separable]	✓	2.398
14110	$y(2x - 1) + x(x + 1)y' = 0$	[_separable]	✓	1.377

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
Continued from previous page

#	ODE	CAS classification	Solved?	time (sec)
14111	$y' = \frac{1}{x-1}$ i.c.	[_quadrature]	✓	0.405
14112	$y' = x + y$ i.c.	[[_linear, 'class A']]	✓	1.165
14113	$y' = \frac{y}{x}$ i.c.	[_separable]	✓	1.465
14114	$y' = \frac{y}{x}$ i.c.	[_separable]	✓	1.496
14115	$y' = \frac{y}{-x^2+1} + \sqrt{x}$ i.c.	[_linear]	✓	2.510
14116	$y' = \frac{y}{-x^2+1} + \sqrt{x}$	[_linear]	✓	1.990
14117	$y' = \frac{y}{-x^2+1} + \sqrt{x}$ i.c.	[_linear]	✓	2.543
14118	$y' = y^2$ i.c.	[_quadrature]	✓	1.151
14119	$y' = y^2$ i.c.	[_quadrature]	✓	1.158
14120	$y' = y^2$ i.c.	[_quadrature]	✓	1.176
14121	$y' = y^3$ i.c.	[_quadrature]	✓	1.695
14122	$y' = y^3$ i.c.	[_quadrature]	✓	1.229
14123	$y' = y^3$ i.c.	[_quadrature]	✓	1.716
14124	$y' = -\frac{3x^2}{2y}$ i.c.	[_separable]	✓	2.868
14125	$y' = -\frac{3x^2}{2y}$ i.c.	[_separable]	✓	3.101

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
14126	$y' = -\frac{3x^2}{2y}$ i.c.	[_separable]	✓	2.480
14127	$y' = -\frac{3x^2}{2y}$ i.c.	[_separable]	✓	3.056
14128	$y' = \frac{\sqrt{y}}{x}$ i.c.	[_separable]	✓	2.563
14129	$y' = \frac{\sqrt{y}}{x}$ i.c.	[_separable]	✓	2.372
14130	$y' = \frac{\sqrt{y}}{x}$ i.c.	[_separable]	✓	2.508
14131	$y' = \frac{\sqrt{y}}{x}$ i.c.	[_separable]	✓	2.625
14132	$y' = 3xy^{1/3}$ i.c.	[_separable]	✓	138.292
14133	$y' = 3xy^{1/3}$ i.c.	[_separable]	✓	17.552
14134	$y' = 3xy^{1/3}$ i.c.	[_separable]	✓	115.734
14135	$y' = 3xy^{1/3}$ i.c.	[_separable]	✓	11.371
14136	$y' = 3xy^{1/3}$ i.c.	[_separable]	✓	49.743
14137	$y' = \sqrt{(y+2)(y-1)}$ i.c.	[_quadrature]	✓	20.224
14138	$y' = \sqrt{(y+2)(y-1)}$ i.c.	[_quadrature]	✓	4.022
14139	$y' = \sqrt{(y+2)(y-1)}$ i.c.	[_quadrature]	✓	99.625

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
14140	$y' = \frac{y}{y-x}$ i.c.	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓	5.039
14141	$y' = \frac{y}{y-x}$ i.c.	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓	4.798
14142	$y' = \frac{y}{y-x}$ i.c.	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓	5.936
14143	$y' = \frac{y}{y-x}$ i.c.	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓	4.952
14144	$y' = \frac{xy}{y^2+x^2}$ i.c.	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	4.925
14145	$y' = \frac{xy}{y^2+x^2}$ i.c.	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	5.095
14146	$y' = \frac{xy}{y^2+x^2}$ i.c.	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	4.897
14147	$y' = x\sqrt{1-y^2}$ i.c.	[_separable]	✓	4.363
14148	$y' = x\sqrt{1-y^2}$ i.c.	[_separable]	✓	84.505
14149	$y' = x\sqrt{1-y^2}$ i.c.	[_separable]	✓	7.842
14150	$y' = x\sqrt{1-y^2}$ i.c.	[_separable]	✓	3.222
14151	$y' = -\frac{x}{2} + \frac{\sqrt{x^2+4y}}{2}$ i.c.	[[_1st_order, _with_linear_symmetries], _Clairaut]	✓	2.685
14152	$y' = -\frac{x}{2} + \frac{\sqrt{x^2+4y}}{2}$ i.c.	[[_1st_order, _with_linear_symmetries], _Clairaut]	✓	2.385

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
14153	$y' = -\frac{x}{2} + \frac{\sqrt{x^2 + 4y}}{2}$ i.c.	[[_1st_order, _with_linear_symmetries], _Clairaut]	✓	2.521
14154	$y' = -\frac{x}{2} + \frac{\sqrt{x^2 + 4y}}{2}$ i.c.	[[_1st_order, _with_linear_symmetries], _Clairaut]	✓	2.984
14155	$y' = -\frac{x}{2} + \frac{\sqrt{x^2 + 4y}}{2}$ i.c.	[[_1st_order, _with_linear_symmetries], _Clairaut]	✓	2.334
14156	$3y'' - 2y' + 4y = x$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	20.174
14157	$xy''' + xy' = 4$ i.c.	[[_3rd_order, _missing_y]]	✓	0.682
14158	$x(x - 3)y'' + 3y' = x^2$ i.c.	[[_2nd_order, _missing_y]]	✓	1.561
14159	$x(x - 3)y'' + 3y' = x^2$ i.c.	[[_2nd_order, _missing_y]]	✓	1.973
14160	$\sqrt{1 - x}y'' - 4y = \sin(x)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✗	0.704
14161	$(x^2 - 4)y'' + y \ln(x) = x e^x$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✗	0.257
14162	$y'' - y = 0$	[[_2nd_order, _missing_x]]	✓	1.989
14163	$y'' + y = 0$	[[_2nd_order, _missing_x]]	✓	1.903
14164	$x^2y'' + 2xy' - 2y = 0$	[[_Emden, _Fowler]]	✓	1.169
14165	$2yy'' - y'^2 = 0$	[[_2nd_order, _missing_x], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓	0.339
14166	$y'' - y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	2.521
14167	$y''' + y' = 0$ i.c.	[[_3rd_order, _missing_x]]	✓	0.078

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
14168	$x^2y'' - xy' + y = 0$ i.c.	[[_Emden, _Fowler]]	✓	2.092
14169	$y'' - 4y = 31$ i.c.	[[_2nd_order, _missing_x]]	✓	3.191
14170	$y'' + 9y = 27x + 18$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	3.226
14171	$x^2y'' + xy' - 4y = -3x - \frac{3}{x}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	3.049
14172	$4y'' + 4y' - 3y = 0$	[[_2nd_order, _missing_x]]	✓	0.845
14173	$y''' - 4y'' + 6y' - 4y = 0$	[[_3rd_order, _missing_x]]	✓	0.077
14174	$y'''' - 16y = 0$	[[_high_order, _missing_x]]	✓	0.082
14175	$y'''' + 16y = 0$	[[_high_order, _missing_x]]	✓	0.088
14176	$y'''' - 4y''' + 8y'' - 8y' + 4y = 0$	[[_high_order, _missing_x]]	✓	0.091
14177	$y'''' - 8y' = 0$	[[_high_order, _missing_x]]	✓	0.083
14178	$36y'''' - 12y''' - 11y'' + 2y' + y = 0$	[[_high_order, _missing_x]]	✓	0.079
14179	$y^{(5)} - 3y'''' + 3y''' - 3y'' + 2y' = 0$	[[_high_order, _missing_x]]	✓	0.082
14180	$y^{(5)} - y'''' + y''' + 35y'' + 16y' - 52y = 0$	[[_high_order, _missing_x]]	✓	0.087
14181	$y^{(8)} + 8y'''' + 16y = 0$	[[_high_order, _missing_x]]	✓	0.111
14182	$y'' + \alpha y = 0$	[[_2nd_order, _missing_x]]	✓	1.705
14183	$y''' + (-3 - 4i)y'' + (-4 + 12i)y' + 12y = 0$	[[_3rd_order, _missing_x]]	✓	0.095
14184	$y'''' + (-3 - i)y''' + (4 + 3i)y'' = 0$	[[_high_order, _missing_x]]	✓	0.090

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
14185	<i>i.c.</i> $y' - iy = 0$	[_quadrature]	✓	1.165
14186	$y'''' - 6y''' + 13y'' - 12y' + 4y = 2e^x - 4e^{2x}$	[[_high_order, _linear, _nonhomogeneous]]	✓	0.174
14187	$y'''' + 4y'' = 24x^2 - 6x + 14 + 32 \cos(2x)$	[[_high_order, _missing_y]]	✓	0.641
14188	$y'''' + 2y'' + y = 3 + \cos(2x)$	[[_high_order, _linear, _nonhomogeneous]]	✓	0.182
14189	$y'''' - 3y''' + 3y'' - y' = 6x - 20 - 120e^x x^2$	[[_high_order, _missing_y]]	✓	0.173
14190	$y''' - 6y'' + 21y' - 26y = 36e^{2x} \sin(3x)$	[[_3rd_order, _linear, _nonhomogeneous]]	✓	0.555
14191	$y''' + y'' - y' - y = (2x^2 + 4x + 8) \cos(x) + (6x^2 + 8x + 12) \sin(x)$	[[_3rd_order, _linear, _nonhomogeneous]]	✓	0.273
14192	$y^{(6)} - 12y^{(5)} + 63y'''' - 18y''' + 315y'' - 300y' + 125y = e^x(48 \cos(x) + 96 \sin(x))$	[[_high_order, _linear, _nonhomogeneous]]	✓	0.272
14193	<i>i.c.</i> $y''' - 3y'' - 4y' + 12y = 0$	[[_3rd_order, _missing_x]]	✓	0.158
14194	<i>i.c.</i> $y'''' - 2y''' + 2y' - y = 0$	[[_high_order, _missing_x]]	✓	0.155
14195	<i>i.c.</i> $y''' - y'' + y' - y = 2e^x$	[[_3rd_order, _with_linear_symmetries]]	✓	0.143
14196	<i>i.c.</i> $y'''' + 2y'' + y = 3x + 4$	[[_high_order, _with_linear_symmetries]]	✓	0.146
14197	$y' - y = 0$	[_quadrature]	✓	0.177
14198	$y'' - 2y' + 5y = 0$	[[_2nd_order, _missing_x]]	✓	0.230
14199	$y' + 2y = 4$	[_quadrature]	✓	0.199
14200	$y'' - 9y = 2 \sin(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.246

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
14201	$y'' + 9y = 2 \sin(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.257
14202	$y'' + y' - 2y = x e^x - 3x^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.249
14203	$y'''' - 2y''' + y'' = x e^x - 3x^2$	[[_high_order, _missing_y]]	✓	0.269
14204	$y' = e^x$ i.c.	[_quadrature]	✓	0.275
14205	$y' - y = 2 e^x$ i.c.	[[_linear, 'class A']]	✓	0.296
14206	$y'' - 9y = x + 2$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	0.297
14207	$y'' + 9y = x + 2$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	0.349
14208	$y'' - y' + 6y = -2 \sin(3x)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.599
14209	$y'' - 2y' + 2y = -x^2 + 1$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	0.326
14210	$y''' + 3y'' + 2y' = x + \cos(x)$ i.c.	[[_3rd_order, _missing_y]]	✓	0.406
14211	$y' - 2y = 6$ i.c.	[_quadrature]	✓	0.317
14212	$y' + y = e^x$ i.c.	[[_linear, 'class A']]	✓	0.309
14213	$y'' + 9y = 1$ i.c.	[[_2nd_order, _missing_x]]	✓	0.290
14214	$y'' + 9y = 18 e^{3x}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	0.333
14215	$y'' - y' - 2y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	0.247
14216	$y'' - y' - 2y = x^2$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	0.302
14217	$y'' - 2y' + y = 2 \sin(x)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.326

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
14218	$y''' - y'' + 4y' - 4y = 0$ i.c.	[[_3rd_order, _missing_x]]	✓	0.397
14219	$y' + 2y = \begin{cases} 2 & 0 \leq x < 1 \\ 1 & 1 \leq x \end{cases}$ i.c.	[[_linear, 'class A']]	✓	0.528
14220	$y'' - y' - 2y = \begin{cases} 1 & 2 \leq x < 4 \\ 0 & \text{otherwise} \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.607
14221	$y'' - 2y' = \begin{cases} 0 & 0 \leq x < 1 \\ (x-1)^2 & 1 \leq x \end{cases}$ i.c.	[[_2nd_order, _missing_y]]	✓	0.581
14222	$y'' - 2y' + y = \begin{cases} 0 & 0 \leq x < 1 \\ x^2 - 2x + 3 & 1 \leq x \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.666
14223	$y'' + 4y = \begin{cases} 0 & 0 \leq x < \pi \\ -\sin(3x) & \pi \leq x \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.174
14224	$y'' - 4y = \begin{cases} x & 0 \leq x < 1 \\ 1 & 1 \leq x \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.747
14225	$y'' - 4y' + 5y = \begin{cases} x & 0 \leq x < 1 \\ 1 & 1 \leq x \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.783
14226	$y' + 3y = \delta(-2 + x)$ i.c.	[[_linear, 'class A']]	✓	0.411
14227	$y' - 3y = \delta(x - 1) + 2 \text{Heaviside}(-2 + x)$ i.c.	[[_linear, 'class A']]	✓	0.554
14228	$y'' + 9y = \delta(x - \pi) + \delta(x - 3\pi)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.592
14229	$y'' - 2y' + y = 2\delta(x - 1)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.394
14230	$y'' - 2y' + 5y = \cos(x) + 2\delta(x - \pi)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.156

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
14231	$y'' + 4y = \cos(x) \delta(x - \pi)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.498
14232	$y'' + a^2y = \delta(x - \pi) f(x)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.353
14233	$\begin{bmatrix} y'_1 = 2y_1 - 3y_2 \\ y'_2 = y_1 - 2y_2 \end{bmatrix}$	system_of_ODEs	✓	0.352
14234	$\begin{bmatrix} y'_1 = y_1 - 2y_2 \\ y'_2 = y_1 + 3y_2 \end{bmatrix}$	system_of_ODEs	✓	0.422
14235	$\begin{bmatrix} y'_1 = y_1 + 2y_2 + x - 1 \\ y'_2 = 3y_1 + 2y_2 - 5x - 2 \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.655
14236	$\begin{bmatrix} y'_1 = \frac{2y_1}{x} - \frac{y_2}{x^2} - 3 + \frac{1}{x} - \frac{1}{x^2} \\ y'_2 = 2y_1 + 1 - 6x \end{bmatrix}$ i.c.	system_of_ODEs	✗	0.055
14237	$\begin{bmatrix} y'_1 = \frac{5y_1}{x} + \frac{4y_2}{x} - 2x \\ y'_2 = -\frac{6y_1}{x} - \frac{5y_2}{x} + 5x \end{bmatrix}$ i.c.	system_of_ODEs	✗	0.056
14238	$\begin{bmatrix} y'_1 = 3y_1 - 2y_2 \\ y'_2 = y_2 - y_1 \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.707
14239	$\begin{bmatrix} y'_1 = \sin(x) y_1 + \sqrt{x} y_2 + \ln(x) \\ y'_2 = \tan(x) y_1 - e^x y_2 + 1 \end{bmatrix}$ i.c.	system_of_ODEs	✗	0.058
14240	$\begin{bmatrix} y'_1 = \sin(x) y_1 + \sqrt{x} y_2 + \ln(x) \\ y'_2 = \tan(x) y_1 - e^x y_2 + 1 \end{bmatrix}$ i.c.	system_of_ODEs	✗	0.059
14241	$\begin{bmatrix} y'_1 = e^{-x} y_1 - \sqrt{x+1} y_2 + x^2 \\ y'_2 = \frac{y_1}{(-2+x)^2} \end{bmatrix}$ i.c.	system_of_ODEs	✗	0.059
14242	$\begin{bmatrix} y'_1 = e^{-x} y_1 - \sqrt{x+1} y_2 + x^2 \\ y'_2 = \frac{y_1}{(-2+x)^2} \end{bmatrix}$ i.c.	system_of_ODEs	✗	0.060

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
14243	$\begin{bmatrix} -2 & -4 \\ 1 & 3 \end{bmatrix}$	Eigenvectors	✓	0.154
14244	$\begin{bmatrix} -3 & -1 \\ 2 & -1 \end{bmatrix}$	Eigenvectors	✓	0.204
14245	$\begin{bmatrix} 1 & 0 & 1 \\ 0 & 1 & -1 \\ -2 & 0 & -1 \end{bmatrix}$	Eigenvectors	✓	0.296
14246	$\begin{bmatrix} 3 & 1 & -1 \\ 1 & 3 & -1 \\ 3 & 3 & -1 \end{bmatrix}$	Eigenvectors	✓	0.217
14247	$\begin{bmatrix} 7 & -1 & 6 \\ -10 & 4 & -12 \\ -2 & 1 & -1 \end{bmatrix}$	Eigenvectors	✓	0.266
14248	$\begin{bmatrix} 1 & 1 & 1 & 1 \\ 1 & 1 & 1 & 1 \\ 1 & 1 & 1 & 1 \\ 1 & 1 & 1 & 1 \end{bmatrix}$	Eigenvectors	✓	0.270
14249	$\begin{bmatrix} 1 & 3 & 5 & 7 \\ 2 & 6 & 10 & 14 \\ 3 & 9 & 15 & 21 \\ 6 & 18 & 30 & 42 \end{bmatrix}$	Eigenvectors	✓	0.283
14250	$\begin{bmatrix} 1 & 3 & 5 & 2 & 4 \\ 5 & 2 & 4 & 1 & 3 \\ 4 & 1 & 3 & 5 & 2 \\ 3 & 5 & 2 & 4 & 1 \\ 2 & 4 & 1 & 3 & 5 \end{bmatrix}$	Eigenvectors	✓	4.802
14251	$\begin{bmatrix} y_1' = 2y_1 - 3y_2 + 5e^x \\ y_2' = y_1 + 4y_2 - 2e^{-x} \end{bmatrix}$	system_of_ODEs	✓	1.336
14252	$\begin{bmatrix} y_1' = y_2 - 2y_1 + \sin(2x) \\ y_2' = -3y_1 + y_2 - 2\cos(3x) \end{bmatrix}$	system_of_ODEs	✓	2.875
14253	$\begin{bmatrix} y_1' = 2y_2 \\ y_2' = 3y_1 \\ y_3' = 2y_3 - y_1 \end{bmatrix}$	system_of_ODEs	✓	0.645
14254	$\begin{bmatrix} y_1' = 2xy_1 - x^2y_2 + 4x \\ y_2' = e^xy_1 + 3e^{-x}y_2 - \cos(3x) \end{bmatrix}$	system_of_ODEs	✗	0.059
14255	$\begin{bmatrix} y_1' = 2y_1 - 3y_2 \\ y_2' = y_1 - 2y_2 \end{bmatrix}$	system_of_ODEs	✓	0.337

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
14256	$\begin{bmatrix} y_1' = 2y_1 - 3y_2 + 4x - 2 \\ y_2' = y_1 - 2y_2 + 3x \end{bmatrix}$	system_of_ODEs	✓	0.507
14257	$\begin{bmatrix} y_1' = \frac{5y_1}{x} + \frac{4y_2}{x} \\ y_2' = -\frac{6y_1}{x} - \frac{5y_2}{x} \end{bmatrix}$	system_of_ODEs	✗	0.052
14258	$\begin{bmatrix} y_1' = \frac{5y_1}{x} + \frac{4y_2}{x} - 2x \\ y_2' = -\frac{6y_1}{x} - \frac{5y_2}{x} + 5x \end{bmatrix}$	system_of_ODEs	✗	0.053
14259	$\begin{bmatrix} y_1' = 2y_1 + y_2 - 2y_3 \\ y_2' = 3y_2 - 2y_3 \\ y_3' = 3y_1 + y_2 - 3y_3 \end{bmatrix}$	system_of_ODEs	✓	0.493
14260	$\begin{bmatrix} y_1' = 5y_1 - 5y_2 - 5y_3 \\ y_2' = -y_1 + 4y_2 + 2y_3 \\ y_3' = 3y_1 - 5y_2 - 3y_3 \end{bmatrix}$	system_of_ODEs	✓	0.654
14261	$\begin{bmatrix} y_1' = 4y_1 + 6y_2 + 6y_3 \\ y_2' = y_1 + 3y_2 + 2y_3 \\ y_3' = -y_1 - 4y_2 - 3y_3 \end{bmatrix}$	system_of_ODEs	✓	0.512
14262	$\begin{bmatrix} y_1' = y_1 + 2y_2 - 3y_3 \\ y_2' = -3y_1 + 4y_2 - 2y_3 \\ y_3' = 2y_1 + y_3 \end{bmatrix}$	system_of_ODEs	✓	0.750
14263	$\begin{bmatrix} y_1' = -2y_1 - y_2 + y_3 \\ y_2' = -y_1 - 2y_2 - y_3 \\ y_3' = y_1 - y_2 - 2y_3 \end{bmatrix}$	system_of_ODEs	✓	0.359
14264	$\begin{bmatrix} y_1' = y_1 + y_2 + 2y_3 \\ y_2' = y_1 + y_2 + 2y_3 \\ y_3' = 2y_1 + 2y_2 + 4y_3 \end{bmatrix}$	system_of_ODEs	✓	0.352
14265	$\begin{bmatrix} y_1' = 2y_1 + y_2 \\ y_2' = -y_1 + 2y_2 \\ y_3' = 3y_3 - 4y_4 \\ y_4' = 4y_3 + 3y_4 \end{bmatrix}$	system_of_ODEs	✓	0.825

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
14266	$\begin{bmatrix} y'_1 = y_2 \\ y'_2 = -3y_1 + 2y_3 \\ y'_3 = y_4 \\ y'_4 = 2y_1 - 5y_3 \end{bmatrix}$	system_of_ODEs	✓	4.716
14267	$\begin{bmatrix} y'_1 = 3y_1 + 2y_2 \\ y'_2 = 3y_2 - 2y_1 \\ y'_3 = y_3 \\ y'_4 = 2y_4 \end{bmatrix}$	system_of_ODEs	✓	0.643
14268	$\begin{bmatrix} y'_1 = y_2 + y_4 \\ y'_2 = y_1 - y_3 \\ y'_3 = y_4 \\ y'_4 = y_3 \end{bmatrix}$	system_of_ODEs	✓	0.506
14269	$\begin{bmatrix} x' = -2x + 3y \\ y' = -x + 2y \end{bmatrix}$	system_of_ODEs	✓	0.328
14270	$\begin{bmatrix} x' = -x + 2y \\ y' = -2x + 3y \end{bmatrix}$	system_of_ODEs	✓	0.301
14271	$\begin{bmatrix} x' = -x - 2y \\ y' = 2x - 3y \end{bmatrix}$	system_of_ODEs	✓	0.623
14272	$\begin{bmatrix} x' = -x - 2y \\ y' = 5x + y \end{bmatrix}$	system_of_ODEs	✓	0.418
14273	$\begin{bmatrix} x' = -x + 2y \\ y' = -2x - y \end{bmatrix}$	system_of_ODEs	✓	0.394
14274	$\begin{bmatrix} x' = x - 2y \\ y' = 2x + y \end{bmatrix}$	system_of_ODEs	✓	0.372
14275	$\begin{bmatrix} x' = -5x - y + 2 \\ y' = 3x - y - 3 \end{bmatrix}$	system_of_ODEs	✓	0.558
14276	$\begin{bmatrix} x' = 3x - 2y - 6 \\ y' = 4x - y + 2 \end{bmatrix}$	system_of_ODEs	✓	0.788
14277	$y' = \frac{y + 1}{t + 1}$	[_separable]	✓	1.417

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
14278	$y' = t^2 y^2$	[_separable]	✓	1.684
14279	$y' = t^4 y$	[_separable]	✓	1.158
14280	$y' = 2y + 1$	[_quadrature]	✓	0.923
14281	$y' = 2 - y$	[_quadrature]	✓	0.944
14282	$y' = e^{-y}$	[_quadrature]	✓	0.956
14283	$x' = 1 + x^2$	[_quadrature]	✓	0.962
14284	$y' = 2ty^2 + 3y^2$	[_separable]	✓	1.476
14285	$y' = \frac{t}{y}$	[_separable]	✓	2.985
14286	$y' = \frac{t}{t^2 y + y}$	[_separable]	✓	1.254
14287	$y' = ty^{1/3}$	[_separable]	✓	3.873
14288	$y' = \frac{1}{2y + 1}$	[_quadrature]	✓	0.974
14289	$y' = \frac{2y + 1}{t}$	[_separable]	✓	1.651
14290	$y' = y(1 - y)$	[_quadrature]	✓	1.623
14291	$y' = \frac{4t}{1 + 3y^2}$	[_separable]	✓	1.058
14292	$v' = t^2 v - 2 - 2v + t^2$	[_separable]	✓	1.312
14293	$y' = \frac{1}{ty + t + y + 1}$	[_separable]	✓	1.309
14294	$y' = \frac{e^t y}{1 + y^2}$	[_separable]	✓	1.497
14295	$y' = y^2 - 4$	[_quadrature]	✓	1.362
14296	$w' = \frac{w}{t}$	[_separable]	✓	1.237
14297	$y' = \sec(y)$	[_quadrature]	✓	0.934
14298	$x' = -xt$	[_separable]	✓	1.889
	i.c.			

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
14299	$y' = ty$ i.c.	[_separable]	✓	1.583
14300	$y' = -y^2$ i.c.	[_quadrature]	✓	1.187
14301	$y' = t^2y^3$ i.c.	[_separable]	✓	4.092
14302	$y' = -y^2$ i.c.	[_quadrature]	✓	1.150
14303	$y' = \frac{t}{y - t^2y}$ i.c.	[_separable]	✓	5.288
14304	$y' = 2y + 1$ i.c.	[_quadrature]	✓	1.286
14305	$y' = ty^2 + 2y^2$ i.c.	[_separable]	✓	1.878
14306	$x' = \frac{t^2}{x + t^3x}$ i.c.	[_separable]	✓	2.591
14307	$y' = \frac{1 - y^2}{y}$ i.c.	[_quadrature]	✓	7.452
14308	$y' = (1 + y^2)t$ i.c.	[_separable]	✓	2.411
14309	$y' = \frac{1}{2y + 3}$ i.c.	[_quadrature]	✓	1.501
14310	$y' = 2ty^2 + 3t^2y^2$ i.c.	[_separable]	✓	1.805
14311	$y' = \frac{y^2 + 5}{y}$ i.c.	[_quadrature]	✓	15.671
14312	$y' = t^2 + t$	[_quadrature]	✓	0.269
14313	$y' = t^2 + 1$	[_quadrature]	✓	0.270
14314	$y' = 1 - 2y$	[_quadrature]	✓	1.044
14315	$y' = 4y^2$	[_quadrature]	✓	0.932

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
14316	$y' = 2y(1 - y)$	[_quadrature]	✓	1.764
14317	$y' = y + t + 1$	[[_linear, 'class A']]	✓	0.989
14318	$y' = 3y(1 - y)$ i.c.	[_quadrature]	✓	2.223
14319	$y' = 2y - t$ i.c.	[[_linear, 'class A']]	✓	1.274
14320	$y' = \left(y + \frac{1}{2}\right)(y + t)$ i.c.	[_Riccati]	✓	1.565
14321	$y' = (t + 1)y$ i.c.	[_separable]	✓	1.693
14322	$S' = S^3 - 2S^2 + S$ i.c.	[_quadrature]	✓	3.940
14323	$S' = S^3 - 2S^2 + S$ i.c.	[_quadrature]	✓	3.899
14324	$S' = S^3 - 2S^2 + S$ i.c.	[_quadrature]	✓	4.599
14325	$S' = S^3 - 2S^2 + S$ i.c.	[_quadrature]	✓	3.911
14326	$S' = S^3 - 2S^2 + S$ i.c.	[_quadrature]	✓	3.888
14327	$y' = y^2 + y$	[_quadrature]	✓	1.485
14328	$y' = y^2 - y$	[_quadrature]	✓	1.364
14329	$y' = y^3 + y^2$	[_quadrature]	✓	4.295
14330	$y' = -t^2 + 2$	[_quadrature]	✓	0.269
14331	$y' = ty + ty^2$	[_separable]	✓	2.022
14332	$y' = t^2 + t^2y$	[_separable]	✓	1.108
14333	$y' = t + ty$	[_separable]	✓	1.065
14334	$y' = t^2 - 2$	[_quadrature]	✓	0.261
14335	$\theta' = \frac{9}{10} - \frac{11 \cos(\theta)}{10}$	[_quadrature]	✓	1.303

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
14336	$\theta' = 2$	[_quadrature]	✓	0.464
14337	$\theta' = \frac{11}{10} - \frac{9 \cos(\theta)}{10}$	[_quadrature]	✓	1.251
14338	$v' = -\frac{v}{RC}$	[_quadrature]	✓	0.913
14339	$v' = \frac{K - v}{RC}$	[_quadrature]	✓	0.752
14340	$v' = 2V(t) - 2v$	[[_linear, 'class A']]	✓	1.231
14341	$y' = 2y + 1$ i.c.	[_quadrature]	✓	1.261
14342	$y' = t - y^2$ i.c.	[[_Riccati, _special]]	✓	1.850
14343	$y' = y^2 - 4t$ i.c.	[[_Riccati, _special]]	✓	1.910
14344	$y' = \sin(y)$ i.c.	[_quadrature]	✓	5.816
14345	$w' = (3 - w)(w + 1)$ i.c.	[_quadrature]	✓	1.819
14346	$w' = (3 - w)(w + 1)$ i.c.	[_quadrature]	✓	1.839
14347	$y' = e^{\frac{2}{y}}$ i.c.	[_quadrature]	✓	3.846
14348	$y' = e^{\frac{2}{y}}$ i.c.	[_quadrature]	✓	3.859
14349	$y' = y^2 - y^3$ i.c.	[_quadrature]	✓	3.944
14350	$y' = 2y^3 + t^2$ i.c.	[_Abel]	✗	0.723
14351	$y' = \sqrt{y}$ i.c.	[_quadrature]	✓	1.387
14352	$y' = 2 - y$ i.c.	[_quadrature]	✓	1.173

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
14353	$\theta' = \frac{9}{10} - \frac{11 \cos(\theta)}{10}$ i.c.	[_quadrature]	✓	2.336
14354	$y' = y(-1 + y)(y - 3)$ i.c.	[_quadrature]	✓	319.271
14355	$y' = y(-1 + y)(y - 3)$ i.c.	[_quadrature]	✓	362.453
14356	$y' = y(-1 + y)(y - 3)$ i.c.	[_quadrature]	✓	371.357
14357	$y' = y(-1 + y)(y - 3)$ i.c.	[_quadrature]	✓	364.684
14358	$y' = -y^2$	[_quadrature]	✓	0.933
14359	$y' = y^3$ i.c.	[_quadrature]	✓	1.839
14360	$y' = \frac{1}{(y + 1)(t - 2)}$ i.c.	[_separable]	✓	1.747
14361	$y' = \frac{1}{(y + 2)^2}$ i.c.	[_quadrature]	✓	1.745
14362	$y' = \frac{t}{y - 2}$ i.c.	[_separable]	✓	2.906
14363	$y' = 3y(y - 2)$ i.c.	[_quadrature]	✓	2.024
14364	$y' = 3y(y - 2)$ i.c.	[_quadrature]	✓	2.091
14365	$y' = 3y(y - 2)$ i.c.	[_quadrature]	✓	2.073
14366	$y' = 3y(y - 2)$ i.c.	[_quadrature]	✓	1.921
14367	$y' = y^2 - 4y - 12$ i.c.	[_quadrature]	✓	1.767
14368	$y' = y^2 - 4y - 12$ i.c.	[_quadrature]	✓	1.826

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
14369	<i>i.c.</i> $y' = y^2 - 4y - 12$	[_quadrature]	✓	1.763
14370	<i>i.c.</i> $y' = y^2 - 4y - 12$	[_quadrature]	✓	1.772
14371	<i>i.c.</i> $y' = \cos(y)$	[_quadrature]	✓	1.464
14372	<i>i.c.</i> $y' = \cos(y)$	[_quadrature]	✓	3.353
14373	<i>i.c.</i> $y' = \cos(y)$	[_quadrature]	✓	1.921
14374	<i>i.c.</i> $y' = \cos(y)$	[_quadrature]	✓	1.402
14375	$w' = w \cos(w)$	[_quadrature]	✓	0.950
14376	<i>i.c.</i> $w' = w \cos(w)$	[_quadrature]	✓	1.219
14377	<i>i.c.</i> $w' = w \cos(w)$	[_quadrature]	✓	1.320
14378	<i>i.c.</i> $w' = w \cos(w)$	[_quadrature]	✓	1.323
14379	<i>i.c.</i> $w' = w \cos(w)$	[_quadrature]	✓	1.303
14380	$w' = (1 - w) \sin(w)$	[_quadrature]	✓	4.313
14381	$y' = \frac{1}{y - 2}$	[_quadrature]	✓	0.968
14382	$v' = -v^2 - 2v - 2$	[_quadrature]	✓	1.006
14383	$w' = 3w^3 - 12w^2$	[_quadrature]	✓	3.552
14384	$y' = 1 + \cos(y)$	[_quadrature]	✓	1.029
14385	$y' = \tan(y)$	[_quadrature]	✓	1.083
14386	$y' = y \ln( y )$	[_quadrature]	✓	1.359
14387	$w' = (w^2 - 2) \arctan(w)$	[_quadrature]	✓	1.694
14388	<i>i.c.</i> $y' = y^2 - 4y + 2$	[_quadrature]	✓	1.534

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
14389	<i>i.c.</i> $y' = y^2 - 4y + 2$	[_quadrature]	✓	1.343
14390	<i>i.c.</i> $y' = y^2 - 4y + 2$	[_quadrature]	✓	1.464
14391	<i>i.c.</i> $y' = y^2 - 4y + 2$	[_quadrature]	✓	1.525
14392	<i>i.c.</i> $y' = y^2 - 4y + 2$	[_quadrature]	✓	1.522
14393	<i>i.c.</i> $y' = y^2 - 4y + 2$	[_quadrature]	✓	1.471
14394	$y' = y \cos\left(\frac{\pi y}{2}\right)$	[_quadrature]	✓	1.188
14395	$y' = y - y^2$	[_quadrature]	✓	1.612
14396	$y' = y \sin\left(\frac{\pi y}{2}\right)$	[_quadrature]	✓	1.236
14397	$y' = y^3 - y^2$	[_quadrature]	✓	3.559
14398	$y' = \cos\left(\frac{\pi y}{2}\right)$	[_quadrature]	✓	2.204
14399	$y' = y^2 - y$	[_quadrature]	✓	1.400
14400	$y' = y \sin\left(\frac{\pi y}{2}\right)$	[_quadrature]	✓	1.230
14401	$y' = y^2 - y^3$	[_quadrature]	✓	3.527
14402	$y' = -4y + 9e^{-t}$	[[_linear, 'class A']]	✓	1.096
14403	$y' = -4y + 3e^{-t}$	[[_linear, 'class A']]	✓	1.054
14404	$y' = -3y + 4 \cos(2t)$	[[_linear, 'class A']]	✓	1.306
14405	$y' = 2y + \sin(2t)$	[[_linear, 'class A']]	✓	1.283
14406	$y' = 3y - 4e^{3t}$	[[_linear, 'class A']]	✓	1.006
14407	$y' = \frac{y}{2} + 4e^{\frac{t}{2}}$	[[_linear, 'class A']]	✓	1.012
14408	<i>i.c.</i> $y' + 2y = e^{\frac{t}{3}}$	[[_linear, 'class A']]	✓	1.407

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
14409	<i>i.c.</i> $y' - 2y = 3e^{-2t}$	[[_linear, 'class A']]	✓	1.478
14410	<i>i.c.</i> $y' + y = \cos(2t)$	[[_linear, 'class A']]	✓	1.550
14411	<i>i.c.</i> $y' + 3y = \cos(2t)$	[[_linear, 'class A']]	✓	1.608
14412	<i>i.c.</i> $y' - 2y = 7e^{2t}$	[[_linear, 'class A']]	✓	1.258
14413	$y' + 2y = 3t^2 + 2t - 1$	[[_linear, 'class A']]	✓	1.078
14414	$y' + 2y = t^2 + 2t + 1 + e^{4t}$	[[_linear, 'class A']]	✓	1.827
14415	$y' + y = t^3 + \sin(3t)$	[[_linear, 'class A']]	✓	1.639
14416	$y' - 3y = 2t - e^{4t}$	[[_linear, 'class A']]	✓	1.156
14417	$y' + y = \cos(2t) + 3\sin(2t) + e^{-t}$	[[_linear, 'class A']]	✓	1.868
14418	$y' = -\frac{y}{t} + 2$	[_linear]	✓	1.850
14419	$y' = \frac{3y}{t} + t^5$	[_linear]	✓	1.339
14420	$y' = -\frac{y}{t+1} + t^2$	[_linear]	✓	1.491
14421	$y' = -2ty + 4e^{-t^2}$	[_linear]	✓	1.404
14422	$y' - \frac{2ty}{t^2+1} = 3$	[_linear]	✓	1.472
14423	$y' - \frac{2y}{t} = t^3e^t$	[_linear]	✓	1.410
14424	<i>i.c.</i> $y' = -\frac{y}{t+1} + 2$	[_linear]	✓	1.811
14425	<i>i.c.</i> $y' = \frac{y}{t+1} + 4t^2 + 4t$	[_linear]	✓	1.286
14426	<i>i.c.</i> $y' = -\frac{y}{t} + 2$	[_linear]	✓	2.480

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
14427	<i>i.c.</i> $y' = -2ty + 4e^{-t^2}$	[_linear]	✓	1.709
14428	<i>i.c.</i> $y' - \frac{2y}{t} = 2t^2$	[_linear]	✓	1.690
14429	<i>i.c.</i> $y' - \frac{3y}{t} = 2t^3 e^{2t}$	[_linear]	✓	2.388
14430	$y' = \sin(t)y + 4$	[_linear]	✓	1.749
14431	$y' = t^2 y + 4$	[_linear]	✓	1.277
14432	$y' = \frac{y}{t^2} + 4 \cos(t)$	[_linear]	✓	1.968
14433	$y' = y + 4 \cos(t^2)$	[[_linear, 'class A']]	✓	1.526
14434	$y' = -y e^{-t^2} + \cos(t)$	[_linear]	✓	2.618
14435	$y' = \frac{y}{\sqrt{t^3 - 3}} + t$	[_linear]	✓	22.539
14436	$y' = aty + 4e^{-t^2}$	[_linear]	✓	1.178
14437	$y' = t^r y + 4$	[_linear]	✓	1.398
14438	$v' + \frac{2v}{5} = 3 \cos(2t)$	[[_linear, 'class A']]	✓	1.441
14439	$y' = -2ty + 4e^{-t^2}$	[_linear]	✓	1.392
14440	$y' + 2y = 3e^{-2t}$	[[_linear, 'class A']]	✓	0.984
14441	$y' = 3y$	[_quadrature]	✓	1.054
14442	$y' = t^2(t^2 + 1)$	[_quadrature]	✓	0.303
14443	$y' = -\sin(y)^5$	[_quadrature]	✓	1.842
14444	$y' = \frac{(t^2 - 4)(y + 1)e^y}{(t - 1)(3 - y)}$	[_separable]	✓	2.274
14445	$y' = \sin(y)^2$	[_quadrature]	✓	1.117
14446	<i>i.c.</i> $y' = (y - 3)(\sin(y)\sin(t) + \cos(t) + 1)$	['x=_G(y,y)']	✗	10.814

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
14447	$y' = y + e^{-t}$	[[_linear, 'class A']]	✓	1.061
14448	$y' = 3 - 2y$	[_quadrature]	✓	1.069
14449	$y' = ty$	[_separable]	✓	1.145
14450	$y' = 3y + e^{7t}$	[[_linear, 'class A']]	✓	1.056
14451	$y' = \frac{ty}{t^2 + 1}$	[_separable]	✓	1.321
14452	$y' = -5y + \sin(3t)$	[[_linear, 'class A']]	✓	1.310
14453	$y' = t + \frac{2y}{t+1}$	[_linear]	✓	1.019
14454	$y' = 3 + y^2$	[_quadrature]	✓	1.030
14455	$y' = 2y - y^2$	[_quadrature]	✓	1.807
14456	$y' = -3y + e^{-2t} + t^2$	[[_linear, 'class A']]	✓	1.595
14457	$x' = -xt$	[_separable]	✓	1.746
i.c.				
14458	$y' = 2y + \cos(4t)$	[[_linear, 'class A']]	✓	1.623
i.c.				
14459	$y' = 3y + 2e^{3t}$	[[_linear, 'class A']]	✓	1.292
i.c.				
14460	$y' = t^2y^3 + y^3$	[_separable]	✓	3.033
i.c.				
14461	$y' + 5y = 3e^{-5t}$	[[_linear, 'class A']]	✓	1.247
i.c.				
14462	$y' = 2ty + 3te^{t^2}$	[_linear]	✓	2.536
i.c.				
14463	$y' = \frac{(t+1)^2}{(y+1)^2}$	[_separable]	✓	4.305
i.c.				
14464	$y' = 2ty^2 + 3t^2y^2$	[_separable]	✓	1.810
i.c.				
14465	$y' = 1 - y^2$	[_quadrature]	✓	1.507
i.c.				

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
14466	$y' = \frac{t^2}{y + t^3 y}$ i.c.	[_separable]	✓	2.592
14467	$y' = y^2 - 2y + 1$ i.c.	[_quadrature]	✓	1.066
14468	$y' = (y - 2)(y + 1 - \cos(t))$	[_Riccati]	✓	4.221
14469	$y' = (-1 + y)(y - 2)(y - e^{\frac{t}{2}})$	[_Abel]	✗	1.973
14470	$y' = t^2 y + 1 + y + t^2$	[_separable]	✓	1.260
14471	$y' = \frac{2y + 1}{t}$	[_separable]	✓	1.651
14472	$y' = 3 - y^2$ i.c.	[_quadrature]	✓	1.211
14473	$\begin{bmatrix} x' = x - y \\ y' = x - y \end{bmatrix}$	system_of_ODEs	✓	0.250
14474	$\begin{bmatrix} x' = 2x - y \\ y' = 0 \end{bmatrix}$	system_of_ODEs	✓	0.288
14475	$\begin{bmatrix} x' = x \\ y' = 2x + y \end{bmatrix}$	system_of_ODEs	✓	0.284
14476	$\begin{bmatrix} x' = -x + 2y \\ y' = 2x - y \end{bmatrix}$	system_of_ODEs	✓	0.335
14477	$\begin{bmatrix} x' = 2x + y \\ y' = x + y \end{bmatrix}$	system_of_ODEs	✓	0.535
14478	$\begin{bmatrix} x' = 3y \\ y' = 3\pi y - \frac{x}{3} \end{bmatrix}$	system_of_ODEs	✓	0.688
14479	$\begin{bmatrix} p' = 3p - 2q - 7r \\ q' = -2p + 6r \\ r' = \frac{73q}{100} + 2r \end{bmatrix}$	system_of_ODEs	✓	64.736
14480	$\begin{bmatrix} x' = -3x + 2\pi y \\ y' = 4x - y \end{bmatrix}$	system_of_ODEs	✓	0.632

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
14481	$\begin{bmatrix} x' = \beta y \\ y' = \gamma x - y \end{bmatrix}$	system_of_ODEs	✓	0.552
14482	$\begin{bmatrix} x' = 2y \\ y' = x + y \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.464
14483	$\begin{bmatrix} x' = x - y \\ y' = x + 3y \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.426
14484	$\begin{bmatrix} x' = -2x - y \\ y' = 2x - 5y \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.455
14485	$\begin{bmatrix} x' = -2x - 3y \\ y' = 3x - 2y \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.498
14486	$\begin{bmatrix} x' = 2x + 3y \\ y' = x \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.470
14487	$\begin{bmatrix} x' = 1 \\ y' = x \end{bmatrix}$	system_of_ODEs	✓	0.332
14488	$\begin{bmatrix} x' = 3x \\ y' = -2y \end{bmatrix}$	system_of_ODEs	✓	0.296
14489	$\begin{bmatrix} x' = -4x - 2y \\ y' = -x - 3y \end{bmatrix}$	system_of_ODEs	✓	0.339
14490	$\begin{bmatrix} x' = -5x - 2y \\ y' = -x - 4y \end{bmatrix}$	system_of_ODEs	✓	0.344
14491	$\begin{bmatrix} x' = 2x + y \\ y' = -x + 4y \end{bmatrix}$	system_of_ODEs	✓	0.299
14492	$\begin{bmatrix} x' = -\frac{x}{2} \\ y' = x - \frac{y}{2} \end{bmatrix}$	system_of_ODEs	✓	0.287
14493	$\begin{bmatrix} x' = 5x + 4y \\ y' = 9x \end{bmatrix}$	system_of_ODEs	✓	0.349

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
14494	$\begin{bmatrix} x' = 3x + 4y \\ y' = x \end{bmatrix}$	system_of_ODEs	✓	0.335
14495	$\begin{bmatrix} x' = 2x - y \\ y' = y - x \end{bmatrix}$	system_of_ODEs	✓	0.487
14496	$\begin{bmatrix} x' = 2x + y \\ y' = x + y \end{bmatrix}$	system_of_ODEs	✓	0.541
14497	$\begin{bmatrix} x' = -x - 2y \\ y' = x - 4y \end{bmatrix}$	system_of_ODEs	✓	0.338
14498	$\begin{bmatrix} x' = -2x - 2y \\ y' = -2x + y \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.534
14499	$\begin{bmatrix} x' = -2x - 2y \\ y' = -2x + y \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.546
14500	$\begin{bmatrix} x' = -2x - 2y \\ y' = -2x + y \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.538
14501	$\begin{bmatrix} x' = 3x \\ y' = x - 2y \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.458
14502	$\begin{bmatrix} x' = 3x \\ y' = x - 2y \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.439
14503	$\begin{bmatrix} x' = 3x \\ y' = x - 2y \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.466
14504	$\begin{bmatrix} x' = -4x + y \\ y' = 2x - 3y \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.468
14505	$\begin{bmatrix} x' = -4x + y \\ y' = 2x - 3y \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.451

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
14506	$\begin{bmatrix} x' = -4x + y \\ y' = 2x - 3y \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.454
14507	$\begin{bmatrix} x' = 4x - 2y \\ y' = x + y \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.451
14508	$\begin{bmatrix} x' = 4x - 2y \\ y' = x + y \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.431
14509	$\begin{bmatrix} x' = 4x - 2y \\ y' = x + y \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.505
14510	$\begin{bmatrix} x' = 2y \\ y' = -2x \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.419
14511	$\begin{bmatrix} x' = 2x + 2y \\ y' = -4x + 6y \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.461
14512	$\begin{bmatrix} x' = -3x - 5y \\ y' = 3x + y \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.713
14513	$\begin{bmatrix} x' = 2y \\ y' = -2x - y \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.748
14514	$\begin{bmatrix} x' = 2x - 6y \\ y' = 2x + y \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.720
14515	$\begin{bmatrix} x' = x + 4y \\ y' = -3x + 2y \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.711
14516	$\begin{bmatrix} x' = 2y \\ y' = -2x \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.415

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
14517	$\begin{cases} x' = 2x + 2y \\ y' = -4x + 6y \end{cases}$ i.c.	system_of_ODEs	✓	0.468
14518	$\begin{cases} x' = -3x - 5y \\ y' = 3x + y \end{cases}$ i.c.	system_of_ODEs	✓	0.718
14519	$\begin{cases} x' = 2y \\ y' = -2x - y \end{cases}$ i.c.	system_of_ODEs	✓	0.723
14520	$\begin{cases} x' = 2x - 6y \\ y' = 2x + y \end{cases}$ i.c.	system_of_ODEs	✓	0.717
14521	$\begin{cases} x' = x + 4y \\ y' = -3x + 2y \end{cases}$ i.c.	system_of_ODEs	✓	0.759
14522	$\begin{cases} x' = -\frac{9x}{10} - 2y \\ y' = x + \frac{11y}{10} \end{cases}$ i.c.	system_of_ODEs	✓	0.549
14523	$\begin{cases} x' = -3x + 10y \\ y' = -x + 3y \end{cases}$	system_of_ODEs	✓	0.383
14524	$\begin{cases} x' = -3x \\ y' = x - 3y \end{cases}$ i.c.	system_of_ODEs	✓	0.428
14525	$\begin{cases} x' = 2x + y \\ y' = -x - 2y \end{cases}$ i.c.	system_of_ODEs	✓	0.648
14526	$\begin{cases} x' = -2x - y \\ y' = x - 4y \end{cases}$ i.c.	system_of_ODEs	✓	0.418
14527	$\begin{cases} x' = y \\ y' = -x - 2y \end{cases}$ i.c.	system_of_ODEs	✓	0.502

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
14528	$\begin{bmatrix} x' = -3x \\ y' = x - 3y \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.402
14529	$\begin{bmatrix} x' = 2x + y \\ y' = -x + 4y \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.413
14530	$\begin{bmatrix} x' = -2x - y \\ y' = x - 4y \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.506
14531	$\begin{bmatrix} x' = y \\ y' = -x - 2y \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.425
14532	$\begin{bmatrix} x' = 2y \\ y' = -y \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.408
14533	$\begin{bmatrix} x' = 2x + 4y \\ y' = 3x + 6y \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.429
14534	$\begin{bmatrix} x' = 4x + 2y \\ y' = 2x + y \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.428
14535	$\begin{bmatrix} x' = 2y \\ y' = 0 \end{bmatrix}$	system_of_ODEs	✓	0.247
14536	$\begin{bmatrix} x' = -2y \\ y' = 0 \end{bmatrix}$	system_of_ODEs	✓	0.250
14537	$\begin{bmatrix} x' = -3x - y \\ y' = 4x + y \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.457
14538	$y'' - 6y' - 7y = 0$	[[_2nd_order, _missing_x]]	✓	0.858
14539	$y'' - y' - 12y = 0$	[[_2nd_order, _missing_x]]	✓	0.838

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
14540	$\begin{bmatrix} x' = \frac{y}{10} \\ y' = \frac{z}{5} \\ z' = \frac{2x}{5} \end{bmatrix}$	system_of_ODEs	✓	1.072
14541	$\begin{bmatrix} x' = y \\ y' = -x \\ z' = 2z \end{bmatrix}$	system_of_ODEs	✓	0.486
14542	$\begin{bmatrix} x' = -2x + 3y \\ y' = 3x - 2y \\ z' = -z \end{bmatrix}$	system_of_ODEs	✓	0.383
14543	$\begin{bmatrix} x' = x + 3z \\ y' = -y \\ z' = -3x + z \end{bmatrix}$	system_of_ODEs	✓	0.514
14544	$\begin{bmatrix} x' = x \\ y' = 2y - z \\ z' = -y + 2z \end{bmatrix}$	system_of_ODEs	✓	0.320
14545	$\begin{bmatrix} x' = -2x + y \\ y' = -2y \\ z' = -z \end{bmatrix}$	system_of_ODEs	✓	0.312
14546	$\begin{bmatrix} x' = -2x + y \\ y' = -2y \\ z' = z \end{bmatrix}$	system_of_ODEs	✓	0.309
14547	$\begin{bmatrix} x' = -x + 2y \\ y' = 2x - 4y \\ z' = -z \end{bmatrix}$	system_of_ODEs	✓	0.392
14548	$\begin{bmatrix} x' = -x + 2y \\ y' = 2x - 4y \\ z' = 0 \end{bmatrix}$	system_of_ODEs	✓	0.319
14549	$\begin{bmatrix} x' = -2x + y \\ y' = -2y + z \\ z' = -2z \end{bmatrix}$	system_of_ODEs	✓	0.317
14550	$\begin{bmatrix} x' = y \\ y' = z \\ z' = 0 \end{bmatrix}$	system_of_ODEs	✓	0.247

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
14551	$\begin{bmatrix} x' = 2x - y \\ y' = -2y + 3z \\ z' = -x + 3y - z \end{bmatrix}$	system_of_ODEs	✓	0.849
14552	$\begin{bmatrix} x' = -4x + 3y \\ y' = z - y \\ z' = 5x - 5y \end{bmatrix}$	system_of_ODEs	✓	0.741
14553	$\begin{bmatrix} x' = -10x + 10y \\ y' = 28x - y \\ z' = -\frac{8z}{3} \end{bmatrix}$	system_of_ODEs	✓	0.664
14554	$\begin{bmatrix} x' = z - y \\ y' = z - x \\ z' = z \end{bmatrix}$	system_of_ODEs	✓	0.324
14555	$\begin{bmatrix} 1 & 0 \\ 0 & 2 \end{bmatrix}$	Eigenvectors	✓	0.150
14556	$\begin{bmatrix} 0 & 1 \\ 2 & 0 \end{bmatrix}$	Eigenvectors	✓	0.211
14557	$\begin{bmatrix} x' = 3x \\ y' = -2y \end{bmatrix}$	system_of_ODEs	✓	0.276
14558	$\begin{bmatrix} 1 & 0 \\ 2 & 3 \end{bmatrix}$	Eigenvectors	✓	0.148
14559	$\begin{bmatrix} x' = 0 \\ y' = x - y \end{bmatrix}$	system_of_ODEs	✓	0.292
14560	$\begin{bmatrix} x' = \pi^2 x + \frac{187y}{5} \\ y' = \sqrt{555} x + \frac{400617y}{5000} \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.916
14561	$\begin{bmatrix} x' = x + y \\ y' = -2x - y \end{bmatrix}$	system_of_ODEs	✓	0.398
14562	$\begin{bmatrix} x' = -3x + y \\ y' = y - x \end{bmatrix}$	system_of_ODEs	✓	0.544
14563	$\begin{bmatrix} x' = -3x + y \\ y' = -x \end{bmatrix}$	system_of_ODEs	✓	0.541

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
14564	$\begin{bmatrix} x' = y - x \\ y' = -2x + y \end{bmatrix}$	system_of_ODEs	✓	0.385
14565	$\begin{bmatrix} x' = 2x \\ y' = x - y \end{bmatrix}$	system_of_ODEs	✓	0.316
14566	$\begin{bmatrix} x' = 3x + y \\ y' = -x \end{bmatrix}$	system_of_ODEs	✓	0.543
14567	$\begin{bmatrix} x' = y \\ y' = -4x - 4y \end{bmatrix}$	system_of_ODEs	✓	0.323
14568	$\begin{bmatrix} x' = -3x - 3y \\ y' = 2x + y \end{bmatrix}$	system_of_ODEs	✓	0.656
14569	i.c. $y'' + 5y' + 6y = 0$	[[_2nd_order, _missing_x]]	✓	1.120
14570	i.c. $y'' + 2y' + 5y = 0$	[[_2nd_order, _missing_x]]	✓	2.602
14571	i.c. $y'' + 2y' + y = 0$	[[_2nd_order, _missing_x]]	✓	1.208
14572	i.c. $y'' + 2y = 0$	[[_2nd_order, _missing_x]]	✓	43.952
14573	$y'' - y' - 6y = e^{4t}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.099
14574	$y'' + 6y' + 8y = 2e^{-3t}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.069
14575	$y'' - y' - 2y = 5e^{3t}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.053
14576	$y'' + 4y' + 13y = e^{-t}$	[[_2nd_order, _with_linear_symmetries]]	✓	11.030
14577	$y'' + 4y' + 13y = -3e^{-2t}$	[[_2nd_order, _with_linear_symmetries]]	✓	4.179
14578	$y'' + 7y' + 10y = e^{-2t}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.105
14579	$y'' - 5y' + 4y = e^{4t}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.124

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
14580	$y'' + y' - 6y = 4e^{-3t}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.161
14581	$y'' + 6y' + 8y = e^{-t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	1.258
14582	$y'' + 7y' + 12y = 3e^{-t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	1.372
14583	$y'' + 4y' + 13y = -3e^{-2t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	4.953
14584	$y'' + 7y' + 10y = e^{-2t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	1.685
14585	$y'' + 4y' + 3y = e^{-\frac{t}{2}}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	1.563
14586	$y'' + 4y' + 3y = e^{-2t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	1.126
14587	$y'' + 4y' + 3y = e^{-4t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	1.577
14588	$y'' + 4y' + 20y = e^{-\frac{t}{2}}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	12.142
14589	$y'' + 4y' + 20y = e^{-2t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	5.397
14590	$y'' + 4y' + 20y = e^{-4t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	12.712
14591	$y'' + 2y' + y = e^{-t}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.020
14592	$y'' - 5y' + 4y = 5$ i.c.	[[_2nd_order, _missing_x]]	✓	1.450
14593	$y'' + 5y' + 6y = 2$ i.c.	[[_2nd_order, _missing_x]]	✓	1.271
14594	$y'' + 2y' + 10y = 10$ i.c.	[[_2nd_order, _missing_x]]	✓	3.667
14595	$y'' + 4y' + 6y = -8$ i.c.	[[_2nd_order, _missing_x]]	✓	8.392
14596	$y'' + 9y = e^{-t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	2.754

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
14597	$y'' + 4y = 2e^{-2t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	2.607
14598	$y'' + 2y = -3$ i.c.	[[_2nd_order, _missing_x]]	✓	2.537
14599	$y'' + 4y = e^t$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	2.515
14600	$y'' + 9y = 6$ i.c.	[[_2nd_order, _missing_x]]	✓	2.450
14601	$y'' + 2y = -e^t$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	3.502
14602	$y'' + 4y = -3t^2 + 2t + 3$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	4.003
14603	$y'' + 2y' = 3t + 2$ i.c.	[[_2nd_order, _missing_y]]	✓	2.062
14604	$y'' + 4y' = 3t + 2$ i.c.	[[_2nd_order, _missing_y]]	✓	1.972
14605	$y'' + 3y' + 2y = t^2$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	1.367
14606	$y'' + 4y = t - \frac{1}{20}t^2$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	3.382
14607	$y'' + 5y' + 6y = 4 + e^{-t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	1.357
14608	$y'' + 3y' + 2y = e^{-t} - 4$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	1.332
14609	$y'' + 6y' + 8y = 2t + e^{-t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	1.419
14610	$y'' + 6y' + 8y = 2t + e^t$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	1.418
14611	$y'' + 4y = t + e^{-t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	5.053
14612	$y'' + 4y = 6 + t^2 + e^t$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	5.233
14613	$y'' + 3y' + 2y = \cos(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.438

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
14614	$y'' + 3y' + 2y = 5 \cos(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.408
14615	$y'' + 3y' + 2y = \sin(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.370
14616	$y'' + 3y' + 2y = 2 \sin(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.391
14617	$y'' + 6y' + 8y = \cos(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.389
14618	$y'' + 6y' + 8y = -4 \cos(3t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.494
14619	$y'' + 4y' + 13y = 3 \cos(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	39.117
14620	$y'' + 4y' + 20y = -\cos(5t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	72.783
14621	$y'' + 4y' + 20y = -3 \sin(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	23.078
14622	$y'' + 2y' + y = \cos(3t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.462
14623	<i>i.c.</i> $y'' + 6y' + 8y = \cos(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.760
14624	<i>i.c.</i> $y'' + 6y' + 8y = 2 \cos(3t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.860
14625	<i>i.c.</i> $y'' + 6y' + 20y = -3 \sin(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	40.249
14626	<i>i.c.</i> $y'' + 2y' + y = 2 \cos(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.800
14627	$y'' + 3y' + y = \cos(3t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	2.217
14628	$y'' + 4y' + 20y = 3 + 2 \cos(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	19.529
14629	$y'' + 4y' + 20y = e^{-t} \cos(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	18.976
14630	$y'' + 9y = \cos(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	2.980
14631	$y'' + 9y = 5 \sin(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.263

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
14632	$y'' + 4y = -\cos\left(\frac{t}{2}\right)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.875
14633	$y'' + 4y = 3\cos(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.876
14634	$y'' + 9y = 2\cos(3t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.720
14635	$y'' + 4y = 8$ i.c.	[[_2nd_order, _missing_x]]	✓	0.323
14636	$y'' - 4y = e^{2t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	0.290
14637	$y'' - 4y' + 5y = 2e^t$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	0.349
14638	$y'' + 6y' + 13y = 13\text{Heaviside}(-4 + t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.190
14639	$y'' + 4y = \cos(2t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.346
14640	$y'' + 3y = \text{Heaviside}(-4 + t)\cos(-20 + 5t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.225
14641	$y'' + 4y' + 9y = 20\text{Heaviside}(t - 2)\sin(t - 2)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	2.989
14642	$y'' + 3y = \begin{cases} t & 0 \leq t < 1 \\ 1 & 1 \leq t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.150
14643	$y'' + 3y = 5\delta(t - 2)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.563
14644	$y'' + 2y' + 5y = \delta(t - 3)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.961
14645	$y'' + 2y' + 2y = -2\delta(t - 2)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.995
14646	$y'' + 2y' + 3y = \delta(t - 1) - 3\delta(-4 + t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.750
14647	$y'' + 2y' + 2y = e^{-2t}\sin(4t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.510

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
14648	$y'' + y' + 5y = \text{Heaviside}(t - 2) \sin(4t - 8)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	2.000
14649	$y'' + y' + 8y = (1 - \text{Heaviside}(-4 + t)) \cos(-4 + t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	4.400
14650	$y'' + y' + 3y = (1 - \text{Heaviside}(t - 2)) e^{-\frac{t}{10} + \frac{1}{5}} \sin(t - 2)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	4.239
14651	$y'' + 16y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	0.326
14652	$y'' + 4y = \sin(2t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.334
14653	$y'' + 2y' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	0.244
14654	$y'' + 16y = t$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	0.335
14655	$y' = 3 - \sin(x)$	[_quadrature]	✓	0.346
14656	$y' = 3 - \sin(y)$	[_quadrature]	✓	1.198
14657	$y' + 4y = e^{2x}$	[[_linear, 'class A']]	✓	1.073
14658	$xy' = \arcsin(x^2)$	[_quadrature]	✓	19.700
14659	$yy' = 2x$	[_separable]	✓	2.944
14660	$y'' = \frac{x+1}{x-1}$	[[_2nd_order, _quadrature]]	✓	1.505
14661	$x^2y'' = 1$	[[_2nd_order, _quadrature]]	✓	0.691
14662	$y^2y'' = 8x^2$	[[_Emden, _Fowler], [_2nd_order, _with_linear_symmetries]]	✗	0.089
14663	$y'' + 3y' + 8y = e^{-x^2}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	27.977
14664	$x^2y'' + 3xy' = 0$	[[_2nd_order, _missing_y]]	✓	0.792

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
14665	$y' = 4x^3$	[_quadrature]	✓	0.266
14666	$y' = 20e^{-4x}$	[_quadrature]	✓	0.319
14667	$xy' + \sqrt{x} = 2$	[_quadrature]	✓	0.334
14668	$\sqrt{4+x}y' = 1$	[_quadrature]	✓	0.408
14669	$y' = x \cos(x^2)$	[_quadrature]	✓	0.352
14670	$y' = x \cos(x)$	[_quadrature]	✓	0.343
14671	$x = (x^2 - 9)y'$	[_quadrature]	✓	0.378
14672	$1 = (x^2 - 9)y'$	[_quadrature]	✓	0.418
14673	$1 = x^2 - 9y'$	[_quadrature]	✓	0.296
14674	$y'' = \sin(2x)$	[[_2nd_order, _quadrature]]	✓	1.675
14675	$y'' - 3 = x$	[[_2nd_order, _quadrature]]	✓	1.328
14676	$y''' = 1$	[[_high_order, _quadrature]]	✓	0.101
14677	$y' = 40xe^{2x}$ i.c.	[_quadrature]	✓	0.506
14678	$(x+6)^{1/3}y' = 1$ i.c.	[_quadrature]	✓	0.658
14679	$y' = \frac{x-1}{x+1}$ i.c.	[_quadrature]	✓	0.538
14680	$xy' + 2 = \sqrt{x}$ i.c.	[_quadrature]	✓	0.640
14681	$y' \cos(x) - \sin(x) = 0$ i.c.	[_quadrature]	✓	1.064
14682	$(x^2 + 1)y' = 1$ i.c.	[_quadrature]	✓	0.543
14683	$xy'' + 2 = \sqrt{x}$ i.c.	[[_2nd_order, _quadrature]]	✓	1.653

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
14684	$y' = \sin\left(\frac{x}{2}\right)$	[_quadrature]	✓	0.334
14685	$y' = \sin\left(\frac{x}{2}\right)$ i.c.	[_quadrature]	✓	0.507
14686	$y' = \sin\left(\frac{x}{2}\right)$ i.c.	[_quadrature]	✓	0.575
14687	$y' = 3\sqrt{x+3}$	[_quadrature]	✓	0.304
14688	$y' = 3\sqrt{x+3}$ i.c.	[_quadrature]	✓	0.513
14689	$y' = 3\sqrt{x+3}$ i.c.	[_quadrature]	✓	0.533
14690	$y' = 3\sqrt{x+3}$ i.c.	[_quadrature]	✓	0.533
14691	$y' = x e^{-x^2}$ i.c.	[_quadrature]	✓	0.470
14692	$y' = \frac{x}{\sqrt{x^2+5}}$ i.c.	[_quadrature]	✓	0.804
14693	$y' = \frac{1}{x^2+1}$ i.c.	[_quadrature]	✓	0.510
14694	$y' = e^{-9x^2}$ i.c.	[_quadrature]	✓	0.445
14695	$xy' = \sin(x)$ i.c.	[_quadrature]	✓	0.622
14696	$xy' = \sin(x^2)$ i.c.	[_quadrature]	✓	0.664
14697	$y' = \begin{cases} 0 & x < 0 \\ 1 & 0 \leq x \end{cases}$ i.c.	[_quadrature]	✓	0.292
14698	$y' = \begin{cases} 0 & x < 1 \\ 1 & 1 \leq x \end{cases}$ i.c.	[_quadrature]	✓	0.296

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
14699	$y' = \begin{cases} 0 & x < 1 \\ 1 & 1 \leq x < 2 \\ 0 & 2 \leq x \end{cases}$ i.c.	[_quadrature]	✓	0.314
14700	$y' + 3xy = 6x$	[_separable]	✓	1.180
14701	$\sin(x + y) - yy' = 0$	['y=_G(x,y)']	✗	3.816
14702	$y' - y^3 = 8$	[_quadrature]	✓	2.435
14703	$x^2y' + xy^2 = x$	[_separable]	✓	1.402
14704	$y' - y^2 = x$	[[_Riccati, _special]]	✓	0.961
14705	$y^3 - 25y + y' = 0$	[_quadrature]	✓	2.857
14706	$(-2 + x)y' = y + 3$	[_separable]	✓	1.471
14707	$(y - 2)y' = x - 3$	[_separable]	✓	2.869
14708	$y' + 2y - y^2 = -2$	[_quadrature]	✓	1.031
14709	$y' + (8 - x)y - y^2 = -8x$	[_Riccati]	✓	1.535
14710	$y' = 2\sqrt{y}$ i.c.	[_quadrature]	✓	1.353
14711	$y' = 3y^2 - y^2 \sin(x)$	[_separable]	✓	1.772
14712	$y' = 3x - y \sin(x)$	[_linear]	✓	1.862
14713	$xy' = (x - y)^2$	[_rational, _Riccati]	✓	1.569
14714	$y' = \sqrt{x^2 + 1}$	[_quadrature]	✓	0.357
14715	$y' + 4y = 8$	[_quadrature]	✓	1.070
14716	$y' + xy = 4x$	[_separable]	✓	1.396
14717	$y' + 4y = x^2$	[[_linear, 'class A']]	✓	1.056
14718	$y' = xy - 3x - 2y + 6$	[_separable]	✓	1.282
14719	$y' = \sin(x + y)$	[[_homogeneous, 'class C'], _dAlembert]	✓	2.349
14720	$yy' = e^{x-3y^2}$	[_separable]	✓	1.478

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
14721	$y' = \frac{x}{y}$	[_separable]	✓	2.962
14722	$y' = y^2 + 9$	[_quadrature]	✓	0.980
14723	$xyy' = y^2 + 9$	[_separable]	✓	2.445
14724	$y' = \frac{1 + y^2}{x^2 + 1}$	[_separable]	✓	1.809
14725	$\cos(y) y' = \sin(x)$	[_separable]	✓	1.728
14726	$y' = e^{2x-3y}$	[_separable]	✓	1.732
14727	$y' = \frac{x}{y}$ i.c.	[_separable]	✓	4.293
14728	$y' = 2x - 1 + 2xy - y$ i.c.	[_separable]	✓	1.503
14729	$yy' = xy^2 + x$ i.c.	[_separable]	✓	2.852
14730	$yy' = 3\sqrt{xy^2 + 9x}$ i.c.	[[_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]']]	✓	3.803
14731	$y' = xy - 4x$	[_separable]	✓	1.194
14732	$y' - 4y = 2$	[_quadrature]	✓	0.962
14733	$yy' = xy^2 - 9x$	[_separable]	✓	1.888
14734	$y' = \sin(y)$	[_quadrature]	✓	1.444
14735	$y' = e^{x+y^2}$	[_separable]	✓	1.187
14736	$y' = 200y - 2y^2$	[_quadrature]	✓	1.983
14737	$y' = xy - 4x$	[_separable]	✓	1.148
14738	$y' = xy - 3x - 2y + 6$	[_separable]	✓	1.273
14739	$y' = 3y^2 - y^2 \sin(x)$	[_separable]	✓	1.844
14740	$y' = \tan(y)$	[_quadrature]	✓	1.122
14741	$y' = \frac{y}{x}$	[_separable]	✓	1.260

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
14742	$y' = \frac{6x^2 + 4}{3y^2 - 4y}$	[_separable]	✓	1.361
14743	$(x^2 + 1) y' = 1 + y^2$	[_separable]	✓	1.873
14744	$(y^2 - 1) y' = 4xy^2$	[_separable]	✓	11.935
14745	$y' = e^{-y}$	[_quadrature]	✓	0.924
14746	$y' = e^{-y} + 1$	[_quadrature]	✓	1.284
14747	$y' = 3xy^3$	[_separable]	✓	2.251
14748	$y' = \frac{2 + \sqrt{x}}{2 + \sqrt{y}}$	[_separable]	✓	1.570
14749	$y' - 3y^2x^2 = -3x^2$	[_separable]	✓	3.053
14750	$y' - 3y^2x^2 = 3x^2$	[_separable]	✓	3.187
14751	$y' = 200y - 2y^2$	[_quadrature]	✓	1.863
14752	$y' - 2y = -10$	[_quadrature]	✓	1.263
14753	$yy' = \sin(x)$	[_separable]	✓	2.396
14754	$y' = 2x - 1 + 2xy - y$	[_separable]	✓	1.368
14755	$xy' = y^2 - y$	[_separable]	✓	2.102
14756	$xy' = y^2 - y$	[_separable]	✓	2.133
14757	$y' = \frac{y^2 - 1}{xy}$	[_separable]	✓	4.074
14758	$(y^2 - 1) y' = 4xy$	[_separable]	✓	1.891
14759	$x^2y' + 3x^2y = \sin(x)$	[[_linear, 'class A']]	✓	1.684
14760	$y^2y' + 3x^2y = \sin(x)$	['y=_G(x,y)']	✗	3.018
14761	$y' - xy^2 = \sqrt{x}$	[_Riccati]	✓	1.632

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
14762	$y' = 1 + (xy + 3y)^2$	[_Riccati]	✓	5.441
14763	$y' = 1 + xy + 3y$	[_linear]	✓	1.158
14764	$y' = 4y + 8$	[_quadrature]	✓	0.961
14765	$y' - e^{2x} = 0$	[_quadrature]	✓	0.311
14766	$y' = y \sin(x)$	[_separable]	✓	1.385
14767	$y' + 4y = y^3$	[_quadrature]	✓	3.338
14768	$xy' + \cos(x^2) = 827y$	[_linear]	✓	1.995
14769	$y' + 2y = 6$	[_quadrature]	✓	1.119
14770	$y' + 2y = 20e^{3x}$	[[_linear, 'class A']]	✓	1.109
14771	$y' = 4y + 16x$	[[_linear, 'class A']]	✓	0.982
14772	$y' - 2xy = x$	[_separable]	✓	1.116
14773	$xy' + 3y - 10x^2 = 0$	[_linear]	✓	1.398
14774	$x^2y' + 2xy = \sin(x)$	[_linear]	✓	1.277
14775	$xy' = \sqrt{x} + 3y$	[_linear]	✓	1.416
14776	$y' \cos(x) + y \sin(x) = \cos(x)^2$	[_linear]	✓	2.293
14777	$xy' + (5x + 2)y = \frac{20}{x}$	[_linear]	✓	2.098
14778	$2\sqrt{x}y' + y = 2xe^{-\sqrt{x}}$	[_linear]	✓	2.712
14779	$y' - 3y = 6$	[_quadrature]	✓	1.319
	i.c.			
14780	$y' - 3y = 6$	[_quadrature]	✓	1.028
	i.c.			
14781	$y' + 5y = e^{-3x}$	[[_linear, 'class A']]	✓	1.378
	i.c.			
14782	$xy' + 3y = 20x^2$	[_linear]	✓	1.824
	i.c.			
14783	$xy' = y + x^2 \cos(x)$	[_linear]	✓	1.566
	i.c.			

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
14784	$(x^2 + 1)y' = x(3 + 3x^2 - y)$ i.c.	[_linear]	✓	4.116
14785	$y' + 6xy = \sin(x)$ i.c.	[_linear]	✓	1.638
14786	$x^2y' + xy = \sqrt{x} \sin(x)$ i.c.	[_linear]	✓	2.056
14787	$-y + xy' = x^2e^{-x^2}$ i.c.	[_linear]	✓	1.625
14788	$y' = \frac{1}{(3x + 3y + 2)^2}$	[[_homogeneous, 'class C', _dAlembert]	✓	5.666
14789	$y' = \frac{(-2y + 3x)^2 + 1}{-2y + 3x} + \frac{3}{2}$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓	10.996
14790	$\cos(-4y + 8x - 3)y' = 2 + 2\cos(-4y + 8x - 3)$	[[_homogeneous, 'class C', _exact, _dAlembert]	✓	122.847
14791	$y' = 1 + (y - x)^2$ i.c.	[[_homogeneous, 'class C', _Riccati]	✓	3.171
14792	$x^2y' - xy = y^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓	1.850
14793	$y' = \frac{y}{x} + \frac{x}{y}$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓	4.608
14794	$\cos\left(\frac{y}{x}\right)\left(y' - \frac{y}{x}\right) = 1 + \sin\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A', _dAlembert]	✓	3.479
14795	$y' = \frac{x - y}{x + y}$ i.c.	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓	6.010
14796	$y' + 3y = 3y^3$	[_quadrature]	✓	3.409
14797	$y' - \frac{3y}{x} = \frac{y^2}{x^2}$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓	2.893
14798	$y' + 3y \cot(x) = 6 \cos(x)y^{2/3}$	[_Bernoulli]	✓	3.879

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
14799	$y' - \frac{y}{x} = \frac{1}{y}$ i.c.	[[_homogeneous, 'class D', _rational, _Bernoulli]	✓	3.760
14800	$y' = \frac{y}{x} + \frac{x^2}{y^2}$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓	7.808
14801	$3y' = -2 + \sqrt{2x + 3y + 4}$	[[_homogeneous, 'class C', _dAlembert]	✓	1.397
14802	$3y' + \frac{2y}{x} = 4\sqrt{y}$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓	3.763
14803	$y' = 4 + \frac{1}{\sin(4x - y)}$	[[_homogeneous, 'class C', _dAlembert]	✓	38.788
14804	$(y - x)y' = 1$	[[_homogeneous, 'class C', [_Abel, '2nd type', 'class C', _dAlembert]	✓	1.370
14805	$(x + y)y' = y$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓	2.326
14806	$(2xy + 2x^2)y' = x^2 + 2xy + 2y^2$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓	65.103
14807	$y' + \frac{y}{x} = x^2y^3$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓	2.879
14808	$y' = 2\sqrt{2x + y - 3} - 2$	[[_homogeneous, 'class C', _dAlembert]	✓	1.481
14809	$y' = 2\sqrt{2x + y - 3}$	[[_homogeneous, 'class C', _dAlembert]	✓	2.167
14810	$-y + xy' = \sqrt{xy + x^2}$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓	8.467
14811	$y' + 3y = \frac{28e^{2x}}{y^3}$	[[_1st_order, _with_linear_symmetries], _Bernoulli]	✓	2.832

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
14812	$y' = (x - y + 3)^2$	[[_homogeneous, 'class C'], _Riccati]	✓	3.421
14813	$y' + 2x = 2\sqrt{y + x^2}$	[[_1st_order, _with_linear_symmetries], _Clairaut]	✓	2.151
14814	$\cos(y) y' = e^{-x} - \sin(y)$	['y=_G(x,y)']	✓	2.132
14815	$y' = x \left( 1 + \frac{2y}{x^2} + \frac{y^2}{x^4} \right)$	[[_homogeneous, 'class G'], _rational, _Riccati]	✓	1.550
14816	$y' = \frac{1}{y} - \frac{y}{2x}$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓	1.916
14817	$e^{xy^2-x^2} (y^2 - 2x) + 2e^{xy^2-x^2} xyy' = 0$	[[_homogeneous, 'class G'], _exact, _rational, _Bernoulli]	✓	2.000
14818	$2xy + y^2 + (2xy + x^2) y' = 0$	[[_homogeneous, 'class A'], _exact, _rational, [_Abel, '2nd type', 'class B']]	✓	4.718
14819	$2xy^3 + 4x^3 + 3x^2y^2y' = 0$	[[_homogeneous, 'class G'], _exact, _rational, _Bernoulli]	✓	2.604
14820	$2 - 2x + 3y^2y' = 0$	[_separable]	✓	1.784
14821	$1 + 3y^2x^2 + (2x^3y + 6y) y' = 0$	[_exact, _rational, _Bernoulli]	✓	1.644
14822	$4x^3y + (x^4 - y^4) y' = 0$	[[_homogeneous, 'class A'], _exact, _rational, _dAlembert]	✓	73.186
14823	$1 + \ln(xy) + \frac{xy'}{y} = 0$	[[_homogeneous, 'class G'], _exact]	✓	2.061
14824	$1 + e^y + x e^y y' = 0$	[_separable]	✓	1.456
14825	$e^y + (x e^y + 1) y' = 0$	[[_1st_order, _with_exponential_symmetries], _exact]	✓	1.158
14826	$1 + y^4 + xy^3y' = 0$	[_separable]	✓	3.157

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
14827	$y + (y^4 - 3x) y' = 0$	[[_homogeneous, 'class G'], _rational]	✓	7.532
14828	$\frac{2y}{x} + (4x^2y - 3) y' = 0$	[[_homogeneous, 'class G'], _rational, [_Abel, '2nd type', 'class B']]	✓	6.553
14829	$1 + (1 - x \tan(y)) y' = 0$	[[_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓	1.265
14830	$3y + 3y^2 + (2x + 4xy) y' = 0$	[_separable]	✓	3.887
14831	$2x(1 + y) - y' = 0$	[_separable]	✓	1.104
14832	$2y^3 + (4x^3y^3 - 3xy^2) y' = 0$	[[_homogeneous, 'class G'], _rational, [_Abel, '2nd type', 'class B']]	✓	6.326
14833	$4xy + (3x^2 + 5y) y' = 0$	[[_homogeneous, 'class G'], _rational, [_Abel, '2nd type', 'class A']]	✓	1.702
14834	$6 + 12y^2x^2 + \left(7x^3y + \frac{x}{y}\right) y' = 0$	[[_homogeneous, 'class G'], _rational]	✓	2.533
14835	$xy' = 2y - 6x^3$	[_linear]	✓	1.384
14836	$xy' = 2y^2 - 6y$	[_separable]	✓	2.093
14837	$4y^2 - y^2x^2 + y' = 0$	[_separable]	✓	1.437
14838	$y' = \sqrt{x + y}$	[[_homogeneous, 'class C'], _dAlembert]	✓	2.504
14839	$x^2y' - \sqrt{x} = 3$	[_quadrature]	✓	0.362
14840	$xyy' - y^2 = \sqrt{x^4 + y^2x^2}$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	37.003
14841	$y' = y^2 - 2xy + x^2$	[[_homogeneous, 'class C'], _Riccati]	✓	1.773
14842	$4xy - 6 + x^2y' = 0$	[_linear]	✓	1.405
14843	$xy^2 - 6 + x^2yy' = 0$	[[_homogeneous, 'class G'], _exact, _rational, _Bernoulli]	✓	1.919

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
14844	$x^3 + y^3 + xy^2y' = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓	13.795
14845	$3y - x^3 + xy' = 0$	[_linear]	✓	1.323
14846	$1 + 2xy^2 + (2x^2y + 2y)y' = 0$	[_exact, _rational, _Bernoulli]	✓	1.602
14847	$3xy^3 - y + xy' = 0$	[[_homogeneous, 'class D'], _rational, _Bernoulli]	✓	2.622
14848	$2 + 2x^2 - 2xy + (x^2 + 1)y' = 0$	[_linear]	✓	1.490
14849	$(y^2 - 4)y' = y$	[_quadrature]	✓	1.589
14850	$(x^2 - 4)y' = x$	[_quadrature]	✓	0.378
14851	$y' = \frac{1}{xy - 3x}$	[_separable]	✓	1.427
14852	$y' = \frac{3y}{x+1} - y^2$	[[_1st_order, _with_linear_symmetries], _rational, _Bernoulli]	✓	1.526
14853	$\sin(y) + (x+y)\cos(y)y' = 0$	[_exact, [_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓	3.813
14854	$\sin(y) + (x+1)\cos(y)y' = 0$	[_separable]	✓	3.690
14855	$\sin(x) + 2y'\cos(x) = 0$	[_quadrature]	✓	0.481
14856	$xyy' = 2y^2 + 2x^2$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓	10.210
14857	$y' = \frac{x+2y}{x+2y+3}$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	1.355
14858	$y' = \frac{x+2y}{2x-y}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓	2.779
14859	$y' = \frac{y}{x} + \tan\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A'], _dAlembert]	✓	4.112

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
14860	$y' = xy^2 + 3y^2 + x + 3$	[_separable]	✓	2.153
14861	$1 - (x + 2y)y' = 0$	[[_homogeneous, 'class C'], [_Abel, '2nd type', 'class C'], _dAlembert]	✓	1.515
14862	$\ln(y) + \left(\frac{x}{y} + 3\right)y' = 0$	[_exact, [_1st_order, '._with_symmetry_[F(x)*G(y),0]']]	✓	1.195
14863	$y^2 + 1 - y' = 0$	[_quadrature]	✓	0.981
14864	$y' - 3y = 12e^{2x}$	[[_linear, 'class A']]	✓	1.112
14865	$xyy' = y^2 + xy + x^2$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓	36.654
14866	$(x + 2)y' - x^3 = 0$	[_quadrature]	✓	0.382
14867	$xy^3y' = y^4 - x^2$	[[_homogeneous, 'class D'], _rational, _Bernoulli]	✓	3.542
14868	$y' = 4y - \frac{16e^{4x}}{y^2}$	[[_1st_order, _with_linear_symmetries], _Bernoulli]	✓	2.060
14869	$2y - 6x + (x + 1)y' = 0$	[_linear]	✓	1.492
14870	$xy^2 + (x^2y + 10y^4)y' = 0$	[[_homogeneous, 'class G'], _exact, _rational]	✓	1.957
14871	$yy' - xy^2 = 6xe^{4x^2}$	[_Bernoulli]	✓	2.387
14872	$(y - x + 3)^2(y' - 1) = 1$	[[_homogeneous, 'class C'], _exact, _rational, _dAlembert]	✓	11.450
14873	$x + ye^{xy} + xe^{xy}y' = 0$	[_exact, [_1st_order, '._with_symmetry_[F(x),G(x)*y+H(x)]]]	✓	1.302
14874	$y^2 - y^2 \cos(x) + y' = 0$	[_separable]	✓	1.795
14875	$y' + 2y = \sin(x)$	[[_linear, 'class A']]	✓	1.232
14876	$y' + 2x = \sin(x)$	[_quadrature]	✓	0.354

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
14877	$y' = y^3 - y^3 \cos(x)$	[_separable]	✓	2.720
14878	$y^2 e^{xy^2} - 2x + 2xy e^{xy^2} y' = 0$	[_exact, [_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]]]	✓	1.678
14879	$y' = e^{4x+3y}$	[_separable]	✓	2.009
14880	$y' = \tan(6x + 3y + 1) - 2$	[[_homogeneous, 'class C'], _dAlembert]	✓	388.497
14881	$y' = e^{4x+3y}$	[_separable]	✓	2.023
14882	$y' = x(6y + e^{x^2})$	[_linear]	✓	1.238
14883	$x(1 - 2y) + (y - x^2) y' = 0$	[_exact, _rational, [_1st_order, '_with_symmetry_[F(x)*G(y),0]'], [_Abel, '2nd type', 'class A']]	✓	1.204
14884	$x^2 y' + 3xy = 6e^{-x^2}$	[_linear]	✓	1.260
14885	$xy'' + 4y' = 18x^2$	[[_2nd_order, _missing_y]]	✓	1.241
14886	$xy'' = 2y'$	[[_2nd_order, _missing_y]]	✓	0.971
14887	$y'' = y'$	[[_2nd_order, _missing_x]]	✓	1.212
14888	$y'' + 2y' = 8e^{2x}$	[[_2nd_order, _missing_y]]	✓	1.546
14889	$xy'' = y' - 2x^2 y'$	[[_2nd_order, _missing_y]]	✓	0.989
14890	$(x^2 + 1) y'' + 2xy' = 0$	[[_2nd_order, _missing_y]]	✓	1.097
14891	$y'' = 4x\sqrt{y'}$	[[_2nd_order, _missing_y], [_2nd_order, _reducible, _mu_y_y1]]	✓	0.467

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
14892	$y'y'' = 1$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], [_2nd_order, _reducible, _mu_poly_yn]]	✓	1.846
14893	$yy'' = -y'^2$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓	0.804
14894	$xy'' = y'^2 - y'$	[[_2nd_order, _missing_y], [_2nd_order, _reducible, _mu_y_y1]]	✓	0.331
14895	$xy'' - y'^2 = 6x^5$	[[_2nd_order, _missing_y]]	✓	1.738
14896	$yy'' - y'^2 = y'$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓	0.276
14897	$y'' = 2y' - 6$	[[_2nd_order, _missing_x]]	✓	1.484
14898	$(-3 + y)y'' = 2y'^2$	[[_2nd_order, _missing_x], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓	0.204
14899	$y'' + 4y' = 9e^{-3x}$	[[_2nd_order, _missing_y]]	✓	1.536
14900	$y''' = y''$	[[_3rd_order, _missing_x]]	✓	0.061
14901	$xy''' + 2y'' = 6x$	[[_3rd_order, _missing_y]]	✓	0.298

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
14902	$y''' = 2\sqrt{y''}$	[[_3rd_order, _missing_x], [_3rd_order, _missing_y], [_3rd_order, _with_linear_symmetries], [_3rd_order, _reducible, _mu_y2]]	✓	0.337
14903	$y'''' = -2y'''$	[[_high_order, _missing_x]]	✓	0.067
14904	i.c. $yy'' = y'^2$	[[_2nd_order, _missing_x], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓	0.392
14905	i.c. $3yy'' = 2y'^2$	[[_2nd_order, _missing_x], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓	0.429
14906	$\sin(y)y'' + \cos(y)y'^2 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓	0.536
14907	$y'' = y'$	[[_2nd_order, _missing_x]]	✓	1.198
14908	$y'^2 + yy'' = 2yy'$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓	0.774
14909	$y^2y'' + y'' + 2yy'^2 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓	0.406

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
14910	$y'' = 4x\sqrt{y'}$	[[_2nd_order, _missing_y], [_2nd_order, _reducible, _mu_y_y1]]	✓	0.405
14911	$y'y'' = 1$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], [_2nd_order, _reducible, _mu_poly_yn]]	✓	1.902
14912	$xy'' = y'^2 - y'$	[[_2nd_order, _missing_y], [_2nd_order, _reducible, _mu_y_y1]]	✓	0.327
14913	$xy'' - y' = 6x^5$	[[_2nd_order, _missing_y]]	✓	1.190
14914	$yy'' - y'^2 = y'$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓	0.274
14915	$yy'' = 2y'^2$	[[_2nd_order, _missing_x], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓	0.198
14916	$(-3 + y)y'' = y'^2$	[[_2nd_order, _missing_x], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓	0.263
14917	$y'' + 4y' = 9e^{-3x}$	[[_2nd_order, _missing_y]]	✓	1.551
14918	$y'' = y'(y' - 2)$	[[_2nd_order, _missing_x], _Liouville, [_2nd_order, _reducible, _mu_xy]]	✓	0.549
14919	$xy'' + 4y' = 18x^2$	[[_2nd_order, _missing_y]]	✓	1.697
14920	$xy'' = 2y'$	[[_2nd_order, _missing_y]]	✓	1.266

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
14921	$y'' = y'$ i.c.	[[_2nd_order, _missing_x]]	✓	1.621
14922	$y'' + 2y' = 8e^{2x}$ i.c.	[[_2nd_order, _missing_y]]	✓	1.838
14923	$y''' = y''$ i.c.	[[_3rd_order, _missing_x]]	✓	0.144
14924	$xy''' + 2y'' = 6x$ i.c.	[[_3rd_order, _missing_y]]	✓	0.389
14925	$xy'' + 2y' = 6$ i.c.	[[_2nd_order, _missing_y]]	✓	1.531
14926	$2xy'y'' = -1 + y'^2$ i.c.	[[_2nd_order, _missing_y], [_2nd_order, _reducible, _mu_y_y1], [_2nd_order, _reducible, _mu_poly_yn]]	✓	0.533
14927	$3yy'' = 2y'^2$ i.c.	[[_2nd_order, _missing_x], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓	0.401
14928	$yy'' + 2y'^2 = 3yy'$ i.c.	[[_2nd_order, _missing_x], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓	1.459
14929	$y'' = -y'e^{-y}$ i.c.	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], [_2nd_order, _reducible, _mu_xy]]	✓	1.544
14930	$y'' = -2xy'^2$ i.c.	[[_2nd_order, _missing_y], [_2nd_order, _reducible, _mu_y_y1]]	✓	0.356
14931	$y'' = -2xy'^2$ i.c.	[[_2nd_order, _missing_y], [_2nd_order, _reducible, _mu_y_y1]]	✓	0.272

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
14932	<i>i.c.</i> $y'' = -2xy'^2$	[[_2nd_order, _missing_y], [_2nd_order, _reducible, _mu_y_y1]]	✓	0.309
14933	<i>i.c.</i> $y'' = -2xy'^2$	[[_2nd_order, _missing_y], [_2nd_order, _reducible, _mu_y_y1]]	✓	0.526
14934	<i>i.c.</i> $y'' = 2yy'$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _non-linear], _Lagerstrom, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓	0.959
14935	<i>i.c.</i> $y'' = 2yy'$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _non-linear], _Lagerstrom, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓	0.819
14936	<i>i.c.</i> $y'' = 2yy'$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _non-linear], _Lagerstrom, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓	0.734
14937	<i>i.c.</i> $y'' = 2yy'$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _non-linear], _Lagerstrom, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓	0.853
14938	$y'' + x^2y' - 4y = x^3$	[[_2nd_order, _linear, _nonhomogeneous]]	✗	0.631
14939	$y'' + x^2y' - 4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.640

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
14940	$y'' + x^2y' = 4y$	[[_2nd_order, _with_linear_symmetries]]	✗	0.634
14941	$y'' + x^2y' + 4y = y^3$	[NONE]	✗	0.088
14942	$xy' + 3y = e^{2x}$	[_linear]	✓	1.136
14943	$y''' + y = 0$	[[_3rd_order, _missing_x]]	✓	0.072
14944	$(1 + y)y'' = y'^3$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_y_y1]]	✓	0.405
14945	$y'' = 2y' - 5y + 30e^{3x}$	[[_2nd_order, _with_linear_symmetries]]	✓	10.987
14946	$y'''' + 6y'' + 3y' - 83y - 25 = 0$	[[_high_order, _missing_x]]	✓	0.146
14947	$yy''' + 6y'' + 3y' = y$	[[_3rd_order, _missing_x], [_3rd_order, _with_linear_symmetries]]	✗	0.048
14948	$y'' - 5y' + 6y = 0$	[[_2nd_order, _missing_x]]	✓	0.403
14949	$y'' - 10y' + 25y = 0$	[[_2nd_order, _missing_x]]	✓	0.395
14950	$x^2y'' - 6xy' + 12y = 0$	[[_Emden, _Fowler]]	✓	0.312
14951	$2x^2y'' - xy' + y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓	0.333
14952	$4x^2y'' + y = 0$	[[_Emden, _Fowler]]	✓	0.301
14953	$y'' - \left(4 + \frac{2}{x}\right)y' + \left(4 + \frac{4}{x}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.329
14954	$(x + 1)y'' + xy' - y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.339

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
14955	$y'' - \frac{y'}{x} - 4x^2y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)']]]	✓	0.331
14956	$y'' + y = 0$	[[_2nd_order, _missing_x]]	✓	0.451
14957	$xy'' + (2x + 2)y' + 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.339
14958	$\sin(x)^2 y'' - 2 \cos(x) \sin(x) y' + (1 + \cos(x)^2) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.358
14959	$x^2 y'' - 2xy' + (x^2 + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.393
14960	$x^2 y'' + xy' + y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)']]]	✓	0.322
14961	$x^2 y'' + xy' + \left(x^2 - \frac{1}{4}\right) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.375
14962	$y'' - 4y' + 3y = 9e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓	0.475
14963	$y'' - 6y' + 8y = e^{4x}$	[[_2nd_order, _with_linear_symmetries]]	✓	0.519
14964	$x^2 y'' + xy' - y = \sqrt{x}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓	0.383
14965	$x^2 y'' - 20y = 27x^5$	[[_2nd_order, _with_linear_symmetries]]	✓	0.400
14966	$xy'' + (2x + 2)y' + 2y = 8e^{2x}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓	0.437
14967	$(x + 1)y'' + xy' - y = (x + 1)^2$	[[_2nd_order, _with_linear_symmetries]]	✓	0.432
14968	$y''' - 9y'' + 27y' - 27y = 0$	[[_3rd_order, _missing_x]]	✓	0.067
14969	$y''' - 9y'' + 27y' - 27y = e^{3x} \sin(x)$	[[_3rd_order, _linear, _nonhomogeneous]]	✓	0.141

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
14970	$y'''' - 8y''' + 24y'' - 32y' + 16y = 0$	[[_high_order, _missing_x]]	✓	0.073
14971	$x^3y''' - 4y'' + 10y' - 12y = 0$	[[_3rd_order, _with_linear_symmetries]]	✗	0.048
14972	i.c. $y'' + 4y = 0$	[[_2nd_order, _missing_x]]	✓	3.142
14973	i.c. $y'' - 4y = 0$	[[_2nd_order, _missing_x]]	✓	2.562
14974	i.c. $y'' + y' - 6y = 0$	[[_2nd_order, _missing_x]]	✓	1.428
14975	i.c. $y'' - 4y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓	1.175
14976	i.c. $x^2y'' - 4xy' + 6y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓	1.974
14977	i.c. $4x^2y'' + 4xy' - y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓	1.754
14978	i.c. $x^2y'' - xy' + y = 0$	[[_Emden, _Fowler]]	✓	2.098
14979	i.c. $xy'' - y' + 4x^3y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓	2.304
14980	i.c. $(x + 1)^2 y'' - 2(x + 1) y' + 2y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓	2.036
14981	$x^2y'' - 4xy' + 6y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓	1.182
14982	$xy'' - y' + 4x^3y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓	1.349

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
14983	$y''' + 4y' = 0$ i.c.	[[_3rd_order, _missing_x]]	✓	0.079
14984	$y'''' - y = 0$ i.c.	[[_high_order, _missing_x]]	✓	0.085
14985	$y'' - 4y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	2.567
14986	$y'' + 2y' - 3y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	1.320
14987	$y'' - 10y' + 9y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	1.403
14988	$y'' + 5y' = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	1.423
14989	$y''' - 9y' = 0$	[[_3rd_order, _missing_x]]	✓	0.064
14990	$y'''' - 10y'' + 9y = 0$	[[_high_order, _missing_x]]	✓	0.071
14991	$y'' - 7y' + 10y = 0$	[[_2nd_order, _missing_x]]	✓	0.837
14992	$y'' + 2y' - 24y = 0$	[[_2nd_order, _missing_x]]	✓	0.821
14993	$y'' - 25y = 0$	[[_2nd_order, _missing_x]]	✓	2.144
14994	$y'' + 3y' = 0$	[[_2nd_order, _missing_x]]	✓	1.386
14995	$4y'' - y = 0$	[[_2nd_order, _missing_x]]	✓	1.889
14996	$3y'' + 7y' - 6y = 0$	[[_2nd_order, _missing_x]]	✓	0.842
14997	$y'' - 8y' + 15y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	1.396
14998	$y'' - 8y' + 15y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	1.406
14999	$y'' - 8y' + 15y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	1.422
15000	$y'' - 9y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	2.627

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
15001	$y'' - 9y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	2.594
15002	$y'' - 9y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	2.580
15003	$y'' - 10y' + 25y = 0$	[[_2nd_order, _missing_x]]	✓	0.852
15004	$y'' + 2y' + y = 0$	[[_2nd_order, _missing_x]]	✓	0.841
15005	$4y'' - 4y' + y = 0$	[[_2nd_order, _missing_x]]	✓	0.849
15006	$25y'' - 10y' + y = 0$	[[_2nd_order, _missing_x]]	✓	0.857
15007	$16y'' - 24y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓	0.855
15008	$9y'' + 12y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓	0.842
15009	$y'' - 8y' + 16y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	1.164
15010	$y'' - 8y' + 16y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	1.159
15011	$y'' - 8y' + 16y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	1.171
15012	$4y'' + 4y' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	1.200
15013	$4y'' + 4y' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	1.187
15014	$4y'' + 4y' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	1.202
15015	$y'' + 25y = 0$	[[_2nd_order, _missing_x]]	✓	1.968
15016	$y'' + 2y' + 5y = 0$	[[_2nd_order, _missing_x]]	✓	1.642
15017	$y'' - 2y' + 5y = 0$	[[_2nd_order, _missing_x]]	✓	1.757
15018	$y'' - 4y' + 29y = 0$	[[_2nd_order, _missing_x]]	✓	1.933

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
15019	$9y'' + 18y' + 10y = 0$	[[_2nd_order, _missing_x]]	✓	1.531
15020	$4y'' + y = 0$	[[_2nd_order, _missing_x]]	✓	1.873
15021	$y'' + 16y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	2.228
15022	$y'' + 16y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	2.669
15023	$y'' + 16y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	3.188
15024	$y'' - 4y' + 13y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	2.684
15025	$y'' - 4y' + 13y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	2.059
15026	$y'' - 4y' + 13y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	2.712
15027	$y'' - y' + \left(\frac{1}{4} + 4\pi^2\right)y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	2.913
15028	$y'' - y' + \left(\frac{1}{4} + 4\pi^2\right)y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	2.844
15029	$y'''' - 4y''' = 0$	[[_high_order, _missing_x]]	✓	0.067
15030	$y'''' + 4y'' = 0$	[[_high_order, _missing_x]]	✓	0.070
15031	$y'''' - 34y'' + 225y = 0$	[[_high_order, _missing_x]]	✓	0.072
15032	$y'''' - 81y = 0$	[[_high_order, _missing_x]]	✓	0.077
15033	$y'''' - 18y'' + 81y = 0$	[[_high_order, _missing_x]]	✓	0.073
15034	$y^{(5)} + 18y''' + 81y' = 0$	[[_high_order, _missing_x]]	✓	0.086
15035	$y''' - y'' + y' - y = 0$	[[_3rd_order, _missing_x]]	✓	0.071

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
15036	$y''' - 6y'' + 11y' - 6y = 0$	[[_3rd_order, _missing_x]]	✓	0.075
15037	$y''' - 8y'' + 37y' - 50y = 0$	[[_3rd_order, _missing_x]]	✓	0.076
15038	$y''' - 9y'' + 31y' - 39y = 0$	[[_3rd_order, _missing_x]]	✓	0.073
15039	$y'''' + y''' + 2y'' + 4y' - 8y = 0$	[[_high_order, _missing_x]]	✓	0.116
15040	$y'''' + 2y''' + 10y'' + 18y' + 9y = 0$	[[_high_order, _missing_x]]	✓	0.080
15041	$y''' + 4y' = 0$ i.c.	[[_3rd_order, _missing_x]]	✓	0.079
15042	$y''' - 6y'' + 12y' - 8y = 0$ i.c.	[[_3rd_order, _missing_x]]	✓	0.138
15043	$y'''' + 26y'' + 25y = 0$ i.c.	[[_high_order, _missing_x]]	✓	0.094
15044	$y'''' + y''' + 9y'' + 9y' = 0$ i.c.	[[_high_order, _missing_x]]	✓	0.094
15045	$y''' - 8y = 0$	[[_3rd_order, _missing_x]]	✓	0.082
15046	$y''' + 216y = 0$	[[_3rd_order, _missing_x]]	✓	0.077
15047	$y'''' - 3y'' - 4y = 0$	[[_high_order, _missing_x]]	✓	0.076
15048	$y'''' + 13y'' + 36y = 0$	[[_high_order, _missing_x]]	✓	0.079
15049	$y^{(6)} - 3y'''' + 3y'' - y = 0$	[[_high_order, _missing_x]]	✓	0.080
15050	$y^{(6)} - 2y'''' + y = 0$	[[_high_order, _missing_x]]	✓	0.097
15051	$16y'''' - y = 0$	[[_high_order, _missing_x]]	✓	0.076
15052	$4y'''' + 15y'' - 4y = 0$	[[_high_order, _missing_x]]	✓	0.075
15053	$y'''' - 4y''' + 16y' - 16y = 0$	[[_high_order, _missing_x]]	✓	0.076

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
15054	$y^{(6)} + 16y''' + 64y = 0$	[[_high_order, _missing_x]]	✓	0.103
15055	$x^2y'' - 5xy' + 8y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)']]]	✓	1.150
15056	$x^2y'' - 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.888
15057	$x^2y'' - 2xy' = 0$	[[_2nd_order, _missing_y]]	✓	0.753
15058	$2x^2y'' - xy' + y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)']]]	✓	1.266
15059	$x^2y'' - 5xy' + 9y = 0$	[[_Emden, _Fowler]]	✓	1.153
15060	$x^2y'' + 5xy' + 4y = 0$	[[_Emden, _Fowler]]	✓	1.167
15061	$4x^2y'' + y = 0$	[[_Emden, _Fowler]]	✓	0.800
15062	$x^2y'' - 19xy' + 100y = 0$	[[_Emden, _Fowler]]	✓	1.189
15063	$x^2y'' - 5xy' + 29y = 0$	[[_Emden, _Fowler]]	✓	3.040
15064	$x^2y'' - xy' + 10y = 0$	[[_Emden, _Fowler]]	✓	2.698
15065	$x^2y'' + 5xy' + 29y = 0$	[[_Emden, _Fowler]]	✓	2.497
15066	$x^2y'' + xy' + y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)']]]	✓	1.270
15067	$2x^2y'' + 5xy' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	1.335
15068	$4x^2y'' + 37y = 0$	[[_Emden, _Fowler]]	✓	0.891
15069	$x^2y'' + xy' = 0$	[[_2nd_order, _missing_y]]	✓	0.760
15070	$x^2y'' + xy' - 25y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)']]]	✓	1.021

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
15071	$4x^2y'' + 8xy' + 5y = 0$	[[_Emden, _Fowler]]	✓	2.069
15072	$3x^2y'' - 7xy' + 3y = 0$	[[_Emden, _Fowler]]	✓	1.164
15073	<i>i.c.</i> $x^2y'' - 2xy' - 10y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)']]]	✓	1.820
15074	<i>i.c.</i> $4x^2y'' + 4xy' - y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)']]]	✓	1.741
15075	<i>i.c.</i> $x^2y'' - 11xy' + 36y = 0$	[[_Emden, _Fowler]]	✓	1.959
15076	<i>i.c.</i> $x^2y'' - xy' + y = 0$	[[_Emden, _Fowler]]	✓	2.081
15077	<i>i.c.</i> $x^2y'' - xy' + 2y = 0$	[[_Emden, _Fowler]]	✓	3.643
15078	<i>i.c.</i> $x^2y'' - 3xy' + 13y = 0$	[[_Emden, _Fowler]]	✓	4.180
15079	$x^3y''' + 2x^2y'' - 4xy' + 4y = 0$	[[_3rd_order, _with_linear_symmetries]]	✓	0.130
15080	$x^3y''' + 2x^2y'' + xy' - y = 0$	[[_3rd_order, _with_linear_symmetries]]	✓	0.128
15081	$x^3y''' - 5x^2y'' + 14xy' - 18y = 0$	[[_3rd_order, _with_linear_symmetries]]	✓	0.127
15082	$x^3y''' - 3x^2y'' + 7xy' - 8y = 0$	[[_3rd_order, _with_linear_symmetries]]	✓	0.126
15083	$x^4y'''' + 6x^3y''' + 15x^2y'' + 9xy' + 16y = 0$	[[_high_order, _with_linear_symmetries]]	✓	0.144
15084	$x^4y'''' + 6x^3y''' - 3x^2y'' - 9xy' + 9y = 0$	[[_high_order, _exact, _linear, _homogeneous]]	✓	0.138
15085	$x^4y'''' + 2x^3y''' + x^2y'' - xy' + y = 0$	[[_high_order, _with_linear_symmetries]]	✓	0.135
15086	$x^4y'''' + 6x^3y''' + 7x^2y'' + xy' - y = 0$	[[_high_order, _exact, _linear, _homogeneous]]	✓	0.140

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
15087	$y'' + 4y = 24e^{2x}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	3.034
15088	$y'' + 4y = 24e^{2x}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	3.082
15089	$y'' + 2y' - 8y = 8x^2 - 3$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	1.177
15090	$y'' + 2y' - 8y = 8x^2 - 3$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	1.231
15091	$y'' - 9y = 36$ i.c.	[[_2nd_order, _missing_x]]	✓	3.001
15092	$y'' - 3y' - 10y = -6e^{4x}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	1.663
15093	$y'' - 3y' - 10y = 7e^{5x}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	1.760
15094	$y'' + 6y' + 9y = 169 \sin(2x)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.934
15095	$x^2y'' - 4xy' + 6y = 10x + 12$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	2.547
15096	$y'''' + y'' = 1$ i.c.	[[_high_order, _missing_x]]	✓	0.118
15097	$y'' - 3y' - 10y = e^{4x}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.035
15098	$y'' - 3y' - 10y = e^{5x}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.126
15099	$y'' - 3y' - 10y = -18e^{4x} + 14e^{5x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.263
15100	$y'' - 3y' - 10y = 35e^{5x} + 12e^{4x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.278
15101	$x^2y'' - 4xy' + 6y = 1$	[[_2nd_order, _with_linear_symmetries]]	✓	1.575
15102	$x^2y'' - 4xy' + 6y = x$	[[_2nd_order, _with_linear_symmetries]]	✓	1.602
15103	$x^2y'' - 4xy' + 6y = 22x + 24$	[[_2nd_order, _with_linear_symmetries]]	✓	1.743

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
15104	$x^2 y'' - 7xy' + 15y = x^2$	[[_2nd_order, _with_linear_symmetries]]	✓	1.568
15105	$x^2 y'' - 7xy' + 15y = x$	[[_2nd_order, _with_linear_symmetries]]	✓	1.539
15106	$x^2 y'' - 7xy' + 15y = 1$	[[_2nd_order, _with_linear_symmetries]]	✓	1.533
15107	$x^2 y'' - 7xy' + 15y = 4x^2 + 2x + 3$	[[_2nd_order, _with_linear_symmetries]]	✓	1.619
15108	$y'' + 9y = 52 e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓	2.353
15109	$y'' - 6y' + 9y = 27 e^{6x}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.043
15110	$y'' + 4y' - 5y = 30 e^{-4x}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.053
15111	$y'' + 3y' = e^{\frac{x}{2}}$	[[_2nd_order, _missing_y]]	✓	1.524
15112	<i>i.c.</i> $y'' - 3y' - 10y = -5 e^{3x}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.650
15113	$y'' + 9y = 10 \cos(2x) + 15 \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.900
15114	$y'' - 6y' + 9y = 25 \sin(6x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.536
15115	$y'' + 3y' = 26 \cos\left(\frac{x}{3}\right) - 12 \sin\left(\frac{x}{3}\right)$	[[_2nd_order, _missing_y]]	✓	2.303
15116	$y'' + 4y' - 5y = \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.373
15117	<i>i.c.</i> $y'' - 3y' - 10y = -4 \cos(x) + 7 \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.615
15118	$y'' - 3y' - 10y = -200$	[[_2nd_order, _missing_x]]	✓	0.977
15119	$y'' + 4y' - 5y = x^3$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.481
15120	$y'' - 6y' + 9y = 18x^2 + 3x + 4$	[[_2nd_order, _with_linear_symmetries]]	✓	1.069
15121	$y'' + 9y = 9x^4 - 9$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.218

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
15122	<i>i.c.</i> $y'' + 9y = x^3$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.655
15123	$y'' + 9y = 25x \cos(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	4.171
15124	$y'' - 6y' + 9y = e^{2x} \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.356
15125	$y'' + 9y = 54x^2 e^{3x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	2.737
15126	$y'' = 6x e^x \sin(x)$	[[_2nd_order, _quadrature]]	✓	1.842
15127	$y'' - 2y' + y = (-6x - 8) \cos(2x) + (8x - 11) \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.969
15128	$y'' - 2y' + y = (12x - 4) e^{-5x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.070
15129	<i>i.c.</i> $y'' + 9y = 39x e^{2x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	2.885
15130	$y'' - 3y' - 10y = -3 e^{-2x}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.096
15131	$y'' + 4y' = 20$	[[_2nd_order, _missing_x]]	✓	1.738
15132	$y'' + 4y' = x^2$	[[_2nd_order, _missing_y]]	✓	1.667
15133	$y'' + 9y = 3 \sin(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.640
15134	$y'' - 6y' + 9y = 10 e^{3x}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.042
15135	$y'' - 3y' - 10y = (72x^2 - 1) e^{2x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.106
15136	$y'' - 3y' - 10y = 4x e^{6x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.140
15137	$y'' - 10y' + 25y = 6 e^{5x}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.026
15138	$y'' - 10y' + 25y = 6 e^{-5x}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.076
15139	$y'' + 4y' + 5y = 24 \sin(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	10.013

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
*Continued from previous page*

#	ODE	CAS classification	Solved?	time (sec)
15140	$y'' + 4y' + 5y = 8e^{-3x}$	[[_2nd_order, _with_linear_symmetries]]	✓	7.947
15141	$y'' - 4y' + 5y = e^{2x} \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	5.034
15142	$y'' - 4y' + 5y = e^{-x} \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	7.951
15143	$y'' - 4y' + 5y = 100$	[[_2nd_order, _missing_x]]	✓	2.232
15144	$y'' - 4y' + 5y = e^{-x}$	[[_2nd_order, _with_linear_symmetries]]	✓	8.030
15145	$y'' - 4y' + 5y = 10x^2 + 4x + 8$	[[_2nd_order, _with_linear_symmetries]]	✓	10.020
15146	$y'' + 9y = e^{2x} \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	5.576
15147	$y'' + y = 6 \cos(x) - 3 \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	2.913
15148	$y'' + y = 6 \cos(2x) - 3 \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	2.240
15149	$y'' - 4y' + 5y = x^3 e^{-x} \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	16.715
15150	$y'' - 4y' + 5y = x^3 e^{2x} \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	9.028
15151	$y'' - 5y' + 6y = x^2 e^{-7x} + 2e^{-7x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.286
15152	$y'' - 5y' + 6y = x^2$	[[_2nd_order, _with_linear_symmetries]]	✓	1.174
15153	$y'' - 5y' + 6y = 4e^{-8x}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.040
15154	$y'' - 5y' + 6y = 4e^{3x}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.010
15155	$y'' - 5y' + 6y = x^2 e^{3x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.105
15156	$y'' - 5y' + 6y = x^2 \cos(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	2.090
15157	$y'' - 5y' + 6y = x^2 e^{3x} \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	2.809

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
15158	$y'' - 4y' + 20y = e^{4x} \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	22.566
15159	$y'' - 4y' + 20y = e^{2x} \sin(4x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	14.922
15160	$y'' - 4y' + 20y = x^3 \sin(4x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	24.829
15161	$y'' - 10y' + 25y = 3x^2 e^{5x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.087
15162	$y'' - 10y' + 25y = 3x^4$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.129
15163	$y'''' - 4y''' = 12e^{-2x}$	[[_high_order, _missing_y]]	✓	0.119
15164	$y'''' - 4y''' = 10 \sin(2x)$	[[_high_order, _missing_y]]	✓	0.156
15165	$y'''' - 4y''' = 32e^{4x}$	[[_high_order, _missing_y]]	✓	0.126
15166	$y'''' - 4y''' = 32x$	[[_high_order, _missing_y]]	✓	0.121
15167	$y''' - y'' + y' - y = x^2$	[[_3rd_order, _with_linear_symmetries]]	✓	0.120
15168	$y''' - y'' + y' - y = 30 \cos(2x)$	[[_3rd_order, _linear, _nonhomogeneous]]	✓	0.155
15169	$y''' - y'' + y' - y = 6e^x$	[[_3rd_order, _with_linear_symmetries]]	✓	0.128
15170	$y^{(5)} + 18y''' + 81y' = x^2 e^{3x}$	[[_high_order, _missing_y]]	✓	0.160
15171	$y^{(5)} + 18y''' + 81y' = x^2 \sin(3x)$	[[_high_order, _missing_y]]	✓	0.754
15172	$y^{(5)} + 18y''' + 81y' = x^2 e^{3x} \sin(3x)$	[[_high_order, _missing_y]]	✓	0.476
15173	$y''' - y'' + y' - y = 30x \cos(2x)$	[[_3rd_order, _linear, _nonhomogeneous]]	✓	0.224
15174	$y''' - y'' + y' - y = 3x \cos(x)$	[[_3rd_order, _linear, _nonhomogeneous]]	✓	0.639
15175	$y''' - y'' + y' - y = 3x e^x \cos(x)$	[[_3rd_order, _linear, _nonhomogeneous]]	✓	0.188

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
15176	$y''' - y'' + y' - y = 5x^5 e^{2x}$	[[_3rd_order, _linear, _nonhomogeneous]]	✓	0.155
15177	$y'' - 6y' + 9y = 27 e^{6x} + 25 \sin(6x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.952
15178	$y'' + 9y = 25x \cos(2x) + 3 \sin(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	6.224
15179	$y'' - 4y' + 5y = 5 \sin(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	11.958
15180	$y'' - 4y' + 5y = 20 \sinh(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	10.136
15181	$x^2 y'' - 5xy' + 8y = \frac{5}{x^3}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.735
15182	$2x^2 y'' - xy' + y = \frac{50}{x^3}$	[[_2nd_order, _with_linear_symmetries]]	✓	2.048
15183	$2x^2 y'' + 5xy' + y = 85 \cos(2 \ln(x))$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓	3.445
15184	$x^2 y'' - 2y = 15 \cos(3 \ln(x)) - 10 \sin(3 \ln(x))$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓	2.319
15185	$3x^2 y'' - 7xy' + 3y = 4x^3$	[[_2nd_order, _with_linear_symmetries]]	✓	2.211
15186	$2x^2 y'' + 5xy' + y = \frac{10}{x}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓	2.295
15187	$x^2 y'' - 5xy' + 9y = 6x^3$	[[_2nd_order, _with_linear_symmetries]]	✓	1.863
15188	$x^2 y'' + 5xy' + 4y = 64x^2 \ln(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.898
15189	$x^2 y'' - 2xy' + 2y = 3\sqrt{x}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.963
15190	$y'' + y = \cot(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	2.105
15191	$y'' + 4y = \csc(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.342

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
15192	$y'' - 7y' + 10y = 6e^{3x}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.049
15193	$y'' - 4y' + 4y = (24x^2 + 2)e^{2x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.077
15194	$y'' + 4y' + 4y = \frac{e^{-2x}}{x^2 + 1}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.685
15195	$x^2y'' + xy' - y = \sqrt{x}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓	2.119
15196	$x^2y'' + xy' - 9y = 12x^3$	[[_2nd_order, _with_linear_symmetries]]	✓	1.868
15197	$x^2y'' - 3xy' + 4y = x^2$	[[_2nd_order, _with_linear_symmetries]]	✓	1.794
15198	$x^2y'' + 5xy' + 4y = \ln(x)$	[[_2nd_order, _with_linear_symmetries]]	✓	1.782
15199	$x^2y'' - 2y = \frac{1}{-2 + x}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓	1.182
15200	$xy'' - y' - 4x^3y = x^3e^{x^2}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	6.395
15201	$xy'' + (2x + 2)y' + 2y = 8e^{2x}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓	2.079
15202	$(x + 1)y'' + xy' - y = (x + 1)^2$	[[_2nd_order, _with_linear_symmetries]]	✓	1.549
15203	$x^2y'' - 2xy' - 4y = \frac{10}{x}$ i.c.	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓	2.638
15204	$y'' - y' - 6y = 12e^{2x}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	1.637
15205	$y''' - 4y' = 30e^{3x}$	[[_3rd_order, _missing_y]]	✓	0.164
15206	$x^3y''' - 3x^2y'' + 6xy' - 6y = x^3$	[[_3rd_order, _with_linear_symmetries]]	✓	0.252
15207	$x^3y''' - 3x^2y'' + 6xy' - 6y = e^{-x^2}$	[[_3rd_order, _with_linear_symmetries]]	✓	0.367

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
15208	$y''' - y'' + y' - y = \tan(x)$	[[_3rd_order, _linear, _nonhomogeneous]]	✓	1.096
15209	$y'''' - 81y = \sinh(x)$	[[_high_order, _linear, _nonhomogeneous]]	✓	0.561
15210	$x^4y'''' + 6x^3y''' - 3x^2y'' - 9xy' + 9y = 12x \sin(x^2)$	[[_high_order, _exact, _linear, _nonhomogeneous]]	✓	0.400
15211	$y'' + 36y = 0$	[[_2nd_order, _missing_x]]	✓	2.017
15212	$y'' - 12y' + 36y = 0$	[[_2nd_order, _missing_x]]	✓	0.853
15213	$x^2y'' + xy' - 9y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)']]	✓	0.977
15214	$y'' - 36y = 0$	[[_2nd_order, _missing_x]]	✓	2.083
15215	$y'' - 9y' + 14y = 0$	[[_2nd_order, _missing_x]]	✓	0.833
15216	$x^2y'' - 7xy' + 16y = 0$	[[_Emden, _Fowler]]	✓	1.161
15217	$2xy'' + y' = \sqrt{x}$	[[_2nd_order, _missing_y]]	✓	1.143
15218	$y'''' - 8y'' + 16y = 0$	[[_high_order, _missing_x]]	✓	0.072
15219	$y'' + 6y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓	0.849
15220	$y'' + 3y = 0$	[[_2nd_order, _missing_x]]	✓	2.059
15221	$x^2y'' + 7xy' + 9y = 0$	[[_Emden, _Fowler]]	✓	1.153
15222	$x^2y'' + \frac{5y}{2} = 0$	[[_Emden, _Fowler]]	✓	1.031
15223	$y^{(5)} - 6y'''' + 13y''' = 0$	[[_high_order, _missing_x]]	✓	0.078
15224	$x^2y'' - 6y = 0$	[[_Emden, _Fowler]]	✓	0.704

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
15225	$y'' - 6y' + 25y = 0$	[[_2nd_order, _missing_x]]	✓	1.836
15226	$y'' = y^2$	[[_2nd_order, _missing_x], _Liouville, [_2nd_order, _reducible, _mu_xy]]	✓	0.196
15227	$x^2y'' + xy' + 9y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓	1.434
15228	$y'' - 8y' + 25y = 0$	[[_2nd_order, _missing_x]]	✓	1.848
15229	$x^2y'' + 2xy' - 30y = 0$	[[_Emden, _Fowler]]	✓	1.026
15230	$y'' + y' - 30y = 0$	[[_2nd_order, _missing_x]]	✓	0.817
15231	$16y'' - 8y' + y = 0$	[[_2nd_order, _missing_x]]	✓	0.851
15232	$4x^2y'' + 8xy' + y = 0$	[[_Emden, _Fowler]]	✓	1.158
15233	$y''' - 6y'' + 12y' = 8$	[[_3rd_order, _missing_x]]	✓	0.107
15234	$2x^2y'' - 3xy' + 2y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓	1.171
15235	$9x^2y'' + 3xy' + y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓	1.138
15236	$y'''' - 16y = 0$	[[_high_order, _missing_x]]	✓	0.074
15237	$2y'' - 7y' + 3 = 0$	[[_2nd_order, _missing_x]]	✓	1.633
15238	$y'' + 20y' + 100y = 0$	[[_2nd_order, _missing_x]]	✓	0.843
15239	$xy'' = 3y'$	[[_2nd_order, _missing_y]]	✓	1.025

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
15240	$y'' - 5y' = 0$	[[_2nd_order, _missing_x]]	✓	1.291
15241	$y'' - 9y' + 14y = 98x^2$	[[_2nd_order, _with_linear_symmetries]]	✓	1.250
15242	$y'' - 12y' + 36y = 25 \sin(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.449
15243	$y'' - 9y' + 14y = 576x^2 e^{-x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.113
15244	$y'' - 12y' + 36y = 81 e^{3x}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.037
15245	$x^2 y'' + xy' - 9y = 3\sqrt{x}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.868
15246	$y'' - 12y' + 36y = 3x e^{6x} - 2 e^{6x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.089
15247	$y'' + 36y = 6 \sec(6x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.359
15248	$x^2 y'' + 2xy' - 6y = 18 \ln(x)$	[[_2nd_order, _with_linear_symmetries]]	✓	1.609
15249	$y'' + 6y' + 9y = 10 e^{-3x}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.042
15250	$2x^2 y'' - xy' - 2y = 10x^2$	[[_2nd_order, _with_linear_symmetries]]	✓	1.627
15251	$y'' + 6y' + 9y = 2 \cos(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.483
15252	$xy'' - y' = -3xy'^3$	[[_2nd_order, _missing_y]]	✓	1.066
15253	$x^2 y'' + 3xy' + 2y = 6$	[[_2nd_order, _with_linear_symmetries]]	✓	3.457
15254	$x^2 y'' + xy' - y = \frac{1}{x^2 + 1}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓	2.288
15255	$4y'' - 12y' + 9y = x e^{\frac{3x}{2}}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.099
15256	$3y'' + 8y' - 3y = 123x \sin(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.579

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
15257	$y''' + 8y = e^{-2x}$	[[_3rd_order, _with_linear_symmetries]]	✓	0.125
15258	$y^{(6)} - 64y = e^{-2x}$	[[_high_order, _with_linear_symmetries]]	✓	0.165
15259	$x^2 y'' + 3xy' + y = \frac{1}{(x+1)^2}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓	1.924
15260	$x^2 y'' + 3xy' + y = \frac{1}{x}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓	1.808
15261	$y' + 4y = 0$ i.c.	[_quadrature]	✓	0.274
15262	$y' - 2y = t^3$ i.c.	[[_linear, 'class A']]	✓	0.330
15263	$y' + 3y = \text{Heaviside}(-4 + t)$ i.c.	[[_linear, 'class A']]	✓	0.394
15264	$y'' - 4y = t^3$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.277
15265	$y'' + 4y = 20e^{4t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	0.331
15266	$y'' + 4y = \sin(2t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.341
15267	$y'' + 4y = 3 \text{Heaviside}(t - 2)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.629
15268	$y'' + 5y' + 6y = e^{4t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	0.291
15269	$y'' - 5y' + 6y = t^2 e^{4t}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.290
15270	$y'' - 5y' + 6y = 7$ i.c.	[[_2nd_order, _missing_x]]	✓	0.269
15271	$y'' - 4y' + 13y = e^{2t} \sin(3t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.461
15272	$y'' + 4y' + 13y = 4t + 2e^{2t} \sin(3t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.533

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
15273	$y''' - 27y = e^{-3t}$ i.c.	[[_3rd_order, _with_linear_symmetries]]	✓	0.582
15274	$ty'' + y' + ty = 0$ i.c.	[_Lienard]	✓	0.285
15275	$y'' - 9y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	0.250
15276	$y'' + 9y = 27t^3$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.311
15277	$y'' + 8y' + 7y = 165e^{4t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	0.283
15278	$y'' - 8y' + 17y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	0.289
15279	$y'' - 6y' + 9y = e^{3t}t^2$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.241
15280	$y'' + 6y' + 13y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	0.330
15281	$y'' + 8y' + 17y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	0.287
15282	$y'' = e^t \sin(t)$ i.c.	[[_2nd_order, _quadrature]]	✓	0.304
15283	$y'' - 4y' + 40y = 122e^{-3t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	0.433
15284	$y'' - 9y = 24e^{-3t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	0.278
15285	$y'' - 4y' + 13y = e^{2t} \sin(3t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.458
15286	$y'' + 4y = 1$ i.c.	[[_2nd_order, _missing_x]]	✓	0.305
15287	$y'' + 4y = t$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	0.285
15288	$y'' + 4y = e^{3t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	0.391
15289	$y'' + 4y = \sin(2t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.321

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
15290	$y'' + 4y = \sin(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.335
15291	$y'' - 6y' + 9y = 1$ i.c.	[[_2nd_order, _missing_x]]	✓	0.259
15292	$y'' - 6y' + 9y = t$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	0.299
15293	$y'' - 6y' + 9y = e^{3t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	0.240
15294	$y'' - 6y' + 9y = e^{-3t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	0.316
15295	$y'' - 6y' + 9y = e^t$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	0.272
15296	$y' = \text{Heaviside}(t - 3)$ i.c.	[_quadrature]	✓	0.329
15297	$y' = \text{Heaviside}(t - 3)$ i.c.	[_quadrature]	✓	0.332
15298	$y'' = \text{Heaviside}(t - 2)$ i.c.	[[_2nd_order, _quadrature]]	✓	0.261
15299	$y'' = \text{Heaviside}(t - 2)$ i.c.	[[_2nd_order, _quadrature]]	✓	0.280
15300	$y'' + 9y = \text{Heaviside}(t - 10)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.473
15301	$y' = \begin{cases} 0 & t < 1 \\ 1 & 1 < t < 3 \\ 0 & 3 < t \end{cases}$ i.c.	[_quadrature]	✓	0.458
15302	$y'' = \begin{cases} 0 & t < 1 \\ 1 & 1 < t < 3 \\ 0 & 3 < t \end{cases}$ i.c.	[[_2nd_order, _quadrature]]	✓	0.426
15303	$y'' + 9y = \begin{cases} 0 & t < 1 \\ 1 & 1 < t < 3 \\ 0 & 3 < t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.205
15304	$y' = 3\delta(t - 2)$ i.c.	[_quadrature]	✓	0.329

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
15305	$y' = \delta(t - 2) - \delta(-4 + t)$ i.c.	[_quadrature]	✓	0.371
15306	$y'' = \delta(t - 3)$ i.c.	[[_2nd_order, _quadrature]]	✓	0.251
15307	$y'' = \delta(t - 1) - \delta(-4 + t)$ i.c.	[[_2nd_order, _quadrature]]	✓	0.306
15308	$y' + 2y = 4\delta(t - 1)$ i.c.	[[_linear, 'class A']]	✓	0.385
15309	$y'' + y = \delta(t) + \delta(t - \pi)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.882
15310	$y'' + y = -2\delta\left(t - \frac{\pi}{2}\right)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.332
15311	$y' + 3y = \delta(t - 2)$ i.c.	[[_linear, 'class A']]	✓	0.462
15312	$y'' + 3y' = \delta(t)$	[[_2nd_order, _missing_y]]	✓	0.194
15313	$y'' + 3y' = \delta(t - 1)$ i.c.	[[_2nd_order, _missing_y]]	✓	0.543
15314	$y'' + 16y = \delta(t - 2)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.440
15315	$y'' - 16y = \delta(t - 10)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.446
15316	$y'' + y = \delta(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.158
15317	$y'' + 4y' - 12y = \delta(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.225
15318	$y'' + 4y' - 12y = \delta(t - 3)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.592
15319	$y'' + 6y' + 9y = \delta(-4 + t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.421
15320	$y'' - 12y' + 45y = \delta(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.254
15321	$y''' + 9y' = \delta(t - 1)$ i.c.	[[_3rd_order, _missing_y]]	✓	1.465

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
15322	<i>i.c.</i> $y'''' - 16y = \delta(t)$	[[_high_order, _linear, _nonhomogeneous]]	✓	0.356
15323	$y' - 2y = 0$	[_quadrature]	✓	0.492
15324	$y' - 2xy = 0$	[_separable]	✓	0.516
15325	$y' + \frac{2y}{2x-1} = 0$	[_separable]	✓	0.527
15326	$(x-3)y' - 2y = 0$	[_separable]	✓	0.494
15327	$(x^2+1)y' - 2xy = 0$	[_separable]	✓	0.515
15328	$y' + \frac{y}{x-1} = 0$	[_separable]	✓	0.540
15329	$y' + \frac{y}{x-1} = 0$	[_separable]	✓	0.549
15330	$(1-x)y' - 2y = 0$	[_separable]	✓	0.593
15331	$(-x^3+2)y' - 3x^2y = 0$	[_separable]	✓	0.567
15332	$(-x^3+2)y' + 3x^2y = 0$	[_separable]	✓	0.531
15333	$(x+1)y' - xy = 0$	[_separable]	✓	0.562
15334	$(x+1)y' + (1-x)y = 0$	[_separable]	✓	0.613
15335	$(x^2+1)y'' - 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.576
15336	$y'' + xy' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.555
15337	$(x^2+4)y'' + 2xy' = 0$	[[_2nd_order, _missing_y]]	✓	0.565
15338	$y'' - 3x^2y = 0$	[[_Emden, _Fowler]]	✓	0.470
15339	$(-x^2+4)y'' - 5xy' - 3y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.618
15340	$(-x^2+1)y'' - xy' + 4y = 0$	[_Gegenbauer, _2nd_order, _linear, ' _with_symmetry_[0,F(x)] ']]	✓	0.600
15341	$y'' - 2xy' + 6y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.501

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
15342	$(x^2 - 6x)y'' + 4(x - 3)y' + 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.813
15343	$y'' + (x + 2)y' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.589
15344	$(x^2 - 2x + 2)y'' + (1 - x)y' - 3y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.629
15345	$y'' - 2y' - xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.589
15346	$y'' - xy' - 2xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.533
15347	$(-x^2 + 1)y'' - xy' + \lambda y = 0$	[_Gegenbauer, _2nd_order, _linear, 'with_symmetry_[0,F(x)]']	✓	0.653
15348	$(-x^2 + 1)y'' - 2xy' + \lambda y = 0$	[_Gegenbauer]	✓	0.644
15349	$y'' + 4y = 0$	[[_2nd_order, _missing_x]]	✓	0.519
15350	$y'' - x^2y = 0$	[[_Emden, _Fowler]]	✓	0.447
15351	$y'' + e^{2x}y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.550
15352	$\sin(x)y'' - y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.664
15353	$y'' + xy = \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.490
15354	$y'' - \sin(x)y' - xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.774
15355	$y'' - y^2 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓	0.159
15356	$y' + \cos(y) = 0$	[_quadrature]	✓	0.276
15357	$y' - ye^x = 0$	[_separable]	✓	0.604
15358	$y' - \tan(x)y = 0$	[_separable]	✓	0.721
15359	$\sin(x)y'' + x^2y' - ye^x = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	9.053

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
15360	$\sinh(x)y'' + x^2y' - ye^x = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	4.071
15361	$\sinh(x)y'' + x^2y' - y\sin(x) = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	50.325
15362	$e^{3x}y'' + \sin(x)y' + \frac{2y}{x^2+4} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	4.419
15363	$y'' + \frac{(1+e^x)y}{1-e^x} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.526
15364	$(x^2-4)y'' + (x^2+x-6)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.644
15365	$xy'' + (1-e^x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.762
15366	$\sin(\pi x^2)y'' + x^2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.803
15367	$y' - ye^x = 0$	[_separable]	✓	0.656
15368	$y' + e^{2x}y = 0$	[_separable]	✓	0.613
15369	$y' + y\cos(x) = 0$	[_separable]	✓	0.663
15370	$y' + y\ln(x) = 0$	[_separable]	✓	0.687
15371	$y'' - ye^x = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.793
15372	$y'' + 3xy' - ye^x = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.761
15373	$xy'' - 3xy' + y\sin(x) = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.710
15374	$y'' + y\ln(x) = 0$	[_Titchmarsh]	✓	0.734
15375	$\sqrt{x}y'' + y = 0$	[[_Emden, _Fowler]]	✓	0.813
15376	$y'' + (6x^2+2x+1)y' + (2+12x)y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.668
15377	$y' - ye^x = 0$	[_separable]	✓	0.815
15378	$y' + \sqrt{x^2+1}y = 0$	[_separable]	✓	0.932
15379	$y'\cos(x) + y = 0$	[_separable]	✓	1.166

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
15380	$y' + \sqrt{2x^2 + 1} y = 0$	[_separable]	✓	0.910
15381	$y'' - y e^x = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.795
15382	$y'' + y \cos(x) = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.937
15383	$y'' + \sin(x) y' + y \cos(x) = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	1.049
15384	$\sqrt{x} y'' + y' + xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.825
15385	$(x - 3)^2 y'' - 2(x - 3) y' + 2y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓	0.507
15386	$2x^2 y'' + 5xy' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.753
15387	$(x - 1)^2 y'' - 5(x - 1) y' + 9y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.647
15388	$(x + 2)^2 y'' + (x + 2) y' = 0$	[[_2nd_order, _missing_y]]	✓	0.537
15389	$3(-2 + x)^2 y'' - 4(x - 5) y' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.678
15390	$(x - 5)^2 y'' + (x - 5) y' + 4y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓	0.656
15391	$x^2 y'' + \frac{xy'}{-2+x} + \frac{2y}{x+2} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.189
15392	$x^3 y'' + x^2 y' + y = 0$	[[_Emden, _Fowler]]	✓	0.722
15393	$(-x^4 + x^3) y'' + (3x - 1) y' + 827y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.562
15394	$y'' + \frac{y'}{x-3} + \frac{y}{x-4} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.821

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
15395	$y'' + \frac{y'}{(x-3)^2} + \frac{y}{(x-4)^2} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.183
15396	$y'' + \left(\frac{1}{x} - \frac{1}{3}\right)y' + \left(\frac{1}{x} - \frac{1}{4}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.822
15397	$(4x^2 - 1)y'' + \left(4 - \frac{2}{x}\right)y' + \frac{(-x^2 + 1)y}{x^2 + 1} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.523
15398	$(x^2 + 4)^2 y'' + y = 0$	[[_Emden, _Fowler]]	✓	0.606
15399	$x^2 y'' - 2xy' + (x^2 + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.949
15400	$4x^2 y'' + (1 - 4x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.901
15401	$x^2 y'' + xy' + (4x - 4)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.346
15402	$(-9x^4 + x^2)y'' - 6xy' + 10y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.890
15403	$x^2 y'' - xy' + \frac{y}{1-x} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.845
15404	$y'' + \frac{y'}{x} + y = 0$	[_Lienard]	✓	0.627
15405	$y'' + \frac{y'}{x} + \left(1 - \frac{1}{x^2}\right)y = 0$	[_Bessel]	✓	1.216
15406	$2x^2 y'' + (-2x^3 + 5x)y' + (-x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.923
15407	$x^2 y'' - (2x^2 + 5x)y' + (9 + 4x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.902
15408	$(-3x^3 + 3x^2)y'' - (5x^2 + 4x)y' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.954
15409	$x^2 y'' - (x^2 + x)y' + 4xy = 0$	[_Laguerre]	✓	1.303
15410	$4x^2 y'' + 8x^2 y' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.874

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
15411	$x^2 y'' + (-x^4 + x) y' + 3x^3 y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.715
15412	$(9x^3 + 9x^2) y'' + (27x^2 + 9x) y' + (8x - 1) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.872
15413	$(x - 3) y'' + (x - 3) y' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	1.229
15414	$y'' + \frac{2y'}{x+2} + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.822
15415	$4y'' + \frac{(4x-3)y}{(x-1)^2} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.862
15416	$(x-3)^2 y'' + (x^2 - 3x) y' - 3y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.936
15417	$x^2 y'' - 2xy' + (-x^2 + 2) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.834
15418	$x^2 y'' - 2x^2 y' + (x^2 - 2) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.947
15419	$y'' + \frac{y'}{x} + y = 0$	[_Lienard]	✓	0.639
15420	$x^2(-x^2 + 2) y'' + (4x^2 + 5x) y' + (x^2 + 1) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.107
15421	$x^2 y'' - (2x^2 + 5x) y' + 9y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.856
15422	$x^2(2x + 1) y'' + xy' + (4x^3 - 4) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.470
15423	$4x^2 y'' + 8xy' + (1 - 4x) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.852
15424	$x^2 y'' + xy' - (2x + 1) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.293
15425	$xy'' + 4y' + \frac{12y}{(x+2)^2} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.072
15426	$xy'' + 4y' + \frac{12y}{(x+2)^2} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.018

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
15427	$(x - 3)y'' + (x - 3)y' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	1.262
15428	$(-x^2 + 1)y'' - xy' + 3y = 0$	[_Gegenbauer, _2nd_order, _linear, 'with_symmetry_[0,F(x)']]	✓	0.997
15429	$4x^2y'' + (1 - 4x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.912
15430	$y'' + \frac{y'}{x} + y = 0$	[_Lienard]	✓	0.676
15431	$x^2y'' - (x^2 + x)y' + 4xy = 0$	[_Laguerre]	✓	1.331
15432	$x^2y'' + xy' + (4x - 4)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.296
15433	$\begin{bmatrix} x' = 2y \\ y' = 1 - 2x \end{bmatrix}$	system_of_ODEs	✓	0.571
15434	$\begin{bmatrix} x' = 4x - 3y \\ y' = 6x - 7y \end{bmatrix}$	system_of_ODEs	✓	0.373
15435	$\begin{bmatrix} tx' + 2x = 15y \\ ty' = x \end{bmatrix}$	system_of_ODEs	✗	0.052
15436	$\begin{bmatrix} x' = x + 2y \\ y' = 5x - 2y \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.493
15437	$\begin{bmatrix} x' = 5x + 4y \\ y' = 8x + y \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.510
15438	$\begin{bmatrix} x' = 4x + 2y \\ y' = 3x - y \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.530
15439	$\begin{bmatrix} x' = x + 2y \\ y' = 5x - 2y \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.549
15440	$\begin{bmatrix} x' = 2y \\ y' = 2x \end{bmatrix}$	system_of_ODEs	✓	0.307

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
15441	$\begin{bmatrix} x' = 2y \\ y' = -2x \end{bmatrix}$	system_of_ODEs	✓	0.340
15442	$\begin{bmatrix} x' = -2y \\ y' = 8x \end{bmatrix}$	system_of_ODEs	✓	0.368
15443	$\begin{bmatrix} x' = 4x - 13y \\ y' = x \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.531
15444	$\begin{bmatrix} x' = 3x + 2y \\ y' = -2x + 3y \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.413
15445	$\begin{bmatrix} x' = 8x + 2y - 17 \\ y' = 4x + y - 13 \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.639
15446	$\begin{bmatrix} x' = 8x + 2y + 7e^{2t} \\ y' = 4x + y - 7e^{2t} \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.596
15447	$\begin{bmatrix} x' = 4x + 3y - 6e^{3t} \\ y' = x + 6y + 2e^{3t} \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.613
15448	$\begin{bmatrix} x' = -y \\ y' = 4x + 24t \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.616
15449	$\begin{bmatrix} x' = 4x - 13y \\ y' = x + 19 \cos(4t) - 13 \sin(4t) \end{bmatrix}$ i.c.	system_of_ODEs	✓	1.517
15450	$\begin{bmatrix} x' = 4x + 3y + 5 \text{Heaviside}(t - 2) \\ y' = x + 6y + 17 \text{Heaviside}(t - 2) \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.656
15451	$\begin{bmatrix} x' = 5x + 4y \\ y' = 8x + y \end{bmatrix}$	system_of_ODEs	✓	0.339
15452	$\begin{bmatrix} x' = 2x - 5y \\ y' = 3x - 7y \end{bmatrix}$	system_of_ODEs	✓	0.542

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
15453	$\begin{cases} x' = 2x - 5y + 4 \\ y' = 3x - 7y + 5 \end{cases}$	system_of_ODEs	✓	0.841
15454	$\begin{cases} x' = 3x + y \\ y' = 6x + 2y \end{cases}$	system_of_ODEs	✓	0.318
15455	$\begin{cases} x' = xy - 6y \\ y' = x - y - 5 \end{cases}$	system_of_ODEs	✗	0.051
15456	$\begin{cases} x' = -x + 2y \\ y' = 2x - y \end{cases}$	system_of_ODEs	✓	0.335
15457	$y'' + y' - 2y = x^3$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.090
15458	$yy' + y^4 = \sin(x)$	['y=_G(x,y)']	✗	2.723
15459	$y''' - 2y'' + 5y' + y = e^x$	[[_3rd_order, _with_linear_symmetries]]	✓	0.170
15460	$y'^2 + y = 0$	[_quadrature]	✓	0.553
15461	$t^2y'' + ty' + 2y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)']]]	✓	1.500
15462	$xy''^2 + 2y = 2x$	[[_2nd_order, _with_linear_symmetries]]	✗	0.112
15463	$x'' + 2 \sin(x) = \sin(2t)$	[NONE]	✗	0.399
15464	$2x - 1 - y' = 0$	[_quadrature]	✓	0.296
15465	$2x - y - yy' = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]]	✓	4.198
15466	$y' + 2y = 0$	[_quadrature]	✓	1.036
15467	$y' + xy = 0$	[_separable]	✓	1.396
15468	$y' + y = \sin(x)$	[[_linear, 'class A']]]	✓	1.171
15469	$y'' - y' - 12y = 0$	[[_2nd_order, _missing_x]]	✓	0.842

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
15470	$y'' + 9y' = 0$	[[_2nd_order, _missing_x]]	✓	1.407
15471	$x'' + 2x' - 10x = 0$	[[_2nd_order, _missing_x]]	✓	1.027
15472	$x'' + x = t \cos(t) - \cos(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.661
15473	$y'' - 12y' + 40y = 0$	[[_2nd_order, _missing_x]]	✓	1.753
15474	$y''' - 4y'' = 0$	[[_3rd_order, _missing_x]]	✓	0.067
15475	$y''' - 2y'' = 0$	[[_3rd_order, _missing_x]]	✓	0.066
15476	$x^2y'' - 12xy' + 42y = 0$	[[_Emden, _Fowler]]	✓	1.205
15477	$t^2y'' + 3ty' + 5y = 0$	[[_Emden, _Fowler]]	✓	2.476
15478	$y' = -\frac{x}{y}$	[_separable]	✓	2.813
15479	$3y(t^2 + y) + t(t^2 + 6y)y' = 0$	[[_homogeneous, 'class G'], _exact, _rational, [_Abel, '2nd type', 'class B']]	✓	2.879
15480	$y' = -\frac{2y}{x} - 3$	[_linear]	✓	1.940
15481	$y \cos(t) + (2y + \sin(t))y' = 0$	[_exact, [_1st_order, '_with_symmetry_[F(x),G(y)]'], [_Abel, '2nd type', 'class A']]	✓	1.951
15482	$\frac{y}{x} + \cos(y) + (\ln(x) - x \sin(y))y' = 0$	[_exact]	✓	4.985
15483	$y' = (x^2 - 1)(x^3 - 3x)^3$	[_quadrature]	✓	0.371
15484	$y' = x \sin(x^2)$	[_quadrature]	✓	0.345
15485	$y' = \frac{x}{\sqrt{x^2 - 16}}$	[_quadrature]	✓	0.310
15486	$y' = \frac{1}{x \ln(x)}$	[_quadrature]	✓	0.300

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
15487	$y' = x \ln(x)$	[_quadrature]	✓	0.322
15488	$y' = x e^{-x}$	[_quadrature]	✓	0.322
15489	$y' = \frac{-2x - 10}{(x + 2)(x - 4)}$	[_quadrature]	✓	0.355
15490	$y' = \frac{-x^2 + x}{(x + 1)(x^2 + 1)}$	[_quadrature]	✓	0.405
15491	$y' = \frac{\sqrt{x^2 - 16}}{x}$	[_quadrature]	✓	0.415
15492	$y' = (-x^2 + 4)^{3/2}$	[_quadrature]	✓	0.371
15493	$y' = \frac{1}{x^2 - 16}$	[_quadrature]	✓	0.398
15494	$y' = \cos(x) \cot(x)$	[_quadrature]	✓	0.420
15495	$y' = \sin(x)^3 \tan(x)$	[_quadrature]	✓	0.545
15496	$y' + 2y = 0$ i.c.	[_quadrature]	✓	1.448
15497	$y' + y = \sin(t)$ i.c.	[[_linear, 'class A']]	✓	1.530
15498	$y'' - y' - 12y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	1.421
15499	$y'' + 9y' = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	2.168
15500	$y''' - 2y'' = 0$ i.c.	[[_3rd_order, _missing_x]]	✓	0.141
15501	$y''' - 4y' = 0$ i.c.	[[_3rd_order, _missing_x]]	✓	0.143
15502	$t^2 y'' - 12ty' + 42y = 0$ i.c.	[[_Emden, _Fowler]]	✓	2.048
15503	$x^2 y'' + 3xy' + 5y = 0$ i.c.	[[_Emden, _Fowler]]	✓	3.047
15504	$y' = 4x^3 - x + 2$ i.c.	[_quadrature]	✓	0.450

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
15505	<i>i.c.</i> $y' = \sin(2t) - \cos(2t)$	[_quadrature]	✓	0.693
15506	<i>i.c.</i> $y' = \frac{\cos(\frac{1}{x})}{x^2}$	[_quadrature]	✓	0.765
15507	<i>i.c.</i> $y' = \frac{\ln(x)}{x}$	[_quadrature]	✓	0.510
15508	$y' = \frac{(x-4)y^3}{x^3(y-2)}$	[_separable]	✓	2.983
15509	$y' = \frac{y^2 + 2xy}{x^2}$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓	2.175
15510	$xy' + y = \cos(x)$	[_linear]	✓	1.132
15511	$16y'' + 24y' + 153y = 0$	[[_2nd_order, _missing_x]]	✓	1.837
15512	$\begin{bmatrix} x' = 4y \\ y' = -x - 2y \end{bmatrix}$	system_of_ODEs	✓	0.615
15513	$4x(y^2 + x^2) - 5y + 4y(x^2 + y^2 - 5x)y' = 0$	[_rational]	✗	32.165
15514	<i>i.c.</i> $y' = \sin(x)^4$	[_quadrature]	✓	0.759
15515	<i>i.c.</i> $y'''' + \frac{25y''}{2} - 5y' + \frac{629y}{16} = 0$	[[_high_order, _missing_x]]	✓	0.103
15516	<i>i.c.</i> $\begin{bmatrix} x' = 4y \\ y' = -4x \end{bmatrix}$	system_of_ODEs	✓	0.426
15517	<i>i.c.</i> $\begin{bmatrix} x' = -5x + 4y \\ y' = 2x + 2y \end{bmatrix}$	system_of_ODEs	✓	0.519
15518	$y' + y \cos(x) = 0$	[_separable]	✓	1.388
15519	$y' - y = \sin(x)$	[[_linear, 'class A']]	✓	1.193

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
15520	$y'' + 4y' - 5y = 0$	[[_2nd_order, _missing_x]]	✓	0.818
15521	$y'' - 6y' + 45y = 0$	[[_2nd_order, _missing_x]]	✓	1.854
15522	$x^2y'' - xy' - 16y = 0$	[[_Emden, _Fowler]]	✓	1.331
15523	$x^2y'' + 3xy' + 2y = 0$	[[_Emden, _Fowler]]	✓	1.978
15524	$y'' + 2y' + 2y = x$	[[_2nd_order, _with_linear_symmetries]]	✓	8.017
15525	$y'' - 7y' + 12y = 2$	[[_2nd_order, _missing_x]]	✓	0.987
15526	$2x - 3y + (2y - 3x)y' = 0$	[[_homogeneous, 'class A'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓	3.340
15527	$y \cos(xy) + \sin(x) + x \cos(xy)y' = 0$	[_exact, [_1st_order, 'with_symmetry_[F(x),G(x)*y+H(x)]]]	✓	35.278
15528	$y' = x e^{-x^2}$	[_quadrature]	✓	0.329
15529	$y' = x^2 \sin(x)$	[_quadrature]	✓	0.354
15530	$y' = \frac{2x^2 - x + 1}{(x - 1)(x^2 + 1)}$	[_quadrature]	✓	0.376
15531	$y' = \frac{x^2}{\sqrt{x^2 - 1}}$	[_quadrature]	✓	0.385
15532	$y' + 2y = x^2$ i.c.	[[_linear, 'class A']]	✓	1.342
15533	$y'' + 4y = t$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	3.220
15534	$x^2y'' + 5xy' + 4y = 0$ i.c.	[[_Emden, _Fowler]]	✓	1.700
15535	$y' = \cos(x)^2 \sin(x)$ i.c.	[_quadrature]	✓	0.571
15536	$y' = \frac{4x - 9}{3(x - 3)^{2/3}}$ i.c.	[_quadrature]	✓	0.540

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
15537	<i>i.c.</i> $y' + t^2 = y^2$	[_Riccati]	✓	1.428
15538	$y' + t^2 = \frac{1}{y^2}$	[_rational]	✗	0.677
15539	$y' = y + \frac{1}{-t + 1}$	[_linear]	✓	1.157
15540	<i>i.c.</i> $y' = y^{1/5}$	[_quadrature]	✓	1.717
15541	<i>i.c.</i> $\frac{y'}{t} = \sqrt{y}$	[_separable]	✓	4.530
15542	<i>i.c.</i> $y' = 4t^2 - ty^2$	[_Riccati]	✓	2.454
15543	<i>i.c.</i> $y' = y\sqrt{t}$	[_separable]	✓	1.754
15544	<i>i.c.</i> $y' = 6y^{2/3}$	[_quadrature]	✓	1.629
15545	$ty' = y$	[_separable]	✓	1.228
15546	<i>i.c.</i> $y' = y \tan(t)$	[_separable]	✓	1.870
15547	<i>i.c.</i> $y' = \frac{1}{t^2 + 1}$	[_quadrature]	✓	0.506
15548	<i>i.c.</i> $y' = \sqrt{y^2 - 1}$	[_quadrature]	✓	10.656
15549	<i>i.c.</i> $y' = \sqrt{y^2 - 1}$	[_quadrature]	✓	7.452
15550	<i>i.c.</i> $y' = \sqrt{y^2 - 1}$	[_quadrature]	✓	11.417
15551	<i>i.c.</i> $y' = \sqrt{y^2 - 1}$	[_quadrature]	✓	4.985
15552	<i>i.c.</i> $y' = \sqrt{25 - y^2}$	[_quadrature]	✓	222.026

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
15553	<i>i.c.</i> $y' = \sqrt{25 - y^2}$	[_quadrature]	✓	3.243
15554	<i>i.c.</i> $y' = \sqrt{25 - y^2}$	[_quadrature]	✓	8.827
15555	<i>i.c.</i> $y' = \sqrt{25 - y^2}$	[_quadrature]	✓	74.030
15556	<i>i.c.</i> $ty' + y = t^3$	[_linear]	✓	1.691
15557	<i>i.c.</i> $t^3y' + t^4y = 2t^3$	[_linear]	✓	1.330
15558	<i>i.c.</i> $2y' + ty = \ln(t)$	[_linear]	✓	1.806
15559	<i>i.c.</i> $y' + y \sec(t) = t$	[_linear]	✓	2.058
15560	<i>i.c.</i> $y' + \frac{y}{t-3} = \frac{1}{t-1}$	[_linear]	✓	1.534
15561	<i>i.c.</i> $(t-2)y' + (t^2-4)y = \frac{1}{t+2}$	[_linear]	✓	1.829
15562	<i>i.c.</i> $y' + \frac{y}{\sqrt{-t^2+4}} = t$	[_linear]	✓	2.497
15563	<i>i.c.</i> $y' + \frac{y}{\sqrt{-t^2+4}} = t$	[_linear]	✓	2.988
15564	<i>i.c.</i> $ty' + y = t \sin(t)$	[_linear]	✓	1.495
15565	<i>i.c.</i> $y' + y \tan(t) = \sin(t)$	[_linear]	✓	2.268
15566	<i>i.c.</i> $y' = y^2$	[_quadrature]	✓	1.202
15567	<i>i.c.</i> $y' = ty^2$	[_separable]	✓	2.255

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
15568	$y' = -\frac{t}{y}$ i.c.	[_separable]	✓	5.856
15569	$y' = -y^3$ i.c.	[_quadrature]	✓	1.707
15570	$y' = \frac{x}{y^2}$	[_separable]	✓	2.174
15571	$\frac{1}{2\sqrt{t}} + y^2 y' = 0$	[_separable]	✓	2.252
15572	$y' = \frac{\sqrt{y}}{x^2}$	[_separable]	✓	3.137
15573	$y' = \frac{1 + y^2}{y}$	[_quadrature]	✓	4.319
15574	$6 + 4t^3 + \left(5 + \frac{9}{y^8}\right) y' = 0$	[_separable]	✓	1.773
15575	$\frac{6}{t^9} - \frac{6}{t^3} + t^7 + \left(9 + \frac{1}{s^2} - 4s^8\right) s' = 0$	[_separable]	✓	2.132
15576	$4 \sinh(4y) y' = 6 \cosh(3x)$	[_separable]	✓	2.750
15577	$y' = \frac{y + 1}{t + 1}$	[_separable]	✓	1.446
15578	$y' = \frac{y + 2}{2t + 1}$	[_separable]	✓	1.464
15579	$\frac{3}{t^2} = \left(\frac{1}{\sqrt{y}} + \sqrt{y}\right) y'$	[_separable]	✓	1.825
15580	$3 \sin(x) - 4 \cos(y) y' = 0$	[_separable]	✓	1.825
15581	$\cos(y) y' = 8 \sin(8t)$	[_separable]	✓	3.116
15582	$y' + ky = 0$	[_quadrature]	✓	0.714
15583	$(5x^5 - 4 \cos(x)) x' + 2 \cos(9t) + 2 \sin(7t) = 0$	[_separable]	✓	40.592
15584	$\cosh(6t) + 5 \sinh(4t) + 20 \sinh(y) y' = 0$	[_separable]	✓	5.777
15585	$y' = e^{2y+10t}$	[_separable]	✓	1.987

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
15586	$y' = e^{3y+2t}$	[_separable]	✓	2.059
15587	$\sin(t)^2 = \cos(y)^2 y'$	[_separable]	✓	2.451
15588	$3 \sin(t) - \sin(3t) = (\cos(4y) - 4 \cos(y)) y'$	[_separable]	✓	35.997
15589	$x' = \frac{\sec(t)^2}{\sec(x) \tan(x)}$	[_separable]	✓	36.487
15590	$\left(2 - \frac{5}{y^2}\right) y' + 4 \cos(x)^2 = 0$	[_separable]	✓	2.127
15591	$y' = \frac{t^3}{y \sqrt{(1-y^2)(t^4+9)}}$	[[_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]]]	✓	2.641
15592	$\tan(y) \sec(y)^2 y' + \cos(2x)^3 \sin(2x) = 0$	[_separable]	✓	39.833
15593	$y' = \frac{(1+2e^y)e^{-y}}{t \ln(t)}$	[_separable]	✓	1.827
15594	$x \sin(x^2) = \frac{\cos(\sqrt{y}) y'}{\sqrt{y}}$	[_separable]	✓	5.889
15595	$\frac{-2+x}{x^2-4x+3} = \frac{\left(1-\frac{1}{y}\right)^2 y'}{y^2}$	[_separable]	✓	2.047
15596	$\frac{\cos(y) y'}{(1-\sin(y))^2} = \sin(x)^3 \cos(x)$	[_separable]	✓	43.932
15597	$y' = \frac{(5-2\cos(x))^3 \sin(x) \cos(y)^4}{\sin(y)}$	[_separable]	✓	42.722
15598	$\frac{\sqrt{\ln(x)}}{x} = \frac{e^{\frac{3}{y}} y'}{y}$	[_separable]	✓	1.585
15599	$y' = \frac{5^{-t}}{y^2}$	[_separable]	✓	2.136
15600	$y' = t^2 y^2 + y^2 - t^2 - 1$	[_separable]	✓	2.198
15601	$y' = y^2 - 3y + 2$	[_quadrature]	✓	1.317
15602	$4(x-1)^2 y' - 3(y+3)^2 = 0$	[_separable]	✓	2.063

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
15603	$y' = \sin(t - y) + \sin(y + t)$	[_separable]	✓	5.320
15604	$y' = y^3 + 1$	[_quadrature]	✓	2.212
15605	$y' = y^3 - 1$	[_quadrature]	✓	2.634
15606	$y' = y^3 + y$	[_quadrature]	✓	3.928
15607	$y' = y^3 - y^2$	[_quadrature]	✓	3.510
15608	$y' = y^3 - y$	[_quadrature]	✓	3.219
15609	$y' = y^3 + y$	[_quadrature]	✓	3.982
15610	$y' = x^3$ i.c.	[_quadrature]	✓	0.447
15611	$y' = \cos(t)$ i.c.	[_quadrature]	✓	0.495
15612	$1 = \cos(y) y'$ i.c.	[_quadrature]	✓	4.036
15613	$\sin(y)^2 = x'$ i.c.	[_quadrature]	✓	0.626
15614	$y' = \frac{\sqrt{t}}{y}$ i.c.	[_separable]	✓	6.410
15615	$y' = \sqrt{\frac{y}{t}}$ i.c.	[[_homogeneous, 'class A', _dAlembert]	✓	15.338
15616	$y' = \frac{e^t}{y + 1}$ i.c.	[_separable]	✓	2.233
15617	$y' = e^{t-y}$ i.c.	[_separable]	✓	2.854
15618	$y' = \frac{y}{\ln(y)}$ i.c.	[_quadrature]	✓	4.572
15619	$y' = t \sin(t^2)$ i.c.	[_quadrature]	✓	0.706

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
15620	$y' = \frac{1}{x^2 + 1}$ i.c.	[_quadrature]	✓	0.521
15621	$y' = \frac{\sin(x)}{\cos(y) + 1}$ i.c.	[_separable]	✓	2.927
15622	$y' = \frac{y + 3}{3x + 1}$ i.c.	[_separable]	✓	2.151
15623	$y' = e^{x-y}$ i.c.	[_separable]	✓	2.485
15624	$y' = e^{2x-y}$ i.c.	[_separable]	✓	3.696
15625	$y' = \frac{3y + 1}{x + 3}$ i.c.	[_separable]	✓	2.069
15626	$y' = y \cos(t)$ i.c.	[_separable]	✓	1.841
15627	$y' = y^2 \cos(t)$ i.c.	[_separable]	✓	1.898
15628	$y' = \sqrt{y} \cos(t)$ i.c.	[_separable]	✓	2.073
15629	$y' + yf(t) = 0$ i.c.	[_separable]	✓	1.462
15630	$y' = -\frac{y - 2}{-2 + x}$ i.c.	[_separable]	✓	1.955
15631	$y' = \frac{x + y + 3}{3x + 3y + 1}$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	1.342
15632	$y' = \frac{x - y + 2}{2x - 2y - 1}$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	1.323
15633	$y' = (x + y - 4)^2$	[[_homogeneous, 'class C'], _Riccati]	✓	4.735
15634	$y' = (3y + 1)^4$	[_quadrature]	✓	1.794

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
15635	$y' = 3y$	[_quadrature]	✓	1.051
15636	$y' = -y$	[_quadrature]	✓	1.011
15637	$y' = y^2 - y$	[_quadrature]	✓	1.398
15638	$y' = 16y - 8y^2$	[_quadrature]	✓	1.852
15639	$y' = 12 + 4y - y^2$	[_quadrature]	✓	1.568
15640	$y' = yf(t)$ i.c.	[_separable]	✓	1.262
15641	$y' - y = 10$	[_quadrature]	✓	0.929
15642	$y' - y = 2e^{-t}$	[[_linear, 'class A']]	✓	1.111
15643	$y' - y = 2\cos(t)$	[[_linear, 'class A']]	✓	1.240
15644	$y' - y = t^2 - 2t$	[[_linear, 'class A']]	✓	1.079
15645	$y' - y = 4te^{-t}$	[[_linear, 'class A']]	✓	1.152
15646	$ty' + y = t^2$	[_linear]	✓	1.266
15647	$ty' + y = t$	[_linear]	✓	1.875
15648	$xy' + y = xe^x$	[_linear]	✓	1.079
15649	$xy' + y = e^{-x}$	[_linear]	✓	0.982
15650	$y' - \frac{2ty}{t^2 + 1} = 2$	[_linear]	✓	1.480
15651	$y' - \frac{4ty}{4t^2 + 1} = 4t$	[_linear]	✓	1.779
15652	$y' = 2x + \frac{xy}{x^2 - 1}$	[_linear]	✓	2.753
15653	$y' + y \cot(t) = \cos(t)$	[_linear]	✓	1.722
15654	$y' - \frac{3ty}{t^2 - 4} = t$	[_linear]	✓	1.741
15655	$y' - \frac{4ty}{4t^2 - 9} = t$	[_linear]	✓	3.270
15656	$y' - \frac{9xy}{9x^2 + 49} = x$	[_linear]	✓	3.119

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
15657	$y' + 2y \cot(x) = \cos(x)$	[_linear]	✓	1.772
15658	$y' + xy = x^3$	[_linear]	✓	1.579
15659	$y' - xy = x$	[_separable]	✓	1.119
15660	$y' = \frac{1}{y^2 + x}$	[[_1st_order, _with_exponential_symmetries]]	✓	0.977
15661	$y' - x = y$	[[_linear, 'class A']]	✓	0.972
15662	$y - (x + 3y^2) y' = 0$	[[_homogeneous, 'class G'], _rational]	✓	1.990
15663	$x' = \frac{3xt^2}{-t^3 + 1}$	[_separable]	✓	1.368
15664	$p' = t^3 + \frac{p}{t}$	[_linear]	✓	1.216
15665	$v' + v = e^{-s}$	[[_linear, 'class A']]	✓	0.965
15666	$y' - y = 4e^t$ i.c.	[[_linear, 'class A']]	✓	1.286
15667	$y' + y = e^{-t}$ i.c.	[[_linear, 'class A']]	✓	1.132
15668	$y' + 3t^2y = e^{-t^3}$ i.c.	[_linear]	✓	2.170
15669	$y' + 2ty = 2t$ i.c.	[_separable]	✓	1.464
15670	$ty' + y = \cos(t)$ i.c.	[_linear]	✓	1.457
15671	$ty' + y = 2te^t$ i.c.	[_linear]	✓	1.327
15672	$(1 + e^t) y' + e^t y = t$ i.c.	[_linear]	✓	1.737
15673	$(t^2 + 4) y' + 2ty = 2t$ i.c.	[_separable]	✓	1.589
15674	$x' = x + t + 1$ i.c.	[[_linear, 'class A']]	✓	1.291
15675	$y' = e^{2t} + 2y$ i.c.	[[_linear, 'class A']]	✓	1.289

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
15676	$y' - \frac{y}{t} = \ln(t)$	[_linear]	✓	0.964
15677	$y'' - \frac{y'}{t} + \frac{y}{t^2} = \frac{1}{t}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓	1.805
15678	$y' + y = \begin{cases} 4 & 0 \leq t < 2 \\ 0 & 2 \leq t \end{cases}$ i.c.	[[_linear, 'class A']]	✓	0.615
15679	$y' + y = \begin{cases} t & 0 \leq t < 1 \\ 0 & 1 \leq t \end{cases}$ i.c.	[[_linear, 'class A']]	✓	0.592
15680	$y' - y = \sin(2t)$	[[_linear, 'class A']]	✓	1.294
15681	$y' + y = 5e^{2t}$	[[_linear, 'class A']]	✓	1.109
15682	$y' + y = e^{-t}$	[[_linear, 'class A']]	✓	0.947
15683	$y' + y = 2 - e^{2t}$	[[_linear, 'class A']]	✓	1.086
15684	$y' - 5y = t$	[[_linear, 'class A']]	✓	1.010
15685	$y' + 3y = 27t^2 + 9$	[[_linear, 'class A']]	✓	1.060
15686	$y' - \frac{y}{2} = 5 \cos(t) + 2e^t$	[[_linear, 'class A']]	✓	1.821
15687	$y' + 4y = 8 \cos(4t)$	[[_linear, 'class A']]	✓	1.424
15688	$y' + 10y = 2e^t$	[[_linear, 'class A']]	✓	1.114
15689	$y' - 3y = 27t^2$	[[_linear, 'class A']]	✓	1.059
15690	$y' - y = 2e^t$	[[_linear, 'class A']]	✓	0.982
15691	$y' + y = 4 + 3e^t$	[[_linear, 'class A']]	✓	1.186
15692	$y' + y = 2 \cos(t) + t$	[[_linear, 'class A']]	✓	1.483
15693	$y' + \frac{y}{2} = \sin(t)$ i.c.	[[_linear, 'class A']]	✓	1.381
15694	$y' - \frac{y}{2} = \sin(t)$ i.c.	[[_linear, 'class A']]	✓	1.452

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
15695	$ty' + y = t \cos(t)$	[_linear]	✓	1.219
15696	$y' + y = t$ i.c.	[[_linear, 'class A']]	✓	1.256
15697	$y' + y = \sin(t)$ i.c.	[[_linear, 'class A']]	✓	1.519
15698	$y' + y = \cos(t)$ i.c.	[[_linear, 'class A']]	✓	1.483
15699	$y' + y = e^t$ i.c.	[[_linear, 'class A']]	✓	1.314
15700	$y^2 - \frac{y}{2\sqrt{t}} + (2ty - \sqrt{t} + 1)y' = 0$	[_exact, _rational, [_Abel, '2nd type', 'class B']]	✓	57.323
15701	$\frac{t}{\sqrt{t^2 + y^2}} + \frac{yy'}{\sqrt{t^2 + y^2}} = 0$	[_separable]	✓	3.042
15702	$y \cos(ty) + t \cos(ty)y' = 0$	[_separable]	✓	1.708
15703	$y \sec(t)^2 + 2t + \tan(t)y' = 0$	[_linear]	✓	10.656
15704	$3ty^2 + y^3y' = 0$	[_separable]	✓	3.013
15705	$t - \sin(t)y + (y^6 + \cos(t))y' = 0$	[_exact]	✓	2.941
15706	$y \sin(2t) + (\sqrt{y} + \cos(2t))y' = 0$	[[_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓	6.052
15707	$\ln(ty) + \frac{ty'}{y} = 0$	[[_homogeneous, 'class G'], _exact]	✓	2.056
15708	$e^{ty} + \frac{te^{ty}y'}{y} = 0$	[_separable]	✓	1.902
15709	$3t^2 - y' = 0$	[_quadrature]	✓	0.285
15710	$-1 + 3y^2y' = 0$	[_quadrature]	✓	10.645
15711	$y^2 + 2tyy' = 0$	[_separable]	✓	1.676
15712	$\frac{3t^2}{y} - \frac{t^3y'}{y^2} = 0$	[_separable]	✓	1.797
15713	$2t + y^3 + (3ty^2 + 4)y' = 0$	[_exact, _rational]	✓	1.339

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
15714	$-\frac{1}{y} + \left(\frac{t}{y^2} + 3y^2\right) y' = 0$	[[_homogeneous, 'class G'], _exact, _rational]	✓	2.931
15715	$2ty + (t^2 + y^2) y' = 0$	[[_homogeneous, 'class A'], _exact, _rational, _dAlembert]	✓	3.567
15716	$2ty^3 + (1 + 3t^2y^2) y' = 0$	[[_homogeneous, 'class G'], _exact, _rational]	✓	1.914
15717	$\sin(y)^2 + t \sin(2y) y' = 0$	[_separable]	✓	4.904
15718	$3t^2 + 3y^2 + 6tyy' = 0$	[[_homogeneous, 'class A'], _exact, _rational, _Bernoulli]	✓	4.056
15719	$e^t \sin(y) + (1 + e^t \cos(y)) y' = 0$	[_exact, [_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓	2.016
15720	$3t^2y + 3y^2 - 1 + (t^3 + 6ty) y' = 0$	[_exact, _rational, [_Abel, '2nd type', 'class B']]	✓	1.503
15721	$-2ty^2 \sin(t^2) + 2y \cos(t^2) y' = 0$	[_separable]	✓	2.753
15722	$2t - y^2 \sin(ty) + (\cos(ty) - ty \sin(ty)) y' = 0$	[_exact]	✓	38.838
15723	$1 - y^2 \cos(ty) + (ty \cos(ty) + \sin(ty)) y' = 0$	['y=_G(x,y)']	✗	59.556
15724	$2t \sin(y) - 2ty \sin(t^2) + (t^2 \cos(y) + \cos(t^2)) y' = 0$	[_exact]	✓	35.940
15725	$(3 + t) \cos(y + t) + \sin(y + t) + (3 + t) \cos(y + t) y' = 0$	[[_1st_order, _with_linear_symmetries], _exact]	✓	28.682
15726	$\frac{2t^2y \cos(t^2) - y \sin(t^2)}{t^2} + \frac{(2ty + \sin(t^2)) y'}{t} = 0$	[_exact, [_1st_order, '_with_symmetry_[F(x)*G(y),0]'], [_Abel, '2nd type', 'class B']]	✓	8.774
15727	$-\frac{y^2 e^{\frac{y}{t}}}{t^2} + 1 + e^{\frac{y}{t}} \left(1 + \frac{y}{t}\right) y' = 0$	[[_homogeneous, 'class A'], _exact, _dAlembert]	✓	5.506

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
15728	$2t \sin\left(\frac{y}{t}\right) - y \cos\left(\frac{y}{t}\right) + t \cos\left(\frac{y}{t}\right) y' = 0$	[[_homogeneous, 'class A', _exact, _dAlembert]	✓	4.500
15729	$2ty^2 + 2t^2yy' = 0$ i.c.	[_separable]	✓	2.143
15730	$1 + \frac{y}{t^2} - \frac{y'}{t} = 0$ i.c.	[_linear]	✓	1.621
15731	$2ty + 3t^2 + (t^2 - 1) y' = 0$ i.c.	[_linear]	✓	1.394
15732	$1 + 5t - y - (t + 2y) y' = 0$ i.c.	[[_homogeneous, 'class C', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓	3.877
15733	$e^y - 2ty + (te^y - t^2) y' = 0$ i.c.	[_exact]	✓	1.941
15734	$2tye^{t^2} + 2te^{-y} + (e^{t^2} - t^2e^{-y} + 1) y' = 0$ i.c.	[_exact]	✓	36.030
15735	$y^2 - 2 \sin(2t) + (1 + 2ty) y' = 0$ i.c.	[_exact, [_Abel, '2nd type', 'class B']]	✓	43.499
15736	$\cos(t)^2 - \sin(t)^2 + y + (\sec(y) \tan(y) + t) y' = 0$ i.c.	[_exact]	✓	38.183
15737	$\frac{1}{t^2 + 1} - y^2 - 2tyy' = 0$ i.c.	[_exact, _rational, _Bernoulli]	✓	4.234
15738	$\frac{2t}{t^2 + 1} + y + (e^y + t) y' = 0$ i.c.	[_exact]	✓	2.882
15739	$-2x - y \cos(xy) + (2y - x \cos(xy)) y' = 0$ i.c.	[_exact]	✓	8.888
15740	$-4x^3 + 6y \sin(6xy) + (4y^3 + 6x \sin(6xy)) y' = 0$ i.c.	[_exact]	✓	43.775
15741	$t^2y + t^3y' = 0$	[_separable]	✓	1.585

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
15742	$y(2e^t + 4t) + 3(e^t + t^2)y' = 0$	[_separable]	✓	1.816
15743	$y + (2t - ye^y)y' = 0$	[[_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓	1.175
15744	$2ty + y^2 - t^2y' = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓	2.161
15745	$y + 2t^2 + (t^2y - t)y' = 0$	[_rational, [_1st_order, '_with_symmetry_[F(x),G(x)]'], [_Abel, '2nd type', 'class B']]	✓	1.222
15746	$5ty + 4y^2 + 1 + (t^2 + 2ty)y' = 0$	[_rational, [_Abel, '2nd type', 'class B']]	✓	1.452
15747	$5ty^2 + y + (2t^3 - t)y' = 0$	[[_homogeneous, 'class D'], _rational, _Bernoulli]	✓	3.105
15748	$2t + \tan(y) + (t - t^2 \tan(y))y' = 0$	[[_1st_order, '_with_symmetry_[F(x),G(x)]']]	✓	2.155
15749	$2t - y^2 \sin(ty) + (\cos(ty) - ty \sin(ty))y' = 0$	[_exact]	✓	39.433
15750	$-1 + e^{ty}y + y \cos(ty) + (1 + e^{ty}t + t \cos(ty))y' = 0$	[_exact]	✓	37.049
15751	$2t + 2y + (2t + 2y)y' = 0$	[_quadrature]	✓	0.568
15752	$\frac{9t}{5} + 2y + (2t + 2y)y' = 0$	[[_homogeneous, 'class A'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓	3.870
15753	$2t + \frac{19y}{10} + \left(\frac{19t}{10} + 2y\right)y' = 0$	[[_homogeneous, 'class A'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓	3.277
15754	$y' - \frac{y}{2} = \frac{t}{y}$	[_rational, _Bernoulli]	✓	1.181
15755	$y' + y = ty^2$	[_Bernoulli]	✓	1.435

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
15756	$2ty' - y = 2ty^3 \cos(t)$	[_Bernoulli]	✓	41.582
15757	$ty' - y = ty^3 \sin(t)$	[[_homogeneous, 'class D'], _Bernoulli]	✓	40.464
15758	$y' - 2y = \frac{\cos(t)}{\sqrt{y}}$	[_Bernoulli]	✓	31.732
15759	$y' + 3y = \sqrt{y} \sin(t)$	[_Bernoulli]	✓	1.980
15760	$y' - \frac{y}{t} = ty^2$	[[_homogeneous, 'class D'], _rational, _Bernoulli]	✓	1.888
15761	$y' - \frac{y}{t} = \frac{y^2}{t^2}$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓	1.753
15762	$y' - \frac{y}{t} = \frac{y^2}{t}$	[_separable]	✓	1.829
15763	$y' - \frac{y}{t} = t^2 y^{3/2}$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓	6.607
15764	$\cos\left(\frac{t}{y+t}\right) + e^{\frac{2y}{t}} y' = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓	19.551
15765	$y \ln\left(\frac{t}{y}\right) + \frac{t^2 y'}{y+t} = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓	4.951
15766	$2 \ln(t) - \ln(4y^2) y' = 0$	[_separable]	✓	11.634
15767	$\frac{2}{t} + \frac{1}{y} + \frac{ty'}{y^2} = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓	2.687
15768	$\frac{\sin(2t)}{\cos(2y)} + \frac{\ln(y) y'}{\ln(t)} = 0$	[_separable]	✓	8.267
15769	$\sqrt{t^2 + 1} + yy' = 0$	[_separable]	✓	1.363
15770	$2t + (y - 3t) y' = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class C'], _dAlembert]	✓	5.068
15771	$2y - 3t + ty' = 0$	[_linear]	✓	1.934

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
15772	$ty - y^2 + t(t - 3y)y' = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓	3.843
15773	$t^2 + ty + y^2 - tyy' = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓	36.719
15774	$t^3 + y^3 - ty^2y' = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓	7.927
15775	$y' = \frac{t + 4y}{4t + y}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓	5.093
15776	$t - y + ty' = 0$	[_linear]	✓	1.197
15777	$y + (y + t)y' = 0$	[[_homogeneous, 'class A'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓	3.848
15778	$2t^2 - 7ty + 5y^2 + tyy' = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓	12.700
15779	$y + 2\sqrt{t^2 + y^2} - ty' = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓	10.396
15780	$y^2 = (ty - 4t^2)y'$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓	5.200
15781	$y - (3\sqrt{ty} + t)y' = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓	11.497
15782	$(t^2 - y^2)y' + y^2 + ty = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓	3.862
15783	$tty' - t^2e^{-\frac{y}{t}} - y^2 = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓	2.650
15784	$y' = \frac{1}{\frac{2ye^{-\frac{t}{y}}}{t} + \frac{t}{y}}$	[[_homogeneous, 'class A'], _dAlembert]	✓	3.710
15785	$t(\ln(t) - \ln(y))y' = y$	[[_homogeneous, 'class A'], _dAlembert]	✓	6.344

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
15786	$y' + 2y = t^2\sqrt{y}$ i.c.	[_Bernoulli]	✓	1.445
15787	$y' - 2y = t^2\sqrt{y}$ i.c.	[_Bernoulli]	✓	1.404
15788	$y' = \frac{4y^2 - t^2}{2ty}$ i.c.	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓	5.273
15789	$t + y - ty' = 0$ i.c.	[_linear]	✓	1.525
15790	$ty' - y - \sqrt{t^2 + y^2} = 0$ i.c.	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	4.262
15791	$t^3 + y^2\sqrt{t^2 + y^2} - ty\sqrt{t^2 + y^2}y' = 0$ i.c.	[[_homogeneous, 'class A'], _dAlembert]	✓	301.041
15792	$y^3 - t^3 - ty^2y' = 0$ i.c.	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓	93.021
15793	$ty^3 - (t^4 + y^4)y' = 0$ i.c.	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	19.047
15794	$y^4 + (t^4 - ty^3)y' = 0$ i.c.	[[_homogeneous, 'class A'], _rational, _dAlembert]	✗	7.707
15795	$t - 2y + 1 + (4t - 3y - 6)y' = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	3.437
15796	$5t + 2y + 1 + (2t + y + 1)y' = 0$	[[_homogeneous, 'class C'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓	2.534
15797	$3t - y + 1 - (6t - 2y - 3)y' = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	1.451
15798	$2t + 3y + 1 + (4t + 6y + 1)y' = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	1.384
15799	$y' - \frac{2y}{x} = -x^2y$	[_separable]	✓	1.352

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
15800	$y' + y \cot(x) = y^4$ i.c.	[_Bernoulli]	✓	3.512
15801	$ty' - y'^3 = y$	[[_1st_order, _with_linear_symmetries], _Clairaut]	✓	0.500
15802	$ty' - y - 2(ty' - y)^2 = y' + 1$	[[_1st_order, _with_linear_symmetries], _rational, _Clairaut]	✓	0.709
15803	$ty' - y - 1 = y'^2 - y'$	[[_1st_order, _with_linear_symmetries], _Clairaut]	✓	0.492
15804	$1 + y - ty' = \ln(y')$	[[_1st_order, _with_linear_symmetries], _Clairaut]	✓	1.807
15805	$1 - 2ty' + 2y = \frac{1}{y'^2}$	[[_1st_order, _with_linear_symmetries], _Clairaut]	✓	1.006
15806	$y = -ty' + \frac{y'^5}{5}$	[_dAlembert]	✓	0.805
15807	$y = ty'^2 + 3y'^2 - 2y'^3$	[_dAlembert]	✓	11.263
15808	$y = t(y' + 1) + 2y' + 1$	[_linear]	✓	1.204
15809	$y = t(2 - y') + 2y'^2 + 1$	[[_1st_order, _with_linear_symmetries], _dAlembert]	✓	0.507
15810	$t^{1/3}y^{2/3} + t + (t^{2/3}y^{1/3} + y)y' = 0$	[[_homogeneous, 'class G'], _rational]	✓	37.217
15811	$y' = \frac{y^2 - t^2}{ty}$ i.c.	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓	8.399
15812	$y \sin\left(\frac{t}{y}\right) - \left(t + t \sin\left(\frac{t}{y}\right)\right) y' = 0$ i.c.	[[_homogeneous, 'class A'], _dAlembert]	✓	17.926
15813	$y' = \frac{2t^5}{5y^2}$	[_separable]	✓	2.195
15814	$\cos(4x) - 8 \sin(y) y' = 0$	[_separable]	✓	2.859

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
15815	$y' - \frac{y}{t} = \frac{y^2}{t}$	[_separable]	✓	1.970
15816	$y' = \frac{e^{8y}}{t}$	[_separable]	✓	1.328
15817	$y' = \frac{e^{5t}}{y^4}$	[_separable]	✓	1.248
15818	$-\frac{1}{x^5} + \frac{1}{x^3} = (2y^4 - 6y^9) y'$	[_separable]	✓	1.743
15819	$y' = \frac{y e^{-2t}}{\ln(y)}$	[_separable]	✓	1.376
15820	$y' = \frac{(4 - 7x)(2y - 3)}{(x - 1)(2x - 5)}$	[_separable]	✓	1.740
15821	$y' + 3y = -10 \sin(t)$	[[_linear, 'class A']]	✓	1.247
15822	$3t + (t - 4y) y' = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class C'], _dAlembert]	✓	4.957
15823	$y - t + (y + t) y' = 0$	[[_homogeneous, 'class A'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓	3.656
15824	$y - x + y' = 0$	[[_linear, 'class A']]	✓	0.948
15825	$y^2 + (ty + t^2) y' = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓	6.059
15826	$r' = \frac{r^2 + t^2}{rt}$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓	4.483
15827	$x' = \frac{5tx}{x^2 + t^2}$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	51.573
15828	$t^2 - y + (-t + y) y' = 0$	[_exact, _rational, [_1st_order, '_with_symmetry_[F(x),G(x)']], [_Abel, '2nd type', 'class A']]	✓	1.126

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
15829	$t^2y + \sin(t) + \left(\frac{t^3}{3} - \cos(y)\right)y' = 0$	[_exact]	✓	4.446
15830	$\tan(y) - t + (t \sec(y)^2 + 1)y' = 0$	[_exact]	✓	3.897
15831	$t \ln(y) + \left(\frac{t^2}{2y} + 1\right)y' = 0$	[_exact, [_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓	1.441
15832	$y' + y = 5$	[_quadrature]	✓	0.916
15833	$y' + ty = t$	[_separable]	✓	1.347
15834	$x' + \frac{x}{y} = y^2$	[_linear]	✓	1.195
15835	$tr' + r = t \cos(t)$	[_linear]	✓	1.193
15836	$y' - y = ty^3$	[_Bernoulli]	✓	2.319
15837	$y' + y = \frac{e^t}{y^2}$	[[_1st_order, _with_linear_symmetries], _Bernoulli]	✓	2.044
15838	$y = ty' + 3y^4$	[[_1st_order, _with_linear_symmetries], _Clairaut]	✓	2.542
15839	$y - ty' = 2y^2 \ln(t)$	[[_homogeneous, 'class D'], _Bernoulli]	✓	2.494
15840	$y - ty' = -2y^3$	[[_1st_order, _with_linear_symmetries], _Clairaut]	✓	0.432
15841	$y - ty' = -4y^2$	[[_1st_order, _with_linear_symmetries], _Clairaut]	✓	0.350
15842	$2x - y - 2 + (2y - x)y' = 0$ i.c.	[[_homogeneous, 'class C'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓	5.334
15843	$\cos(t - y) + (1 - \cos(t - y))y' = 0$ i.c.	[[_homogeneous, 'class C'], _exact, _dAlembert]	✓	125.768
15844	$e^{ty}y - 2t + te^{ty}y' = 0$ i.c.	[_exact, [_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]']]	✓	1.878

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
15845	$\sin(y) - y \cos(t) + (t \cos(y) - \sin(t)) y' = 0$ i.c.	[_exact]	✓	9.025
15846	$y^2 + (2ty - 2 \cos(y) \sin(y)) y' = 0$ i.c.	[_exact, [_1st_order, 'with_symmetry_[F(x)*G(y),0]']]	✓	2.125
15847	$\frac{y}{t} + \ln(y) + \left(\frac{t}{y} + \ln(t)\right) y' = 0$ i.c.	[_exact]	✓	2.066
15848	$y' = y^2 - x$ i.c.	[[_Riccati, _special]]	✓	17.343
15849	$y' = \sqrt{x - y}$ i.c.	[[_homogeneous, 'class C'], _dAlembert]	✓	2.357
15850	$y' = ty^3$ i.c.	[_separable]	✓	3.331
15851	$y' = \frac{t}{y^3}$ i.c.	[_separable]	✓	5.007
15852	$y' = -\frac{y}{t-2}$ i.c.	[_separable]	✓	2.023
15853	$y'' - y = 0$	[[_2nd_order, _missing_x]]	✓	1.997
15854	$y'' + 2y' + y = 0$	[[_2nd_order, _missing_x]]	✓	0.844
15855	$2t^2 y'' - 3ty' - 3y = 0$	[[_Emden, _Fowler]]	✓	1.097
15856	$y'' + 9y = 0$	[[_2nd_order, _missing_x]]	✓	1.990
15857	$y'' - y' - 2y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	1.490
15858	$y'' + 9y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	2.813
15859	$3t^2 y'' - 5ty' - 3y = 0$ i.c.	[[_Emden, _Fowler]]	✓	1.937
15860	$t^2 y'' + 7ty' - 7y = 0$ i.c.	[[_Emden, _Fowler]]	✓	1.865

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
15861	$y'' + y = 2 \cos(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.607
15862	$y'' + 10y' + 24y = 0$	[[_2nd_order, _missing_x]]	✓	0.836
15863	$y'' + 16y = 0$	[[_2nd_order, _missing_x]]	✓	2.014
15864	$y'' + 6y' + 18y = 0$	[[_2nd_order, _missing_x]]	✓	1.785
15865	$t^2y'' + ty' - y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	1.300
15866	$y'' - 5y' + 6y = 0$	[[_2nd_order, _missing_x]]	✓	0.417
15867	$y'' + 6y' + 8y = 0$	[[_2nd_order, _missing_x]]	✓	0.438
15868	$y'' - 4y' + 4y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	0.474
15869	$y'' + 10y' + 25y = 0$	[[_2nd_order, _missing_x]]	✓	0.417
15870	$y'' + 9y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	0.588
15871	$y'' + 49y = 0$	[[_2nd_order, _missing_x]]	✓	0.464
15872	$t^2y'' + 4ty' - 4y = 0$	[[_Emden, _Fowler]]	✓	0.332
15873	$t^2y'' + 6ty' + 6y = 0$	[[_Emden, _Fowler]]	✓	0.327
15874	$t^2y'' + ty' + \left(t^2 - \frac{1}{4}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.378
15875	$t^2y'' + 3ty' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.317
15876	$ay'' + by' + cy = 0$	[[_2nd_order, _missing_x]]	✓	1.239
15877	$t^2y'' + aty' + by = 0$	[[_Emden, _Fowler]]	✓	1.990
15878	$4t^2y'' + 4ty' + (36t^2 - 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.312

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
15879	$ty'' + 2y' + 16ty = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.395
15880	$y'' + b(t)y' + c(t)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.106
15881	<i>i.c.</i> $y'' + b(t)y' + c(t)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.142
15882	$y'' = 0$	[[_2nd_order, _quadrature]]	✓	1.369
15883	$y'' - 4y' - 12y = 0$	[[_2nd_order, _missing_x]]	✓	0.839
15884	$y'' + y' = 0$	[[_2nd_order, _missing_x]]	✓	1.266
15885	$y'' + 3y' - 4y = 0$	[[_2nd_order, _missing_x]]	✓	0.845
15886	$y'' + 8y' + 12y = 0$	[[_2nd_order, _missing_x]]	✓	0.850
15887	$y'' + 5y' + y = 0$	[[_2nd_order, _missing_x]]	✓	1.116
15888	$8y'' + 6y' + y = 0$	[[_2nd_order, _missing_x]]	✓	0.820
15889	$4y'' + 9y = 0$	[[_2nd_order, _missing_x]]	✓	2.012
15890	$y'' + 16y = 0$	[[_2nd_order, _missing_x]]	✓	2.021
15891	$y'' + 8y = 0$	[[_2nd_order, _missing_x]]	✓	2.040
15892	$y'' + 7y = 0$	[[_2nd_order, _missing_x]]	✓	2.105
15893	$4y'' + 21y' + 5y = 0$	[[_2nd_order, _missing_x]]	✓	0.855
15894	$7y'' + 4y' - 3y = 0$	[[_2nd_order, _missing_x]]	✓	0.864
15895	$4y'' + 4y' + y = 0$	[[_2nd_order, _missing_x]]	✓	0.888
15896	$y'' - 6y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓	0.882

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
15897	$y'' - y' = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	1.621
15898	$3y'' - y' = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	1.964
15899	$y'' + y' - 12y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	1.380
15900	$y'' - 7y' + 12y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	1.108
15901	$2y'' - 7y' - 4y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	1.457
15902	$y'' - 7y' + 10y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	1.425
15903	$y'' + 36y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	3.025
15904	$y'' + 100y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	2.938
15905	$y'' - 2y' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	1.151
15906	$y'' + 4y' + 4y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	1.173
15907	$y'' + 2y' + 5y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	2.542
15908	$y'' + 4y' + 20y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	2.666
15909	$y'' + y' - y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	1.558
15910	$y'' + y' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	3.019
15911	$y'' - y' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	3.016
15912	$y'' - y' - y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	1.524
15913	$6y'' + 5y' + y = 0$	[[_2nd_order, _missing_x]]	✓	0.839

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
15914	$9y'' + 6y' + y = 0$	[[_2nd_order, _missing_x]]	✓	0.865
15915	$y'' + 4y' + 20y = 0$	[[_2nd_order, _missing_x]]	✓	1.829
15916	$3t^2y'' - 2ty' + 2y = 0$	[[_Emden, _Fowler]]	✓	1.423
15917	$t^2y'' - ty' + y = 0$	[[_Emden, _Fowler]]	✓	1.217
15918	$ay'' + 2by' + cy = 0$	[[_2nd_order, _missing_x]]	✓	1.214
15919	$y'' + 6y' + 2y = 0$	[[_2nd_order, _missing_x]]	✓	1.213
15920	$y'' - 5y' + 6y = 0$	[[_2nd_order, _missing_x]]	✓	0.835
15921	$y'' - 6y' - 16y = 0$	[[_2nd_order, _missing_x]]	✓	0.873
15922	$y'' - 16y = 0$	[[_2nd_order, _missing_x]]	✓	2.171
15923	<i>i.c.</i> $y'' + 2y' + 5y = 0$	[[_2nd_order, _missing_x]]	✓	1.863
15924	$y''^2 - 5y''y' + 4y^2 = 0$	[[_2nd_order, _missing_x]]	✗	0.074
15925	$y''^2 - 2y''y' + y^2 = 0$	[[_2nd_order, _missing_x]]	✗	0.074
15926	<i>i.c.</i> $y'' + 4y' + 3y = 0$	[[_2nd_order, _missing_x]]	✓	0.945
15927	$y'' + y = 8e^{2t}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.950
15928	$y'' - 4y' + 3y = -e^{-9t}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.113
15929	$y'' - 4y' + 3y = 2e^{3t}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.132
15930	$y'' - y = 2t - 4$	[[_2nd_order, _with_linear_symmetries]]	✓	1.041
15931	$y'' - 2y' + y = t^2$	[[_2nd_order, _with_linear_symmetries]]	✓	1.022

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
15932	$y'' + 2y' = 3 - 4t$	[[_2nd_order, _missing_y]]	✓	1.665
15933	$y'' + y = \cos(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.793
15934	$y'' + 4y = 4\cos(t) - \sin(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.312
15935	$y'' + 4y = \cos(2t) + t$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.799
15936	$y'' + 4y = 3te^{-t}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	2.344
15937	$y'' = 3t^4 - 2t$	[[_2nd_order, _quadrature]]	✓	1.330
15938	$y'' - 4y' + 13y = 2te^{-2t}\sin(3t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	13.892
15939	$y'' + y' - 2y = -1$	[[_2nd_order, _missing_x]]	✓	1.016
15940	$5y'' + y' - 4y = -3$	[[_2nd_order, _missing_x]]	✓	1.016
15941	$y'' - 2y' - 8y = 32t$	[[_2nd_order, _with_linear_symmetries]]	✓	1.056
15942	$16y'' - 8y' - 15y = 75t$	[[_2nd_order, _with_linear_symmetries]]	✓	1.103
15943	$y'' + 2y' + 26y = -338t$	[[_2nd_order, _with_linear_symmetries]]	✓	12.049
15944	$y'' + 3y' - 4y = -32t^2$	[[_2nd_order, _with_linear_symmetries]]	✓	1.608
15945	$8y'' + 6y' + y = 5t^2$	[[_2nd_order, _with_linear_symmetries]]	✓	1.081
15946	$y'' - 6y' + 8y = -256t^3$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.248
15947	$y'' - 2y' = 52\sin(3t)$	[[_2nd_order, _missing_y]]	✓	2.100
15948	$y'' - 6y' + 13y = 25\sin(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	11.678
15949	$y'' - 9y = 54t\sin(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.605

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
15950	$y'' - 5y' + 6y = -78 \cos(3t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.590
15951	$y'' + 4y' + 4y = -32t^2 \cos(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.981
15952	$y'' - y' - 20y = -2e^t$	[[_2nd_order, _with_linear_symmetries]]	✓	1.112
15953	$y'' - 4y' - 5y = -648t^2e^{5t}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.224
15954	$y'' - 7y' + 12y = -2t^3e^{4t}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.162
15955	$y'' + 4y' = 8e^{4t} - 4e^{-4t}$	[[_2nd_order, _missing_y]]	✓	1.677
15956	$y'' - 3y' = t^2 - e^{3t}$	[[_2nd_order, _missing_y]]	✓	1.788
15957	$y'' + 4y' = -24t - 6 - 4te^{-4t} + e^{-4t}$	[[_2nd_order, _missing_y]]	✓	1.829
15958	$y'' - 3y' = t^2 - e^{3t}$	[[_2nd_order, _missing_y]]	✓	1.789
15959	$y'' = t^2 + e^t + \sin(t)$	[[_2nd_order, _quadrature]]	✓	1.904
15960	$y'' + 3y' = 18$ i.c.	[[_2nd_order, _missing_x]]	✓	2.250
15961	$y'' - y = 4$ i.c.	[[_2nd_order, _missing_x]]	✓	2.692
15962	$y'' - 4y = 32t$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	1.256
15963	$y'' + 2y' - 3y = -2$ i.c.	[[_2nd_order, _missing_x]]	✓	1.550
15964	$y'' + y' - 6y = 3t$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	1.657
15965	$y'' + 8y' + 16y = 4$ i.c.	[[_2nd_order, _missing_x]]	✓	1.357
15966	$y'' + 7y' + 10y = te^{-t}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.452
15967	$y'' + 6y' + 25y = -1$ i.c.	[[_2nd_order, _missing_x]]	✓	3.200

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
15968	$y'' - 3y' = -e^{3t} - 2t$ i.c.	[[_2nd_order, _missing_y]]	✓	2.305
15969	$y'' - y' = -3t - 4t^2e^{2t}$ i.c.	[[_2nd_order, _missing_y]]	✓	2.151
15970	$y'' - 2y' = 2t^2$ i.c.	[[_2nd_order, _missing_y]]	✓	2.339
15971	$y'' + 4y' = -24t - 6 - 4te^{-4t} + e^{-4t}$ i.c.	[[_2nd_order, _missing_y]]	✓	2.151
15972	$y'' - 3y' = e^{-3t} - e^{3t}$ i.c.	[[_2nd_order, _missing_y]]	✓	2.260
15973	$y'' + 9y = \begin{cases} 2t & 0 \leq t < \pi \\ 0 & \pi \leq t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	4.878
15974	$y'' + 9\pi^2y = \begin{cases} 2t & 0 \leq t < \pi \\ 2t - 2\pi & \pi \leq t < 2\pi \\ 0 & 2\pi \leq t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	58.914
15975	$y'' + 4y = \begin{cases} 0 & 0 \leq t < \pi \\ 10 & \pi \leq t < 2\pi \\ 0 & 2\pi \leq t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.620
15976	$y' - 4y = t^2$	[[_linear, 'class A']]	✓	1.024
15977	$y' + y = \cos(2t)$ i.c.	[[_linear, 'class A']]	✓	1.529
15978	$y' - y = e^{4t}$ i.c.	[[_linear, 'class A']]	✓	1.336
15979	$y' + 4y = e^{-4t}$ i.c.	[[_linear, 'class A']]	✓	1.229
15980	$y' + 4y = te^{-4t}$	[[_linear, 'class A']]	✓	1.463
15981	$y'' + y' - 2y = f(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.860
15982	$x'' + 9x = \sin(3t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	4.039
15983	$4y'' + 4y' + 37y = \cos(3t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	11.257

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
15984	$y'' + 4y = 1$	[[_2nd_order, _missing_x]]	✓	2.458
15985	$y'' + 16y' = t$	[[_2nd_order, _missing_y]]	✓	1.703
15986	$y'' - 7y' + 10y = e^{3t}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.058
15987	$y'' + 16y = 2 \cos(4t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.745
15988	$y'' + 4y' + 20y = 2t e^{-2t}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	12.956
15989	$y'' + \frac{y}{4} = \sec\left(\frac{t}{2}\right) + \csc\left(\frac{t}{2}\right)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	4.041
15990	$y'' + 16y = \csc(4t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.485
15991	$y'' + 16y = \cot(4t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	5.580
15992	$y'' + 2y' + 50y = e^{-t} \csc(7t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	11.921
15993	$y'' + 6y' + 25y = e^{-3t}(\sec(4t) + \csc(4t))$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	14.889
15994	$y'' - 2y' + 26y = e^t(\sec(5t) + \csc(5t))$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	15.744
15995	$y'' + 12y' + 37y = e^{-6t} \csc(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	4.730
15996	$y'' - 6y' + 34y = e^{3t} \tan(5t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	17.536
15997	$y'' - 10y' + 34y = e^{5t} \cot(3t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	14.684
15998	$y'' - 12y' + 37y = e^{6t} \sec(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	4.719
15999	$y'' - 8y' + 17y = e^{4t} \sec(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	4.759
16000	$y'' - 9y = \frac{1}{1 + e^{3t}}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.525

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
16001	$y'' - 25y = \frac{1}{1 - e^{5t}}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.641
16002	$y'' - y = 2 \sinh(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	2.592
16003	$y'' - 2y' + y = \frac{e^t}{t}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.101
16004	$y'' - 4y' + 4y = \frac{e^{2t}}{t^2}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.161
16005	$y'' + 8y' + 16y = \frac{e^{-4t}}{t^4}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.185
16006	$y'' + 6y' + 9y = \frac{e^{-3t}}{t}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.169
16007	$y'' + 6y' + 9y = e^{-3t} \ln(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.205
16008	$y'' + 3y' + 2y = \cos(e^t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.507
16009	$y'' + 4y' + 4y = e^{-2t} \sqrt{-t^2 + 1}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.317
16010	$y'' - 2y' + y = e^t \sqrt{-t^2 + 1}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.296
16011	$y'' - 10y' + 25y = e^{5t} \ln(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.277
16012	$y'' - 4y' + 4y = e^{2t} \arctan(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.016
16013	$y'' + 8y' + 16y = \frac{e^{-4t}}{t^2 + 1}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.675
16014	$y'' + y = \sec\left(\frac{t}{2}\right) + \csc\left(\frac{t}{2}\right)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	7.229
16015	$y'' + 9y = \tan(3t)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	8.951
16016	$y'' + 9y = \sec(3t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.389
16017	$y'' + 9y = \tan(3t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	5.579

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
16018	$y'' + 4y = \tan(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	5.918
16019	$y'' + 16y = \tan(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	5.333
16020	$y'' + 4y = \tan(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	6.692
16021	$y'' + 9y = \sec(3t) \tan(3t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	4.280
16022	$y'' + 4y = \sec(2t) \tan(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	4.244
16023	$y'' + 9y = \frac{\csc(3t)}{2}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	4.294
16024	$y'' + 4y = \sec(2t)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	9.627
16025	$y'' - 16y = 16t e^{-4t}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.343
16026	$y'' + y = \tan(t)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	4.498
16027	$y'' + 4y = \sec(2t) + \tan(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	5.100
16028	$y'' + 9y = \csc(3t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	4.132
16029	$y'' + 4y' + 3y = 65 \cos(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.477
16030	$t^2 y'' + 3ty' + y = \ln(t)$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓	1.912
16031	$t^2 y'' + ty' + 4y = t$	[[_2nd_order, _with_linear_symmetries]]	✓	4.245
16032	$t^2 y'' - 4ty' - 6y = 2 \ln(t)$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓	1.985
16033	$4y'' + 4y' + y = e^{-\frac{t}{2}}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.143

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
16034	$y'' + 4y = f(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.059
16035	$t^2y'' - 4ty' + (t^2 + 6)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.395
16036	$t^2y'' - 4ty' + (t^2 + 6)y = t^3 + 2t$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	7.030
16037	$ty'' + 2y' + ty = 0$	[_Lienard]	✓	0.395
16038	$ty'' + 2y' + ty = -t$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	3.955
16039	$4t^2y'' + 4ty' + (16t^2 - 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.389
16040	$4t^2y'' + 4ty' + (16t^2 - 1)y = 16t^{3/2}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	74.608
16041	$t^2(\ln(t) - 1)y'' - ty' + y = -\frac{3(1 + \ln(t))}{4\sqrt{t}}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	1.306
16042	$(\sin(t) - t \cos(t))y'' - t \sin(t)y' + \sin(t)y = t$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	4.366
16043	$y''' = 0$	[[_3rd_order, _quadrature]]	✓	0.033
16044	$y''' - 10y'' + 25y' = 0$	[[_3rd_order, _missing_x]]	✓	0.068
16045	$8y''' + y'' = 0$	[[_3rd_order, _missing_x]]	✓	0.063
16046	$y'''' + 16y'' = 0$	[[_high_order, _missing_x]]	✓	0.069
16047	$y''' - 2y'' - y' + 2y = 0$	[[_3rd_order, _missing_x]]	✓	0.069
16048	$3y''' - 4y'' - 5y' + 2y = 0$	[[_3rd_order, _missing_x]]	✓	0.068
16049	$6y''' - 5y'' - 2y' + y = 0$	[[_3rd_order, _missing_x]]	✓	0.071
16050	$y''' - 5y' + 2y = 0$	[[_3rd_order, _missing_x]]	✓	0.069

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
16051	$5y'''' - 15y' + 11y = 0$	[[_3rd_order, _missing_x]]	✓	0.121
16052	$y'''' + y''' = 0$	[[_high_order, _missing_x]]	✓	0.062
16053	$y'''' - 9y'' = 0$	[[_high_order, _missing_x]]	✓	0.065
16054	$y'''' - 16y = 0$	[[_high_order, _missing_x]]	✓	0.073
16055	$y'''' - 6y''' - y'' + 54y' - 72y = 0$	[[_high_order, _missing_x]]	✓	0.073
16056	$y'''' + 7y''' + 6y'' - 32y' - 32y = 0$	[[_high_order, _missing_x]]	✓	0.073
16057	$y'''' + 2y''' - 2y'' + 8y = 0$	[[_high_order, _missing_x]]	✓	0.079
16058	$y^{(5)} + 4y'''' = 0$	[[_high_order, _missing_x]]	✓	0.069
16059	$y^{(5)} + 4y'''' = 0$	[[_high_order, _missing_x]]	✓	0.072
16060	$y^{(5)} + 3y'''' + 3y''' + y'' = 0$	[[_high_order, _missing_x]]	✓	0.074
16061	$y'''' + 2y'' + y = 0$	[[_high_order, _missing_x]]	✓	0.082
16062	$y'''' + 8y'' + 16y = 0$	[[_high_order, _missing_x]]	✓	0.083
16063	$y^{(6)} + 3y'''' + 3y'' + y = 0$	[[_high_order, _missing_x]]	✓	0.088
16064	$y^{(6)} + 12y'''' + 48y'' + 64y = 0$	[[_high_order, _missing_x]]	✓	0.088
16065	$y''' - 2y'' = 0$ i.c.	[[_3rd_order, _missing_x]]	✓	0.122
16066	$y''' - y = 0$ i.c.	[[_3rd_order, _missing_x]]	✓	0.127
16067	$y'''' + 16y''' = 0$ i.c.	[[_high_order, _missing_x]]	✓	0.137
16068	$y'''' - 8y'' + 16y = 0$ i.c.	[[_high_order, _missing_x]]	✓	0.146

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
16069	$24y''' - 26y'' + 9y' - y = 0$ i.c.	[[_3rd_order, _missing_x]]	✓	0.150
16070	$y'''' - 5y'' + 4y = 0$ i.c.	[[_high_order, _missing_x]]	✓	0.146
16071	$y'''' - 16y = 0$ i.c.	[[_high_order, _missing_x]]	✓	0.088
16072	$8y^{(5)} + 4y'''' + 66y''' - 41y'' - 37y' = 0$ i.c.	[[_high_order, _missing_x]]	✓	0.100
16073	$2y^{(5)} + 7y'''' + 17y''' + 17y'' + 5y' = 0$ i.c.	[[_high_order, _missing_x]]	✓	0.099
16074	$y^{(5)} + 8y'''' = 0$ i.c.	[[_high_order, _missing_x]]	✓	0.146
16075	$y^{(6)} - 3y'''' + 3y'' - y = 0$ i.c.	[[_high_order, _missing_x]]	✓	0.157
16076	$y''' + 9y'' + 16y' - 26y = 0$	[[_3rd_order, _missing_x]]	✓	0.073
16077	$y'''' + 12y''' + 60y'' + 124y' + 75y = 0$	[[_high_order, _missing_x]]	✓	0.080
16078	$y''' + 3y'' + 2y' + 6y = 0$ i.c.	[[_3rd_order, _missing_x]]	✓	0.122
16079	$y'''' - 8y''' + 30y'' - 56y' + 49y = 0$ i.c.	[[_high_order, _missing_x]]	✓	0.142
16080	$\frac{31y'''}{100} + \frac{56y''}{5} - \frac{49y'}{5} + \frac{53y}{10} = 0$ i.c.	[[_3rd_order, _missing_x]]	✓	0.517
16081	$2yy'' + y^2 = y'^2$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_xy]]	✓	2.757
16082	$y''' + y'' = e^t$	[[_3rd_order, _missing_y]]	✓	0.100
16083	$y'''' - 16y = 1$	[[_high_order, _missing_x]]	✓	0.105
16084	$y^{(5)} - y'''' = 1$	[[_high_order, _missing_x]]	✓	0.108
16085	$y'''' + 9y'' = 1$	[[_high_order, _missing_x]]	✓	0.110

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
16086	$y'''' + 9y'' = 9e^{3t}$	[[_high_order, _missing_y]]	✓	0.118
16087	$y''' + 10y'' + 34y' + 40y = te^{-4t} + 2e^{-3t} \cos(t)$	[[_3rd_order, _linear, _nonhomogeneous]]	✓	0.908
16088	$y''' + 6y'' + 11y' + 6y = 2e^{-3t} - te^{-t}$	[[_3rd_order, _linear, _nonhomogeneous]]	✓	0.177
16089	$y'''' - 6y''' + 13y'' - 24y' + 36y = 108t$	[[_high_order, _with_linear_symmetries]]	✓	0.128
16090	$y''' + 6y'' - 14y' - 104y = -111e^t$	[[_3rd_order, _with_linear_symmetries]]	✓	0.125
16091	$y'''' - 10y''' + 38y'' - 64y' + 40y = 153e^{-t}$	[[_high_order, _with_linear_symmetries]]	✓	0.136
16092	$y''' + 4y' = \tan(2t)$	[[_3rd_order, _missing_y]]	✓	0.586
16093	$y''' + 4y' = \sec(2t) \tan(2t)$	[[_3rd_order, _missing_y]]	✓	0.680
16094	$y'''' + 4y'' = \sec(2t)^2$	[[_high_order, _missing_y]]	✓	0.686
16095	$y'''' + 4y'' = \tan(2t)^2$	[[_high_order, _missing_y]]	✓	0.700
16096	$y''' + 9y' = \sec(3t)$	[[_3rd_order, _missing_y]]	✓	1.553
16097	$y''' + y' = -\sec(t) \tan(t)$	[[_3rd_order, _missing_y]]	✓	0.615
16098	$y''' + 4y' = \sec(2t)$	[[_3rd_order, _missing_y]]	✓	0.645
16099	$y''' - 2y'' = -\frac{1}{t^2} - \frac{2}{t}$	[[_3rd_order, _missing_y]]	✓	0.232
16100	$y''' - 3y'' + 3y' - y = \frac{e^t}{t}$	[[_3rd_order, _linear, _nonhomogeneous]]	✓	0.233
16101	$y''' - 4y'' - 11y' + 30y = e^{4t}$	[[_3rd_order, _with_linear_symmetries]]	✓	0.115

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
16102	$y''' + 3y'' - 10y' - 24y = e^{-3t}$	[[_3rd_order, _with_linear_symmetries]]	✓	0.125
16103	$y''' - 13y' + 12y = \cos(t)$	[[_3rd_order, _linear, _nonhomogeneous]]	✓	0.136
16104	$y''' + 3y'' + 2y' = \cos(t)$	[[_3rd_order, _missing_y]]	✓	0.137
16105	$y^{(6)} + y'''' = -24$	[[_high_order, _missing_x]]	✓	0.115
16106	$y'''' + y'' = \tan(t)^2$	[[_high_order, _missing_y]]	✓	0.610
16107	<i>i.c.</i> $y''' - y'' = 3t^2$	[[_3rd_order, _missing_y]]	✓	0.194
16108	<i>i.c.</i> $y'''' + y'' = \sec(t)^2$	[[_high_order, _missing_y]]	✓	0.638
16109	<i>i.c.</i> $y''' + y' = \sec(t)$	[[_3rd_order, _missing_y]]	✓	0.578
16110	<i>i.c.</i> $y'''' + y'' = \cos(t)$	[[_high_order, _missing_y]]	✓	0.779
16111	<i>i.c.</i> $y'''' + y'' = t$	[[_high_order, _missing_y]]	✓	0.123
16112	$t^2 \ln(t) y''' - ty'' + y' = 1$	[[_3rd_order, _missing_y]]	✓	0.501
16113	$(t^2 + t) y''' + (-t^2 + 2) y'' - (t + 2) y' = -2 - t$	[[_3rd_order, _missing_y]]	✓	0.556
16114	<i>i.c.</i> $2t^3 y''' + t^2 y'' + ty' - y = -3t^2$	[[_3rd_order, _with_linear_symmetries]]	✓	0.411
16115	<i>i.c.</i> $ty'''' + 2y''' = \frac{45}{8t^{7/2}}$	[[_high_order, _missing_y]]	✓	0.564
16116	$4x^2 y'' - 8xy' + 5y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓	1.184

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
16117	$3x^2y'' - 4xy' + 2y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)']]]	✓	1.204
16118	$2x^2y'' - 8xy' + 8y = 0$	[[_Emden, _Fowler]]	✓	1.223
16119	$2x^2y'' - 7xy' + 7y = 0$	[[_Emden, _Fowler]]	✓	1.318
16120	$4x^2y'' + 17y = 0$	[[_Emden, _Fowler]]	✓	0.909
16121	$9x^2y'' - 9xy' + 10y = 0$	[[_Emden, _Fowler]]	✓	2.163
16122	$2x^2y'' - 2xy' + 20y = 0$	[[_Emden, _Fowler]]	✓	2.638
16123	$x^2y'' - 5xy' + 10y = 0$	[[_Emden, _Fowler]]	✓	2.039
16124	$4x^2y'' + 8xy' + y = 0$	[[_Emden, _Fowler]]	✓	1.146
16125	$4x^2y'' + y = 0$	[[_Emden, _Fowler]]	✓	0.789
16126	$x^2y'' - 5xy' + 9y = 0$	[[_Emden, _Fowler]]	✓	1.156
16127	$x^2y'' + 7xy' + 9y = 0$	[[_Emden, _Fowler]]	✓	1.145
16128	$x^3y''' + 22x^2y'' + 124xy' + 140y = 0$	[[_3rd_order, _with_linear_symmetries]]	✓	0.127
16129	$x^3y''' - 4x^2y'' - 46xy' + 100y = 0$	[[_3rd_order, _with_linear_symmetries]]	✓	0.128
16130	$x^3y''' + 2x^2y'' - 4xy' + 4y = 0$	[[_3rd_order, _with_linear_symmetries]]	✓	0.125
16131	$x^3y''' + 4x^2y'' + 6xy' + 4y = 0$	[[_3rd_order, _exact, _linear, _homogeneous]]	✓	0.133
16132	$x^3y''' + 2xy' - 2y = 0$	[[_3rd_order, _with_linear_symmetries]]	✓	0.123
16133	$x^3y''' + 3x^2y'' - 2xy' - 2y = 0$	[[_3rd_order, _exact, _linear, _homogeneous]]	✓	0.126
16134	$x^3y''' + 6x^2y'' + 7xy' + y = 0$	[[_3rd_order, _exact, _linear, _homogeneous]]	✓	0.125
16135	$x^3y'''' + 6x^2y''' + 7xy'' + y' = 0$	[[_high_order, _missing_y]]	✓	0.191
16136	$x^2y'' + 5xy' + 4y = \frac{1}{x^5}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.693

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
16137	$x^2y'' - 5xy' + 9y = x^3$	[[_2nd_order, _with_linear_symmetries]]	✓	1.872
16138	$x^2y'' + xy' + y = \frac{1}{x^2}$	[[_2nd_order, _with_linear_symmetries]]	✓	3.025
16139	$x^2y'' + xy' + 4y = \frac{1}{x^2}$	[[_2nd_order, _with_linear_symmetries]]	✓	3.849
16140	$x^2y'' + 2xy' - 6y = 2x$	[[_2nd_order, _with_linear_symmetries]]	✓	1.369
16141	$x^2y'' + xy' - 16y = \ln(x)$	[[_2nd_order, _with_linear_symmetries]]	✓	1.914
16142	$x^2y'' + xy' + 4y = 8$	[[_2nd_order, _with_linear_symmetries]]	✓	2.275
16143	$x^2y'' + xy' + 36y = x^2$	[[_2nd_order, _with_linear_symmetries]]	✓	3.775
16144	$x^3y''' + 3x^2y'' - 11xy' + 16y = \frac{1}{x^3}$	[[_3rd_order, _with_linear_symmetries]]	✓	0.279
16145	$x^3y''' + 16x^2y'' + 70xy' + 80y = \frac{1}{x^{13}}$	[[_3rd_order, _with_linear_symmetries]]	✓	0.277
16146	<i>i.c.</i> $3x^2y'' - 4xy' + 2y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓	2.114
16147	<i>i.c.</i> $2x^2y'' - 7xy' + 7y = 0$	[[_Emden, _Fowler]]	✓	2.340
16148	<i>i.c.</i> $x^2y'' + xy' + 4y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓	1.942
16149	<i>i.c.</i> $x^2y'' + xy' + 2y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓	2.103
16150	<i>i.c.</i> $x^3y''' + 10x^2y'' - 20xy' + 20y = 0$	[[_3rd_order, _with_linear_symmetries]]	✓	0.231
16151	<i>i.c.</i> $x^3y''' + 15x^2y'' + 54xy' + 42y = 0$	[[_3rd_order, _with_linear_symmetries]]	✓	0.227

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
16152	$x^3y''' - 2x^2y'' + 5xy' - 5y = 0$ i.c.	[[_3rd_order, _with_linear_symmetries]]	✓	0.234
16153	$x^3y''' - 6x^2y'' + 17xy' - 17y = 0$ i.c.	[[_3rd_order, _with_linear_symmetries]]	✓	0.235
16154	$2x^2y'' + 3xy' - y = \frac{1}{x^2}$ i.c.	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓	2.406
16155	$x^2y'' + 4xy' + 2y = \ln(x)$ i.c.	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓	3.170
16156	$4x^2y'' + y = x^3$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	1.415
16157	$9x^2y'' + 27xy' + 10y = \frac{1}{x}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	6.645
16158	$x^2y'' - xy' + 2y = 0$	[[_Emden, _Fowler]]	✓	2.051
16159	$x^2y'' + 4xy' + 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	1.343
16160	$x^2y'' + xy' + y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓	1.316
16161	$x^3y''' + 3x^2y'' + 37xy' = 0$	[[_3rd_order, _missing_y]]	✓	0.132
16162	$x^3y''' + 3x^2y'' - 3xy' = 0$	[[_3rd_order, _missing_y]]	✓	0.123
16163	$x^3y''' + xy' - y = 0$	[[_3rd_order, _with_linear_symmetries]]	✓	0.118
16164	$x^3y''' + 3x^2y'' - 3xy' = -8$	[[_3rd_order, _missing_y]]	✓	0.236
16165	$(x^2 + 1)^2 y'' + 2x(x^2 + 1) y' + 4y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓	1.295
16166	$(x^2 + 1)^2 y'' + 2x(x^2 + 1) y' + 4y = \arctan(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.869

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
16167	$(x^2 + 1)^2 y'' + 2x(x^2 + 1) y' + 4y = 0$ i.c.	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]]	✓	1.657
16168	$(x^2 + 1)^2 y'' + 2x(x^2 + 1) y' + 4y = \arctan(x)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	2.250
16169	$(x^4 - 1) y'' + (x^3 - x) y' + (x^2 - 1) y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]]	✓	2.548
16170	$(x^4 - 1) y'' + (x^3 - x) y' + (4x^2 - 4) y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]]	✓	2.634
16171	$(x^4 - 1) y'' + (x^3 - x) y' + (x^2 - 1) y = 0$ i.c.	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]]	✓	9.090
16172	$x^2 y'' + 4xy' + 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	1.353
16173	$x^2 y'' + xy' + y = x^2$	[[_2nd_order, _with_linear_symmetries]]	✓	2.825
16174	$x^2 y'' + xy' + 4y = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]]	✓	1.750
16175	$x^2 y'' - xy' + y = 0$ i.c.	[[_Emden, _Fowler]]	✓	1.824
16176	$x^3 y''' + 16x^2 y'' + 79xy' + 125y = 0$	[[_3rd_order, _with_linear_symmetries]]	✓	0.139
16177	$x^4 y'''' + 5x^3 y''' - 12x^2 y'' - 12xy' + 48y = 0$	[[_high_order, _with_linear_symmetries]]	✓	0.145

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
16178	$x^4 y'''' + 14x^3 y''' + 55x^2 y'' + 65xy' + 15y = 0$	[[_high_order, _exact, _linear, _homogeneous]]	✓	0.156
16179	$x^4 y'''' + 8x^3 y''' + 27x^2 y'' + 35xy' + 45y = 0$	[[_high_order, _with_linear_symmetries]]	✓	0.155
16180	$x^4 y'''' + 10x^3 y''' + 27x^2 y'' + 21xy' + 4y = 0$	[[_high_order, _with_linear_symmetries]]	✓	0.150
16181	$x^3 y''' + 9x^2 y'' + 44xy' + 58y = 0$ i.c.	[[_3rd_order, _with_linear_symmetries]]	✓	0.266
16182	$6x^2 y'' + 5xy' - y = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)']]	✓	1.332
16183	$x^2 y'' - 2xy' + 7y = 0$	[[_Emden, _Fowler]]	✓	0.655
16184	$(-2 + x) y'' + y' - y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.655
16185	$(x^2 - 4) y'' + 16(x + 2) y' - y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.724
16186	$y'' + 3y' - 18y = 0$	[[_2nd_order, _missing_x]]	✓	0.648
16187	$y'' - 11y' + 30y = 0$	[[_2nd_order, _missing_x]]	✓	0.597
16188	$y'' + y = 0$	[[_2nd_order, _missing_x]]	✓	0.318
16189	$y'' - y' - 2y = e^{-x}$	[[_2nd_order, _with_linear_symmetries]]	✓	0.647
16190	$(-2 - 2x) y'' + 2y' + 4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.611
16191	$(2 + 3x) y'' + 3xy' = 0$	[[_2nd_order, _missing_y]]	✓	0.597
16192	$(3x + 1) y'' - 3y' - 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.625
16193	$(-x^2 + 2) y'' + 2(x - 1) y' + 4y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.658

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
16194	$y'' - xy' + 4y = 0$	[_Hermite]	✓	0.534
16195	$(2x^2 + 2)y'' + 2xy' - 3y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓	0.616
16196	<i>i.c.</i> $(3 - 2x)y'' + 2y' - 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.601
16197	<i>i.c.</i> $y'' - 4x^2y = 0$	[[_Emden, _Fowler]]	✓	0.499
16198	<i>i.c.</i> $(2x^2 - 1)y'' + 2xy' - 3y = 0$	[_Gegenbauer, [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓	0.629
16199	<i>i.c.</i> $y'' + xy' = \sin(x)$	[[_2nd_order, _missing_y]]	✓	0.581
16200	<i>i.c.</i> $y'' + y' + xy = \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.661
16201	<i>i.c.</i> $y'' + (y^2 - 1)y' + y = 0$	[[_2nd_order, _missing_x], _Van_der_Pol]	✓	0.224
16202	<i>i.c.</i> $y'' + \left(\frac{y'^2}{3} - 1\right)y' + y = 0$	[[_2nd_order, _missing_x]]	✓	0.216
16203	$y'' - 2xy' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.502
16204	$y'' - 2xy' + 6y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.514
16205	$(-x^2 + 1)y'' - xy' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.590
16206	$(-x^2 + 1)y'' - xy' + 9y = 0$	[_Gegenbauer, [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓	0.603
16207	<i>i.c.</i> $y'' - y \cos(x) = \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.720
16208	$x^2y'' + 6y = 0$	[[_Emden, _Fowler]]	✓	0.684

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
16209	$x(x+1)y'' + \frac{y'}{x^2} + 5y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.141
16210	$(x^2 - 3x - 4)y'' - (x+1)y' + (x^2 - 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.698
16211	$(x^2 - 25)^2 y'' - (x+5)y' + 10y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.727
16212	$2xy'' - 5y' - 3y = 0$	[[_Emden, _Fowler]]	✓	0.935
16213	$5xy'' + 8y' - xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.746
16214	$9xy'' + 14y' + (x-1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.905
16215	$7xy'' + 10y' + (-x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.886
16216	$x^2y'' + xy' + (x-1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.378
16217	$xy'' + 2xy' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.241
16218	$y'' + \frac{8y'}{3x} - \left(\frac{2}{3x^2} - 1\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.885
16219	$y'' + \left(\frac{16}{3x} - 1\right)y' - \frac{16y}{3x^2} = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.881
16220	$y'' + \left(\frac{1}{2x} - 2\right)y' - \frac{35y}{16x^2} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.490
16221	$y'' - \left(\frac{1}{x} + 2\right)y' + \left(x + \frac{1}{x^2}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.941
16222	$x^2y'' + 7xy' - 7y = 0$	[[_Emden, _Fowler]]	✓	0.895
16223	$x^2y'' + 3xy' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.760
16224	$x^2y'' - 3xy' + 4y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)']]]	✓	0.767
16225	$y'' + xy = 0$	[[_Emden, _Fowler]]	✓	0.482

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
16226	$x^2y'' + xy' + (-k^2 + x^2)y = 0$	[_Bessel]	✓	0.890
16227	$(-x^2 + 1)y'' - 2xy' + k(k + 1)y = 0$	[_Gegenbauer]	✓	0.732
16228	$x(1 - x)y'' + \left(\frac{1}{2} - 3x\right)y' - y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.947
16229	$x(1 - x)y'' + y' + 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.816
16230	$x(1 - x)y'' + (-2x + 1)y' + 2y = 0$	[_Jacobi]	✓	0.806
16231	$xy'' + (1 - x)y' + ky = 0$	[_Laguerre]	✓	0.960
16232	$x^2y'' + xy' + \left(x^2 - \frac{1}{4}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.837
16233	$x^2y'' + xy' + (16x^2 - 25)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.493
16234	$y'' - 7y' + 10y = 0$	[[_2nd_order, _missing_x]]	✓	0.829
16235	$y'' - y' - 2y = 0$	[[_2nd_order, _missing_x]]	✓	0.811
16236	$y'' - 2y' + 2y = 0$	[[_2nd_order, _missing_x]]	✓	1.311
16237	$(t + 1)^2y'' - 2(t + 1)y' + 2y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓	0.333
16238	$ty'' + 2y' + ty = 0$	[_Lienard]	✓	0.385
16239	$y'' + 7y' + 10y = 0$	[[_2nd_order, _missing_x]]	✓	0.835
16240	$6y'' + 5y' - 4y = 0$	[[_2nd_order, _missing_x]]	✓	0.852
16241	$y'' + 2y' + y = 0$	[[_2nd_order, _missing_x]]	✓	0.866
16242	$y'' + 3y' + 2y = 0$	[[_2nd_order, _missing_x]]	✓	0.835
16243	$y'' - 10y' + 34y = 0$	[[_2nd_order, _missing_x]]	✓	1.848

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
16244	$2y'' - 5y' + 2y = 0$	[[_2nd_order, _missing_x]]	✓	0.856
16245	$15y'' - 11y' + 2y = 0$	[[_2nd_order, _missing_x]]	✓	0.859
16246	$20y'' + y' - y = 0$	[[_2nd_order, _missing_x]]	✓	0.859
16247	$12y'' + 8y' + y = 0$	[[_2nd_order, _missing_x]]	✓	0.872
16248	$2y''' + 3y'' + y' = 0$	[[_3rd_order, _missing_x]]	✓	0.064
16249	$9y''' + 36y'' + 40y' = 0$	[[_3rd_order, _missing_x]]	✓	0.072
16250	$9y''' + 12y'' + 13y' = 0$	[[_3rd_order, _missing_x]]	✓	0.070
16251	$y'' - 2y' - 8y = -t$	[[_2nd_order, _with_linear_symmetries]]	✓	1.065
16252	$y'' + 5y' = 5t^2$	[[_2nd_order, _missing_y]]	✓	1.700
16253	$y'' - 4y' = -3 \sin(t)$	[[_2nd_order, _missing_y]]	✓	1.954
16254	$y'' + 2y' + 5y = 3 \sin(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	12.452
16255	$y'' - 9y = \frac{1}{1 + e^{3t}}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.475
16256	$y'' - 2y' = \frac{1}{1 + e^{2t}}$	[[_2nd_order, _missing_y]]	✓	1.408
16257	$y'' - 3y' + 2y = -4e^{-2t}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.037
16258	$y'' - 6y' + 13y = 3e^{-2t}$	[[_2nd_order, _with_linear_symmetries]]	✓	11.967
16259	$y'' + 9y' + 20y = -2te^t$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.169
16260	$y'' + 7y' + 12y = 3t^2e^{-4t}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.086
16261	$y''' + 3y'' - 9y' + 5y = e^t$	[[_3rd_order, _with_linear_symmetries]]	✓	0.125

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
16262	$y''' - 12y' - 16y = e^{4t} - e^{-2t}$	[[_3rd_order, _linear, _nonhomogeneous]]	✓	0.163
16263	$y'''' + 6y''' + 18y'' + 30y' + 25y = e^{-t} \cos(2t) + e^{-2t} \sin(t)$	[[_high_order, _linear, _nonhomogeneous]]	✓	2.269
16264	$y'''' + 4y''' + 14y'' + 20y' + 25y = t^2$	[[_high_order, _with_linear_symmetries]]	✓	0.151
16265	i.c. $y'' + 5y' + 6y = 0$	[[_2nd_order, _missing_x]]	✓	1.147
16266	i.c. $y'' + 10y' + 16y = 0$	[[_2nd_order, _missing_x]]	✓	1.365
16267	i.c. $y'' + 16y = 0$	[[_2nd_order, _missing_x]]	✓	2.759
16268	i.c. $y'' + 25y = 0$	[[_2nd_order, _missing_x]]	✓	2.150
16269	i.c. $y'' - 4y = t$	[[_2nd_order, _with_linear_symmetries]]	✓	1.276
16270	i.c. $y'' + 3y' - 4y = e^t$	[[_2nd_order, _with_linear_symmetries]]	✓	1.726
16271	i.c. $y'' + 9y = \sin(3t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	4.161
16272	i.c. $y'' + y = \cos(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.253
16273	$y'' + 4y = \tan(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	5.895
16274	$y'' + y = \csc(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.708
16275	$y'' - 8y' + 16y = \frac{e^{4t}}{t^3}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.118
16276	$y'' - 8y' + 16y = \frac{e^{4t}}{t^3}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.127
16277	$y'' - 2y' + y = e^t \ln(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.148
16278	i.c. $y'' - 2y' + y = e^t \ln(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.740

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
16279	$y'' - 2ty' + t^2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.402
16280	$y'' + 3y' - 4y = 0$	[[_2nd_order, _missing_x]]	✓	0.835
16281	$y'' + 4y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓	0.828
16282	$t^2y'' - 5ty' + 5y = 0$	[[_Emden, _Fowler]]	✓	1.250
16283	$x^2y'' + 7xy' + 8y = 0$	[[_Emden, _Fowler]]	✓	1.133
16284	$x^2y'' - 4xy' + 6y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓	1.203
16285	$x^2y'' + xy' + y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓	1.305
16286	$2x^2y'' + 5xy' + y = 0$ i.c.	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	2.144
16287	$5x^2y'' - xy' + 2y = 0$	[[_Emden, _Fowler]]	✓	2.131
16288	$x^2y'' - 7xy' + 25y = 0$	[[_Emden, _Fowler]]	✓	2.698
16289	$x^2y'' - 7xy' + 15y = 8x$	[[_2nd_order, _with_linear_symmetries]]	✓	1.541
16290	$y'' - 4y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓	0.596
16291	$y'' + 2y' - 3y = x e^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.667
16292	$(2x^2 - 1)y'' + 2xy' - 3y = 0$	[_Gegenbauer, [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓	0.617
16293	$3xy'' + 11y' - y = 0$	[[_Emden, _Fowler]]	✓	0.845
16294	$2x^2y'' + 5xy' - 2y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓	0.751

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
16295	$x^2 y'' - 7xy' + (-2x^2 + 7)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.247
16296	$x(1-x)y'' + (2x+1)y' + 10y = 0$	[_Jacobi]	✓	0.835
16297	$x(x+1)y'' + (-2x+1)y' - 10y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.852
16298	$t(y y'' + y'^2) + y y' = 1$ i.c.	[[_2nd_order, _exact, _nonlinear], [_2nd_order, _with_linear_symmetries], [_2nd_order, _reducible, _mu_y_y1], [_2nd_order, _reducible, _mu_xy]]	✓	0.623
16299	$4x'' + 9x = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	2.135
16300	$9x'' + 4x = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	3.050
16301	$x'' + 64x = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	3.114
16302	$x'' + 100x = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	3.177
16303	$x'' + x = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	2.874
16304	$x'' + 4x = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	3.117
16305	$x'' + 16x = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	3.087
16306	$x'' + 256x = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	3.271
16307	$x'' + 9x = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	2.820
16308	$10x'' + \frac{x}{10} = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	3.020
16309	$x'' + 4x' + 3x = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	1.421
16310	$\frac{x''}{32} + 2x' + x = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	1.392

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
16311	$\frac{x''}{4} + 2x' + x = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	1.410
16312	$4x'' + 2x' + 8x = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	2.755
16313	$x'' + 4x' + 13x = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	2.772
16314	$x'' + 4x' + 20x = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	2.652
16315	$x'' + x = \begin{cases} 1 & 0 \leq t < \pi \\ 0 & \pi \leq t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	2.722
16316	$x'' + x = \begin{cases} \cos(t) & 0 \leq t < \pi \\ 0 & \pi \leq t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✗	5.174
16317	$x'' + x = \begin{cases} t & 0 \leq t < 1 \\ 2 - t & 1 \leq t < 2 \\ 0 & 2 \leq t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	72.616
16318	$x'' + 4x' + 13x = \begin{cases} 1 & 0 \leq t < \pi \\ -t + 1 & \pi \leq t < 2\pi \\ 0 & 2\pi \leq t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	29.528
16319	$x'' + x = \cos(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.439
16320	$x'' + x = \cos(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	4.056
16321	$x'' + x = \cos\left(\frac{9t}{10}\right)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	10.432
16322	$x'' + x = \cos\left(\frac{7t}{10}\right)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	9.350
16323	$x'' + \frac{x'}{10} + x = 3 \cos(2t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	76.201

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
16324	$\begin{bmatrix} x' = 6 \\ y' = \cos(t) \end{bmatrix}$	system_of_ODEs	✓	0.264
16325	$\begin{bmatrix} x' = x \\ y' = 1 \end{bmatrix}$	system_of_ODEs	✓	0.373
16326	$\begin{bmatrix} x' = 0 \\ y' = -2y \end{bmatrix}$	system_of_ODEs	✓	0.295
16327	$\begin{bmatrix} x' = x^2 \\ y' = e^t \end{bmatrix}$	system_of_ODEs	✗	0.022
16328	$\begin{bmatrix} x'_1 = -3x_1 \\ x'_2 = 1 \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.516
16329	$\begin{bmatrix} x'_1 = -x_1 + 1 \\ x'_2 = x_2 \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.595
16330	$\begin{bmatrix} x' = -3x + 6y \\ y' = 4x - y \end{bmatrix}$	system_of_ODEs	✓	0.368
16331	$\begin{bmatrix} x' = 8x - y \\ y' = x + 6y \end{bmatrix}$	system_of_ODEs	✓	0.309
16332	$\begin{bmatrix} x' = -x - 2y \\ y' = x + y \end{bmatrix}$	system_of_ODEs	✓	0.402
16333	$\begin{bmatrix} x' = 4x + 2y \\ y' = -x + 2y \end{bmatrix}$	system_of_ODEs	✓	0.433
16334	$\begin{bmatrix} x' = y \\ y' = -x + 1 \end{bmatrix}$	system_of_ODEs	✓	0.573
16335	$\begin{bmatrix} x' = y \\ y' = -x + \sin(2t) \end{bmatrix}$	system_of_ODEs	✓	0.607
16336	$x'' - 3x' + 4x = 0$	[[_2nd_order, _missing_x]]	✓	2.314
16337	$x'' + 6x' + 9x = 0$	[[_2nd_order, _missing_x]]	✓	0.904

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
16338	$x'' + 16x = t \sin(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	5.487
16339	$x'' + x = e^t$	[[_2nd_order, _with_linear_symmetries]]	✓	1.990
16340	$y' = y^2 + x^2$	[[_Riccati, _special]]	✓	1.013
16341	$y' = \frac{x}{y}$	[_separable]	✓	2.958
16342	$y' = y + 3y^{1/3}$	[_quadrature]	✓	4.890
16343	$y' = \sqrt{x - y}$	[[_homogeneous, 'class C'], _dAlembert]	✓	1.941
16344	$y' = \sqrt{x^2 - y} - x$	[[_1st_order, _with_linear_symmetries], _dAlembert]	✓	5.367
16345	$y' = \sqrt{1 - y^2}$	[_quadrature]	✓	38.752
16346	$y' = \frac{1 + y}{x - y}$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	1.874
16347	$y' = \sin(y) - \cos(x)$	['y=_G(x,y)']	✗	2.814
16348	$y' = 1 - \cot(y)$	[_quadrature]	✓	1.789
16349	$y' = (3x - y)^{1/3} - 1$	[[_homogeneous, 'class C'], _dAlembert]	✓	1.589
16350	$y' = \sin(xy)$ i.e.	['y=_G(x,y)']	✗	1.403
16351	$xy' + y = \cos(x)$	[_linear]	✓	1.141
16352	$y' + 2y = e^x$	[[_linear, 'class A']]	✓	1.066
16353	$(-x^2 + 1)y' + xy = 2x$	[_separable]	✓	1.254
16354	$y' = x + 1$	[_quadrature]	✓	0.255
16355	$y' = x + y$	[[_linear, 'class A']]	✓	0.962
16356	$y' = y - x$	[[_linear, 'class A']]	✓	0.979
16357	$y' = \frac{x}{2} - y + \frac{3}{2}$	[[_linear, 'class A']]	✓	0.976

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
16358	$y' = (y - 1)^2$	[_quadrature]	✓	0.870
16359	$y' = (y - 1)x$	[_separable]	✓	1.081
16360	$y' = x^2 - y^2$	[_Riccati]	✓	1.002
16361	$y' = \cos(x - y)$	[[_homogeneous, 'class C'], _dAlembert]	✓	2.420
16362	$y' = y - x^2$	[[_linear, 'class A']]	✓	1.013
16363	$y' = x^2 + 2x - y$	[[_linear, 'class A']]	✓	0.986
16364	$y' = \frac{1 + y}{x - 1}$	[_separable]	✓	1.402
16365	$y' = \frac{x + y}{x - y}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓	2.645
16366	$y' = 1 - x$	[_quadrature]	✓	0.260
16367	$y' = 2x - y$	[[_linear, 'class A']]	✓	0.956
16368	$y' = y + x^2$	[[_linear, 'class A']]	✓	0.974
16369	$y' = -\frac{y}{x}$	[_separable]	✓	1.584
16370	$y' = 1$	[_quadrature]	✓	0.447
16371	$y' = \frac{1}{x}$	[_quadrature]	✓	0.277
16372	$y' = y$	[_quadrature]	✓	0.966
16373	$y' = y^2$	[_quadrature]	✓	0.964
16374	$y' = x^2 - y^2$ i.c.	[_Riccati]	✓	1.378
16375	$y' = y^2 + x$ i.c.	[[_Riccati, _special]]	✓	15.266
16376	$y' = x + y$ i.c.	[[_linear, 'class A']]	✓	1.274
16377	$y' = 2y - 2x^2 - 3$ i.c.	[[_linear, 'class A']]	✓	1.270

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
16378	<i>i.c.</i> $xy' = 2x - y$	[_linear]	✓	2.497
16379	$1 + y^2 + (x^2 + 1)y' = 0$	[_separable]	✓	1.814
16380	$1 + y^2 + xyy' = 0$	[_separable]	✓	2.125
16381	<i>i.c.</i> $\sin(x)y' - y\cos(x) = 0$	[_separable]	✓	2.140
16382	$1 + y^2 = xy'$	[_separable]	✓	1.565
16383	$x\sqrt{1+y^2} + yy'\sqrt{x^2+1} = 0$	[_separable]	✓	2.751
16384	<i>i.c.</i> $x\sqrt{1-y^2} + y\sqrt{-x^2+1}y' = 0$	[_separable]	✓	3.413
16385	$e^{-y}y' = 1$	[_quadrature]	✓	0.918
16386	<i>i.c.</i> $y\ln(y) + xy' = 1$	[_separable]	✓	2.701
16387	$y' = a^{x+y}$	[_separable]	✓	1.875
16388	$e^y(x^2 + 1)y' - 2x(1 + e^y) = 0$	[_separable]	✓	2.872
16389	$2x\sqrt{1-y^2} = (x^2 + 1)y'$	[_separable]	✓	2.353
16390	$e^x \sin(y)^3 + (1 + e^{2x})\cos(y)y' = 0$	[_separable]	✓	3.618
16391	$y^2 \sin(x) + \cos(x)^2 \ln(y)y' = 0$	[_separable]	✓	3.139
16392	$y' = \sin(x - y)$	[[_homogeneous, 'class C'], _dAlembert]	✓	2.373
16393	$y' = ax + by + c$	[[_linear, 'class A']]	✓	0.753
16394	$(x + y)^2 y' = a^2$	[[_homogeneous, 'class C'], _dAlembert]	✓	4.360
16395	<i>i.c.</i> $xy' + y = a(xy + 1)$	[_linear]	✓	1.084
16396	<i>i.c.</i> $a^2 + y^2 + 2x\sqrt{ax - x^2}y' = 0$	[_separable]	✓	3.432
16397	<i>i.c.</i> $y' = \frac{y}{x}$	[_separable]	✓	1.341

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
16398	$\cos(y') = 0$	[_quadrature]	✓	0.468
16399	$e^{y'} = 1$	[_quadrature]	✓	0.397
16400	$\sin(y') = x$	[_quadrature]	✓	0.254
16401	$\ln(y') = x$	[_quadrature]	✓	0.289
16402	$\tan(y') = 0$	[_quadrature]	✓	0.408
16403	$e^{y'} = x$	[_quadrature]	✓	0.258
16404	$\tan(y') = x$	[_quadrature]	✓	0.340
16405	$x^2 y' \cos(y) + 1 = 0$ i.c.	[_separable]	✗	2.440
16406	$x^2 y' + \cos(2y) = 1$ i.c.	[_separable]	✗	3.421
16407	$x^3 y' - \sin(y) = 1$ i.c.	[_separable]	✓	3.668
16408	$(x^2 + 1) y' - \frac{\cos(2y)^2}{2} = 0$ i.c.	[_separable]	✓	10.291
16409	$e^y = e^{4y} y' + 1$	[_quadrature]	✓	1.326
16410	$(x + 1) y' = y - 1$	[_separable]	✓	1.442
16411	$y' = 2x(\pi + y)$	[_separable]	✓	1.160
16412	$x^2 y' + \sin(2y) = 1$ i.c.	[_separable]	✗	11.876
16413	$xy' = y + x \cos\left(\frac{y}{x}\right)^2$	[[_homogeneous, 'class A'], _dAlembert]	✓	3.607
16414	$x - y + xy' = 0$	[_linear]	✓	1.246
16415	$xy' = y(\ln(y) - \ln(x))$	[[_homogeneous, 'class A'], _dAlembert]	✓	4.139
16416	$x^2 y' = y^2 - xy + x^2$	[[_homogeneous, 'class A'], _rational, _Riccati]	✓	1.742
16417	$xy' = y + \sqrt{y^2 - x^2}$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	4.293

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
16418	$2x^2y' = y^2 + x^2$	[[_homogeneous, 'class A'], _rational, _Riccati]	✓	1.765
16419	$4x - 3y + (2y - 3x)y' = 0$	[[_homogeneous, 'class A'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓	3.636
16420	$y - x + (x + y)y' = 0$	[[_homogeneous, 'class A'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓	3.680
16421	$x + y - 2 + (1 - x)y' = 0$	[_linear]	✓	1.101
16422	$3y - 7x + 7 - (3x - 7y - 3)y' = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	3.335
16423	$x + y - 2 + (x - y + 4)y' = 0$	[[_homogeneous, 'class C'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓	2.613
16424	$x + y + (x - y - 2)y' = 0$	[[_homogeneous, 'class C'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓	2.474
16425	$2x + 3y - 5 + (3x + 2y - 5)y' = 0$	[[_homogeneous, 'class C'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓	2.727
16426	$8x + 4y + 1 + (4x + 2y + 1)y' = 0$	[[_homogeneous, 'class C'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓	1.786
16427	$x - 2y - 1 + (3x - 6y + 2)y' = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	1.443
16428	$x + y + (y - 1 + x)y' = 0$	[[_homogeneous, 'class C'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓	1.422
16429	$2xy'(x - y^2) + y^3 = 0$	[[_homogeneous, 'class G'], _rational]	✓	1.784

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
16430	$4y^6 + x^3 = 6xy^5y'$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓	2.089
16431	$y(1 + \sqrt{x^2y^4 + 1}) + 2xy' = 0$	[[_homogeneous, 'class G']]	✓	2.265
16432	$x + y^3 + 3(y^3 - x)y^2y' = 0$	[[_homogeneous, 'class G'], _rational]	✓	1.757
16433	$y' + 2y = e^{-x}$	[[_linear, 'class A']]	✓	1.063
16434	$x^2 - xy' = y$ i.c.	[_linear]	✓	1.595
16435	$y' - 2xy = 2x e^{x^2}$	[_linear]	✓	2.222
16436	$y' + 2xy = e^{-x^2}$	[_linear]	✓	1.382
16437	$y' \cos(x) - y \sin(x) = 2x$ i.c.	[_linear]	✓	2.171
16438	$xy' - 2y = x^3 \cos(x)$	[_linear]	✓	1.627
16439	$y' - y \tan(x) = \frac{1}{\cos(x)^3}$ i.c.	[_linear]	✓	9.567
16440	$y'x \ln(x) - y = 3x^3 \ln(x)^2$	[_linear]	✓	1.420
16441	$(2x - y^2)y' = 2y$	[[_homogeneous, 'class G'], _rational]	✓	1.944
16442	$y' + y \cos(x) = \cos(x)$ i.c.	[_separable]	✓	1.578
16443	$y' = \frac{y}{2y \ln(y) + y - x}$	[[_1st_order, _with_linear_symmetries]]	✓	1.385
16444	$\left(\frac{e^{-y^2}}{2} - xy\right)y' - 1 = 0$	[[_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓	1.444
16445	$y' - ye^x = 2xe^{e^x}$	[_linear]	✓	1.319
16446	$y' + xy e^x = e^{(1-x)e^x}$	[_linear]	✓	1.335
16447	$y' - y \ln(2) = 2^{\sin(x)}(\cos(x) - 1) \ln(2)$	[[_linear, 'class A']]	✓	2.139

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
16448	$y' - y = -2e^{-x}$ i.c.	[[_linear, 'class A']]	✓	1.195
16449	$\sin(x)y' - y\cos(x) = -\frac{\sin(x)^2}{x^2}$ i.c.	[_linear]	✓	4.238
16450	$x^2y' \cos\left(\frac{1}{x}\right) - y \sin\left(\frac{1}{x}\right) = -1$ i.c.	[_linear]	✓	2.385
16451	$2xy' - y = 1 - \frac{2}{\sqrt{x}}$ i.c.	[_linear]	✓	1.441
16452	$x^2y' + y = (x^2 + 1)e^x$ i.c.	[_linear]	✓	1.737
16453	$xy' + y = 2x$	[_linear]	✓	1.877
16454	$\sin(x)y' + y\cos(x) = 1$	[_linear]	✓	1.717
16455	$y' \cos(x) - y \sin(x) = -\sin(2x)$ i.c.	[_linear]	✓	2.675
16456	$y' + 2xy = 2xy^2$	[_separable]	✓	1.807
16457	$3xy^2y' - 2y^3 = x^3$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓	9.266
16458	$(x^3 + e^y)y' = 3x^2$	[[_1st_order, _with_linear_symmetries]]	✓	1.213
16459	$y' + 3xy = ye^{x^2}$	[_separable]	✓	1.528
16460	$y' - 2ye^x = 2\sqrt{y}e^x$	[[_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]]]	✗	3.810
16461	$2y' \ln(x) + \frac{y}{x} = \frac{\cos(x)}{y}$	[_Bernoulli]	✓	4.466
16462	$2 \sin(x)y' + y \cos(x) = y^3 \sin(x)^2$	[_Bernoulli]	✓	8.836
16463	$(1 + x^2 + y^2)y' + xy = 0$	[_rational, [_1st_order, '_with_symmetry_[F(x)*G(y),0]]]	✓	1.319
16464	$y' - y \cos(x) = y^2 \cos(x)$	[_separable]	✓	2.285

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
16465	$y' - \tan(y) = \frac{e^x}{\cos(y)}$	['y=_G(x,y)']	✓	2.361
16466	$y' = y(e^x + \ln(y))$	[[_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]']]	✗	2.080
16467	$y' \cos(y) + \sin(y) = x + 1$	[[_1st_order, '_with_symmetry_[F(x),G(y)]']]	✓	2.755
16468	$yy' + 1 = (x - 1)e^{-\frac{y^2}{2}}$	['y=_G(x,y)']	✗	2.714
16469	$y' + x \sin(2y) = 2x e^{-x^2} \cos(y)^2$	['y=_G(x,y)']	✗	5.692
16470	$x(2x^2 + y^2) + y(x^2 + 2y^2)y' = 0$	[[_homogeneous, 'class A'], _exact, _rational, _dAlembert]	✓	260.655
16471	$3x^2 + 6xy^2 + (6x^2y + 4y^3)y' = 0$	[_exact, _rational]	✓	1.688
16472	$\frac{x}{\sqrt{y^2 + x^2}} + \frac{1}{x} + \frac{1}{y} + \left(\frac{y}{\sqrt{y^2 + x^2}} + \frac{1}{y} - \frac{x}{y^2}\right)y' = 0$	[_exact]	✓	22.773
16473	$3x^2 \tan(y) - \frac{2y^3}{x^3} + \left(x^3 \sec(y)^2 + 4y^3 + \frac{3y^2}{x^2}\right)y' = 0$	[_exact]	✓	45.977
16474	$2x + \frac{y^2 + x^2}{x^2y} = \frac{(y^2 + x^2)y'}{xy^2}$	[[_homogeneous, 'class D'], _exact, _rational]	✓	3.559
16475	$\frac{\sin(2x)}{y} + x + \left(y - \frac{\sin(x)^2}{y^2}\right)y' = 0$	[_exact]	✓	33.559
16476	$3x^2 - 2x - y + (2y - x + 3y^2)y' = 0$	[_exact, _rational]	✓	1.369
16477	$\frac{xy}{\sqrt{x^2 + 1}} + 2xy - \frac{y}{x} + \left(\sqrt{x^2 + 1} + x^2 - \ln(x)\right)y' = 0$	[_separable]	✓	18.987
16478	$\sin(y) + y \sin(x) + \frac{1}{x} + \left(x \cos(y) - \cos(x) + \frac{1}{y}\right)y' = 0$	[_exact]	✓	36.066

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
16479	$\frac{y + \sin(x) \cos(xy)^2}{\cos(xy)^2} + \left( \frac{x}{\cos(xy)^2} + \sin(y) \right) y' = 0$	[_exact]	✓	52.098
16480	$\frac{2x}{y^3} + \frac{(y^2 - 3x^2)y'}{y^4} = 0$ i.c.	[[_homogeneous, 'class A'], _exact, _rational, _dAlembert]	✓	10.466
16481	$y(x^2 + y^2 + a^2)y' + x(x^2 + y^2 - a^2) = 0$	[_exact, _rational]	✓	1.770
16482	$3x^2y + y^3 + (x^3 + 3xy^2)y' = 0$	[[_homogeneous, 'class A'], _exact, _rational, _dAlembert]	✓	109.534
16483	$1 - x^2y + x^2(y - x)y' = 0$	[_rational, [_1st_order, '_with_symmetry_[F(x),G(x)']], [_Abel, '2nd type', 'class B']]	✓	1.318
16484	$x^2 + y - xy' = 0$	[_linear]	✓	1.153
16485	$x + y^2 - 2xyy' = 0$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓	1.655
16486	$2x^2y + 2y + 5 + (2x^3 + 2x)y' = 0$	[_linear]	✓	1.243
16487	$x^4 \ln(x) - 2xy^3 + 3x^2y^2y' = 0$	[_Bernoulli]	✓	1.754
16488	$x + \sin(x) + \sin(y) + y' \cos(y) = 0$	['y=_G(x,y)']	✓	3.762
16489	$2xy^2 - 3y^3 + (7 - 3xy^2)y' = 0$	[_rational]	✓	2.373
16490	$3y^2 - x + (2y^3 - 6xy)y' = 0$	[[_homogeneous, 'class G'], _rational]	✓	4.313
16491	$x^2 + y^2 + 1 - 2xyy' = 0$	[_rational, _Bernoulli]	✓	1.980
16492	$x - xy + (y + x^2)y' = 0$	[_rational, [_1st_order, '_with_symmetry_[F(x)*G(y),0]'], [_Abel, '2nd type', 'class A']]	✓	2.163
16493	$4y'^2 - 9x = 0$	[_quadrature]	✓	0.264

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
16494	$y'^2 - 2yy' = y^2(-1 + e^{2x})$	[_separable]	✓	0.416
16495	$y'^2 - 2xy' - 8x^2 = 0$	[_quadrature]	✓	0.481
16496	$x^2y'^2 + 3xyy' + 2y^2 = 0$	[_separable]	✓	2.954
16497	$y'^2 - (2x + y)y' + x^2 + xy = 0$	[_quadrature]	✓	1.163
16498	$y'^3 + (x + 2)e^y = 0$	[[_1st_order, _with_exponential_symmetries]]	✓	0.847
16499	$y'^3 = yy'^2 - x^2y' + x^2y$	[_quadrature]	✓	1.193
16500	$y'^2 - yy' + e^x = 0$	[[_1st_order, _with_linear_symmetries]]	✓	3.481
16501	$y'^2 - 4xy' + 2y + 2x^2 = 0$	[[_homogeneous, 'class G']]	✓	2.395
16502	$y = y'^2 e^{y'}$	[_quadrature]	✓	1.659
16503	$y' = e^{\frac{y'}{y}}$	[_quadrature]	✓	3.029
16504	$x = \ln(y') + \sin(y')$	[_quadrature]	✓	1.920
16505	$x = y'^2 - 2y' + 2$	[_quadrature]	✓	0.225
16506	$y = y' \ln(y')$	[_quadrature]	✓	4.193
16507	$y = (y' - 1)e^{y'}$	[_quadrature]	✓	1.215
16508	$y'^2 x = e^{\frac{1}{y'}}$	[_quadrature]	✓	0.516
16509	$x(1 + y'^2)^{3/2} = a$	[_quadrature]	✓	1.902
16510	$y^{2/5} + y'^{2/5} = a^{2/5}$	[_quadrature]	✓	2.461
16511	$x = y' + \sin(y')$	[_quadrature]	✓	0.510
16512	$y = y'(1 + y' \cos(y'))$	[_quadrature]	✓	1.770
16513	$y = \arcsin(y') + \ln(1 + y'^2)$	[_quadrature]	✓	3.527
16514	$y = 2xy' + \ln(y')$	[[_1st_order, _with_linear_symmetries], _dAlembert]	✓	2.505

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
16515	$y = x(1 + y') + y'^2$	[[_1st_order, _with_linear_symmetries], _dAlembert]	✓	0.500
16516	$y = 2xy' + \sin(y')$	[_dAlembert]	✓	1.083
16517	$y = y'^2x - \frac{1}{y'}$	[_dAlembert]	✓	3.049
16518	$y = \frac{3xy'}{2} + e^{y'}$	[_dAlembert]	✓	1.045
16519	$y = xy' + \frac{a}{y'^2}$	[[_1st_order, _with_linear_symmetries], _Clairaut]	✓	0.762
16520	$y = xy' + y'^2$	[[_1st_order, _with_linear_symmetries], _Clairaut]	✓	0.346
16521	$y'^2x - yy' - y' + 1 = 0$	[[_1st_order, _with_linear_symmetries], _rational, _Clairaut]	✓	0.482
16522	$y = xy' + a\sqrt{1 + y'^2}$	[[_1st_order, _with_linear_symmetries], _Clairaut]	✓	6.291
16523	$x = \frac{y}{y'} + \frac{1}{y'^2}$	[[_homogeneous, 'class G'], _rational, _Clairaut]	✓	0.378
16524	$y'e^{-x} + y^2 - 2ye^x = 1 - e^{2x}$	[[_1st_order, '_with_symmetry_[F(x),G(x)]'], _Riccati]	✓	2.213
16525	$y' + y^2 - 2y \sin(x) + \sin(x)^2 - \cos(x) = 0$	[[_1st_order, '_with_symmetry_[F(x),G(x)]'], _Riccati]	✓	2.498
16526	$xy' - y^2 + (2x + 1)y = x^2 + 2x$	[[_1st_order, _with_linear_symmetries], _rational, _Riccati]	✓	1.760
16527	$x^2y' = y^2x^2 + xy + 1$	[[_homogeneous, 'class G'], _rational, _Riccati]	✓	1.339

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
16528	$(1 + y'^2) y^2 - 4yy' - 4x = 0$	[_rational, [_1st_order, '_with_symmetry_[F(x),G(y)]]]	✓	7.233
16529	$y'^2 - 4y = 0$	[_quadrature]	✓	0.582
16530	$y'^3 - 4xyy' + 8y^2 = 0$	[[_1st_order, _with_linear_symmetries]]	✓	7.499
16531	$y'^2 - y^2 = 0$	[_quadrature]	✓	1.776
16532	$y' = y^{2/3} + a$	[_quadrature]	✓	3.033
16533	$(xy' + y)^2 + 3x^5(xy' - 2y) = 0$	[[_homogeneous, 'class G']]	✓	8.677
16534	$y(y - 2xy')^2 = 2y'$	[[_homogeneous, 'class G'], _rational]	✓	3.237
16535	$8y'^3 - 12y'^2 = 27y - 27x$	[[_homogeneous, 'class C'], _dAlembert]	✓	0.720
16536	$(y' - 1)^2 = y^2$	[_quadrature]	✓	1.597
16537	$y = y'^2 - xy' + x$	[[_1st_order, _with_linear_symmetries], _dAlembert]	✓	0.503
16538	$(xy' + y)^2 = y^2 y'$	[[_homogeneous, 'class A'], _dAlembert]	✓	150.854
16539	$y^2 y'^2 + y^2 = 1$	[_quadrature]	✓	0.591
16540	$y'^2 - yy' + e^x = 0$	[[_1st_order, _with_linear_symmetries]]	✓	3.512
16541	$3y'^2 x - 6yy' + x + 2y = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	2.456
16542	$y = xy' + \sqrt{a^2 y'^2 + b^2}$	[[_1st_order, _with_linear_symmetries], _rational, _Clairaut]	✓	7.697
16543	$y' = (x - y)^2 + 1$	[[_homogeneous, 'class C'], _Riccati]	✓	2.461
16544	$x \sin(x) y' + (\sin(x) - x \cos(x)) y = \sin(x) \cos(x) - x$	[_linear]	✓	6.414

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
16545	$y' + y \cos(x) = y^n \sin(2x)$	[_Bernoulli]	✓	5.339
16546	$x^3 - 3xy^2 + (y^3 - 3x^2y) y' = 0$	[[_homogeneous, 'class A'], _exact, _rational, _dAlembert]	✓	17.037
16547	$5xy - 4y^2 - 6x^2 + \left(y^2 - 8xy + \frac{5x^2}{2}\right) y' = 0$	[[_homogeneous, 'class A'], _exact, _rational, _dAlembert]	✓	130.082
16548	$3xy^2 - x^2 + (3x^2y - 6y^2 - 1) y' = 0$	[_exact, _rational]	✓	1.533
16549	$y - xy^2 \ln(x) + xy' = 0$	[_Bernoulli]	✓	2.157
16550	$2xy e^{x^2} - x \sin(x) + e^{x^2} y' = 0$	[_linear]	✓	2.269
16551	$y' = \frac{1}{2x - y^2}$	[[_1st_order, _with_exponential_symmetries]]	✓	1.014
16552	$x^2 + xy' = 3x + y'$	[_quadrature]	✓	0.372
16553	$xyy' - y^2 = x^4$	[[_homogeneous, 'class D'], _rational, _Bernoulli]	✓	3.256
16554	$\frac{1}{y^2 - xy + x^2} = \frac{y'}{2y^2 - xy}$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	25.006
16555	$(2x - 1) y' - 2y = \frac{1 - 4x}{x^2}$	[_linear]	✓	1.054
16556	$x - y + 3 + (3x + y + 1) y' = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	1.849
16557	$y' + \cos\left(\frac{x}{2} + \frac{y}{2}\right) = \cos\left(\frac{x}{2} - \frac{y}{2}\right)$	[_separable]	✓	7.289
16558	$y'(3x^2 - 2x) - y(6x - 2) = 0$	[_separable]	✓	1.371
16559	$xy^2y' - y^3 = \frac{x^4}{3}$	[[_homogeneous, 'class D'], _rational, _Bernoulli]	✓	2.868
16560	$1 + e^{\frac{x}{y}} + e^{\frac{x}{y}} \left(1 - \frac{x}{y}\right) y' = 0$ i.c.	[[_homogeneous, 'class A'], _exact, _dAlembert]	✓	4.921

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
16561	$x^2 + y^2 - xy y' = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓	4.448
16562	$x - y + 2 + (x - y + 3) y' = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	1.378
16563	$xy^2 + y - xy' = 0$	[[_homogeneous, 'class D'], _rational, _Bernoulli]	✓	1.829
16564	$x^2 + y^2 + 2x + 2yy' = 0$	[[_homogeneous, 'class D'], _rational, _Bernoulli]	✓	2.054
16565	$(x - 1)(y^2 - y + 1) = (y - 1)(x^2 + x + 1) y'$	[_separable]	✓	1.950
16566	$(x - 2xy - y^2) y' + y^2 = 0$	[_rational, [_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓	1.803
16567	$y \cos(x) + (2y - \sin(x)) y' = 0$	[[_1st_order, '_with_symmetry_[F(x),G(y)]'], [_Abel, '2nd type', 'class A']]	✓	2.067
16568	$y' - 1 = e^{x+2y}$	[[_homogeneous, 'class C'], _dAlembert]	✓	1.983
16569	$2x^5 + 4x^3y - 2xy^2 + (y^2 + 2x^2y - x^4) y' = 0$	[[_homogeneous, 'class G'], _rational]	✓	2.137
16570	$x^2 y^n y' = 2xy' - y$	[[_homogeneous, 'class G'], _rational]	✓	1.388
16571	$(3x + 3y + a^2) y' = 4x + 4y + b^2$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	1.666
16572	$x - y^2 + 2xy y' = 0$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓	1.651
16573	$xy' + y = y^2 \ln(x)$ i.c.	[_Bernoulli]	✓	2.446
16574	$\sin(\ln(x)) - \cos(\ln(y)) y' = 0$	[_separable]	✓	2.214

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
16575	$y' = \sqrt{\frac{9y^2 - 6y + 2}{x^2 - 2x + 5}}$	[[_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]]]	✓	2.256
16576	$(5x - 7y + 1)y' + y - 1 + x = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	3.851
16577	$x + y + 1 + (2x + 2y - 1)y' = 0$ i.c.	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	1.786
16578	$y^3 + 2(x^2 - xy^2)y' = 0$	[[_homogeneous, 'class G'], _rational]	✓	1.814
16579	$y' = \frac{2(y+2)^2}{(y-1+x)^2}$	[[_homogeneous, 'class C'], _rational]	✓	1.758
16580	$4x^2y'^2 - y^2 = xy^3$	[[_homogeneous, 'class G']]	✓	2.619
16581	$y' + y'^2x - y = 0$	[_rational, _dAlembert]	✓	0.916
16582	$y'' + y = 2 \cos(x) + 2 \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.747
16583	$xy''' = 2$	[[_3rd_order, _quadrature]]	✓	0.197
16584	$y'' = y'^2$	[[_2nd_order, _missing_x], _Liouville, [_2nd_order, _reducible, _mu_xy]]	✓	0.202
16585	$(x - 1)y'' = 1$	[[_2nd_order, _quadrature]]	✓	0.915
16586	$y'^4 = 1$	[_quadrature]	✓	0.966
16587	$y'' + y = 0$	[[_2nd_order, _missing_x]]	✓	1.884
16588	$y'' - 3y' + 2y = 2$	[[_2nd_order, _missing_x]]	✓	0.980
16589	$y'' = (1 + y'^2)^{3/2}$	[[_2nd_order, _missing_x]]	✓	0.535

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
16590	$y'^2 + yy'' = 1$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓	1.319
16591	$y'''' = x$	[[_high_order, _quadrature]]	✓	0.110
16592	$y''' = x + \cos(x)$	[[_3rd_order, _quadrature]]	✓	0.154
16593	$y''(x+2)^5 = 1$ i.c.	[[_2nd_order, _quadrature]]	✓	1.009
16594	$y'' = x e^x$ i.c.	[[_2nd_order, _quadrature]]	✓	1.727
16595	$y'' = 2x \ln(x)$	[[_2nd_order, _quadrature]]	✓	1.483
16596	$xy'' = y'$	[[_2nd_order, _missing_y]]	✓	0.957
16597	$xy'' + y' = 0$	[[_2nd_order, _missing_y]]	✓	0.918
16598	$xy'' = (2x^2 + 1) y'$	[[_2nd_order, _missing_y]]	✓	0.970
16599	$xy'' = y' + x^2$	[[_2nd_order, _missing_y]]	✓	1.165
16600	$x \ln(x) y'' = y'$	[[_2nd_order, _missing_y]]	✓	0.757
16601	$xy = y' \ln\left(\frac{y'}{x}\right)$	[_separable]	✓	2.917
16602	$2y'' = \frac{y'}{x} + \frac{x^2}{y'}$ i.c.	[[_2nd_order, _missing_y], [_2nd_order, _reducible, _mu_poly_yn]]	✓	0.582

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
16603	$y''' = \sqrt{1 - y'^2}$	[[_3rd_order, _missing_x], [_3rd_order, _missing_y], [_3rd_order, _with_linear_symmetries], [_3rd_order, _reducible, _mu_y2]]	✓	0.398
16604	$xy''' - y'' = 0$	[[_3rd_order, _missing_y]]	✓	0.197
16605	$y'' = \sqrt{1 + y'^2}$	[[_2nd_order, _missing_x]]	✓	0.450
16606	$y'' = y'^2$	[[_2nd_order, _missing_x], _Liouville, [_2nd_order, _reducible, _mu_xy]]	✓	0.196
16607	$y'' = \sqrt{1 - y'^2}$	[[_2nd_order, _missing_x]]	✓	0.411
16608	$y'' = 1 + y'^2$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_xy]]	✓	0.400
16609	$y'' = \sqrt{1 + y'}$	[[_2nd_order, _missing_x]]	✓	0.396
16610	<i>i.c.</i> $y'' = y' \ln(y')$	[[_2nd_order, _missing_x]]	✓	0.237
16611	<i>i.c.</i> $y'' + y' + 2 = 0$	[[_2nd_order, _missing_x]]	✓	1.682
16612	$y'' = y'(1 + y')$	[[_2nd_order, _missing_x], _Liouville, [_2nd_order, _reducible, _mu_xy]]	✓	0.528
16613	$3y'' = (1 + y'^2)^{3/2}$	[[_2nd_order, _missing_x]]	✓	1.833
16614	$y''' + y''^2 = 0$	[[_3rd_order, _missing_x], [_3rd_order, _missing_y], [_3rd_order, _with_linear_symmetries], [_3rd_order, _reducible, _mu_y2], [_3rd_order, _reducible, _mu_poly_yn]]	✓	0.147

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
16615	$yy'' = y'^2$	[[_2nd_order, _missing_x], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓	0.250
16616	i.c. $y'' = 2yy'$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Lagerstrom, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓	0.831
16617	i.c. $3y'y'' = 2y$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓	1.862
16618	i.c. $2y'' = 3y^2$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓	1.861
16619	$y'^2 + yy'' = 0$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓	0.414
16620	$yy'' = y' + y'^2$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓	0.285
16621	$yy'' = 1 + y'^2$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓	3.099
16622	$2yy'' = 1 + y'^2$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓	1.194
16623	i.c. $y^3y'' = -1$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓	1.990

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
16624	$yy'' - y'^2 = y^2y'$	[[_2nd_order, _missing_x], [_2nd_order, _with_potential_symmetries], [_2nd_order, _reducible, _mu_xy]]	✓	0.487
16625	<i>i.c.</i> $y'' = e^{2y}$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓	25.229
16626	$2yy'' - 3y'^2 = 4y^2$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_xy]]	✓	5.277
16627	<i>i.c.</i> $y''' = 3yy'$	[[_3rd_order, _missing_x], [_3rd_order, _exact, _non-linear], [_3rd_order, _with_linear_symmetries], [_3rd_order, _reducible, _mu_y2]]	✗	0.051
16628	$y'' - y = 0$	[[_2nd_order, _missing_x]]	✓	2.103
16629	$3y'' - 2y' - 8y = 0$	[[_2nd_order, _missing_x]]	✓	0.879
16630	<i>i.c.</i> $y''' - 3y'' + 3y' - y = 0$	[[_3rd_order, _missing_x]]	✓	0.138
16631	$y'' + 2y' + y = 0$	[[_2nd_order, _missing_x]]	✓	0.868
16632	<i>i.c.</i> $y'' - 4y' + 3y = 0$	[[_2nd_order, _missing_x]]	✓	1.490
16633	$y''' + 6y'' + 11y' + 6y = 0$	[[_3rd_order, _missing_x]]	✓	0.070
16634	$y'' - 2y' - 2y = 0$	[[_2nd_order, _missing_x]]	✓	1.047
16635	$y^{(6)} + 2y^{(5)} + y'''' = 0$	[[_high_order, _missing_x]]	✓	0.075
16636	$4y'' - 8y' + 5y = 0$	[[_2nd_order, _missing_x]]	✓	1.611
16637	$y''' - 8y = 0$	[[_3rd_order, _missing_x]]	✓	0.080

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
16638	$y'''' + 4y''' + 10y'' + 12y' + 5y = 0$	[[_high_order, _missing_x]]	✓	0.081
16639	<i>i.c.</i> $y'' - 2y' + 2y = 0$	[[_2nd_order, _missing_x]]	✓	1.514
16640	<i>i.c.</i> $y'' - 2y' + 3y = 0$	[[_2nd_order, _missing_x]]	✓	3.062
16641	$y'''' + 2y''' + 4y'' - 2y' - 5y = 0$	[[_high_order, _missing_x]]	✓	0.085
16642	$y^{(5)} + 4y'''' + 5y''' - 6y'' - 4y = 0$	[[_high_order, _missing_x]]	✓	0.084
16643	$y''' + 2y'' - y' - 2y = 0$	[[_3rd_order, _missing_x]]	✓	0.072
16644	$y''' - 2y'' + 2y' = 0$	[[_3rd_order, _missing_x]]	✓	0.070
16645	$y'''' - y = 0$	[[_high_order, _missing_x]]	✓	0.074
16646	$y^{(5)} = 0$	[[_high_order, _quadrature]]	✓	0.041
16647	$y''' - 3y' - 2y = 0$	[[_3rd_order, _missing_x]]	✓	0.075
16648	$2y''' - 3y'' + y' = 0$	[[_3rd_order, _missing_x]]	✓	0.067
16649	<i>i.c.</i> $y''' + y'' = 0$	[[_3rd_order, _missing_x]]	✓	0.131
16650	$y'' + 3y' = 3$	[[_2nd_order, _missing_x]]	✓	1.701
16651	$y'' - 7y' = (x - 1)^2$	[[_2nd_order, _missing_y]]	✓	1.694
16652	$y'' + 3y' = e^x$	[[_2nd_order, _missing_y]]	✓	1.540
16653	$y'' + 7y' = e^{-7x}$	[[_2nd_order, _missing_y]]	✓	1.560
16654	$y'' - 8y' + 16y = (1 - x)e^{4x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.129
16655	$y'' - 10y' + 25y = e^{5x}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.063

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
16656	$4y'' - 3y' = x e^{\frac{3x}{4}}$	[[_2nd_order, _missing_y]]	✓	1.661
16657	$y'' - 4y' = x e^{4x}$	[[_2nd_order, _missing_y]]	✓	1.645
16658	$y'' + 25y = \cos(5x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.829
16659	$y'' + y = \sin(x) - \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	2.915
16660	$y'' + 16y = \sin(4x + \alpha)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	6.067
16661	$y'' + 4y' + 8y = e^{2x}(\sin(2x) + \cos(2x))$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	11.246
16662	$y'' - 4y' + 8y = e^{2x}(\sin(2x) - \cos(2x))$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	14.924
16663	$y'' + 6y' + 13y = e^{-3x} \cos(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	13.425
16664	$y'' + k^2y = k \sin(kx + \alpha)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	2.039
16665	$y'' + k^2y = k$	[[_2nd_order, _missing_x]]	✓	1.885
16666	$y''' + y = x$	[[_3rd_order, _with_linear_symmetries]]	✓	0.121
16667	$y''' + 6y'' + 11y' + 6y = 1$	[[_3rd_order, _missing_x]]	✓	0.107
16668	$y''' + y' = 2$	[[_3rd_order, _missing_x]]	✓	0.101
16669	$y''' + y'' = 3$	[[_3rd_order, _missing_x]]	✓	0.099
16670	$y'''' - y = 1$	[[_high_order, _missing_x]]	✓	0.108
16671	$y'''' - y' = 2$	[[_high_order, _missing_x]]	✓	0.121
16672	$y'''' - y'' = 3$	[[_high_order, _missing_x]]	✓	0.105
16673	$y'''' - y''' = 4$	[[_high_order, _missing_x]]	✓	0.107

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
16674	$y'''' + 4y''' + 4y'' = 1$	[[_high_order, _missing_x]]	✓	0.110
16675	$y'''' + 2y''' + y'' = e^{4x}$	[[_high_order, _missing_y]]	✓	0.122
16676	$y'''' + 2y''' + y'' = e^{-x}$	[[_high_order, _missing_y]]	✓	0.127
16677	$y'''' + 2y''' + y'' = x e^{-x}$	[[_high_order, _missing_y]]	✓	0.144
16678	$y'''' + 4y'' + 4y = \sin(2x)$	[[_high_order, _linear, _nonhomogeneous]]	✓	0.174
16679	$y'''' + 4y'' + 4y = \cos(x)$	[[_high_order, _linear, _nonhomogeneous]]	✓	0.161
16680	$y'''' + 4y'' + 4y = x \sin(2x)$	[[_high_order, _linear, _nonhomogeneous]]	✓	0.204
16681	$y'''' + 2n^2y'' + n^4y = a \sin(nx + \alpha)$	[[_high_order, _linear, _nonhomogeneous]]	✓	1.165
16682	$y'''' - 2n^2y'' + n^4y = \cos(nx + \alpha)$	[[_high_order, _linear, _nonhomogeneous]]	✓	0.186
16683	$y'''' + 4y''' + 6y'' + 4y' + y = \sin(x)$	[[_high_order, _linear, _nonhomogeneous]]	✓	0.145
16684	$y'''' - 4y''' + 6y'' - 4y' + y = e^x$	[[_high_order, _with_linear_symmetries]]	✓	0.135
16685	$y'''' - 4y''' + 6y'' - 4y' + y = x e^x$	[[_high_order, _linear, _nonhomogeneous]]	✓	0.151
16686	$y'' + 2y' + y = -2$	[[_2nd_order, _missing_x]]	✓	1.007
16687	$y'' + 2y' = -2$	[[_2nd_order, _missing_x]]	✓	1.744
16688	$y'' + 9y = 9$	[[_2nd_order, _missing_x]]	✓	2.431
16689	$y''' + y'' = 1$	[[_3rd_order, _missing_x]]	✓	0.102
16690	$5y''' - 7y'' = 3$	[[_3rd_order, _missing_x]]	✓	0.104
16691	$y'''' - 6y''' = -6$	[[_high_order, _missing_x]]	✓	0.119

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
16692	$3y'''' + y''' = 2$	[[_high_order, _missing_x]]	✓	0.108
16693	$y'''' - 2y''' + 2y'' - 2y' + y = 1$	[[_high_order, _missing_x]]	✓	0.118
16694	$y'' - 4y' + 4y = x^2$	[[_2nd_order, _with_linear_symmetries]]	✓	1.083
16695	$y'' + 8y' = 8x$	[[_2nd_order, _missing_y]]	✓	1.694
16696	$y'' - 2ky' + k^2y = e^x$	[[_2nd_order, _with_linear_symmetries]]	✓	0.922
16697	$y'' + 4y' + 4y = 8e^{-2x}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.100
16698	$y'' + 4y' + 3y = 9e^{-3x}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.238
16699	$7y'' - y' = 14x$	[[_2nd_order, _missing_y]]	✓	1.590
16700	$y'' + 3y' = 3xe^{-3x}$	[[_2nd_order, _missing_y]]	✓	1.649
16701	$y'' + 5y' + 6y = 10(1 - x)e^{-2x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.112
16702	$y'' + 2y' + 2y = x + 1$	[[_2nd_order, _with_linear_symmetries]]	✓	8.001
16703	$y'' + y' + y = (x^2 + x)e^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	38.470
16704	$y'' + 4y' - 2y = 8\sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	2.404
16705	$y'' + y = 4x\cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.359
16706	$y'' - 2my' + m^2y = \sin(nx)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.438
16707	$y'' + 2y' + 5y = e^{-x}\sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	14.263
16708	$y'' + a^2y = 2\cos(mx) + 3\sin(mx)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	2.025
16709	$y'' - y' = e^x\sin(x)$	[[_2nd_order, _missing_y]]	✓	2.016

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
16710	$y'' + 2y' = 4e^x(\sin(x) + \cos(x))$	[[_2nd_order, _missing_y]]	✓	2.286
16711	$y'' + 4y' + 5y = 10e^{-2x} \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	5.632
16712	$4y'' + 8y' = x \sin(x)$	[[_2nd_order, _missing_y]]	✓	2.189
16713	$y'' - 3y' + 2y = xe^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.150
16714	$y'' + y' - 2y = x^2e^{4x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.126
16715	$y'' - 3y' + 2y = (x^2 + x)e^{3x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.128
16716	$y''' - y'' + y' - y = x^2 + x$	[[_3rd_order, _with_linear_symmetries]]	✓	0.118
16717	$y'''' - 2y''' + 2y'' - 2y' + y = e^x$	[[_high_order, _with_linear_symmetries]]	✓	0.136
16718	$y'' - 2y' + y = x^3$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.060
16719	$y'''' + y'' = x^2 + x$	[[_high_order, _missing_y]]	✓	0.119
16720	$y'' + y = x^2 \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.810
16721	$y'' + 2y' + y = x^2e^{-x} \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.497
16722	$y''' - y = \sin(x)$	[[_3rd_order, _linear, _nonhomogeneous]]	✓	0.141
16723	$y'''' - 2y'' + y = \cos(x)$	[[_high_order, _linear, _nonhomogeneous]]	✓	0.141
16724	$y''' - 3y'' + 3y' - y = e^x \cos(2x)$	[[_3rd_order, _linear, _nonhomogeneous]]	✓	0.155
16725	$y'' - 4y' + 5y = e^{2x}(\sin(x) + 2\cos(x))$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	6.091
16726	$y'' - y' - 2y = e^x + e^{-2x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.185

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
16727	$y'' + 4y' = x + e^{-4x}$	[[_2nd_order, _missing_y]]	✓	1.716
16728	$y'' - y = x + \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.648
16729	$y'' - 2y' + 2y = (\sin(x) + 1)e^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	5.883
16730	$y''' - y'' = 1 + e^x$	[[_3rd_order, _missing_y]]	✓	0.125
16731	$y''' + 4y' = e^{2x} + \sin(2x)$	[[_3rd_order, _missing_y]]	✓	0.485
16732	$y'' + 4y = \sin(x)\sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.398
16733	$y'' - 4y' = 2\cos(4x)^2$	[[_2nd_order, _missing_y]]	✓	2.569
16734	$y'' - y' - 2y = 4x - 2e^x$	[[_2nd_order, _with_linear_symmetries]]	✓	1.102
16735	$y'' - 3y' = 18x - 10\cos(x)$	[[_2nd_order, _missing_y]]	✓	2.465
16736	$y'' - 2y' + y = 2 + e^x \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.559
16737	$y'' + 2y' + 2y = (5x + 4)e^x + e^{-x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	11.447
16738	$y'' + 2y' + 5y = 4e^{-x} + 17\sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	19.026
16739	$2y'' - 3y' - 2y = 5e^x \cosh(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	4.248
16740	$y'' + 4y = x\sin(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	5.554
16741	$y'''' + 2y''' + 2y'' + 2y' + y = xe^x + \frac{\cos(x)}{2}$	[[_high_order, _linear, _nonhomogeneous]]	✓	0.931
16742	$y'' + y' = \cos(x)^2 + e^x + x^2$	[[_2nd_order, _missing_y]]	✓	2.861
16743	$y'''' + 4y''' = e^x + 3\sin(2x) + 1$	[[_high_order, _missing_y]]	✓	0.220

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
16744	$y'' - 2y' + 5y = 10 \sin(x) + 17 \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	16.696
16745	$y'' + y' = x^2 - e^{-x} + e^x$	[[_2nd_order, _missing_y]]	✓	1.704
16746	$y'' - 2y' - 3y = 2x + e^{-x} - 2e^{3x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.392
16747	$y'' + 4y = e^x + 4 \sin(2x) + 2 \cos(x)^2 - 1$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	5.275
16748	$y'' + 3y' + 2y = 6x e^{-x} (1 - e^{-x})$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.201
16749	$y'' + y = \cos(2x)^2 + \sin\left(\frac{x}{2}\right)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	5.051
16750	$y'' - 4y' + 5y = 1 + 8 \cos(x) + e^{2x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	16.898
16751	$y'' - 2y' + 2y = e^x \sin\left(\frac{x}{2}\right)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	6.760
16752	$y'' - 3y' = 1 + e^x + \cos(x) + \sin(x)$	[[_2nd_order, _missing_y]]	✓	2.641
16753	$y'' - 2y' + 5y = e^x (1 - 2 \sin(x)^2) + 10x + 1$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	28.726
16754	$y'' - 4y' + 4y = 4x + \sin(x) + \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	2.578
16755	$y'' + 2y' + y = 1 + 2 \cos(x) + \cos(2x) - \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	2.222
16756	$y'' + y' + y + 1 = \sin(x) + x + x^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	74.275
16757	$y'' + 6y' + 9y = 18e^{-3x} + 8 \sin(x) + 6 \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.699
16758	$y'' + 2y' + 1 = 3 \sin(2x) + \cos(x)$	[[_2nd_order, _missing_y]]	✓	3.280
16759	$y''' - 2y'' + y' = 2x + e^x$	[[_3rd_order, _missing_y]]	✓	0.146
16760	$y'' + y = 2 \sin(x) \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.759

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
16761	$y''' - y'' - 2y' = 4x + 3 \sin(x) + \cos(x)$	[[_3rd_order, _missing_y]]	✓	0.181
16762	$y''' - 4y' = x e^{2x} + \sin(x) + x^2$	[[_3rd_order, _missing_y]]	✓	1.322
16763	$y^{(5)} - y'''' = x e^x - 1$	[[_high_order, _missing_y]]	✓	0.166
16764	$y^{(5)} - y''' = x + 2 e^{-x}$	[[_high_order, _missing_y]]	✓	0.164
16765	<i>i.c.</i> $y'' + y = 2 - 2x$	[[_2nd_order, _with_linear_symmetries]]	✓	2.211
16766	<i>i.c.</i> $y'' - 6y' + 9y = 9x^2 - 12x + 2$	[[_2nd_order, _with_linear_symmetries]]	✓	1.475
16767	<i>i.c.</i> $y'' + 9y = 36 e^{3x}$	[[_2nd_order, _with_linear_symmetries]]	✓	3.221
16768	<i>i.c.</i> $y'' - 4y' + 4y = 2 e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.366
16769	<i>i.c.</i> $y'' - 5y' + 6y = (12x - 7) e^{-x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.709
16770	<i>i.c.</i> $y'' + y' = e^{-x}$	[[_2nd_order, _missing_y]]	✓	2.263
16771	<i>i.c.</i> $y'' + 6y' + 9y = 10 \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.773
16772	<i>i.c.</i> $y'' + y = 2 \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.486
16773	<i>i.c.</i> $y'' + 4y = \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.279
16774	<i>i.c.</i> $y'' + y = 4x \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.931
16775	<i>i.c.</i> $y'' - 4y' + 5y = 2 e^x x^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	9.589
16776	<i>i.c.</i> $y'' - 6y' + 9y = 16 e^{-x} + 9x - 6$	[[_2nd_order, _with_linear_symmetries]]	✓	1.475
16777	<i>i.c.</i> $y'' - y' = -5 e^{-x}(\sin(x) + \cos(x))$	[[_2nd_order, _missing_y]]	✓	2.973

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
16778	$y'' - 2y' + 2y = 4e^x \cos(x)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	6.082
16779	$y''' - y' = -2x$ i.c.	[[_3rd_order, _missing_y]]	✓	0.187
16780	$y'''' - y = 8e^x$ i.c.	[[_high_order, _with_linear_symmetries]]	✓	0.151
16781	$y''' - y = 2x$ i.c.	[[_3rd_order, _with_linear_symmetries]]	✓	0.186
16782	$y'''' - y = 8e^x$ i.c.	[[_high_order, _with_linear_symmetries]]	✓	0.211
16783	$y'' - 4y' + 5y = \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	8.276
16784	$y'' + 2y' + 5y = 4 \cos(2x) + \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	12.803
16785	$y'' - y = 1$	[[_2nd_order, _missing_x]]	✓	2.329
16786	$y'' - y = -2 \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.397
16787	$y'' - 2y' + y = 4e^{-x}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	1.314
16788	$y'' + 4y' + 3y = 8e^x + 9$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✗	1.209
16789	$y'' - y' - 5y = 1$ i.c.	[[_2nd_order, _missing_x]]	✓	1.997
16790	$y'' + 4y' + 4y = 2e^x(\sin(x) + 7 \cos(x))$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✗	2.822
16791	$y'' - 5y' + 6y = 2e^{-2x}(9 \sin(2x) + 4 \cos(2x))$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	2.334
16792	$y'' - 4y' + 4y = e^{-x}(9x^2 + 5x - 12)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.387
16793	$x^2y'' + xy' - y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	1.283

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
16794	$x^2 y'' + 3xy' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	1.335
16795	$x^2 y'' + 2xy' + 6y = 0$	[[_Emden, _Fowler]]	✓	2.887
16796	$xy'' + y' = 0$	[[_2nd_order, _missing_y]]	✓	0.881
16797	$(x + 2)^2 y'' + 3(x + 2)y' - 3y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.176
16798	$(2x + 1)^2 y'' - 2(2x + 1)y' + 4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.086
16799	$x^2 y''' - 3xy'' + 3y' = 0$	[[_3rd_order, _missing_y]]	✓	0.180
16800	$x^2 y''' = 2y'$	[[_3rd_order, _missing_y]]	✓	0.212
16801	$(x + 1)^2 y''' - 12y' = 0$	[[_3rd_order, _missing_y]]	✓	0.283
16802	$(2x + 1)^2 y''' + 2(2x + 1)y'' + y' = 0$	[[_3rd_order, _missing_y]]	✓	0.487
16803	$x^2 y'' + xy' + y = x(6 - \ln(x))$	[[_2nd_order, _with_linear_symmetries]]	✓	3.887
16804	$x^2 y'' - 2y = \sin(\ln(x))$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓	2.319
16805	$x^2 y'' - xy' - 3y = -\frac{16 \ln(x)}{x}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓	1.770
16806	$x^2 y'' - 2xy' - 2y = x^2 - 2x + 2$	[[_2nd_order, _with_linear_symmetries]]	✓	2.262
16807	$x^2 y'' + xy' - y = x^m$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓	2.227
16808	$x^2 y'' + 4xy' + 2y = 2 \ln(x)^2 + 12x$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓	2.687
16809	$(x + 1)^3 y'' + 3(x + 1)^2 y' + (x + 1)y = 6 \ln(x + 1)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.645

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
16810	$(-2 + x)^2 y'' - 3(-2 + x) y' + 4y = x$	[[_2nd_order, _with_linear_symmetries]]	✓	1.584
16811	$(2x + 1) y'' + (4x - 2) y' - 8y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.141
16812	$(x^2 - x) y'' + (2x - 3) y' - 2y = 0$	[_Jacobi]	✓	1.333
16813	$(2x^2 + 3x) y'' - 6(x + 1) y' + 6y = 6$	[[_2nd_order, _with_linear_symmetries]]	✓	1.578
16814	$x^2(\ln(x) - 1) y'' - xy' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.332
16815	$y'' + (\tan(x) - 2 \cot(x)) y' + 2 \cot(x)^2 y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.383
16816	$y'' + \tan(x) y' + \cos(x)^2 y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.415
16817	$(x^2 + 1) y'' + xy' - y = 1$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓	0.411
16818	$x^2 y'' - xy' - 3y = 5x^4$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓	0.394
16819	$(x - 1) y'' - xy' + y = (x - 1)^2 e^x$	[[_2nd_order, _with_linear_symmetries]]	✓	0.447
16820	$y'' + y' + e^{-2x} y = e^{-3x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.595
16821	$(x^4 - x^3) y'' + (2x^3 - 2x^2 - x) y' - y = \frac{(x - 1)^2}{x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.452
16822	$y'' - y' + e^{2x} y = x e^{2x} - 1$	[[_2nd_order, _with_linear_symmetries]]	✓	0.747
16823	$x(x - 1) y'' - (2x - 1) y' + 2y = x^2(2x - 3)$	[[_2nd_order, _with_linear_symmetries]]	✓	0.434
16824	$y'' + y = \frac{1}{\sin(x)}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.681
16825	$y'' + y' = \frac{1}{1 + e^x}$	[[_2nd_order, _missing_y]]	✓	1.678

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
16826	$y'' + y = \frac{1}{\cos(x)^3}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	2.002
16827	$y'' + y = \frac{1}{\sqrt{\sin(x)^5 \cos(x)}}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	4.925
16828	$y'' - 2y' + y = \frac{e^x}{x^2 + 1}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.916
16829	$y'' + 2y' + 2y = \frac{e^{-x}}{\sin(x)}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	4.671
16830	$y'' + y = \frac{2}{\sin(x)^3}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.952
16831	$y'' + y' = e^{2x} \cos(e^x)$	[[_2nd_order, _missing_y]]	✓	2.508
16832	$y''' + y'' = \frac{x-1}{x^3}$	[[_3rd_order, _missing_y]]	✓	0.245
16833	$xy'' - (2x^2 + 1)y' = 4x^3 e^{x^2}$	[[_2nd_order, _missing_y]]	✓	1.201
16834	$y'' - 2 \tan(x) y' = 1$	[[_2nd_order, _missing_y]]	✓	2.314
16835	$x \ln(x) y'' - y' = \ln(x)^2$	[[_2nd_order, _missing_y]]	✓	1.011
16836	$xy'' + (2x - 1)y' = -4x^2$	[[_2nd_order, _missing_y]]	✓	1.184
16837	$y'' + \tan(x) y' = \cos(x) \cot(x)$	[[_2nd_order, _missing_y]]	✓	1.316
16838	$4xy'' + 2y' + y = 1$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	2.744
16839	$4xy'' + 2y' + y = \frac{6+x}{x^2}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	52.590
16840	$(x^2 + 1)y'' + 2xy' = \frac{1}{x^2 + 1}$ i.c.	[[_2nd_order, _missing_y]]	✓	1.716
16841	$(1-x)y'' + xy' - y = (x-1)^2 e^x$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✗	1.807

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
16842	$2x^2(2 - \ln(x))y'' + x(4 - \ln(x))y' - y = \frac{(2 - \ln(x))^2}{\sqrt{x}}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.914
16843	$y'' + \frac{2y'}{x} - y = 4e^x$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	5.707
16844	$x^3(\ln(x) - 1)y'' - x^2y' + xy = 2\ln(x)$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	0.734
16845	$(x^2 - 2x)y'' + (-x^2 + 2)y' - 2(1 - x)y = 2x - 2$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✗	2.509
16846	$x'' + x' + x = 0$	[[_2nd_order, _missing_x]]	✓	2.174
16847	$x'' + 2x' + 6x = 0$	[[_2nd_order, _missing_x]]	✓	1.878
16848	$x'' + 2x' + x = 0$	[[_2nd_order, _missing_x]]	✓	0.857
16849	$x'' + x'^2 + x = 0$	[[_2nd_order, _missing_x]]	✓	0.894
16850	$x'' - 2x'^2 + x' - 2x = 0$	[[_2nd_order, _missing_x]]	✗	0.497
16851	$x'' - xe^{x'} = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓	0.594
16852	$x'' + e^{-x'} - x = 0$	[[_2nd_order, _missing_x]]	✗	0.839
16853	$x'' + xx'^2 = 0$	[[_2nd_order, _missing_x], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓	0.468

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
16854	$x'' + (x + 2)x' = 0$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓	0.608
16855	$x'' - x' + x - x^2 = 0$	[[_2nd_order, _missing_x]]	✗	0.504
16856	<i>i.c.</i> $y'' + \lambda y = 0$	[[_2nd_order, _missing_x]]	✓	1.724
16857	<i>i.c.</i> $y'' + \lambda y = 0$	[[_2nd_order, _missing_x]]	✓	1.615
16858	<i>i.c.</i> $y'' - y = 0$	[[_2nd_order, _missing_x]]	✓	2.461
16859	<i>i.c.</i> $y'' + y = 0$	[[_2nd_order, _missing_x]]	✗	1.480
16860	<i>i.c.</i> $yy'' + y'^2 + 1 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓	2.075
16861	<i>i.c.</i> $y'' + y = 0$	[[_2nd_order, _missing_x]]	✓	1.827
16862	<i>i.c.</i> $y'' - y = 0$	[[_2nd_order, _missing_x]]	✓	2.372
16863	<i>i.c.</i> $y'' - 2y' + 2y = 0$	[[_2nd_order, _missing_x]]	✓	1.323
16864	<i>i.c.</i> $y'' + \alpha y' = 0$	[[_2nd_order, _missing_x]]	✓	1.721
16865	<i>i.c.</i> $y'' + \alpha^2 y = 1$	[[_2nd_order, _missing_x]]	✓	6.934
16866	<i>i.c.</i> $y'' + y = 1$	[[_2nd_order, _missing_x]]	✓	1.987
16867	<i>i.c.</i> $y'' + \lambda^2 y = 0$	[[_2nd_order, _missing_x]]	✓	1.867

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
16868	$y'' + \lambda^2 y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	1.730
16869	$y''' + y'' - y' - y = 0$ i.c.	[[_3rd_order, _missing_x]]	✓	0.163
16870	$y'''' - \lambda^4 y = 0$ i.c.	[[_high_order, _missing_x]]	✓	0.172
16871	$xy'' + y' = 0$	[[_2nd_order, _missing_y]]	✓	0.909
16872	$x^2 y'''' + 4xy''' + 2y'' = 0$ i.c.	[[_high_order, _missing_y]]	✓	0.216
16873	$x^3 y'''' + 6x^2 y''' + 6xy'' = 0$ i.c.	[[_high_order, _missing_y]]	✓	0.244
16874	$y' = 1 - xy$ i.c.	[_linear]	✓	0.562
16875	$y' = \frac{y-x}{x+y}$ i.c.	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓	0.252
16876	$y' = y \sin(x)$ i.c.	[_separable]	✓	0.718
16877	$y'' + xy = 0$ i.c.	[[_Emden, _Fowler]]	✓	0.480
16878	$y'' - \sin(x) y' = 0$ i.c.	[[_2nd_order, _missing_y]]	✓	0.700
16879	$xy'' + y \sin(x) = x$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.988
16880	$\ln(x) y'' - y \sin(x) = 0$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	35.693
16881	$y''' + x \sin(y) = 0$ i.c.	[NONE]	✗	0.007
16882	$y' - 2xy = 0$ i.c.	[_separable]	✓	0.557
16883	$y'' + xy' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.518
16884	$y'' - xy' + y = 1$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	0.517

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
16885	$y'' - (x^2 + 1)y = 0$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	0.519
16886	$y'' = x^2y - y'$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	0.543
16887	$y'' - ye^x = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.655
16888	$y' = e^y + xy$ i.c.	['y=_G(x,y)']	✓	0.336
16889	$4xy'' + 2y' + y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)']]]	✓	0.893
16890	$(x + 1)y' - ny = 0$	[_separable]	✓	0.585
16891	$9x(1 - x)y'' - 12y' + 4y = 0$	[_Jacobi]	✓	0.899
16892	$x^2y'' + xy' + \left(4x^2 - \frac{1}{9}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	2.131
16893	$x^2y'' + xy' + \left(x^2 - \frac{1}{4}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	2.836
16894	$y'' + \frac{y'}{x} + \frac{y}{9} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.940
16895	$y'' + \frac{y'}{x} + 4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.921
16896	$x^2y'' - 2xy' + 4(x^4 - 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	2.385
16897	$xy'' + \frac{y'}{2} + \frac{y}{4} = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)']]]	✓	1.370
16898	$y'' + \frac{5y'}{x} + y = 0$	[_Lienard]	✓	0.973
16899	$y'' + \frac{3y'}{x} + 4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.956
16900	$y'' + 4y = \cos(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	4.008

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
16901	$y'' - 4y' + 4y = \pi^2 - x^2$	[[_2nd_order, _with_linear_symmetries]]	✓	1.168
16902	$y'' - 4y = \cos(\pi x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.449
16903	$y'' - 4y' + 4y = \arcsin(\sin(x))$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.984
16904	$y'' + 9y = \sin(x)^3$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	6.203
16905	$\begin{bmatrix} x'_1 = -2tx_1^2 \\ x'_2 = \frac{x_2+t}{t} \end{bmatrix}$	system_of_ODEs	✗	0.055
16906	$\begin{bmatrix} x'_1 = e^{t-x_1} \\ x'_2 = 2e^{x_1} \end{bmatrix}$	system_of_ODEs	✗	0.051
16907	$\begin{bmatrix} x' = y \\ y' = \frac{y^2}{x} \end{bmatrix}$	system_of_ODEs	✗	0.050
16908	$\begin{bmatrix} x'_1 = \frac{x_1^2}{x_2} \\ x'_2 = x_2 - x_1 \end{bmatrix}$	system_of_ODEs	✗	0.050
16909	$\begin{bmatrix} x' = \frac{e^{-x}}{t} \\ y' = \frac{xe^{-y}}{t} \end{bmatrix}$	system_of_ODEs	✗	0.051
16910	$\begin{bmatrix} x' = \frac{y+t}{x+y} \\ y' = \frac{x-t}{x+y} \end{bmatrix}$	system_of_ODEs	✗	0.052
16911	$\begin{bmatrix} x' = \frac{t-y}{y-x} \\ y' = \frac{x-t}{y-x} \end{bmatrix}$	system_of_ODEs	✗	0.050
16912	$\begin{bmatrix} x' = \frac{y+t}{x+y} \\ y' = \frac{t+x}{x+y} \end{bmatrix}$	system_of_ODEs	✗	0.051
16913	$\begin{bmatrix} x' = -9y \\ y' = x \end{bmatrix}$	system_of_ODEs	✓	0.359
16914	$\begin{bmatrix} x' = y + t \\ y' = x - t \end{bmatrix}$	system_of_ODEs	✓	0.395

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
16915	$\begin{cases} x' + 3x + 4y = 0 \\ y' + 2x + 5y = 0 \end{cases}$ i.c.	system_of_ODEs	✓	0.450
16916	$\begin{cases} x' = x + 5y \\ y' = -x - 3y \end{cases}$ i.c.	system_of_ODEs	✓	0.526
16917	$\begin{cases} 4x' - y' + 3x = \sin(t) \\ x' + y = \cos(t) \end{cases}$	system_of_ODEs	✓	0.602
16918	$\begin{cases} x' = z - y \\ y' = z \\ z' = z - x \end{cases}$	system_of_ODEs	✓	0.584
16919	$\begin{cases} x' = y + z \\ y' = x + z \\ z' = x + y \end{cases}$	system_of_ODEs	✓	0.352
16920	$\begin{cases} x'' = y \\ y'' = x \end{cases}$	system_of_ODEs	✗	0.019
16921	$\begin{cases} x'' + y' + x = 0 \\ x' + y'' = 0 \end{cases}$	system_of_ODEs	✗	0.023
16922	$\begin{cases} x'' = 3x + y \\ y' = -2x \end{cases}$	system_of_ODEs	✗	0.045
16923	$\begin{cases} x'' = x^2 + y \\ y' = -2xx' + x \end{cases}$ i.c.	system_of_ODEs	✗	0.000
16924	$\begin{cases} x' = x^2 + y^2 \\ y' = 2xy \end{cases}$	system_of_ODEs	✗	0.050
16925	$\begin{cases} x' = -\frac{1}{y} \\ y' = \frac{1}{x} \end{cases}$	system_of_ODEs	✗	0.050
16926	$\begin{cases} x' = \frac{x}{y} \\ y' = \frac{y}{x} \end{cases}$	system_of_ODEs	✗	0.051

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
16927	$\begin{bmatrix} x' = \frac{y}{x-y} \\ y' = \frac{x}{x-y} \end{bmatrix}$	system_of_ODEs	<b>X</b>	0.053
16928	$\begin{bmatrix} x' = \sin(x) \cos(y) \\ y' = \cos(x) \sin(y) \end{bmatrix}$	system_of_ODEs	<b>X</b>	0.051
16929	$\begin{bmatrix} e^t x' = \frac{1}{y} \\ e^t y' = \frac{1}{x} \end{bmatrix}$	system_of_ODEs	<b>X</b>	0.058
16930	$\begin{bmatrix} x' = \cos(x)^2 \cos(y)^2 + \sin(x)^2 \cos(y)^2 \\ y' = -\frac{\sin(2x) \sin(2y)}{2} \end{bmatrix}$ i.c.	system_of_ODEs	<b>X</b>	0.057
16931	$\begin{bmatrix} x' = 8y - x \\ y' = x + y \end{bmatrix}$	system_of_ODEs	<b>✓</b>	0.336
16932	$\begin{bmatrix} x' = x - y \\ y' = y - x \end{bmatrix}$	system_of_ODEs	<b>✓</b>	0.297
16933	$\begin{bmatrix} x' = 2x + y \\ y' = x - 3y \end{bmatrix}$ i.c.	system_of_ODEs	<b>✓</b>	0.622
16934	$\begin{bmatrix} x' = x + y \\ y' = -2x + 4y \end{bmatrix}$ i.c.	system_of_ODEs	<b>✓</b>	0.505
16935	$\begin{bmatrix} x' = 4x - 5y \\ y' = x \end{bmatrix}$ i.c.	system_of_ODEs	<b>✓</b>	0.434
16936	$\begin{bmatrix} x' = y + z - x \\ y' = x - y + z \\ z' = x + y - z \end{bmatrix}$	system_of_ODEs	<b>✓</b>	0.372
16937	$\begin{bmatrix} x' = 2x - y + z \\ y' = x + 2y - z \\ z' = x - y + 2z \end{bmatrix}$	system_of_ODEs	<b>✓</b>	0.461

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
16938	$\begin{bmatrix} x' = 2x - y + z \\ y' = x + z \\ z' = y - 2z - 3x \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.404
16939	$\begin{bmatrix} x' + 2x - y = -e^{2t} \\ y' + 3x - 2y = 6e^{2t} \end{bmatrix}$	system_of_ODEs	✓	0.501
16940	$\begin{bmatrix} x' = x + y - \cos(t) \\ y' = -y - 2x + \cos(t) + \sin(t) \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.865
16941	$\begin{bmatrix} x' = y + \tan(t)^2 - 1 \\ y' = \tan(t) - x \end{bmatrix}$	system_of_ODEs	✓	0.738
16942	$\begin{bmatrix} x' = -4x - 2y + \frac{2}{e^t - 1} \\ y' = 6x + 3y - \frac{3}{e^t - 1} \end{bmatrix}$	system_of_ODEs	✗	0.058
16943	$\begin{bmatrix} x' = y \\ y' = -x + \frac{1}{\cos(t)} \end{bmatrix}$	system_of_ODEs	✓	0.641
16944	$\begin{bmatrix} x' = y \\ y' = -x + 1 \end{bmatrix}$	system_of_ODEs	✓	0.546
16945	$\begin{bmatrix} x' = 3 - 2y \\ y' = 2x - 2t \end{bmatrix}$	system_of_ODEs	✓	0.576
16946	$\begin{bmatrix} x' = -y + \sin(t) \\ y' = x + \cos(t) \end{bmatrix}$	system_of_ODEs	✓	0.574
16947	$\begin{bmatrix} x' = x + y + e^t \\ y' = x + y - e^t \end{bmatrix}$	system_of_ODEs	✓	0.358
16948	$\begin{bmatrix} x' = 4x - 5y + 4t - 1 \\ y' = x - 2y + t \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.576
16949	$\begin{bmatrix} x' = y - x + e^t \\ y' = x - y + e^t \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.536

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
16950	$\begin{bmatrix} x' + y = t^2 \\ -x + y' = t \end{bmatrix}$	system_of_ODEs	✓	0.558
16951	$\begin{bmatrix} x' + y' + y = e^{-t} \\ 2x' + y' + 2y = \sin(t) \end{bmatrix}$	system_of_ODEs	✓	0.483
16952	$\begin{bmatrix} x' = 2x + y - 2z + 2 - t \\ y' = -x + 1 \\ z' = x + y - z + 1 - t \end{bmatrix}$	system_of_ODEs	✓	1.111
16953	$\begin{bmatrix} x' + x + 2y = 2e^{-t} \\ y' + y + z = 1 \\ z' + z = 1 \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.567
16954	$\begin{bmatrix} x' = 5x + 4y \\ y' = x + 2y \end{bmatrix}$	system_of_ODEs	✓	0.329
16955	$\begin{bmatrix} x' = 6x + y \\ y' = 4x + 3y \end{bmatrix}$	system_of_ODEs	✓	0.338
16956	$\begin{bmatrix} x' = 2x - 4y + 1 \\ y' = -x + 5y \end{bmatrix}$	system_of_ODEs	✓	0.538
16957	$\begin{bmatrix} x' = 3x + y + e^t \\ y' = x + 3y - e^t \end{bmatrix}$	system_of_ODEs	✓	0.411
16958	$\begin{bmatrix} x' = 2x + 4y + \cos(t) \\ y' = -x - 2y + \sin(t) \end{bmatrix}$	system_of_ODEs	✓	0.467
16959	$x' + 3x = e^{-2t}$ i.c.	[[_linear, 'class A']]	✓	0.296
16960	$x' - 3x = 3t^3 + 3t^2 + 2t + 1$ i.c.	[[_linear, 'class A']]	✓	0.294
16961	$x' - x = \cos(t) - \sin(t)$ i.c.	[[_linear, 'class A']]	✓	0.326
16962	$2x' + 6x = te^{-3t}$ i.c.	[[_linear, 'class A']]	✓	0.304
16963	$x' + x = 2\sin(t)$ i.c.	[[_linear, 'class A']]	✓	0.352

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
16964	<i>i.c.</i> $x'' = 0$	[[_2nd_order, _quadrature]]	✓	0.187
16965	<i>i.c.</i> $x'' = 1$	[[_2nd_order, _quadrature]]	✓	0.201
16966	<i>i.c.</i> $x'' = \cos(t)$	[[_2nd_order, _quadrature]]	✓	0.279
16967	<i>i.c.</i> $x'' + x' = 0$	[[_2nd_order, _missing_x]]	✓	0.197
16968	<i>i.c.</i> $x'' + x' = 0$	[[_2nd_order, _missing_x]]	✓	0.223
16969	<i>i.c.</i> $x'' - x' = 1$	[[_2nd_order, _missing_x]]	✓	0.218
16970	<i>i.c.</i> $x'' + x = t$	[[_2nd_order, _with_linear_symmetries]]	✓	0.200
16971	<i>i.c.</i> $x'' + 6x' = 12t + 2$	[[_2nd_order, _missing_y]]	✓	0.205
16972	<i>i.c.</i> $x'' - 2x' + 2x = 2$	[[_2nd_order, _missing_x]]	✓	0.209
16973	<i>i.c.</i> $x'' + 4x' + 4x = 4$	[[_2nd_order, _missing_x]]	✓	0.256
16974	<i>i.c.</i> $2x'' - 2x' = (t + 1)e^t$	[[_2nd_order, _missing_y]]	✓	0.257
16975	<i>i.c.</i> $x'' + x = 2 \cos(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.335
16976	$y' = \frac{x^4}{y}$	[_separable]	✓	1.819
16977	$y' = \frac{x^2(x^3 + 1)}{y}$	[_separable]	✓	1.299
16978	$y' + y^3 \sin(x) = 0$	[_separable]	✓	2.362
16979	$y' = \frac{7x^2 - 1}{7 + 5y}$	[_separable]	✓	1.338
16980	$y' = \sin(2x)^2 \cos(y)^2$	[_separable]	✓	2.489
16981	$xy' = \sqrt{1 - y^2}$	[_separable]	✓	2.132
16982	$yy' = (x + xy^2)e^{x^2}$	[_separable]	✓	2.202

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
16983	$y' = \frac{x^2 + e^{-x}}{y^2 - e^y}$	[_separable]	✓	1.800
16984	$y' = \frac{x^2}{1 + y^2}$	[_separable]	✓	1.046
16985	$y' = \frac{\sec(x)^2}{y^3 + 1}$	[_separable]	✓	1.869
16986	$y' = 4\sqrt{xy}$	[[_homogeneous, 'class G']]	✓	8.820
16987	$y' = x(y - y^2)$	[_separable]	✓	2.110
16988	$y' = (1 - 12x)y^2$	[_separable]	✓	1.783
	i.c.			
16989	$y' = \frac{3 - 2x}{y}$	[_separable]	✓	4.174
	i.c.			
16990	$x + ye^{-x}y' = 0$	[_separable]	✓	3.589
	i.c.			
16991	$r' = \frac{r^2}{\theta}$	[_separable]	✓	1.714
	i.c.			
16992	$y' = \frac{3x}{y + x^2y}$	[_separable]	✓	2.406
	i.c.			
16993	$y' = \frac{2x}{1 + 2y}$	[_separable]	✓	3.277
	i.c.			
16994	$y' = 2xy^2 + 4x^3y^2$	[_separable]	✓	1.841
	i.c.			
16995	$y' = x^2e^{-3y}$	[_separable]	✓	1.906
	i.c.			
16996	$y' = (1 + y^2)\tan(2x)$	[_separable]	✓	3.880
	i.c.			
16997	$y' = \frac{x(x^2 + 1)y^5}{6}$	[_separable]	✓	6.969
	i.c.			

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
16998	$y' = \frac{3x^2 - e^x}{2y - 11}$ i.c.	[_separable]	✓	3.056
16999	$x^2 y' = y - xy$ i.c.	[_separable]	✓	2.221
17000	$y' = \frac{e^{-x} - e^x}{3 + 4y}$ i.c.	[_separable]	✓	3.507
17001	$2yy' = \frac{x}{\sqrt{x^2 - 4}}$ i.c.	[_separable]	✓	3.038
17002	$\sin(2x) + \cos(3y)y' = 0$ i.c.	[_separable]	✓	38.304
17003	$y^2 \sqrt{-x^2 + 1} y' = \arcsin(x)$ i.c.	[_separable]	✓	5.565
17004	$y' = \frac{3x^2 + 1}{12y^2 - 12y}$ i.c.	[_separable]	✓	6.279
17005	$y' = \frac{2x^2}{2y^2 - 6}$ i.c.	[_separable]	✓	2.372
17006	$y' = 2y^2 + xy^2$ i.c.	[_separable]	✓	1.892
17007	$y' = \frac{6 - e^x}{3 + 2y}$ i.c.	[_separable]	✓	3.147
17008	$y' = \frac{2 \cos(2x)}{10 + 2y}$ i.c.	[_separable]	✓	4.276
17009	$y' = 2(x + 1)(1 + y^2)$ i.c.	[_separable]	✓	2.732
17010	$y' = \frac{ty(4 - y)}{3}$ i.c.	[_separable]	✓	2.622
17011	$y' = \frac{ty(4 - y)}{t + 1}$ i.c.	[_separable]	✓	3.301

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
17012	$y' = \frac{ay + b}{cy + d}$	[_quadrature]	✓	1.478
17013	$y' + 4y = t + e^{-2t}$	[[_linear, 'class A']]	✓	1.206
17014	$y' - 2y = t^2 e^{2t}$	[[_linear, 'class A']]	✓	1.501
17015	$y' + y = t e^{-t} + 1$	[[_linear, 'class A']]	✓	1.547
17016	$y' + \frac{y}{t} = 5 + \cos(2t)$	[_linear]	✓	1.628
17017	$y' - 2y = 3e^t$	[[_linear, 'class A']]	✓	1.109
17018	$ty' + 2y = \sin(t)$	[_linear]	✓	1.266
17019	$y' + 2ty = 16t e^{-t^2}$	[_linear]	✓	2.291
17020	$(t^2 + 1)y' + 4ty = \frac{1}{(t^2 + 1)^2}$	[_linear]	✓	2.042
17021	$2y' + y = 3t$	[[_linear, 'class A']]	✓	1.033
17022	$ty' - y = t^3 e^{-t}$	[_linear]	✓	1.188
17023	$y' + y = 5 \sin(2t)$	[[_linear, 'class A']]	✓	1.367
17024	$2y' + y = 3t^2$	[[_linear, 'class A']]	✓	1.100
17025	$y' - y = 2t e^{2t}$	[[_linear, 'class A']]	✓	1.390
	i.c.			
17026	$y' + 2y = t e^{-2t}$	[[_linear, 'class A']]	✓	1.879
	i.c.			
17027	$ty' + 4y = t^2 - t + 1$	[_linear]	✓	1.580
	i.c.			
17028	$y' + \frac{2y}{t} = \frac{\cos(t)}{t^2}$	[_linear]	✓	1.639
	i.c.			
17029	$y' - 2y = e^{2t}$	[[_linear, 'class A']]	✓	1.312
	i.c.			
17030	$ty' + 2y = \sin(t)$	[_linear]	✓	1.670
	i.c.			
17031	$t^3 y' + 4t^2 y = e^{-t}$	[_linear]	✓	1.542
	i.c.			

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
17032	$ty' + (t + 1)y = t$ i.c.	[_linear]	✓	1.359
17033	$y' - \frac{y}{3} = 3 \cos(t)$ i.c.	[[_linear, 'class A']]	✓	1.499
17034	$2y' - y = e^{\frac{t}{3}}$ i.c.	[[_linear, 'class A']]	✓	1.320
17035	$3y' - 2y = e^{-\frac{\pi t}{2}}$ i.c.	[[_linear, 'class A']]	✓	1.478
17036	$ty' + (t + 1)y = 2te^{-t}$ i.c.	[_linear]	✓	1.938
17037	$ty' + 2y = \frac{\sin(t)}{t}$ i.c.	[_linear]	✓	1.439
17038	$\sin(t)y' + \cos(t)y = e^t$ i.c.	[_linear]	✓	38.579
17039	$y' + \frac{y}{2} = 2 \cos(t)$ i.c.	[[_linear, 'class A']]	✓	1.674
17040	$y' + \frac{4y}{3} = 1 - \frac{t}{4}$ i.c.	[[_linear, 'class A']]	✓	1.264
17041	$y' + \frac{y}{4} = 3 + 2 \cos(2t)$ i.c.	[[_linear, 'class A']]	✓	2.030
17042	$y' - y = 1 + 3 \sin(t)$ i.c.	[[_linear, 'class A']]	✓	1.596
17043	$y' - \frac{3y}{2} = 3t + 3e^t$ i.c.	[[_linear, 'class A']]	✓	1.482
17044	$y' - 6y = t^6e^{6t}$	[[_linear, 'class A']]	✓	1.601
17045	$y' + \frac{y}{t} = 3 \cos(2t)$	[_linear]	✓	1.473
17046	$ty' + 2y = \sin(t)$	[_linear]	✓	1.393
17047	$2y' + y = 3t^2$	[[_linear, 'class A']]	✓	1.082
17048	$(t - 3)y' + \ln(t)y = 2t$ i.c.	[_linear]	✓	3.266

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
17049	$t(-4+t)y' + y = 0$ i.c.	[_separable]	✓	1.732
17050	$y' + \tan(t)y = \sin(t)$ i.c.	[_linear]	✓	1.915
17051	$(-t^2 + 4)y' + 2ty = 3t^2$ i.c.	[_linear]	✓	2.020
17052	$(-t^2 + 4)y' + 2ty = 3t^2$ i.c.	[_linear]	✓	1.896
17053	$\ln(t)y' + y = \cot(t)$ i.c.	[_linear]	✓	3.000
17054	$y' = \frac{t-y}{2t+5y}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓	8.684
17055	$y' = \sqrt{1-t^2-y^2}$	['y=_G(x,y)']	✗	1.691
17056	$y' = \frac{\ln(ty)}{1-t^2+y^2}$	['y=_G(x,y)']	✗	2.423
17057	$y' = (t^2 + y^2)^{3/2}$	['y=_G(x,y)']	✗	1.540
17058	$y' = \frac{t^2+1}{3y-y^2}$	[_separable]	✓	1.324
17059	$y' = \frac{\cot(t)y}{y+1}$	[_separable]	✓	1.682
17060	$y' = y^{1/3}$ i.c.	[_quadrature]	✓	1.777
17061	$y' = -\frac{t}{2} + \frac{\sqrt{t^2+4y}}{2}$ i.c.	[[_1st_order, _with_linear_symmetries], _Clairaut]	✓	2.452
17062	$y' = -\frac{4t}{y}$ i.c.	[_separable]	✓	6.227
17063	$y' = 2ty^2$ i.c.	[_separable]	✓	2.020
17064	$y' + y^3 = 0$ i.c.	[_quadrature]	✓	1.700

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
17065	$y' = \frac{t^2}{y(t^3 + 1)}$ i.c.	[_separable]	✓	2.132
17066	$y' = ty(3 - y)$	[_separable]	✓	1.991
17067	$y' = y(3 - ty)$	[_Bernoulli]	✓	1.537
17068	$y' = -y(3 - ty)$	[_Bernoulli]	✓	1.523
17069	$y' + 2y = \begin{cases} 1 & 0 \leq t \leq 1 \\ 0 & 1 < t \end{cases}$ i.c.	[[_linear, 'class A']]	✓	0.664
17070	$y' + \left( \begin{cases} 2 & 0 \leq t \leq 1 \\ 1 & 1 < t \end{cases} \right) y = 0$ i.c.	[_separable]	✓	1.237
17071	$2x + 3 + (2y - 2)y' = 0$	[_separable]	✓	2.671
17072	$2x + 4y + (2x - 2y)y' = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓	5.469
17073	$3x^2 - 2xy + 2 + (6y^2 - x^2 + 3)y' = 0$	[_exact, _rational]	✓	1.418
17074	$2xy^2 + 2y + (2x^2y + 2x)y' = 0$	[_separable]	✓	1.738
17075	$y' = -\frac{4x + 2y}{2x + 3y}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓	4.113
17076	$y' = -\frac{4x - 2y}{2x - 3y}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓	9.693
17077	$e^x \sin(y) - 2y \sin(x) + (e^x \cos(y) + 2 \cos(x))y' = 0$	[_exact]	✓	6.993
17078	$e^x \sin(y) + 3y - (3x - e^x \sin(y))y' = 0$	['x=_G(y,y)']	✗	8.477
17079	$ye^{xy} \cos(2x) - 2e^{xy} \sin(2x) + 2x + (xe^{xy} \cos(2x) - 3)y' = 0$	[_exact]	✓	36.070
17080	$\frac{y}{x} + 6x + (\ln(x) - 2)y' = 0$	[_linear]	✓	1.453
17081	$x \ln(y) + xy + (y \ln(x) + xy)y' = 0$	[_separable]	✓	2.084

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
17082	$\frac{x}{(y^2 + x^2)^{3/2}} + \frac{yy'}{(y^2 + x^2)^{3/2}} = 0$	[_separable]	✓	4.677
17083	<i>i.c.</i> $2x - y + (2y - x)y' = 0$	[[_homogeneous, 'class A'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓	6.932
17084	<i>i.c.</i> $9x^2 + y - 1 - (4y - x)y' = 0$	[_exact, _rational, [_1st_order, '_with_symmetry_[F(x),G(x)]'], [_Abel, '2nd type', 'class A']]	✓	1.954
17085	$x^2y^3 + x(1 + y^2)y' = 0$	[_separable]	✓	1.615
17086	$\frac{\sin(y)}{y} - 2e^{-x}\sin(x) + \frac{(\cos(y) + 2e^{-x}\cos(x))y'}{y} = 0$	unknown	✓	12.865
17087	$y + (2x - ye^y)y' = 0$	unknown	✓	1.266
17088	$(x + 2)\sin(y) + x\cos(y)y' = 0$	[_separable]	✓	2.206
17089	$3x^2y + 2xy + y^3 + (y^2 + x^2)y' = 0$	[[_homogeneous, 'class D'], _rational]	✓	2.147
17090	$y' = e^{2x} + y - 1$	[[_linear, 'class A']]	✓	1.097
17091	$\frac{y'}{\frac{x}{y} - \sin(y)} = 0$	[_quadrature]	✓	0.431
17092	$y + (2xy - e^{-2y})y' = 0$	[[_1st_order, _with_exponential_symmetries]]	✓	1.742
17093	$e^x + (e^x \cot(y) + 2y \csc(y))y' = 0$	[[_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓	3.644
17094	$\frac{4x^3}{y^2} + \frac{12}{y} + 3\left(\frac{x}{y^2} + 4y\right)y' = 0$	[_rational]	✗	1.344
17095	$3x + \frac{6}{y} + \left(\frac{x^2}{y} + \frac{3y}{x}\right)y' = 0$	[_rational]	✓	1.489

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
17096	$3xy + y^2 + (xy + x^2)y' = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓	4.808
17097	$yy' = x + 1$	[_separable]	✓	2.228
17098	$(y^4 + 1)y' = x^4 + 1$	[_separable]	✓	1.291
17099	$\frac{(3x^3 - xy^2)y'}{3x^2y + y^3} = 1$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	32.068
17100	$x(x - 1)y' = y(1 + y)$	[_separable]	✓	2.110
17101	$\sqrt{x^2 - y^2} + y = xy'$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	90.371
17102	$xyy' = (x + y)^2$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓	3.699
17103	$y' = \frac{4y - 7x}{5x - y}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓	4.780
17104	$xy' - 4\sqrt{y^2 - x^2} = y$	[[_homogeneous, 'class A'], _dAlembert]	✓	59.152
17105	$y' = \frac{y^4 + 2xy^3 - 3y^2x^2 - 2x^3y}{2y^2x^2 - 2x^3y - 2x^4}$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	17.947
17106	$(y + xe^{\frac{x}{y}})y' = ye^{\frac{x}{y}}$	[[_homogeneous, 'class A'], _dAlembert]	✓	3.305
17107	<i>i.c.</i> $xyy' = y^2 + x^2$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓	12.277
17108	<i>i.c.</i> $y' = \frac{x + y}{x - y}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓	1195.576
17109	$ty' + y = t^2y^2$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓	1.770
17110	$y' = y(ty^3 - 1)$	[_Bernoulli]	✓	1.249

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
17111	$y' + \frac{3y}{t} = t^2 y^2$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓	1.197
17112	$t^2 y' + 2ty - y^3 = 0$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓	2.471
17113	$5(t^2 + 1) y' = 4ty(y^3 - 1)$	[_separable]	✓	39.752
17114	$3ty' + 9y = 2ty^{5/3}$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓	13.794
17115	$y' = y + \sqrt{y}$	[_quadrature]	✓	2.292
17116	$y' = ry - k^2 y^2$	[_quadrature]	✓	1.426
17117	$y' = ay + by^3$	[_quadrature]	✓	1.896
17118	$y' + 3ty = 4 - 4t^2 + y^2$	[_Riccati]	✓	1.660
17119	$(3x - y) x' + 9y - 2x = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓	4.518
17120	$1 = (3e^y - 2x) y'$	[[_1st_order, _with_exponential_symmetries]]	✓	1.330
17121	$y' - 4e^x y^2 = y$	[[_1st_order, _with_linear_symmetries], _Bernoulli]	✓	1.347
17122	$xy' + (x + 1)y = x$	[_linear]	✓	1.080
17123	$y' = \frac{xy^2 - \frac{\sin(2x)}{2}}{(-x^2 + 1)y}$	[_Bernoulli]	✓	40.111
17124	$\frac{\sqrt{x} y'}{y} = 1$	[_separable]	✓	1.439
17125	$5xy^2 + 5y + (5x^2 y + 5x) y' = 0$	[_separable]	✓	1.671
17126	$2xyy' + \ln(x) = -y^2 - 1$	[_exact, _Bernoulli]	✓	1.506
17127	$(2 - x) y' = y + 2(2 - x)^5$	[_linear]	✓	1.319
17128	$xy' = -\frac{1}{\ln(x)}$	[_quadrature]	✓	0.374

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
17129	$x' = \frac{2xy + x^2}{3y^2 + 2xy}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓	3.388
17130	$4xyy' = 8x^2 + 5y^2$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓	4.833
17131	$y' + y - y^{1/4} = 0$	[_quadrature]	✓	4.138
17132	$\begin{bmatrix} x' = y \\ y' = x + 4 \end{bmatrix}$	system_of_ODEs	✓	0.424
17133	$\begin{bmatrix} x' = x + 2y + \sin(t) \\ y' = -x + y - \cos(t) \end{bmatrix}$	system_of_ODEs	✓	1.211
17134	$\begin{bmatrix} x' = -2xt + y \\ y' = 3x - y \end{bmatrix}$	system_of_ODEs	✗	0.050
17135	$\begin{bmatrix} x' = x + 2y + 4 \\ y' = -2x + y - 3 \end{bmatrix}$	system_of_ODEs	✓	0.642
17136	$\begin{bmatrix} x' = 3x - y \\ y' = x + 2y \end{bmatrix}$	system_of_ODEs	✓	0.636
17137	$\begin{bmatrix} x' = -x + ty \\ y' = xt - y \end{bmatrix}$	system_of_ODEs	✗	0.048
17138	$\begin{bmatrix} x' = x + y + 4 \\ y' = -2x + \sin(t)y \end{bmatrix}$	system_of_ODEs	✗	0.049
17139	$\begin{bmatrix} x' = 3x - 4y \\ y' = x + 3y \end{bmatrix}$	system_of_ODEs	✓	0.388
17140	$\begin{bmatrix} x' = 2x - y \\ y' = 3x - 2y \end{bmatrix}$	system_of_ODEs	✓	0.322
17141	$\begin{bmatrix} x' = -x + 2y \\ y' = -2x - y \end{bmatrix}$	system_of_ODEs	✓	0.366
17142	$\begin{bmatrix} x' = y \\ y' = -x + 2\sin(t) \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.714

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
17143	$\begin{cases} x' = x - 4y + 2t \\ y' = x - 3y - 3 \end{cases}$ i.c.	system_of_ODEs	✓	0.571
17144	$\begin{cases} x' = -x + y + 1 \\ y' = x + y - 3 \end{cases}$	system_of_ODEs	✓	0.703
17145	$\begin{cases} x' = -x - 4y - 4 \\ y' = x - y - 6 \end{cases}$	system_of_ODEs	✓	0.704
17146	$\begin{cases} x' = -\frac{x}{4} - \frac{3y}{4} + 8 \\ y' = \frac{x}{2} + y - \frac{23}{2} \end{cases}$	system_of_ODEs	✓	0.553
17147	$\begin{cases} x' = -2x + y - 11 \\ y' = -5x + 4y - 35 \end{cases}$	system_of_ODEs	✓	0.550
17148	$\begin{cases} x' = x + y - 3 \\ y' = -x + y + 1 \end{cases}$	system_of_ODEs	✓	0.613
17149	$\begin{cases} x' = -5x + 4y - 35 \\ y' = -2x + y - 11 \end{cases}$	system_of_ODEs	✓	0.546
17150	$\begin{cases} x' = 3x - 2y \\ y' = 2x - 2y \end{cases}$	system_of_ODEs	✓	0.329
17151	$\begin{cases} x' = x - 2y \\ y' = 3x - 4y \end{cases}$	system_of_ODEs	✓	0.376
17152	$\begin{cases} x' = 2x - y \\ y' = 3x - 2y \end{cases}$	system_of_ODEs	✓	0.332
17153	$\begin{cases} x' = x + y \\ y' = 4x - 2y \end{cases}$	system_of_ODEs	✓	0.350
17154	$\begin{cases} x' = 4x - 3y \\ y' = 8x - 6y \end{cases}$	system_of_ODEs	✓	0.325
17155	$\begin{cases} x' = -2x + y \\ y' = x - 2y \end{cases}$	system_of_ODEs	✓	0.319

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
17156	$\begin{bmatrix} x' = \frac{5x}{4} + \frac{3y}{4} \\ y' = \frac{3x}{4} + \frac{5y}{4} \end{bmatrix}$	system_of_ODEs	✓	0.322
17157	$\begin{bmatrix} x' = -\frac{3x}{4} - \frac{7y}{4} \\ y' = \frac{x}{4} + \frac{5y}{4} \end{bmatrix}$	system_of_ODEs	✓	0.327
17158	$\begin{bmatrix} x' = -\frac{x}{4} - \frac{3y}{4} \\ y' = \frac{x}{2} + y \end{bmatrix}$	system_of_ODEs	✓	0.334
17159	$\begin{bmatrix} x' = 5x - y \\ y' = 3x + y \end{bmatrix}$	system_of_ODEs	✓	0.329
17160	$\begin{bmatrix} x' = -2x + y \\ y' = -5x + 4y \end{bmatrix}$	system_of_ODEs	✓	0.329
17161	$\begin{bmatrix} x' = 3x + 6y \\ y' = -x - 2y \end{bmatrix}$	system_of_ODEs	✓	0.309
17162	$\begin{bmatrix} x' = x - 2y \\ y' = 3x - 4y \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.459
17163	$\begin{bmatrix} x' = 2x - y \\ y' = 3x - 2y \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.447
17164	$\begin{bmatrix} x' = 5x - y \\ y' = 3x + y \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.513
17165	$\begin{bmatrix} x' = -2x + y \\ y' = -5x + 4y \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.447
17166	$\begin{bmatrix} x' = 3x - 2y \\ y' = 4x - y \end{bmatrix}$	system_of_ODEs	✓	0.422
17167	$\begin{bmatrix} x' = -x - 4y \\ y' = x - y \end{bmatrix}$	system_of_ODEs	✓	0.378

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
17168	$\begin{bmatrix} x' = 2x - 5y \\ y' = x - 2y \end{bmatrix}$	system_of_ODEs	✓	0.385
17169	$\begin{bmatrix} x' = 2x - \frac{5y}{2} \\ y' = \frac{9x}{5} - y \end{bmatrix}$	system_of_ODEs	✓	0.456
17170	$\begin{bmatrix} x' = x - y \\ y' = 5x - 3y \end{bmatrix}$	system_of_ODEs	✓	0.405
17171	$\begin{bmatrix} x' = x + 2y \\ y' = -5x - y \end{bmatrix}$	system_of_ODEs	✓	0.400
17172	$\begin{bmatrix} x' = -x - 4y \\ y' = x - y \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.437
17173	$\begin{bmatrix} x' = 2x - 5y \\ y' = x - 2y \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.419
17174	$\begin{bmatrix} x' = x - 5y \\ y' = x - 3y \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.519
17175	$\begin{bmatrix} x' = -3x + 2y \\ y' = -x - y \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.527
17176	$\begin{bmatrix} x' = \frac{3x}{4} - 2y \\ y' = x - \frac{5y}{4} \end{bmatrix}$	system_of_ODEs	✓	0.403
17177	$\begin{bmatrix} x' = -\frac{4x}{5} + 2y \\ y' = -x + \frac{6y}{5} \end{bmatrix}$	system_of_ODEs	✓	0.399
17178	$\begin{bmatrix} x' = ax + y \\ y' = -x + ay \end{bmatrix}$	system_of_ODEs	✓	0.325
17179	$\begin{bmatrix} x' = -5y \\ y' = x + ay \end{bmatrix}$	system_of_ODEs	✓	0.600

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
17180	$\begin{bmatrix} x' = 2x - 5y \\ y' = ax - 2y \end{bmatrix}$	system_of_ODEs	✓	0.514
17181	$\begin{bmatrix} x' = \frac{5x}{4} + \frac{3y}{4} \\ y' = ax + \frac{5y}{4} \end{bmatrix}$	system_of_ODEs	✓	0.508
17182	$\begin{bmatrix} x' = -x + ay \\ y' = -x - y \end{bmatrix}$	system_of_ODEs	✓	0.398
17183	$\begin{bmatrix} x' = 3x + ay \\ y' = -6x - 4y \end{bmatrix}$	system_of_ODEs	✓	0.513
17184	$\begin{bmatrix} x' = ax + 10y \\ y' = -x - 4y \end{bmatrix}$	system_of_ODEs	✓	0.648
17185	$\begin{bmatrix} x' = 4x + ay \\ y' = 8x - 6y \end{bmatrix}$	system_of_ODEs	✓	0.522
17186	$\begin{bmatrix} i' = \frac{i}{2} - \frac{v}{8} \\ v' = 2i - \frac{v}{2} \end{bmatrix}$	system_of_ODEs	✓	0.282
17187	$\begin{bmatrix} x' = 3x - 4y \\ y' = x - y \end{bmatrix}$	system_of_ODEs	✓	0.308
17188	$\begin{bmatrix} x' = \frac{5x}{4} + \frac{3y}{4} \\ y' = -\frac{3x}{4} - \frac{y}{4} \end{bmatrix}$	system_of_ODEs	✓	0.300
17189	$\begin{bmatrix} x' = -\frac{3x}{2} + y \\ y' = -\frac{x}{4} - \frac{y}{2} \end{bmatrix}$	system_of_ODEs	✓	0.316
17190	$\begin{bmatrix} x' = -3x + \frac{5y}{2} \\ y' = -\frac{5x}{2} + 2y \end{bmatrix}$	system_of_ODEs	✓	0.295
17191	$\begin{bmatrix} x' = -x - \frac{y}{2} \\ y' = 2x - 3y \end{bmatrix}$	system_of_ODEs	✓	0.314
17192	$\begin{bmatrix} x' = 2x + \frac{y}{2} \\ y' = -\frac{x}{2} + y \end{bmatrix}$	system_of_ODEs	✓	0.318

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
17193	$\begin{bmatrix} x' = x - 4y \\ y' = 4x - 7y \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.433
17194	$\begin{bmatrix} x' = -\frac{5x}{2} + \frac{3y}{2} \\ y' = -\frac{3x}{2} + \frac{y}{2} \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.440
17195	$\begin{bmatrix} x' = 2x + \frac{3y}{2} \\ y' = -\frac{3x}{2} - y \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.439
17196	$\begin{bmatrix} x' = \frac{5x}{4} + \frac{3y}{4} \\ y' = -\frac{3x}{4} - \frac{y}{4} \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.447
17197	$\begin{bmatrix} x' = -3x + \frac{5y}{2} \\ y' = -\frac{5x}{2} + 2y \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.442
17198	$\begin{bmatrix} x' = 2x + \frac{y}{2} \\ y' = -\frac{x}{2} + y \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.433
17199	$\begin{bmatrix} x' = -x \\ y' = -2y \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.409
17200	$\begin{bmatrix} x' = -x \\ y' = 2y \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.398
17201	$\begin{bmatrix} x' = -x \\ y' = -2y \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.408
17202	$\begin{bmatrix} x' = 2y \\ y' = 8x \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.450
17203	$\begin{bmatrix} x' = 2y \\ y' = 8x \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.454

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
17204	$\begin{bmatrix} x' = 2y \\ y' = -8x \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.499
17205	$\begin{bmatrix} x' = 2x - y \\ y' = x - 2y \end{bmatrix}$	system_of_ODEs	✓	0.434
17206	$\begin{bmatrix} x' = y - x \\ y' = x + y \end{bmatrix}$	system_of_ODEs	✓	0.435
17207	$\begin{bmatrix} x' = 2x - 4y \\ y' = 2x - 2y \end{bmatrix}$	system_of_ODEs	✓	0.373
17208	$\begin{bmatrix} x' = -x + y + x^2 \\ y' = y - 2xy \end{bmatrix}$	system_of_ODEs	✗	0.049
17209	$\begin{bmatrix} x' = 2y x^2 - 3x^2 - 4y \\ y' = -2x y^2 + 6xy \end{bmatrix}$	system_of_ODEs	✗	0.054
17210	$\begin{bmatrix} x' = 3x - x^2 \\ y' = 2xy - 3y + 2 \end{bmatrix}$	system_of_ODEs	✗	0.051
17211	$\begin{bmatrix} x' = x - xy \\ y' = y + 2xy \end{bmatrix}$	system_of_ODEs	✗	0.049
17212	$\begin{bmatrix} x' = 2 - y \\ y' = y - x^2 \end{bmatrix}$	system_of_ODEs	✗	0.051
17213	$\begin{bmatrix} x' = x - x^2 - xy \\ y' = \frac{y}{2} - \frac{y^2}{4} - \frac{3xy}{4} \end{bmatrix}$	system_of_ODEs	✗	0.051
17214	$\begin{bmatrix} x' = -(x - y)(1 - x - y) \\ y' = x(2 + y) \end{bmatrix}$	system_of_ODEs	✗	0.052
17215	$\begin{bmatrix} x' = y(2 - x - y) \\ y' = -x - y - 2xy \end{bmatrix}$	system_of_ODEs	✗	0.053
17216	$\begin{bmatrix} x' = (x + 2)(y - x) \\ y' = y - x^2 - y^2 \end{bmatrix}$	system_of_ODEs	✗	0.052

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
17217	$\begin{bmatrix} x' = -x + 2xy \\ y' = y - x^2 - y^2 \end{bmatrix}$	system_of_ODEs	✗	0.051
17218	$\begin{bmatrix} x' = y \\ y' = x - \frac{x^3}{5} - \frac{y}{5} \end{bmatrix}$	system_of_ODEs	✗	0.050
17219	$x' = \frac{x\sqrt{6x-9}}{3}$ i.c.	[_quadrature]	✓	185.478
17220	$\begin{bmatrix} x' = x(1-x-y) \\ y' = y(\frac{3}{4}-y-\frac{x}{2}) \end{bmatrix}$	system_of_ODEs	✗	0.060
17221	$y'' + ty = 0$	[[_Emden, _Fowler]]	✓	0.688
17222	$y'' + y' + y + y^3 = 0$	[[_2nd_order, _missing_x]]	✗	0.490
17223	$(-x^2 + 1)y'' - 2xy' + \alpha(1 + \alpha)y = 0$	[_Gegenbauer]	✗	0.939
17224	$x^2y'' + xy' + (-\nu^2 + x^2)y = 0$	[_Bessel]	✓	2.092
17225	$y'' + \mu(1 - y^2)y' + y = 0$	[[_2nd_order, _missing_x], _Van_der_Pol]	✗	0.558
17226	$y'' - ty = \frac{1}{\pi}$	unknown	✓	3.339
17227	$ax^2y'' + bxy' + cy = d$	[[_2nd_order, _with_linear_symmetries]]	✓	3.599
17228	$y'' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	2.017
17229	$y'' + 9y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	2.144
17230	$y'' + y' + 16y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	3.446
17231	$y'' + 3y' + 4y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	3.116
17232	$y'' - y' + 4y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	3.019
17233	$ty'' + 3y = t$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	2.128

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
17234	$(t-1)y'' - 3ty' + 4y = \sin(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✗	1.054
17235	$t(-4+t)y'' + 3ty' + 4y = 2$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✗	8.010
17236	$y'' + \cos(t)y' + 3\ln(t)y = 0$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✗	0.650
17237	$(x+3)y'' + xy' + y\ln(x) = 0$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✗	0.396
17238	$(-2+x)y'' + y' + (-2+x)\tan(x)y = 0$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✗	0.687
17239	$(-x^2+1)y'' - 2xy' + \frac{\alpha(1+\alpha)\mu^2y}{-x^2+1} = 0$ i.c.	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]]	✓	2.886
17240	$y'' - \frac{t}{y} = \frac{1}{\pi}$ i.c.	[NONE]	✗	0.094
17241	$t^2y'' - 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.913
17242	$yy'' + y'^2 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]]	✓	0.404
17243	$y'' + 4y = 0$	[[_2nd_order, _missing_x]]	✓	1.992
17244	$y'' - 2y' + y = 0$	[[_2nd_order, _missing_x]]	✓	0.829
17245	$x^2y'' - x(x+2)y' + (x+2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.238
17246	$(1-x\cot(x))y'' - xy' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	4.622
17247	$y'' - y' - 2y = 0$	[[_2nd_order, _missing_x]]	✓	0.838

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
17248	$ay'' + by' + cy = 0$	[[_2nd_order, _missing_x]]	✓	0.340
17249	$t^2y'' - 4ty' + 6y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓	0.314
17250	$t^2y'' + 2ty' - 2y = 0$	[[_Emden, _Fowler]]	✓	0.312
17251	$t^2y'' + 3ty' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.316
17252	$t^2y'' - t(t+2)y' + (t+2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.336
17253	$xy'' - y' + 4x^3y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓	0.401
17254	$(x-1)y'' - xy' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.340
17255	$x^2y'' - \left(x - \frac{3}{16}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.333
17256	$x^2y'' + xy' + \left(x^2 - \frac{1}{4}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.399
17257	$xy'' - (x+n)y' + ny = 0$	[_Laguerre]	✓	0.398
17258	$y'' + a(xy' + y) = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.355
17259	$y'' + 2y' - 3y = 0$	[[_2nd_order, _missing_x]]	✓	0.830
17260	$y'' + 3y' + 2y = 0$	[[_2nd_order, _missing_x]]	✓	0.815
17261	$y'' - 4y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓	0.856
17262	$9y'' + 6y' + y = 0$	[[_2nd_order, _missing_x]]	✓	0.867
17263	$y'' - 2y' + 2y = 0$	[[_2nd_order, _missing_x]]	✓	1.272
17264	$y'' - 2y' + 6y = 0$	[[_2nd_order, _missing_x]]	✓	2.016

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
17265	$4y'' - 4y' + y = 0$	[[_2nd_order, _missing_x]]	✓	0.862
17266	$2y'' - 3y' + y = 0$	[[_2nd_order, _missing_x]]	✓	0.810
17267	$6y'' - y' - y = 0$	[[_2nd_order, _missing_x]]	✓	0.845
17268	$9y'' + 12y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓	0.867
17269	$y'' + 2y' - 8y = 0$	[[_2nd_order, _missing_x]]	✓	0.859
17270	$y'' + 2y' + 2y = 0$	[[_2nd_order, _missing_x]]	✓	1.276
17271	$y'' + 5y' = 0$	[[_2nd_order, _missing_x]]	✓	1.388
17272	$4y'' - 9y = 0$	[[_2nd_order, _missing_x]]	✓	2.174
17273	$25y'' - 20y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓	0.850
17274	$y'' - 4y' + 16y = 0$	[[_2nd_order, _missing_x]]	✓	2.201
17275	$y'' + 6y' + 13y = 0$	[[_2nd_order, _missing_x]]	✓	1.768
17276	$y'' + 2y' + \frac{5y}{4} = 0$	[[_2nd_order, _missing_x]]	✓	1.537
17277	$y'' - 9y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓	1.102
17278	$y'' - 2y' - 2y = 0$	[[_2nd_order, _missing_x]]	✓	1.067
17279	$y'' + 4y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓	0.858
17280	$9y'' - 24y' + 16y = 0$	[[_2nd_order, _missing_x]]	✓	0.850
17281	$4y'' + 9y = 0$	[[_2nd_order, _missing_x]]	✓	1.983
17282	$4y'' + 9y' - 9y = 0$	[[_2nd_order, _missing_x]]	✓	0.865

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
17283	$y'' + y' + \frac{5y}{4} = 0$	[[_2nd_order, _missing_x]]	✓	1.314
17284	$y'' + 4y' + \frac{25y}{4} = 0$	[[_2nd_order, _missing_x]]	✓	1.607
17285	<i>i.c.</i> $y'' + y' - 2y = 0$	[[_2nd_order, _missing_x]]	✓	1.397
17286	<i>i.c.</i> $y'' + 16y = 0$	[[_2nd_order, _missing_x]]	✓	2.679
17287	<i>i.c.</i> $9y'' - 12y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓	1.243
17288	<i>i.c.</i> $y'' + 3y' + 2y = 0$	[[_2nd_order, _missing_x]]	✓	1.070
17289	<i>i.c.</i> $y'' + 4y' + 5y = 0$	[[_2nd_order, _missing_x]]	✓	2.059
17290	<i>i.c.</i> $6y'' - 5y' + y = 0$	[[_2nd_order, _missing_x]]	✓	1.121
17291	<i>i.c.</i> $y'' + 6y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓	1.173
17292	<i>i.c.</i> $y'' - 2y' + 5y = 0$	[[_2nd_order, _missing_x]]	✓	1.991
17293	<i>i.c.</i> $y'' + 3y' = 0$	[[_2nd_order, _missing_x]]	✓	2.007
17294	<i>i.c.</i> $y'' + y = 0$	[[_2nd_order, _missing_x]]	✓	2.943
17295	<i>i.c.</i> $y'' + 4y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓	1.207
17296	<i>i.c.</i> $y'' + 6y' + 3y = 0$	[[_2nd_order, _missing_x]]	✓	1.599
17297	<i>i.c.</i> $y'' + y' + \frac{5y}{4} = 0$	[[_2nd_order, _missing_x]]	✓	2.191
17298	<i>i.c.</i> $2y'' + y' - 4y = 0$	[[_2nd_order, _missing_x]]	✓	1.552
17299	<i>i.c.</i> $y'' + 8y' - 9y = 0$	[[_2nd_order, _missing_x]]	✓	1.439

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
17300	<i>i.c.</i> $y'' + 2y' + 2y = 0$	[[_2nd_order, _missing_x]]	✓	2.220
17301	<i>i.c.</i> $4y'' - y = 0$	[[_2nd_order, _missing_x]]	✓	2.520
17302	$ax^2y'' + bxy' + cy = 0$	[[_Emden, _Fowler]]	✓	2.444
17303	$x^2y'' + xy' + 4y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)']]]	✓	1.421
17304	$x^2y'' + 4xy' + 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	1.335
17305	$x^2y'' + 3xy' + \frac{5y}{4} = 0$	[[_Emden, _Fowler]]	✓	2.067
17306	$x^2y'' - 4xy' - 6y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	1.194
17307	$x^2y'' - 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.943
17308	$x^2y'' - 5xy' + 9y = 0$	[[_Emden, _Fowler]]	✓	1.147
17309	$x^2y'' + 2xy' + 4y = 0$	[[_Emden, _Fowler]]	✓	2.857
17310	$2x^2y'' - 4xy' + 6y = 0$	[[_Emden, _Fowler]]	✓	2.846
17311	<i>i.c.</i> $2x^2y'' + xy' - 3y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	2.020
17312	<i>i.c.</i> $4x^2y'' + 8xy' + 17y = 0$	[[_Emden, _Fowler]]	✓	3.957
17313	<i>i.c.</i> $x^2y'' - 5xy' + 9y = 0$	[[_Emden, _Fowler]]	✓	1.718
17314	<i>i.c.</i> $x^2y'' + 3xy' + 5y = 0$	[[_Emden, _Fowler]]	✓	3.695
17315	<i>i.c.</i> $y'' + 2y = 0$	[[_2nd_order, _missing_x]]	✓	2.788
17316	<i>i.c.</i> $y'' + \frac{y'}{4} + 2y = 0$	[[_2nd_order, _missing_x]]	✓	2.709
17317	<i>i.c.</i> $my'' + ky = 0$	[[_2nd_order, _missing_x]]	✓	23.617

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
17318	$y'' - 2y' - 3y = 3e^{2t}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.050
17319	$y'' + 2y' + 5y = 3 \sin(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	11.777
17320	$y'' - 2y' - 3y = -3te^{-t}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.117
17321	$y'' + 2y' = 3 + 4 \sin(2t)$	[[_2nd_order, _missing_y]]	✓	2.760
17322	$y'' + 9y = t^2e^{3t} + 6$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.734
17323	$y'' + 2y' + y = 2e^{-t}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.046
17324	$y'' - 5y' + 4y = 2e^t$	[[_2nd_order, _with_linear_symmetries]]	✓	1.080
17325	$y'' - y' - 2y = 2e^{-t}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.075
17326	$y'' + 2y' + y = 3e^{-t}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.038
17327	$4y'' - 4y' + y = 16e^{\frac{t}{2}}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.075
17328	$2y'' + 3y' + y = t^2 + 3 \sin(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.838
17329	$y'' + y = 3 \sin(2t) + t \cos(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	2.910
17330	$u'' + w_0^2u = \cos(wt)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.414
17331	$y'' + y' + 4y = 2 \sinh(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	28.444
17332	$y'' - y' - 2y = \cosh(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.474
17333	<i>i.c.</i> $y'' + y' - 2y = 2t$	[[_2nd_order, _with_linear_symmetries]]	✓	1.217
17334	<i>i.c.</i> $y'' + 4y = t^2 + 3e^t$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	5.622
17335	<i>i.c.</i> $y'' - 2y' + y = te^t + 4$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.596

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
17336	$y'' - 2y' - 3y = 3t e^{2t}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.357
17337	$y'' + 4y = 3 \sin(2t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	4.327
17338	$y'' + 2y' + 5y = 4 e^{-t} \cos(2t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	13.163
17339	$y'' + 3y' = 2t^4 + t^2 e^{-3t} + \sin(3t)$	[[_2nd_order, _missing_y]]	✓	72.711
17340	$y'' + y = t(1 + \sin(t))$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.539
17341	$y'' - 5y' + 6y = e^t \cos(2t) + e^{2t}(3t + 4) \sin(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	5.737
17342	$y'' + 2y' + 2y = 3 e^{-t} + 2 e^{-t} \cos(t) + 4 e^{-t} t^2 \sin(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	9.760
17343	$y'' - 4y' + 4y = 2t^2 + 4t e^{2t} + t \sin(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	32.023
17344	$y'' + 4y = t^2 \sin(2t) + (6t + 7) \cos(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	6.031
17345	$y'' + 3y' + 2y = e^t(t^2 + 1) \sin(2t) + 3 e^{-t} \cos(t) + 4 e^t$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	73.190
17346	$y'' + 2y' + 5y = 3t e^{-t} \cos(2t) - 2t e^{-2t} \cos(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	95.950
17347	$y'' - 3y' - 4y = 2 e^{-t}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.135
17348	$x^2 y'' - 3xy' + 4y = \ln(x)$	[[_2nd_order, _with_linear_symmetries]]	✓	1.752
17349	$x^2 y'' + 7xy' + 5y = x$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓	1.746
17350	$x^2 y'' - 2xy' + 2y = 3x^2 + 2 \ln(x)$	[[_2nd_order, _with_linear_symmetries]]	✓	2.337
17351	$x^2 y'' + xy' + 4y = \sin(\ln(x))$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	5.434

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
17352	$y'' + y = \begin{cases} t & 0 \leq t \leq \pi \\ \pi e^{-t+\pi} & \pi < t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	6.332
17353	$y'' + 2y' + 5y = \begin{cases} 1 & 0 \leq t \leq \frac{\pi}{2} \\ 0 & \frac{\pi}{2} < t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	17.437
17354	$y'' + y = \begin{cases} At & 0 \leq t \leq \pi \\ A(2\pi - t) & \pi < t \leq 2\pi \\ 0 & 2\pi < t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.844
17355	$y'' + \frac{y'}{4} + 2y = 2 \cos(wt)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	75.172
17356	$y'' + y = 2 \cos(wt)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	2.329
17357	$y'' + y = 3 \cos(wt)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	2.348
17358	$y'' + \frac{y'}{8} + 4y = 3 \cos\left(\frac{t}{4}\right)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	74.168
17359	$y'' + \frac{y'}{8} + 4y = 3 \cos(2t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	74.541
17360	$y'' + \frac{y'}{8} + 4y = 3 \cos(6t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	76.137
17361	$y'' + y + \frac{y^3}{5} = \cos(wt)$ i.c.	[NONE]	✗	0.179
17362	$y'' + \frac{y'}{5} + y + \frac{y^3}{5} = \cos(wt)$ i.c.	[NONE]	✗	0.104
17363	$y'' - 5y' + 6y = 2e^t$	[[_2nd_order, _with_linear_symmetries]]	✓	1.082
17364	$y'' - y' - 2y = 2e^{-t}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.118

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
17365	$y'' + 2y' + y = 3e^{-t}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.086
17366	$4y'' - 4y' + y = 16e^{\frac{t}{2}}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.074
17367	$y'' + y = \tan(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.096
17368	$y'' + 4y = 3\sec(2t)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	8.980
17369	$y'' + 4y' + 4y = \frac{e^{2t}}{t^2}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.362
17370	$y'' + 4y = 2\csc\left(\frac{t}{2}\right)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	5.502
17371	$4y'' + y = 2\sec(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	72.345
17372	$y'' - 2y' + y = \frac{e^t}{t^2 + 1}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.763
17373	$y'' - 5y' + 6y = g(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.727
17374	$y'' + 4y = g(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.939
17375	$t^2y'' - t(t+2)y' + (t+2)y = 2t^3$	[[_2nd_order, _with_linear_symmetries]]	✓	1.610
17376	$ty'' - (t+1)y' + y = t^2e^{2t}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.334
17377	$(-t+1)y'' + ty' - y = 2(t-1)^2e^{-t}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.701
17378	$x^2y'' + xy' + \left(x^2 - \frac{1}{4}\right)y = 3x^{3/2}\sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	12.612
17379	$(1-x)y'' + xy' - y = g(x)$	[[_2nd_order, _with_linear_symmetries]]	✓	1.646
17380	$x^2y'' + xy' + \left(x^2 - \frac{1}{4}\right)y = g(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	8.602

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
17381	$t^2 y'' - 2y = 3t^2 - 1$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓	1.131
17382	$x^2 y'' - 3xy' + 4y = x^2 \ln(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.918
17383	$t^2 y'' - 2ty' + 2y = 4t^2$	[[_2nd_order, _with_linear_symmetries]]	✓	2.023
17384	$t^2 y'' + 7ty' + 5y = t$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓	1.859
17385	$y'' + y = g(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.935
17386	$ty'' - (t + 1)y' - y = t^2 e^{2t}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓	0.451
17387	$(-t + 1)y'' + ty' - y = 2(t - 1)^2 e^{-t}$	[[_2nd_order, _with_linear_symmetries]]	✓	0.474
17388	$y'' + 2y' - 2y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	0.346
17389	$9y'' + 12y' + 4y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	0.322
17390	$y'' + 3y' + 2y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	0.273
17391	$6y'' + 5y' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	0.277
17392	$y'' - 2y' + 2y = t^2 e^t + 7$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.366
17393	$y'' - 5y' - 6y = t^2 + 7$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	0.307
17394	$y'' + 4y = 3e^{-2t} \sin(2t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.461
17395	$y'' + 2y' + 5y = t \cos(2t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.480
17396	$y''' + y'' + y' + y = 0$ i.c.	[[_3rd_order, _missing_x]]	✓	0.350

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
17397	$y'''' - 6y = te^{-t}$ i.c.	[[_high_order, _linear, _nonhomogeneous]]	✓	0.829
17398	$y'' + 16y = \begin{cases} 1 & 0 \leq t < \pi \\ 0 & \pi \leq t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.818
17399	$y'' + y = \begin{cases} t & 0 \leq t < 1 \\ 0 & 1 \leq t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.919
17400	$y'' + 4y = \begin{cases} t & 0 \leq t < 1 \\ 1 & 1 \leq t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.740
17401	$y'' - 4y' - 12y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	0.276
17402	$y'' + 3y' + 2y = t$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	0.286
17403	$y'' - 8y' + 25y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	0.296
17404	$y'' - 4y' + 4y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	0.249
17405	$y'' - 2y' + 4y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	0.497
17406	$y'' + 4y' + 29y = e^{-2t} \sin(5t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.454
17407	$y'' + w^2y = \cos(2t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.290
17408	$y'' - 2y' + 2y = \cos(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.365
17409	$y'' - 2y' + 2y = e^{-t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	0.345
17410	$y'' + 2y' + y = 18e^{-t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	0.266
17411	$y'''' - 4y''' + 6y'' - 4y' + y = 0$ i.c.	[[_high_order, _missing_x]]	✓	0.329
17412	$y'''' - y = 0$ i.c.	[[_high_order, _missing_x]]	✓	0.341

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
17413	$y'''' - 9y = 0$ i.c.	[[_high_order, _missing_x]]	✓	0.506
17414	$\begin{bmatrix} y_1' = -5y_1 + y_2 \\ y_2' = -9y_1 + 5y_2 \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.364
17415	$\begin{bmatrix} y_1' = 5y_1 - 2y_2 \\ y_2' = 6y_1 - 2y_2 \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.352
17416	$\begin{bmatrix} y_1' = 4y_1 - 4y_2 \\ y_2' = 5y_1 - 4y_2 \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.388
17417	$\begin{bmatrix} y_1' = 6y_2 \\ y_2' = -6y_1 \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.449
17418	$\begin{bmatrix} y_1' = -4y_1 - y_2 \\ y_2' = y_1 - 2y_2 \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.334
17419	$\begin{bmatrix} y_1' = 2y_1 - 64y_2 \\ y_2' = y_1 - 14y_2 \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.338
17420	$\begin{bmatrix} y_1' = -4y_1 - y_2 + 2e^t \\ y_2' = y_1 - 2y_2 + \sin(2t) \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.362
17421	$\begin{bmatrix} y_1' = 5y_1 - y_2 + e^{-t} \\ y_2' = y_1 + 3y_2 + 2e^t \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.314
17422	$\begin{bmatrix} y_1' = -y_1 - 5y_2 + 3 \\ y_2' = y_1 + 3y_2 + 5 \cos(t) \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.334
17423	$\begin{bmatrix} y_1' = -2y_1 + y_2 \\ y_2' = y_1 - 2y_2 + \sin(t) \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.337

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
17424	$\begin{cases} y_1' = y_2 - y_3 \\ y_2' = y_1 + y_3 - e^{-t} \\ y_3' = y_1 + y_2 + e^t \end{cases}$ i.c.	system_of_ODEs	✓	0.249
17425	$y'' + y = \begin{cases} 1 & 0 \leq t < \frac{\pi}{2} \\ 0 & \frac{\pi}{2} \leq t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.682
17426	$y'' + 2y' + 2y = \begin{cases} 0 & 0 \leq t < \pi \\ 1 & \pi \leq t \leq 2\pi \\ 0 & t \leq 2\pi \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.685
17427	$y'' + 4y = \sin(t) - \text{Heaviside}(t - 2\pi) \sin(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.514
17428	$y'' + 4y = \sin(t) - \text{Heaviside}(t - \pi) \sin(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.583
17429	$y'' + 3y' + 2y = \begin{cases} 1 & 0 \leq t < 10 \\ 0 & 10 \leq t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.827
17430	$y'' + 3y' + 2y = \text{Heaviside}(t - 2)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.500
17431	$y'' + y = \text{Heaviside}(t - 3\pi)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.515
17432	$y'' + y' + \frac{5y}{4} = t - \text{Heaviside}\left(t - \frac{\pi}{2}\right) \left(t - \frac{\pi}{2}\right)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.571
17433	$y'' + y = \begin{cases} \frac{t}{2} & 0 \leq t < 6 \\ 3 & 6 \leq t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.680
17434	$y'' + y' + \frac{5y}{4} = \begin{cases} \sin(t) & 0 \leq t < \pi \\ 0 & \pi \leq t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.678
17435	$y'' + 4y = \text{Heaviside}(t - \pi) - \text{Heaviside}(t - 3\pi)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.822

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
17436	$y'''' - y = \text{Heaviside}(t - 1) - \text{Heaviside}(t - 2)$ i.c.	[[_high_order, _linear, _nonhomogeneous]]	✓	3.846
17437	$y'''' + 5y'' + 4y = 1 - \text{Heaviside}(t - \pi)$ i.c.	[[_high_order, _linear, _nonhomogeneous]]	✓	2.097
17438	$u'' + \frac{u'}{4} + u = \frac{\left(\begin{cases} 1 & \frac{3}{2} \leq t < \frac{5}{2} \\ 0 & \text{otherwise} \end{cases}\right)}{2}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.128
17439	$u'' + \frac{u'}{4} + u = \begin{cases} 1 & \frac{3}{2} \leq t < \frac{5}{2} \\ 0 & \text{otherwise} \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.244
17440	$u'' + \frac{u'}{4} + u = 2\left(\begin{cases} 1 & \frac{3}{2} \leq t < \frac{5}{2} \\ 0 & \text{otherwise} \end{cases}\right)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.250
17441	$y'' + 2y' + 2y = \delta(t - \pi)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.646
17442	$y'' + 4y = \delta(t - \pi) - \delta(t - 2\pi)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.589
17443	$y'' + 3y' + 2y = \delta(t - \pi) + \text{Heaviside}(t - 10)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.816
17444	$y'' - y = -20\delta(t - 3)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.537
17445	$y'' + 2y' + 3y = \sin(t) + \delta(t - 3\pi)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.690
17446	$y'' + 4y = \delta(t - 4\pi)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.487
17447	$y'' + y = \delta(t - 2\pi) \cos(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.551
17448	$y'' + 4y = 2\delta\left(t - \frac{\pi}{4}\right)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.480

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
17449	$y'' + y = \text{Heaviside}\left(t - \frac{\pi}{2}\right) + 3\delta\left(t - \frac{3\pi}{2}\right) - \text{Heaviside}(t - 2\pi)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.916
17450	$2y'' + y' + 6y = \delta\left(t - \frac{\pi}{6}\right) \sin(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.946
17451	$y'' + 2y' + 2y = \cos(t) + \delta\left(t - \frac{\pi}{2}\right)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.169
17452	$y'''' - y = \delta(t - 1)$ i.c.	[[_high_order, _linear, _nonhomogeneous]]	✓	2.098
17453	$y'' + \frac{y'}{2} + y = \delta(t - 1)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.856
17454	$y'' + \frac{y'}{4} + y = \delta(t - 1)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.852
17455	$y'' + y = \delta(t - 1)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.350
17456	$y'' + \frac{y'}{5} + y = k\delta(t - 1)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.691
17457	$y'' + \frac{y'}{10} + y = k\delta(t - 1)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.691
17458	$y'' + w^2y = g(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.758
17459	$y'' + 6y' + 25y = \sin(\alpha t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.457
17460	$4y'' + 4y' + 17y = g(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.554
17461	$y'' + y' + \frac{5y}{4} = 1 - \text{Heaviside}(t - \pi)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.435
17462	$y'' + 4y' + 4y = g(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.693

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
17463	$y'' + 3y' + 2y = \cos(\alpha t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.345
17464	$y'''' - 16y = g(t)$ i.c.	[[_high_order, _linear, _nonhomogeneous]]	✓	1.048
17465	$y'''' + y'' + 16y = g(t)$ i.c.	[[_high_order, _linear, _nonhomogeneous]]	✗	3.650
17466	$\frac{7y''}{5} + y = \text{Heaviside}(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.350
17467	$\frac{8y''}{5} + y = \text{Heaviside}(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.355
17468	$\begin{bmatrix} x_1' = x_1 + x_2 + x_3 \\ x_2' = 2x_1 + x_2 - x_3 \\ x_3' = -x_2 + x_3 \end{bmatrix}$	system_of_ODEs	✓	0.489
17469	$\begin{bmatrix} x_1' = x_1 - x_2 + 4x_3 \\ x_2' = 3x_1 + 2x_2 - x_3 \\ x_3' = 2x_1 + x_2 - x_3 \end{bmatrix}$	system_of_ODEs	✓	0.543
17470	$y'''' + 6y''' + 3y = t$	[[_high_order, _with_linear_symmetries]]	✓	0.143
17471	$ty''' + \sin(t)y'' + 8y = \cos(t)$	[[_3rd_order, _linear, _nonhomogeneous]]	✗	0.056
17472	$t(t-1)y'''' + e^t y'' + 4t^2 y = 0$	[[_high_order, _with_linear_symmetries]]	✗	0.053
17473	$y''' + ty'' + t^2 y' + t^2 y = \ln(t)$	[[_3rd_order, _linear, _nonhomogeneous]]	✗	0.049
17474	$(x-4)y'''' + (x+1)y'' + \tan(x)y = 0$	[[_high_order, _with_linear_symmetries]]	✗	0.048
17475	$(x^2 - 2)y^{(6)} + x^2 y'' + 3y = 0$	[[_high_order, _with_linear_symmetries]]	✗	0.052
17476	$y'''' + 5y''' + 4y = 0$	[[_high_order, _missing_x]]	✓	0.128

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
17477	$ty''' + \sin(t)y'' + 4y = \cos(t)$	[[_3rd_order, _linear, _nonhomogeneous]]	✗	0.057
17478	$t(t-1)y'''' + e^t y'' + 7t^2 y = 0$	[[_high_order, _with_linear_symmetries]]	✗	0.053
17479	$y''' + ty'' + 5t^2 y' + 2t^3 y = \ln(t)$	[[_3rd_order, _linear, _nonhomogeneous]]	✗	0.051
17480	$(x-1)y'''' + (x+5)y'' + \tan(x)y = 0$	[[_high_order, _with_linear_symmetries]]	✗	0.048
17481	$(x^2 - 25)y^{(6)} + x^2 y'' + 5y = 0$	[[_high_order, _with_linear_symmetries]]	✗	0.051
17482	$\begin{bmatrix} x'_1 = x_2 + x_3 \\ x'_2 = x_1 + x_3 \\ x'_3 = x_1 + x_2 \end{bmatrix}$	system_of_ODEs	✓	0.358
17483	$\begin{bmatrix} x'_1 = 3x_1 + 2x_2 + 4x_3 \\ x'_2 = 2x_1 + 2x_3 \\ x'_3 = 4x_1 + 2x_2 + 3x_3 \end{bmatrix}$	system_of_ODEs	✓	0.451
17484	$y''' + y' = 0$	[[_3rd_order, _missing_x]]	✓	0.065
17485	$y'''' + y'' = 0$	[[_high_order, _missing_x]]	✓	0.069
17486	$y''' + 4y'' - 4y' - 16y = 0$	[[_3rd_order, _missing_x]]	✓	0.072
17487	$y'''' + 6y''' + 9y'' = 0$	[[_high_order, _missing_x]]	✓	0.072
17488	$xy''' - y'' = 0$	[[_3rd_order, _missing_y]]	✓	0.179
17489	$x^3 y''' + x^2 y'' - 2xy' + 2y = 0$	[[_3rd_order, _exact, _linear, _homogeneous]]	✓	0.132
17490	$\begin{bmatrix} x'_1 = -4x_1 + x_2 \\ x'_2 = x_1 - 5x_2 + x_3 \\ x'_3 = x_2 - 4x_3 \end{bmatrix}$	system_of_ODEs	✓	0.464

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
17491	$\begin{bmatrix} x'_1 = x_1 + 4x_2 + 4x_3 \\ x'_2 = 3x_2 + 2x_3 \\ x'_3 = 2x_2 + 3x_3 \end{bmatrix}$	system_of_ODEs	✓	0.347
17492	$\begin{bmatrix} x'_1 = 2x_1 - 4x_2 + 2x_3 \\ x'_2 = -4x_1 + 2x_2 - 2x_3 \\ x'_3 = 2x_1 - 2x_2 - x_3 \end{bmatrix}$	system_of_ODEs	✓	0.478
17493	$\begin{bmatrix} x'_1 = -2x_1 + 2x_2 - x_3 \\ x'_2 = -2x_1 + 3x_2 - 2x_3 \\ x'_3 = -2x_1 + 4x_2 - 3x_3 \end{bmatrix}$	system_of_ODEs	✓	0.372
17494	$\begin{bmatrix} x'_1 = x_1 + x_2 + 6x_3 \\ x'_2 = x_1 + 6x_2 + x_3 \\ x'_3 = 6x_1 + x_2 + x_3 \end{bmatrix}$	system_of_ODEs	✓	0.517
17495	$\begin{bmatrix} x'_1 = 3x_1 + 2x_2 + 4x_3 \\ x'_2 = 2x_1 + 2x_3 \\ x'_3 = 4x_1 + 2x_2 + 3x_3 \end{bmatrix}$	system_of_ODEs	✓	0.462
17496	$\begin{bmatrix} x'_1 = x_1 + x_2 + x_3 \\ x'_2 = 2x_1 + x_2 - x_3 \\ x'_3 = -8x_1 - 5x_2 - 3x_3 \end{bmatrix}$	system_of_ODEs	✓	0.568
17497	$\begin{bmatrix} x'_1 = x_1 - x_2 + 4x_3 \\ x'_2 = 3x_1 + 2x_2 - x_3 \\ x'_3 = 2x_1 + x_2 - x_3 \end{bmatrix}$	system_of_ODEs	✓	0.549
17498	$\begin{bmatrix} x'_1 = x_1 + x_2 + 2x_3 \\ x'_2 = 2x_2 + 2x_3 \\ x'_3 = -x_1 + x_2 + 3x_3 \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.484
17499	$\begin{bmatrix} x'_1 = -x_3 \\ x'_2 = 2x_1 \\ x'_3 = -x_1 + 2x_2 + 4x_3 \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.528
17500	$\begin{bmatrix} x'_1 = x_1 + 3x_3 \\ x'_2 = -2x_2 \\ x'_3 = 3x_1 - x_3 \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.628

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
17501	$\begin{bmatrix} x'_1 = \frac{x_1}{2} - x_2 - \frac{3x_3}{2} \\ x'_2 = \frac{3x_1}{2} - 2x_2 - \frac{3x_3}{2} \\ x'_3 = -2x_1 + 2x_2 + x_3 \end{bmatrix}$ <p>i.c.</p>	system_of_ODEs	✓	0.527
17502	$\begin{bmatrix} x'_1 = x_1 + 5x_2 + 3x_3 - 5x_4 \\ x'_2 = 2x_1 + 3x_2 + 2x_3 - 4x_4 \\ x'_3 = -x_2 - 2x_3 + x_4 \\ x'_4 = 2x_1 + 4x_2 + 2x_3 - 5x_4 \end{bmatrix}$	system_of_ODEs	✓	0.706
17503	$\begin{bmatrix} x'_1 = -5x_1 + x_2 - 4x_3 - x_4 \\ x'_2 = -3x_2 \\ x'_3 = x_1 - x_2 + x_4 \\ x'_4 = 2x_1 - x_2 + 2x_3 - 2x_4 \end{bmatrix}$	system_of_ODEs	✓	0.724
17504	$\begin{bmatrix} x'_1 = 2x_1 + 2x_2 - x_4 \\ x'_2 = 2x_1 - x_2 + 2x_4 \\ x'_3 = 3x_3 \\ x'_4 = -x_1 + 2x_2 + 2x_4 \end{bmatrix}$	system_of_ODEs	✓	0.513
17505	$\begin{bmatrix} x'_1 = x_1 + 8x_2 + 5x_3 + 3x_4 \\ x'_2 = 2x_1 + 16x_2 + 10x_3 + 6x_4 \\ x'_3 = 5x_1 - 14x_2 - 11x_3 - 3x_4 \\ x'_4 = -x_1 - 8x_2 - 5x_3 - 3x_4 \end{bmatrix}$	system_of_ODEs	✓	0.865
17506	$\begin{bmatrix} x'_1 = -2x_1 + 2x_2 - 2x_4 \\ x'_2 = -x_1 + 3x_2 - x_3 + x_4 \\ x'_3 = -2x_1 - 2x_2 - 4x_3 + 2x_4 \\ x'_4 = -7x_1 + x_2 - 7x_3 + 3x_4 \end{bmatrix}$	system_of_ODEs	✓	0.852
17507	$\begin{bmatrix} x'_1 = -5x_1 - 2x_2 - x_3 + 2x_4 + 3x_5 \\ x'_2 = -3x_2 \\ x'_3 = x_1 - x_3 - x_5 \\ x'_4 = 2x_1 + x_2 - 4x_4 - 2x_5 \\ x'_5 = -3x_1 - 2x_2 - x_3 + 2x_4 + x_5 \end{bmatrix}$	system_of_ODEs	✓	1.079
17508	$\begin{bmatrix} x'_1 = -3x_2 - 2x_3 + 3x_4 + 2x_5 \\ x'_2 = 8x_1 + 6x_2 + 4x_3 - 8x_4 - 16x_5 \\ x'_3 = -8x_1 - 8x_2 - 6x_3 + 8x_4 - 16x_5 \\ x'_4 = 8x_1 + 7x_2 + 4x_3 - 9x_4 - 16x_5 \\ x'_5 = -3x_1 - 5x_2 - 3x_3 + 5x_4 + 7x_5 \end{bmatrix}$	system_of_ODEs	✓	3.681

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
17509	$\begin{bmatrix} x'_1 = -2x_1 + 2x_2 + x_3 \\ x'_2 = -2x_1 + 2x_2 + 2x_3 \\ x'_3 = 2x_1 - 3x_2 - 3x_3 \end{bmatrix}$	system_of_ODEs	✓	0.632
17510	$\begin{bmatrix} x'_1 = 2x_1 - 4x_2 - x_3 \\ x'_2 = x_1 + x_2 + 3x_3 \\ x'_3 = 3x_1 - 4x_2 - 2x_3 \end{bmatrix}$	system_of_ODEs	✓	0.666
17511	$\begin{bmatrix} x'_1 = -2x_2 - x_3 \\ x'_2 = x_1 - x_2 + x_3 \\ x'_3 = x_1 - 2x_2 - 2x_3 \end{bmatrix}$	system_of_ODEs	✓	0.628
17512	$\begin{bmatrix} x'_1 = -4x_1 + 2x_2 - x_3 \\ x'_2 = -6x_1 - 3x_3 \\ x'_3 = \frac{8x_2}{3} - 2x_3 \end{bmatrix}$	system_of_ODEs	✓	0.684
17513	$\begin{bmatrix} x'_1 = -7x_1 + 6x_2 - 6x_3 \\ x'_2 = -9x_1 + 5x_2 - 9x_3 \\ x'_3 = -x_2 - x_3 \end{bmatrix}$	system_of_ODEs	✓	0.646
17514	$\begin{bmatrix} x'_1 = \frac{4x_1}{3} + \frac{4x_2}{3} - \frac{11x_3}{3} \\ x'_2 = -\frac{16x_1}{3} - \frac{x_2}{3} + \frac{14x_3}{3} \\ x'_3 = 3x_1 - 2x_2 - 2x_3 \end{bmatrix}$	system_of_ODEs	✓	0.682
17515	$\begin{bmatrix} x'_1 = x_1 + x_2 + x_3 \\ x'_2 = 2x_1 + x_2 - x_3 \\ x'_3 = -8x_1 - 5x_2 - 3x_3 \end{bmatrix}$	system_of_ODEs	✓	0.554
17516	$\begin{bmatrix} x'_1 = x_1 - x_2 + 4x_3 \\ x'_2 = 3x_1 + 2x_2 - x_3 \\ x'_3 = 2x_1 + x_2 - x_3 \end{bmatrix}$	system_of_ODEs	✓	0.533
17517	$\begin{bmatrix} x'_1 = \frac{3x_1}{4} + \frac{29x_2}{4} - \frac{11x_3}{2} \\ x'_2 = -\frac{3x_1}{4} + \frac{3x_2}{4} - \frac{5x_3}{2} \\ x'_3 = \frac{5x_1}{4} + \frac{11x_2}{4} - \frac{5x_3}{2} \end{bmatrix}$	system_of_ODEs	✓	0.674
17518	$\begin{bmatrix} x'_1 = -2x_1 - x_2 + 4x_3 + 2x_4 \\ x'_2 = -19x_1 - 6x_2 + 6x_3 + 16x_4 \\ x'_3 = -9x_1 - x_2 + x_3 + 6x_4 \\ x'_4 = -5x_1 - 3x_2 + 6x_3 + 5x_4 \end{bmatrix}$	system_of_ODEs	✓	4.119

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
17519	$\begin{bmatrix} x'_1 = -3x_1 + 6x_2 + 2x_3 - 2x_4 \\ x'_2 = 2x_1 - 3x_2 - 6x_3 + 2x_4 \\ x'_3 = -4x_1 + 8x_2 + 3x_3 - 4x_4 \\ x'_4 = 2x_1 - 2x_2 - 6x_3 + x_4 \end{bmatrix}$	system_of_ODEs	✓	1.123
17520	$\begin{bmatrix} x'_1 = -3x_1 - 4x_2 + 5x_3 + 9x_4 \\ x'_2 = -2x_1 - 5x_2 + 4x_3 + 12x_4 \\ x'_3 = -2x_1 - x_3 + 2x_4 \\ x'_4 = -2x_2 + 2x_3 + 3x_4 \end{bmatrix}$	system_of_ODEs	✓	1.499
17521	$\begin{bmatrix} x'_1 = -3x_1 - 5x_2 + 8x_3 + 14x_4 \\ x'_2 = -6x_1 - 8x_2 + 11x_3 + 27x_4 \\ x'_3 = -6x_1 - 4x_2 + 7x_3 + 17x_4 \\ x'_4 = -2x_2 + 2x_3 + 4x_4 \end{bmatrix}$	system_of_ODEs	✓	2.528
17522	$\begin{bmatrix} x'_1 = 3x_2 - 2x_4 \\ x'_2 = -\frac{x_1}{2} + x_2 - 3x_3 - \frac{5x_4}{2} \\ x'_3 = 3x_2 - 5x_3 - 3x_4 \\ x'_4 = x_1 + 3x_2 - 3x_4 \end{bmatrix}$	system_of_ODEs	✓	1.132
17523	$\begin{bmatrix} x'_1 = 3x_1 - 2x_2 \\ x'_2 = 2x_1 - 2x_2 \end{bmatrix}$	system_of_ODEs	✓	0.338
17524	$\begin{bmatrix} x'_1 = -3x_1 + 2x_2 \\ x'_2 = \frac{x_1}{2} - 3x_2 \end{bmatrix}$	system_of_ODEs	✓	0.330
17525	$\begin{bmatrix} x'_1 = 3x_1 - 4x_2 \\ x'_2 = x_1 - x_2 \end{bmatrix}$	system_of_ODEs	✓	0.312
17526	$\begin{bmatrix} x'_1 = \frac{x_1}{2} - \frac{x_2}{4} \\ x'_2 = x_1 - \frac{x_2}{2} \end{bmatrix}$	system_of_ODEs	✓	0.269
17527	$\begin{bmatrix} x'_1 = x_1 - \frac{5x_2}{2} \\ x'_2 = \frac{x_1}{2} - x_2 \end{bmatrix}$	system_of_ODEs	✓	0.399
17528	$\begin{bmatrix} x'_1 = -x_1 - 4x_2 \\ x'_2 = x_1 - x_2 \end{bmatrix}$	system_of_ODEs	✓	0.392
17529	$\begin{bmatrix} x'_1 = 5x_1 - x_2 \\ x'_2 = 3x_1 + x_2 \end{bmatrix}$	system_of_ODEs	✓	0.339

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
17530	$\begin{bmatrix} x'_1 = x_1 - x_2 \\ x'_2 = 5x_1 - 3x_2 \end{bmatrix}$	system_of_ODEs	✓	0.428
17531	$\begin{bmatrix} x'_1 = 2x_1 - x_2 \\ x'_2 = 3x_1 - 2x_2 \end{bmatrix}$	system_of_ODEs	✓	0.327
17532	$\begin{bmatrix} x'_1 = \frac{x_1}{2} + \frac{x_2}{2} \\ x'_2 = 2x_1 - x_2 \end{bmatrix}$	system_of_ODEs	✓	0.355
17533	$\begin{bmatrix} x'_1 = -3x_1 + 4x_2 \\ x'_2 = -x_1 - 2x_2 \end{bmatrix}$	system_of_ODEs	✓	0.626
17534	$\begin{bmatrix} x'_1 = -3x_1 + \frac{5x_2}{2} \\ x'_2 = -\frac{5x_1}{2} + 2x_2 \end{bmatrix}$	system_of_ODEs	✓	0.313
17535	$\begin{bmatrix} x'_1 = x_1 + x_2 + x_3 \\ x'_2 = 2x_1 + x_2 - x_3 \\ x'_3 = -8x_1 - 5x_2 - 3x_3 \end{bmatrix}$	system_of_ODEs	✓	0.569
17536	$\begin{bmatrix} x'_1 = x_1 - x_2 + 4x_3 \\ x'_2 = 3x_1 + 2x_2 - x_3 \\ x'_3 = 2x_1 + x_2 - x_3 \end{bmatrix}$	system_of_ODEs	✓	0.543
17537	$\begin{bmatrix} x'_1 = -3x_1 - 9x_2 \\ x'_2 = x_1 - 3x_2 \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.520
17538	$\begin{bmatrix} x'_1 = 2x_1 - x_2 \\ x'_2 = 3x_1 - 2x_2 \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.442
17539	$\begin{bmatrix} x'_1 = -4x_1 - x_2 \\ x'_2 = x_1 - 2x_2 \end{bmatrix}$	system_of_ODEs	✓	0.223
17540	$\begin{bmatrix} x'_1 = 5x_1 - x_2 \\ x'_2 = x_1 + 3x_2 \end{bmatrix}$	system_of_ODEs	✓	0.217
17541	$\begin{bmatrix} x'_1 = -x_1 - 5x_2 \\ x'_2 = x_1 + 3x_2 \end{bmatrix}$	system_of_ODEs	✓	0.236

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
17542	$\begin{bmatrix} x'_1 = x_2 - x_3 \\ x'_2 = x_1 + x_3 \\ x'_3 = x_1 + x_2 \end{bmatrix}$	system_of_ODEs	✓	0.218
17543	$\begin{bmatrix} x'_1 = -k_1 x_1 \\ x'_2 = k_1 x_1 - k_2 x_2 \\ x'_3 = k_2 x_2 \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.568
17544	$\begin{bmatrix} x'_1 = 2x_1 - x_2 + e^t \\ x'_2 = 3x_1 - 2x_2 + t \end{bmatrix}$	system_of_ODEs	✓	0.505
17545	$\begin{bmatrix} x'_1 = x_1 + \sqrt{3}x_2 + e^t \\ x'_2 = \sqrt{3}x_1 - x_2 + \sqrt{3}e^{-t} \end{bmatrix}$	system_of_ODEs	✓	0.633
17546	$\begin{bmatrix} x'_1 = 2x_1 - 5x_2 - \cos(t) \\ x'_2 = x_1 - 2x_2 + \sin(t) \end{bmatrix}$	system_of_ODEs	✓	0.843
17547	$\begin{bmatrix} x'_1 = x_1 + x_2 + e^{-2t} \\ x'_2 = 4x_1 - 2x_2 - 2e^t \end{bmatrix}$	system_of_ODEs	✓	0.555
17548	$\begin{bmatrix} x'_1 = 1 - x_2 + x_3 \\ x'_2 = 2x_2 + t \\ x'_3 = -2x_1 - x_2 + 3x_3 + e^{-t} \end{bmatrix}$	system_of_ODEs	✓	0.625
17549	$\begin{bmatrix} x'_1 = -\frac{x_1}{2} + \frac{x_2}{2} - \frac{x_3}{2} + 1 \\ x'_2 = -x_1 - 2x_2 + x_3 + t \\ x'_3 = \frac{x_1}{2} + \frac{x_2}{2} - \frac{3x_3}{2} + 11e^{-3t} \end{bmatrix}$	system_of_ODEs	✓	0.703
17550	$\begin{bmatrix} x'_1 = -4x_1 + x_2 + 3x_3 + 3t \\ x'_2 = -2x_2 \\ x'_3 = -2x_1 + x_2 + x_3 + 3\cos(t) \end{bmatrix}$	system_of_ODEs	✓	0.799
17551	$\begin{bmatrix} x'_1 = -\frac{x_1}{2} + x_2 + \frac{x_3}{2} \\ x'_2 = x_1 - x_2 + x_3 - \sin(t) \\ x'_3 = \frac{x_1}{2} + x_2 - \frac{x_3}{2} \end{bmatrix}$	system_of_ODEs	✓	0.918
17552	$\begin{bmatrix} x'_1 = 2x_1 + x_2 + 1 \\ x'_2 = x_1 - 2x_2 + x_3 \\ x'_3 = x_2 - x_3 \end{bmatrix}$ i.c.	system_of_ODEs	✓	230.934

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
17553	$\begin{bmatrix} x'_1 = 4x_1 - 9x_2 \\ x'_2 = x_1 - 2x_2 \end{bmatrix}$	system_of_ODEs	✓	0.325
17554	$\begin{bmatrix} x'_1 = 3x_1 - 9x_2 \\ x'_2 = x_1 - 3x_2 \end{bmatrix}$	system_of_ODEs	✓	0.271
17555	$\begin{bmatrix} x'_1 = x_1 + x_2 + x_3 \\ x'_2 = 2x_1 + x_2 - x_3 \\ x'_3 = -3x_1 + 2x_2 + 4x_3 \end{bmatrix}$	system_of_ODEs	✓	0.388
17556	$\begin{bmatrix} x'_1 = 5x_1 - 3x_2 - 2x_3 \\ x'_2 = 8x_1 - 5x_2 - 4x_3 \\ x'_3 = -4x_1 + 3x_2 + 3x_3 \end{bmatrix}$	system_of_ODEs	✓	0.477
17557	$\begin{bmatrix} x'_1 = -7x_1 + 9x_2 - 6x_3 \\ x'_2 = -8x_1 + 11x_2 - 7x_3 \\ x'_3 = -2x_1 + 3x_2 - x_3 \end{bmatrix}$	system_of_ODEs	✓	0.518
17558	$\begin{bmatrix} x'_1 = 5x_1 + 6x_2 + 2x_3 \\ x'_2 = -2x_1 - 2x_2 - x_3 \\ x'_3 = -2x_1 - 3x_2 \end{bmatrix}$	system_of_ODEs	✓	0.459
17559	$\begin{bmatrix} x'_1 = -8x_1 - 16x_2 - 16x_3 - 17x_4 \\ x'_2 = -2x_1 - 10x_2 - 8x_3 - 7x_4 \\ x'_3 = -2x_1 - 2x_3 - 3x_4 \\ x'_4 = 6x_1 + 14x_2 + 14x_3 + 14x_4 \end{bmatrix}$	system_of_ODEs	✓	1.307
17560	$\begin{bmatrix} x'_1 = x_1 - x_2 - 2x_3 + 3x_4 \\ x'_2 = 2x_1 - \frac{3x_2}{2} - x_3 + \frac{7x_4}{2} \\ x'_3 = -x_1 + \frac{x_2}{2} - \frac{3x_4}{2} \\ x'_4 = -2x_1 + \frac{3x_2}{2} + 3x_3 - \frac{7x_4}{2} \end{bmatrix}$	system_of_ODEs	✓	0.595
17561	$\begin{bmatrix} x'_1 = x_1 - 4x_2 \\ x'_2 = 4x_1 - 7x_2 \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.449
17562	$\begin{bmatrix} x'_1 = 3x_1 - 4x_2 \\ x'_2 = x_1 - x_2 \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.447

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
17563	$\begin{bmatrix} x'_1 = 4x_1 + x_2 + 3x_3 \\ x'_2 = 6x_1 + 4x_2 + 6x_3 \\ x'_3 = -5x_1 - 2x_2 - 4x_3 \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.495
17564	$\begin{bmatrix} x'_1 = x_1 + x_2 \\ x'_2 = -14x_1 - 5x_2 + x_3 \\ x'_3 = 15x_1 + 5x_2 - 2x_3 \end{bmatrix}$ i.c.	system_of_ODEs	✓	0.505
17565	$\begin{bmatrix} x' = -2y + xy \\ y' = x + 4xy \end{bmatrix}$	system_of_ODEs	✗	0.050
17566	$\begin{bmatrix} x' = 1 + 5y \\ y' = 1 - 6x^2 \end{bmatrix}$	system_of_ODEs	✗	0.050
17567	$y' = 2$	[_quadrature]	✓	0.484
17568	$y' = -x^3$	[_quadrature]	✓	0.263
17569	$y'' = \sin(x)$	[[_2nd_order, _quadrature]]	✓	1.503
17570	$x\sqrt{1+y^2} + y\sqrt{x^2+1}y' = 0$ i.c.	[_separable]	✓	6.337
17571	$\sec(x)^2 \tan(y) + \sec(y)^2 \tan(x)y' = 0$	[_separable]	✓	36.711
17572	$\sqrt{-x^2+1}y' + \sqrt{1-y^2} = 0$	[_separable]	✓	16.800
17573	$y' = \frac{2xy}{y^2+x^2}$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	4.802
17574	$y' = \frac{y(1+\ln(y)-\ln(x))}{x}$	[[_homogeneous, 'class A'], _dAlembert]	✓	4.046
17575	$y^2 + x^2y' = xy y'$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓	37.229
17576	$(x+y)y' = y-x$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓	2.702

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
17577	$x - y \cos\left(\frac{y}{x}\right) + x \cos\left(\frac{y}{x}\right) y' = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓	4.631
17578	$3y - 7x + 7 = (3x - 7y - 3) y'$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	3.537
17579	$(x + 2y + 1) y' = 2x + 4y + 3$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	1.457
17580	$y' = \frac{2(y+2)^2}{(y-1+x)^2}$	[[_homogeneous, 'class C'], _rational]	✓	1.773
17581	$(x+y)^2 y' = a^2$	[[_homogeneous, 'class C'], _dAlembert]	✓	4.456
17582	$xy' - 4y = x^2 \sqrt{y}$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓	3.473
17583	$\cos(x) y' = y \sin(x) + \cos(x)^2$	[_linear]	✓	2.212
17584	$y' = 2xy - x^3 + x$	[_linear]	✓	1.391
17585	$y' + \frac{xy}{x^2+1} = \frac{1}{x(x^2+1)}$	[_linear]	✓	1.146
17586	$(x - 2xy - y^2) y' + y^2 = 0$	[_rational, [_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓	1.801
17587	$xy' + y = xy^2 \ln(x)$	[_Bernoulli]	✓	2.087
17588	$y' - \frac{xy}{2x^2-2} - \frac{x}{2y} = 0$	[_rational, _Bernoulli]	✓	1.681
17589	$y'(x^2y^3 + xy) = 1$	[[_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓	1.473
17590	$x - y^2 + 2xyy' = 0$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓	1.606
17591	$y' = \frac{y^2}{3} + \frac{2}{3x^2}$	[[_homogeneous, 'class G'], _rational, [_Riccati, _special]]	✓	1.670

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
17592	$y' + y^2 + \frac{y}{x} - \frac{4}{x^2} = 0$	[[_homogeneous, 'class G', _rational, _Riccati]	✓	1.931
17593	$xy' - 3y + y^2 = 4x^2 - 4x$	[_rational, _Riccati]	✓	1.539
17594	$y' = y^2 + \frac{1}{x^4}$	[_rational, [_Riccati, _special]]	✓	1.417
17595	$(y - x) \sqrt{x^2 + 1} y' = (1 + y^2)^{3/2}$	['y=_G(x,y)']	✓	3.704
17596	$y'(x^2 + y^2 + 3) = 2x \left( 2y - \frac{x^2}{y} \right)$	[_rational]	✗	2.862
17597	$y' = \frac{x - y^2}{2y(x + y^2)}$	[[_homogeneous, 'class G', _rational]	✓	2.629
17598	$(x(x + y) + a^2) y' = y(x + y) + b^2$	[[_1st_order, _with_linear_symmetries], _rational, [_Abel, '2nd type', 'class B']]	✓	1.500
17599	$y' = ky + f(x)$	[[_linear, 'class A']]	✓	1.224
17600	$y' = y^2 - x^2$	[_Riccati]	✓	1.002
17601	$\frac{x + yy'}{\sqrt{1 + x^2 + y^2}} + \frac{y - xy'}{y^2 + x^2} = 0$	[[_1st_order, _with_linear_symmetries], _exact]	✓	2.855
17602	$\frac{2x}{y^3} + \frac{(y^2 - 3x^2) y'}{y^4} = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]	✓	4.142
17603	$\frac{\sin\left(\frac{x}{y}\right)}{y} - \frac{y \cos\left(\frac{y}{x}\right)}{x^2} + 1 + \left( \frac{\cos\left(\frac{y}{x}\right)}{x} - \frac{x \sin\left(\frac{x}{y}\right)}{y^2} + \frac{1}{y^2} \right) y' = 0$	[_exact]	✓	37.873
17604	$\frac{1}{x} - \frac{y^2}{(x - y)^2} + \left( \frac{x^2}{(x - y)^2} - \frac{1}{y} \right) y' = 0$	[_exact, _rational]	✓	1.845
17605	$y^3 + 2(x^2 - xy^2) y' = 0$	[[_homogeneous, 'class G', _rational]	✓	1.785

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
17606	$(y^2x^2 - 1)y' + 2xy^3 = 0$	[[_homogeneous, 'class G'], _rational]	✓	2.394
17607	$axy' + by + x^m y^n (\alpha xy' + \beta y) = 0$	[[_homogeneous, 'class G'], _rational]	✓	2.349
17608	$2xy^2 - y + (y^2 + x + y)y' = 0$	[_rational]	✓	1.392
17609	$y' = 2xy - x^3 + x$	[_linear]	✓	1.375
17610	$xy' + y - xy^2 \ln(x) = 0$	[_Bernoulli]	✓	2.120
17611	$2x^3 + 3x^2y + y^2 - y^3 + (2y^3 + 3xy^2 + x^2 - x^3)y' = 0$	[_rational]	✗	2.673
17612	$y'^2y + y'(x - y) - x = 0$	[_quadrature]	✓	3.211
17613	$x^2y'^2 - 2xyy' + y^2 = x^4 + y^2x^2$	[_rational, [_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]]]	✓	9.345
17614	$y'^3 - (y^2 + xy + x^2)y'^2 + (x^3y + y^2x^2 + xy^3)y' - x^3y^3 = 0$	[_quadrature]	✓	2.133
17615	$xy'^2 + 2xy' - y = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	1.174
17616	$xy'^3 = 1 + y'$	[_quadrature]	✓	0.514
17617	$y'^3 - x^3(1 - y') = 0$	[_quadrature]	✓	0.503
17618	$y'^3 + y^3 - 3yy' = 0$	[_quadrature]	✓	19.495
17619	$y = e^{y'}y'^2$	[_quadrature]	✓	1.638
17620	$y^2(y' - 1) = (2 - y')^2$	[_quadrature]	✓	3.259
17621	$y(1 + y'^2) = 2\alpha$	[_quadrature]	✓	0.497
17622	$y'^4 = 4y(xy' - 2y)^2$	[[_homogeneous, 'class G']]	✓	0.735
17623	$y = 2xy' + \frac{x^2}{2} + y'^2$	[[_homogeneous, 'class G']]	✓	10.149

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
17624	$y = \frac{k(x + yy')}{\sqrt{1 + y'^2}}$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	12.771
17625	$x = yy' + ay'^2$	unknown	✓	78.141
17626	$y = xy'^2 + y'^3$	unknown	✓	2.853
17627	$y = xy' + y' - y'^2$	[[_1st_order, _with_linear_symmetries], _Clairaut]	✓	0.382
17628	$y = 2xy' + y^2y'^3$	[[_1st_order, _with_linear_symmetries]]	✓	106.559
17629	$y'^2(x^2 - 1) - 2xyy' + y^2 - 1 = 0$	[[_1st_order, _with_linear_symmetries], _rational, _Clairaut]	✓	0.583
17630	$y'^2 + 2xy' + 2y = 0$	[[_1st_order, _with_linear_symmetries], _dAlembert]	✓	0.464
17631	$y' = \sqrt{y - x}$	[[_homogeneous, 'class C'], _dAlembert]	✓	2.040
17632	$y' = \sqrt{y - x} + 1$	[[_homogeneous, 'class C'], _dAlembert]	✓	1.274
17633	$y' = \sqrt{y}$	[_quadrature]	✓	1.314
17634	$y' = y \ln(y)$	[_quadrature]	✓	2.397
17635	$y' = y \ln(y)^2$	[_quadrature]	✓	7.073
17636	$y' = -x + \sqrt{x^2 + 2y}$	[[_1st_order, _with_linear_symmetries], _Clairaut]	✓	2.060
17637	$y' = -x - \sqrt{x^2 + 2y}$	[[_1st_order, _with_linear_symmetries], _Clairaut]	✓	2.019
17638	$xy'^2 - 2yy' + 4x = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	1.596
17639	$xy'^2 + 2xy' - y = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	1.319

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
17640	$y^2(y' - 1) = (2 - y')^2$	[_quadrature]	✓	3.365
17641	$y'^4 = 4y(xy' - 2y)^2$	[[_homogeneous, 'class G']]	✓	0.747
17642	$x^2y'^2 - 2xyy' + 2xy = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	1.685
17643	$y = y'^2 - xy' + \frac{x^3}{2}$	['y=_G(x,y)']	✓	4.791
17644	$y = 2xy' + \frac{x^2}{2} + y'^2$	[[_homogeneous, 'class G']]	✓	10.826
17645	$y'^2 - yy' + e^x = 0$	[[_1st_order, _with_linear_symmetries]]	✓	3.563
17646	$y'''^2 + x^2 = 1$	[[_3rd_order, _quadrature]]	✓	0.713
17647	$y'' = \frac{1}{\sqrt{y}}$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓	0.611
17648	$a^3y'''y'' = \sqrt{1 + c^2y''^2}$	[[_3rd_order, _missing_x], [_3rd_order, _missing_y], [_3rd_order, _with_linear_symmetries], [_3rd_order, _reducible, _mu_y2]]	✓	19.360
17649	$y''' = \sqrt{1 + y''^2}$	[[_3rd_order, _missing_x], [_3rd_order, _missing_y], [_3rd_order, _with_linear_symmetries], [_3rd_order, _reducible, _mu_y2]]	✓	0.386
17650	$2(2a - y)y'' = 1 + y'^2$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓	1.185
17651	$y'' - xy''' + y'''^3 = 0$	[[_3rd_order, _missing_y], [_3rd_order, _with_linear_symmetries]]	✓	0.545

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
17652	$yy'' + y'^2 = y^2 \ln(y)$	[[_2nd_order, _missing_x]]	✓	1.695
17653	$yy'' - y'^2 = 0$	[[_2nd_order, _missing_x], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓	0.250
17654	$xyy'' + xy'^2 - yy' = 0$	[[_2nd_order, _exact, _nonlinear], _Liouville, [_2nd_order, _with_linear_symmetries], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓	0.800
17655	$nx^3y'' = (y - xy')^2$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _reducible, _mu_xy]]	✗	0.168
17656	$y^2(x^2y'' - xy' + y) = x^3$	[[_2nd_order, _with_linear_symmetries]]	✗	0.159
17657	$x^2y^2y'' - 3xy^2y' + 4y^3 + x^6 = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.152
17658	$y'y'' - x^2yy' - xy^2 = 0$	[[_2nd_order, _exact, _nonlinear], [_2nd_order, _with_linear_symmetries], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_y_y1], [_2nd_order, _reducible, _mu_poly_yn]]	✗	3.167
17659	$x(x^2y' + 2xy)y'' + 4xy'^2 + 8xyy' + 4y^2 - 1 = 0$	[NONE]	✗	0.146
17660	$x(xy + 1)y'' + x^2y'^2 + (4xy + 2)y' + y^2 + 1 = 0$	[[_2nd_order, _exact, _nonlinear], [_2nd_order, _reducible, _mu_xy]]	✓	0.836

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
17661	$yy'' - y'^2 - y^4 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓	0.814
17662	$a^2y'' = 2x\sqrt{1 + y'^2}$	[[_2nd_order, _missing_y], [_2nd_order, _reducible, _mu_y_y1]]	✓	1.154
17663	$x^2yy'' + x^2y'^2 - 5xyy' = 4y^2$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _reducible, _mu_xy]]	✗	0.196
17664	$y(1 - \ln(y))y'' + (1 + \ln(y))y'^2 = 0$	[[_2nd_order, _missing_x], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓	0.487
17665	$5y'''^2 - 3y''y'''' = 0$	[[_high_order, _missing_x], [_high_order, _missing_y], [_high_order, _with_linear_symmetries], [_high_order, _reducible, _mu_poly_yn]]	✓	0.676
17666	$40y'''^3 - 45y''y'''y'''' + 9y''^2y^{(5)} = 0$	[[_high_order, _missing_x], [_high_order, _missing_y], [_high_order, _with_linear_symmetries]]	✗	0.087
17667	$y''^2 + 2xy'' - y' = 0$	[[_2nd_order, _missing_y]]	✓	0.656
17668	$y''^2 - 2xy'' - y' = 0$	[[_2nd_order, _missing_y]]	✓	0.937
17669	$2x^3y''' - 6x^2y'' + 12xy' - 12y = 0$	[[_3rd_order, _with_linear_symmetries]]	✓	0.127
17670	$y''' - \frac{3y''}{x} + \frac{6y'}{x^2} - \frac{6y}{x^3} = 0$	[[_3rd_order, _fully, _exact, _linear]]	✓	0.128
17671	$(-x^2 + 1)y'' - 2xy' + n(n + 1)y = 0$	[_Gegenbauer]	✗	0.943
17672	$y'' + \frac{2y'}{x} + y = 0$	[_Lienard]	✓	1.632

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
17673	$y'' \sin(x)^2 = 2y$	[[_2nd_order, _with_linear_symmetries]]	✗	0.706
17674	$x^3 y''' - 3x^2 y'' + 6xy' - 6y = 0$	[[_3rd_order, _with_linear_symmetries]]	✓	0.129
17675	$xy''' - y'' + xy' - y = 0$	[[_3rd_order, _with_linear_symmetries]]	✗	0.050
17676	$(-x^2 + 1) y''' - xy'' + y' = 0$	[[_3rd_order, _missing_y]]	✓	0.277
17677	$x^2 y'' - 2xy' + 2y = 2x^3$	[[_2nd_order, _with_linear_symmetries]]	✓	1.769
17678	$y'' + \frac{xy'}{1-x} - \frac{y}{1-x} = x - 1$	[[_2nd_order, _with_linear_symmetries]]	✓	1.850
17679	$(x^2 + 2) y''' - 2xy'' + (x^2 + 2) y' - 2xy = x^4 + 12$	[[_3rd_order, _linear, _nonhomogeneous]]	✗	0.056
17680	$y''' + y' = 0$	[[_3rd_order, _missing_x]]	✓	0.066
17681	$y'' + y = 0$	[[_2nd_order, _missing_x]]	✓	1.853
17682	$y'' + \frac{y}{x^2 \ln(x)} = e^x \left( \frac{2}{x} + \ln(x) \right)$	[[_2nd_order, _linear, _nonhomogeneous]]	✗	0.265
17683	$y'' + p_1 y' + p_2 y = 0$	[[_2nd_order, _missing_x]]	✓	1.124
17684	$(2x + 1) y'' + (4x - 2) y' - 8y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.165
17685	$y'' \sin(x)^2 + \sin(x) \cos(x) y' = y$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓	2.017
17686	$y'''' - 2y'' = 0$	[[_high_order, _missing_x]]	✓	0.070
17687	$y''' - 3y'' + 3y' - y = 0$	[[_3rd_order, _missing_x]]	✓	0.068
17688	$y'''' + 4y = 0$	[[_high_order, _missing_x]]	✓	0.081

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
17689	$y'''' - y = 0$	[[_high_order, _missing_x]]	✓	0.074
17690	$2y'' + y' - y = 0$	[[_2nd_order, _missing_x]]	✓	0.856
17691	$y'''' + 2y''' + 3y'' + 2y' + y = 0$	[[_high_order, _missing_x]]	✓	0.097
17692	$y'' - 4y' + 4y = x^2$	[[_2nd_order, _with_linear_symmetries]]	✓	1.097
17693	$y'' - 6y' + 8y = e^x + e^{2x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.172
17694	$y''' + y'' + y' + y = x e^x$	[[_3rd_order, _linear, _nonhomogeneous]]	✓	0.135
17695	$y'''' - 4y''' + 6y'' - 4y' + y = (x + 1) e^x$	[[_high_order, _linear, _nonhomogeneous]]	✓	0.156
17696	$y'' + 4y = x \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	4.852
17697	$y'' + y' + y = e^{-\frac{x}{2}} \sin\left(\frac{\sqrt{3}x}{2}\right)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	32.729
17698	$y'' - y = \frac{e^x - e^{-x}}{e^x + e^{-x}}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.742
17699	$y'' - 2y = 4x^2 e^{x^2}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.303
17700	$y'' + y = \sin(x) \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.860
17701	$y'' + 9y = \ln\left(2 \sin\left(\frac{x}{2}\right)\right)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	118.069
17702	$y'' + \frac{2y'}{x} - \frac{n(n+1)y}{x^2} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.352
17703	$x^2 y'' - 4xy' + 6y = x$	[[_2nd_order, _with_linear_symmetries]]	✓	1.643
17704	$x^2 y'' - xy' + 2y = x \ln(x)$	[[_2nd_order, _with_linear_symmetries]]	✓	11.972
17705	$x^2 y'' - 2y = x^2 + \frac{1}{x}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓	1.088

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
17706	$x^3 y''' - x^2 y'' + 2xy' - 2y = x^3 + 3x$	[[_3rd_order, _with_linear_symmetries]]	✓	0.295
17707	$(x+1)^2 y'' + (x+1)y' + y = 4 \cos(\ln(x+1))$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	5.296
17708	$y'' - \frac{y'}{x} + \left(1 - \frac{m^2}{x^2}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.068
17709	$y'' + \frac{2y'}{x} + y = 0$	[_Lienard]	✓	1.633
17710	$y'' + \frac{2py'}{x} + y = 0$	[_Lienard]	✓	1.122
17711	$xy'' - y' - x^3 y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓	1.313
17712	$y'' - 4xy' + (4x^2 - 1)y = -3e^{x^2} \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	4.036
17713	$y'' - \frac{y'}{\sqrt{x}} + \frac{y(-8 + \sqrt{x} + x)}{4x^2} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.293
17714	$\begin{cases} x' = y \\ y' = z \\ z' = x \end{cases}$	system_of_ODEs	✓	0.800
17715	$\begin{cases} y' = y + z \\ z' = y + z + x \end{cases}$	system_of_ODEs	✓	0.379
17716	$\begin{cases} y' = \frac{y^2}{z} \\ z' = \frac{y}{2} \end{cases}$	system_of_ODEs	✗	0.052
17717	$\begin{cases} y' = 1 - \frac{1}{z} \\ z' = \frac{1}{y-x} \end{cases}$	system_of_ODEs	✗	0.052
17718	$\begin{cases} y' = -z \\ z' = y \end{cases}$	system_of_ODEs	✓	0.408
17719	$y'' = x + y^2$	[NONE]	✗	0.088

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
17720	<i>i.c.</i> $y'' + 2y' + y^2 = 0$	[[_2nd_order, _missing_x], [_Emden, _modified]]	✗	0.437
17721	$\begin{bmatrix} y' = \frac{z^2}{y} \\ z' = \frac{y^2}{z} \end{bmatrix}$	system_of_ODEs	✗	0.051
17722	$\begin{bmatrix} y' = \frac{y^2}{z} \\ z' = \frac{z^2}{y} \end{bmatrix}$	system_of_ODEs	✗	0.051
17723	$\begin{bmatrix} x' = y + z - x \\ y' = x - y + z \\ z' = x + y - z \end{bmatrix}$	system_of_ODEs	✓	0.364
17724	$\begin{bmatrix} x' + x + y = t^2 \\ y' + y + z = 2t \\ z' + z = t \end{bmatrix}$	system_of_ODEs	✓	0.539
17725	$\begin{bmatrix} x' + 5x + y = 7e^t - 27 \\ -2x + y' + 3y = -3e^t + 12 \end{bmatrix}$	system_of_ODEs	✓	0.861
17726	$\begin{bmatrix} y'' + z' - 2z = e^{2x} \\ z' + 2y' - 3y = 0 \end{bmatrix}$	system_of_ODEs	✗	0.050
17727	$\begin{bmatrix} x' = y \\ y' = x + e^t + e^{-t} \end{bmatrix}$	system_of_ODEs	✓	0.502
17728	$\begin{bmatrix} y' + \frac{2z}{x^2} = 1 \\ z' + y = x \end{bmatrix}$	system_of_ODEs	✗	0.049
17729	$\begin{bmatrix} tx' - x - 3y = t \\ ty' - x + y = 0 \end{bmatrix}$	system_of_ODEs	✗	0.051
17730	$\begin{bmatrix} tx' + 6x - y - 3z = 0 \\ ty' + 23x - 6y - 9z = 0 \\ tz' + x + y - 2z = 0 \end{bmatrix}$	system_of_ODEs	✗	0.055
17731	$\begin{bmatrix} x' + 5x + y = e^t \\ y' - x + 3y = e^{2t} \end{bmatrix}$	system_of_ODEs	✓	0.512
17732	$y' = 2x$	[_quadrature]	✓	0.263

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
17733	$xy' = 2y$	[_separable]	✓	1.646
17734	$yy' = e^{2x}$	[_separable]	✓	1.398
17735	$y' = ky$	[_quadrature]	✓	0.711
17736	$y'' + 4y = 0$	[[_2nd_order, _missing_x]]	✓	2.494
17737	$y'' - 4y = 0$	[[_2nd_order, _missing_x]]	✓	2.387
17738	$xy' + y = y'\sqrt{1 - y^2x^2}$	[_rational, [_1st_order, '_with_symmetry_[F(x),G(y)]]']	✓	3.991
17739	$xy' = y + x^2 + y^2$	[[_homogeneous, 'class D'], _rational, _Riccati]	✓	1.408
17740	$y' = \frac{xy}{y^2 + x^2}$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	2.855
17741	$2xyy' = y^2 + x^2$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓	7.721
17742	$xy' + y = x^4y'^2$	[[_homogeneous, 'class G'], _rational]	✓	1.964
17743	$y' = \frac{y^2}{xy - x^2}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓	6.529
17744	$(y \cos(y) - \sin(y) + x)y' = y$	[[_1st_order, _with_linear_symmetries]]	✓	1.636
17745	$1 + y^2 + y^2y' = 0$	[_quadrature]	✓	4.045
17746	$y' = e^{3x} - x$	[_quadrature]	✓	0.313
17747	$xy' = 1$	[_quadrature]	✓	0.313
17748	$y' = xe^{x^2}$	[_quadrature]	✓	0.306
17749	$y' = \arcsin(x)$	[_quadrature]	✓	0.288
17750	$(x + 1)y' = x$	[_quadrature]	✓	0.349
17751	$(x^2 + 1)y' = x$	[_quadrature]	✓	0.356

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
17752	$(x^3 + 1) y' = x$	[_quadrature]	✓	0.493
17753	$(x^2 + 1) y' = \arctan(x)$	[_quadrature]	✓	0.405
17754	$xyy' = y - 1$	[_separable]	✓	1.381
17755	$x^5y' + y^5 = 0$	[_separable]	✓	4.968
17756	$xy' = (-2x^2 + 1) \tan(y)$	[_separable]	✓	2.017
17757	$y' = 2xy$	[_separable]	✓	1.156
17758	$y' \sin(y) = x^2$	[_separable]	✓	1.348
17759	$y' \sin(x) = 1$	[_quadrature]	✓	0.444
17760	$y' + \tan(x) y = 0$	[_separable]	✓	1.334
17761	$y' - \tan(x) y = 0$	[_separable]	✓	1.398
17762	$(x^2 + 1) y' + 1 + y^2 = 0$	[_separable]	✓	1.884
17763	$y \ln(y) - xy' = 0$	[_separable]	✓	1.705
17764	$y' = x e^x$	[_quadrature]	✓	0.545
	i.c.			
17765	$y' = 2 \sin(x) \cos(x)$	[_quadrature]	✓	0.609
	i.c.			
17766	$y' = \ln(x)$	[_quadrature]	✓	0.513
	i.c.			
17767	$(x^2 - 1) y' = 1$	[_quadrature]	✓	0.477
	i.c.			
17768	$x(x^2 - 4) y' = 1$	[_quadrature]	✓	0.652
	i.c.			
17769	$(x + 1) (x^2 + 1) y' = 2x^2 + x$	[_quadrature]	✓	1.089
	i.c.			
17770	$y' = e^{-2y+3x}$	[_separable]	✓	3.673
	i.c.			
17771	$xy' = 2x^2 + 1$	[_quadrature]	✓	0.532
	i.c.			

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
17772	$e^{-y} + (x^2 + 1)y' = 0$ i.c.	[_separable]	✓	2.265
17773	$3 \cos(3x) \cos(2y) - 2 \sin(3x) \sin(2y)y' = 0$ i.c.	[_separable]	✓	4.459
17774	$y' = e^x \cos(x)$ i.c.	[_quadrature]	✓	0.687
17775	$xyy' = (x + 1)(1 + y)$ i.c.	[_separable]	✓	1.440
17776	$y' = 2xy + 1$	[_linear]	✓	0.920
17777	$y'' - 5y' + 6y = 0$	[[_2nd_order, _missing_x]]	✓	0.408
17778	$2y''' + y'' - 5y' + 2y = 0$	[[_3rd_order, _missing_x]]	✓	0.063
17779	$v' = g - \frac{kv^2}{m}$	[_quadrature]	✓	0.836
17780	$x^2 - 2y^2 + xyy' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓	70.940
17781	$x^2y' - 3xy - 2y^2 = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓	2.400
17782	$x^2y' = 3(y^2 + x^2) \arctan\left(\frac{y}{x}\right) + xy$	[[_homogeneous, 'class A', _dAlembert]]	✓	14.593
17783	$x \sin\left(\frac{y}{x}\right)y' = y \sin\left(\frac{y}{x}\right) + x$	[[_homogeneous, 'class A', _dAlembert]]	✓	4.558
17784	$xy' = y + 2x e^{-\frac{y}{x}}$	[[_homogeneous, 'class A', _dAlembert]]	✓	26.610
17785	$x - y - (x + y)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓	3.704
17786	$xy' = 2x + 3y$	[_linear]	✓	1.951
17787	$xy' = \sqrt{y^2 + x^2}$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓	9.308

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
17788	$x^2y' = y^2 + 2xy$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓	2.178
17789	$x^3 + y^3 - xy^2y' = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓	7.734
17790	$y' = (x + y)^2$	[[_homogeneous, 'class C'], _Riccati]	✓	1.545
17791	$y' = \sin(x + 1 - y)^2$	[[_homogeneous, 'class C'], _dAlembert]	✓	8.314
17792	$y' = \frac{x + y + 4}{x - y - 6}$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	1.860
17793	$y' = \frac{x + y + 4}{x + y - 6}$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	1.297
17794	$2x - 2y + (y - 1)y' = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	1.927
17795	$y' = \frac{y - 1 + x}{x + 4y + 2}$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	10.073
17796	$2x + 3y - 1 - 4(x + 1)y' = 0$	[_linear]	✓	1.674
17797	$y' = \frac{1 - xy^2}{2x^2y}$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓	1.750
17798	$y' = \frac{2 + 3xy^2}{4x^2y}$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓	2.424
17799	$y' = \frac{y - xy^2}{x + x^2y}$	[[_homogeneous, 'class G'], _rational, [_Abel, '2nd type', 'class B']]	✓	1.639
17800	$\left(x + \frac{2}{y}\right)y' + y = 0$	[[_homogeneous, 'class G'], _exact, _rational, [_Abel, '2nd type', 'class B']]	✓	1.490

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
17801	$\sin(x) \tan(y) + 1 + \cos(x) \sec(y)^2 y' = 0$	['y=_G(x,y)']	✓	38.925
17802	$y - x^3 + (x + y^3) y' = 0$	[_exact, _rational]	✓	1.223
17803	$y + y \cos(xy) + (x + x \cos(xy)) y' = 0$	[_separable]	✓	1.688
17804	$\cos(x) \cos(y)^2 + 2 \sin(x) \sin(y) \cos(y) y' = 0$	[_separable]	✓	2.794
17805	$(\sin(x) \sin(y) - x e^y) y' = e^y + \cos(x) \cos(y)$	[_exact]	✓	32.514
17806	$-\frac{\sin\left(\frac{x}{y}\right)}{y} + \frac{x \sin\left(\frac{x}{y}\right) y'}{y^2} = 0$	[_separable]	✓	1.524
17807	$1 + y + (1 - x) y' = 0$	[_separable]	✓	1.457
17808	$2xy^3 + y \cos(x) + (3y^2x^2 + \sin(x)) y' = 0$	[_exact, [_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)']]	✓	40.713
17809	$1 = \frac{y}{1 - y^2x^2} + \frac{xy'}{1 - y^2x^2}$	[_exact, _rational, _Riccati]	✓	1.443
17810	$2xy^4 + \sin(y) + (4x^2y^3 + x \cos(y)) y' = 0$	[_exact]	✓	2.712
17811	$\frac{xy' + y}{1 - y^2x^2} + x = 0$	[_exact, _rational, _Riccati]	✓	2.770
17812	$2x(1 + \sqrt{x^2 - y}) = \sqrt{x^2 - y} y'$	[_exact, [_1st_order, '_with_symmetry_[F(x),G(y)']]	✓	4.976
17813	$x \ln(y) + xy + (y \ln(x) + xy) y' = 0$	[_separable]	✓	1.968
17814	$e^{y^2} - \csc(y) \csc(x)^2 + (2xy e^{y^2} - \csc(y) \cot(y) \cot(x)) y' = 0$	[_exact]	✓	51.435
17815	$1 + y^2 \sin(2x) - 2y \cos(x)^2 y' = 0$	[_exact, _Bernoulli]	✓	6.120
17816	$\frac{x}{(y^2 + x^2)^{3/2}} + \frac{yy'}{(y^2 + x^2)^{3/2}} = 0$	[_separable]	✓	4.555

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
17817	$3x^2(1 + \ln(y)) + \left(\frac{x^3}{y} - 2y\right) y' = 0$	[_exact, [_1st_order, ‘_with_symmetry_[F(x)*G(y),0]’]]	✓	1.644
17818	$\frac{y - xy'}{(x + y)^2} + y' = 1$	[[_1st_order, _with_linear_symmetries], _exact, _rational]	✓	2.970
17819	$\frac{4y^2 - 2x^2}{4xy^2 - x^3} + \frac{(8y^2 - x^2)y'}{4y^3 - x^2y} = 0$	[[_homogeneous, ‘class A’], _exact, _rational, _dAlembert]	✓	106.984
17820	$(3x^2 - y^2) y' - 2xy = 0$	[[_homogeneous, ‘class A’], _rational, _dAlembert]	✓	3.975
17821	$xy - 1 + (x^2 - xy) y' = 0$	[_rational, [_1st_order, ‘_with_symmetry_[F(x),G(x)]’], [_Abel, ‘2nd type’, ‘class B’]]	✓	1.160
17822	$xy' + y + 3x^3y^4y' = 0$	[[_homogeneous, ‘class G’], _rational]	✓	6.376
17823	$e^x + (e^x \cot(y) + 2y \csc(y)) y' = 0$	[[_1st_order, ‘_with_symmetry_[F(x)*G(y),0]’]]	✓	3.456
17824	$(x + 2) \sin(y) + x \cos(y) y' = 0$	[_separable]	✓	2.071
17825	$y + (x - 2x^2y^3) y' = 0$	[[_homogeneous, ‘class G’], _rational]	✓	2.792
17826	$x + 3y^2 + 2xyy' = 0$	[[_homogeneous, ‘class G’], _rational, _Bernoulli]	✓	2.041
17827	$y + (2x - ye^y) y' = 0$	[[_1st_order, ‘_with_symmetry_[F(x)*G(y),0]’]]	✓	1.204
17828	$y \ln(y) - 2xy + (x + y) y' = 0$	[‘y=_G(x,y)’]	✓	1.441
17829	$y^2 + xy + 1 + (x^2 + xy + 1) y' = 0$	[_rational, [_Abel, ‘2nd type’, ‘class B’]]	✓	1.385
17830	$x^3 + xy^3 + 3y^2y' = 0$	[_rational, _Bernoulli]	✓	1.920

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
17831	$-y + xy' = (1 + y^2)y'$	[[_1st_order, _with_linear_symmetries], _rational]	✓	1.372
17832	$y - xy' = xy^3y'$	[_separable]	✓	2.296
17833	$xy' = x^5 + x^3y^2 + y$	[[_homogeneous, 'class D'], _rational, _Riccati]	✓	3.008
17834	$(x + y)y' = y - x$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓	2.694
17835	$xy' = y + x^2 + 9y^2$	[[_homogeneous, 'class D'], _rational, _Riccati]	✓	1.309
17836	$y^2 - y + xy' = 0$	[_separable]	✓	1.855
17837	$-y + xy' = 2x^2 - 3$	[_linear]	✓	1.019
17838	$xy' + y = \sqrt{xy}y'$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	65.708
17839	$y - xy^2 + (x + y^2x^2)y' = 0$	[_rational]	✓	1.217
17840	$-y + xy' = x^2y^4(xy' + y)$	[[_homogeneous, 'class G'], _rational]	✓	3.521
17841	$xy' + y + x^2y^5y' = 0$	[[_homogeneous, 'class G'], _rational]	✓	2.095
17842	$2xy^2 - y + xy' = 0$	[[_homogeneous, 'class D'], _rational, _Bernoulli]	✓	1.697
17843	$y' + \frac{y}{x} = \sin(x)$	[_linear]	✓	1.212
17844	$y' = \frac{2y}{x} + \frac{x^3}{y} + x \tan\left(\frac{y}{x^2}\right)$	[[_homogeneous, 'class G']]	✓	5.091
17845	$xy' - 3y = x^4$	[_linear]	✓	1.307
17846	$y' + y = \frac{1}{1 + e^{2x}}$	[_linear]	✓	1.523
17847	$(x^2 + 1)y' + 2xy = \cot(x)$	[_linear]	✓	1.540
17848	$y' + y = 2xe^{-x} + x^2$	[[_linear, 'class A']]	✓	2.470

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
17849	$y' + y \cot(x) = 2x \csc(x)$	[_linear]	✓	1.560
17850	$2y - x^3 = xy'$	[_linear]	✓	1.334
17851	$y - x + xy \cot(x) + xy' = 0$	[_linear]	✓	1.607
17852	$y' - 2xy = 6x e^{x^2}$	[_linear]	✓	2.261
17853	$x \ln(x) y' + y = 3x^3$	[_linear]	✓	1.310
17854	$y - 2xy - x^2 + x^2 y' = 0$	[_linear]	✓	1.482
17855	$xy' + y = x^4 y^3$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓	2.342
17856	$xy^2 y' + y^3 = x \cos(x)$	[_Bernoulli]	✓	54.619
17857	$xy' + y = xy^2$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓	1.294
17858	$(e^y - 2xy) y' = y^2$	[_exact, [_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓	1.158
17859	$y - xy' = y' y^2 e^y$	[[_1st_order, _with_linear_symmetries]]	✓	1.183
17860	$xy' + 2 = x^3(y - 1) y'$	[[_1st_order, '_with_symmetry_[F(x)*G(y),0]'], [_Abel, '2nd type', 'class C']]	✓	2.339
17861	$xy' = 2x^2 y + y \ln(y)$	[[_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]']]	✓	1.603
17862	$y' \sin(2x) = 2y + 2 \cos(x)$	[_linear]	✓	2.860
17863	$yy'' + y'^2 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓	0.531

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
17864	$xy'' = y' + y^3$	[[_2nd_order, _missing_y], [_2nd_order, _reducible, _mu_y_y1]]	✓	0.631
17865	$y'' - ky = 0$	[[_2nd_order, _missing_x]]	✓	3.805
17866	$x^2y'' = 2xy' + y^2$	[[_2nd_order, _missing_y]]	✓	0.502
17867	$2yy'' = 1 + y^2$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓	1.434
17868	$yy'' - y'^2 = 0$	[[_2nd_order, _missing_x], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓	0.248
17869	$xy'' + y' = 4x$	[[_2nd_order, _missing_y]]	✓	0.898
17870	$(x^2 + 2y')y'' + 2xy' = 0$ i.c.		✗	0.057
17871	$yy'' = y^2y' + y'^2$ i.c.	[[_2nd_order, _missing_x], [_2nd_order, _with_potential_symmetries], [_2nd_order, _reducible, _mu_xy]]	✓	0.312
17872	$y'' = y'e^y$ i.c.	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], [_2nd_order, _reducible, _mu_xy]]	✓	2.043
17873	$y'' = 1 + y'^2$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_xy]]	✓	0.385
17874	$y'' + y'^2 = 1$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_xy]]	✓	0.261

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
17875	$yy'' = y'^2$	[[_2nd_order, _missing_x], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓	0.200
17876	$(1 - xy)y' = y^2$	[[_homogeneous, 'class G'], _rational, [_Abel, '2nd type', 'class B']]	✓	1.378
17877	$2x + 3y + 1 + (2y - 3x + 5)y' = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	1.875
17878	$xy' = \sqrt{y^2 + x^2}$		✓	8.279
17879	$y^2 = (x^3 - xy)y'$	[[_homogeneous, 'class G'], _rational, [_Abel, '2nd type', 'class B']]	✓	2.391
17880	$x^2y^3 + y = (x^3y^2 - x)y'$	[[_homogeneous, 'class G'], _rational]	✓	2.016
17881	$yy'' + y'^2 - 2yy' = 0$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓	1.010
17882	$xy' + y = y^2 + x^2y'$	[_separable]	✓	2.120
17883	$xyy' = y^2 + x^2y'$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓	37.104
17884	$(e^x - 3y^2x^2)y' + ye^x = 2xy^3$	[_exact, [_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)']]	✓	2.161
17885	$y'' + 2xy'^2 = 0$	[[_2nd_order, _missing_y], [_2nd_order, _reducible, _mu_y_y1]]	✓	0.319
17886	$y + x^2 = xy'$	[_linear]	✓	1.032
17887	$xy' + y = x^2 \cos(x)$	[_linear]	✓	1.265

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
17888	$6x + 4y + 3 + (3x + 2y + 2)y' = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	1.076
17889	$\cos(x + y) = x \sin(x + y) + x \sin(x + y)y'$	[[_1st_order, _with_linear_symmetries], _exact]	✓	3.054
17890	$x^2y'' + xy' = 1$	[[_2nd_order, _missing_y]]	✓	1.311
17891	$y^2e^{xy} + \cos(x) + (e^{xy} + xy e^{xy})y' = 0$	[_exact]	✓	37.586
17892	$y' \ln(x - y) = 1 + \ln(x - y)$	[[_homogeneous, 'class C'], _exact, _dAlembert]	✓	6.525
17893	$y' + 2xy = e^{-x^2}$	[_linear]	✓	1.503
17894	$y^2 - 3xy - 2x^2 = (x^2 - xy)y'$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓	5.986
17895	$(x^2 + 1)y' + 2xy = 4x^3$	[_linear]	✓	1.386
17896	$e^x \sin(y) + e^x \cos(y)y' = y \sin(xy) + x \sin(xy)y'$	[_exact]	✓	40.673
17897	$(x^2 + 1)y'' + xy' = 0$	[[_2nd_order, _missing_y]]	✓	1.215
17898	$(xe^y + y - x^2)y'' = 2xy - e^y - x$	[NONE]	✗	0.247
17899	$(x + 1)e^x = (xe^x - ye^y)y'$	['y=_G(x,y)']	✓	1.870
17900	$x^2y^4 + x^6 - x^3y^3y' = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓	5.648
17901	$y' = 1 + 3 \tan(x)y$	[_linear]	✓	1.434
17902	$y' = 1 + \frac{y}{x} - \frac{y^2}{x^2}$	[[_homogeneous, 'class A'], _rational, _Riccati]	✓	2.424
17903	$y' = \frac{2xy e^{\frac{x^2}{y^2}}}{y^2 + y^2 e^{\frac{x^2}{y^2}} + 2x^2 e^{\frac{x^2}{y^2}}}$	[[_homogeneous, 'class A'], _dAlembert]	✓	1077.313
17904	$y' = \frac{x + 2y + 2}{y - 2x}$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	3.192

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
17905	$3x^2 \ln(y) + \frac{x^3 y'}{y} = 0$	[_separable]	✓	2.257
17906	$\frac{3y^2}{x^2 + 3x} + \left(2y \ln\left(\frac{5x}{x+3}\right) + 3 \sin(y)\right) y' = 0$	[_exact, [_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓	37.415
17907	$\frac{y-x}{(x+y)^3} - \frac{2xy'}{(x+y)^3} = 0$	[_linear]	✓	6.303
17908	$xy^2 + y + xy' = 0$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓	1.083
17909	$x^2 y'' = y'(3x - 2y')$	[[_2nd_order, _missing_y]]	✓	0.459
17910	$3x^2 y - y^3 - (3xy^2 - x^3) y' = 0$	[[_homogeneous, 'class A'], _exact, _rational, _dAlembert]	✓	8.526
17911	$x(x^2 + 1) y' + 2y = (x^2 + 1)^3$	[_linear]	✓	1.318
17912	$y' = \frac{-3x - 2y - 1}{2x + 3y - 1}$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	2.387
17913	$e^{x^2 y} (1 + 2x^2 y) + x^3 e^{x^2 y} y' = 0$	[_linear]	✓	1.014
17914	$3x^2 e^y - 2x + (x^3 e^y - \sin(y)) y' = 0$	[_exact]	✓	2.484
17915	$y^2 y'' + y'^3 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_y_y1]]	✓	0.271
17916	$3xy + y^2 + (3xy + x^2) y' = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓	6.043
17917	$x^2 y' = y^2 + xy + x^2$	[[_homogeneous, 'class A'], _rational, _Riccati]	✓	2.107
17918	$xy' + y = y^2 \ln(x)$	[_Bernoulli]	✓	1.918

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
17919	$\frac{\cos(y)}{x+3} - \left( \sin(y) \ln(5x+15) - \frac{1}{y} \right) y' = 0$	[_exact, [_1st_order, '[_with_symmetry_[F(x)*G(y),0]']]	✓	41.355
17920	$x^2 y'' + y'^2 = 0$	[[_2nd_order, _missing_y], [_2nd_order, _reducible, _mu_y_y1]]	✓	0.197
17921	$xy + y - 1 + xy' = 0$	[_linear]	✓	1.213
17922	$x^2 y' - y^2 = 2xy$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓	2.365
17923	$y'' = 2yy'^3$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_y_y1]]	✓	0.225
17924	$x' + x \cot(y) = \sec(y)$	[_linear]	✓	1.678
17925	$xy'' - y' = 3x^2$	[[_2nd_order, _missing_y]]	✓	1.704
17926	$xy'' + y' = 0$	[[_2nd_order, _missing_y]]	✓	0.733
17927	$y'' - y' - 2y = 4x$	[[_2nd_order, _with_linear_symmetries]]	✓	0.794
17928	$x^3 y'' + x^2 y' + xy = 1$	[[_2nd_order, _with_linear_symmetries]]	✓	3.452
17929	$y'' - 2y' = 6$	[[_2nd_order, _missing_x]]	✓	1.428
17930	$y'' - 2y = \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.181
17931	$y'' = e^x$	[[_2nd_order, _quadrature]]	✓	0.810
17932	$y'' - 2y' = 4$	[[_2nd_order, _missing_x]]	✓	1.269
17933	$y'' - y = \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.083
17934	$(x-1)y'' - xy' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.326

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
17935	$y'' + 2y' = 6e^x$	[[_2nd_order, _missing_y]]	✓	1.379
17936	$x^2y'' - 3xy' - 5y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	1.339
17937	$x^2y'' - 4xy' + (x^2 + 6)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.295
17938	$y'' - y = 0$	[[_2nd_order, _missing_x]]	✓	2.490
17939	<i>i.c.</i> $x^2y'' - 2xy' + 2y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓	2.082
17940	<i>i.c.</i> $y'' - 3y' + 2y = 0$	[[_2nd_order, _missing_x]]	✓	0.804
17941	$y'' - 4y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓	0.668
17942	<i>i.c.</i> $x^2y'' - 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	1.128
17943	<i>i.c.</i> $y'' + y' - 2y = 0$	[[_2nd_order, _missing_x]]	✓	0.854
17944	<i>i.c.</i> $y'' + 5y' + 6y = 0$	[[_2nd_order, _missing_x]]	✓	0.804
17945	<i>i.c.</i> $y'' + y' = 0$	[[_2nd_order, _missing_x]]	✓	1.306
17946	$y'' + y'^2 = 0$	[[_2nd_order, _missing_x], _Liouville, [_2nd_order, _reducible, _mu_xy]]	✓	0.141
17947	$y'' + 2xy' + (x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.693
17948	$y'' + y = 0$	[[_2nd_order, _missing_x]]	✓	0.122
17949	$y'' - y = 0$	[[_2nd_order, _missing_x]]	✓	0.103
17950	$xy'' + 3y' = 0$	[[_2nd_order, _missing_y]]	✓	0.333

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
17951	$x^2 y'' + xy' - 4y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓	0.099
17952	$(-x^2 + 1) y'' - 2xy' + 2y = 0$	[_Gegenbauer]	✓	0.102
17953	$x^2 y'' + xy' + \left(x^2 - \frac{1}{4}\right) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.086
17954	$y'' - \frac{xy'}{x-1} + \frac{y}{x-1} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.099
17955	$x^2 y'' + 2xy' - 2y = 0$	[[_Emden, _Fowler]]	✓	0.101
17956	$x^2 y'' - x(x+2) y' + (x+2) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.103
17957	$y'' - xf(x) y' + f(x) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.477
17958	$xy'' - (2x+1) y' + (x+1) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.111
17959	$xy'' - (x+n) y' + ny = 0$	[_Laguerre]	✓	1.090
17960	$xy'' - (x+1) y' + y = 0$	[_Laguerre]	✓	0.951
17961	$xy'' - (x+2) y' + 2y = 0$	[_Laguerre]	✓	0.880
17962	$xy'' - (x+3) y' + 3y = 0$	[_Laguerre]	✓	0.969
17963	$y'' - f(x) y' + (f(x) - 1) y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✗	0.647
17964	$y'' + y' - 6y = 0$	[[_2nd_order, _missing_x]]	✓	0.367
17965	$y'' + 2y' + y = 0$	[[_2nd_order, _missing_x]]	✓	0.626
17966	$y'' + 8y = 0$	[[_2nd_order, _missing_x]]	✓	2.506
17967	$2y'' - 4y' + 8y = 0$	[[_2nd_order, _missing_x]]	✓	1.635

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
17968	$y'' - 4y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓	0.634
17969	$y'' - 9y' + 20y = 0$	[[_2nd_order, _missing_x]]	✓	0.605
17970	$2y'' + 2y' + 3y = 0$	[[_2nd_order, _missing_x]]	✓	1.921
17971	$4y'' - 12y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓	0.701
17972	$y'' + y' = 0$	[[_2nd_order, _missing_x]]	✓	0.980
17973	$y'' - 6y' + 25y = 0$	[[_2nd_order, _missing_x]]	✓	1.652
17974	$4y'' + 20y' + 25y = 0$	[[_2nd_order, _missing_x]]	✓	0.412
17975	$y'' + 2y' + 3y = 0$	[[_2nd_order, _missing_x]]	✓	1.602
17976	$y'' = 4y$	[[_2nd_order, _missing_x]]	✓	2.714
17977	$4y'' - 8y' + 7y = 0$	[[_2nd_order, _missing_x]]	✓	1.866
17978	$2y'' + y' - y = 0$	[[_2nd_order, _missing_x]]	✓	0.642
17979	$16y'' - 8y' + y = 0$	[[_2nd_order, _missing_x]]	✓	0.644
17980	$y'' + 4y' + 5y = 0$	[[_2nd_order, _missing_x]]	✓	0.697
17981	$y'' + 4y' - 5y = 0$	[[_2nd_order, _missing_x]]	✓	0.384
17982	<i>i.c.</i> $y'' - 5y' + 6y = 0$	[[_2nd_order, _missing_x]]	✓	0.826
17983	<i>i.c.</i> $y'' - 6y' + 5y = 0$	[[_2nd_order, _missing_x]]	✓	0.841
17984	<i>i.c.</i> $y'' - 6y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓	0.839
17985	<i>i.c.</i> $y'' + 4y' + 5y = 0$	[[_2nd_order, _missing_x]]	✓	0.811

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
17986	<i>i.c.</i> $y'' + 4y' + 2y = 0$	[[_2nd_order, _missing_x]]	✓	1.256
17987	<i>i.c.</i> $y'' + 8y' - 9y = 0$	[[_2nd_order, _missing_x]]	✓	0.895
17988	$x^2y'' + 3xy' + 10y = 0$	[[_Emden, _Fowler]]	✓	3.090
17989	$2x^2y'' + 10xy' + 8y = 0$	[[_Emden, _Fowler]]	✓	1.448
17990	$x^2y'' + 2xy' - 12y = 0$	[[_Emden, _Fowler]]	✓	1.043
17991	$4x^2y'' - 3y = 0$	[[_Emden, _Fowler]]	✓	0.658
17992	$x^2y'' - 3xy' + 4y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)']]]	✓	1.386
17993	$x^2y'' + 2xy' - 6y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)']]]	✓	1.275
17994	$x^2y'' + 2xy' + 3y = 0$	[[_Emden, _Fowler]]	✓	3.378
17995	$x^2y'' + xy' - 2y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)']]]	✓	1.133
17996	$x^2y'' + xy' - 16y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)']]]	✓	1.302
17997	$xy'' + (x^2 - 1)y' + x^3y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	2.573
17998	$y'' + 3xy' + x^2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.843
17999	$y'' + 3y' - 10y = 6e^{4x}$	[[_2nd_order, _with_linear_symmetries]]	✓	0.943
18000	$y'' + 4y = 3\sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	2.679
18001	$y'' + 10y' + 25y = 14e^{-5x}$	[[_2nd_order, _with_linear_symmetries]]	✓	0.857

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
18002	$y'' - 2y' + 5y = 25x^2 + 12$	[[_2nd_order, _with_linear_symmetries]]	✓	20.746
18003	$y'' - y' - 6y = 20e^{-2x}$	[[_2nd_order, _with_linear_symmetries]]	✓	0.964
18004	$y'' - 3y' + 2y = 14\sin(2x) - 18\cos(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.286
18005	$y'' + y = 2\cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.026
18006	$y'' - 2y' = 12x - 10$	[[_2nd_order, _missing_y]]	✓	1.737
18007	$y'' - 2y' + y = 6e^x$	[[_2nd_order, _with_linear_symmetries]]	✓	0.820
18008	$y'' - 2y' + 2y = e^x \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	5.622
18009	$y'' + y' = 10x^4 + 2$	[[_2nd_order, _missing_y]]	✓	1.762
18010	$y'' + k^2y = \sin(bx)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.303
18011	$y'' + 4y = 4\cos(2x) + 6\cos(x) + 8x^2 - 4x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	5.973
18012	$y'' + 9y = 2\sin(3x) + 4\sin(x) - 26e^{-2x} + 27x^3$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	9.221
18013	$y'' - 2y' + y = 2x$	[[_2nd_order, _with_linear_symmetries]]	✓	0.878
18014	$y'' - y' - 6y = e^{-x}$	[[_2nd_order, _with_linear_symmetries]]	✓	0.884
18015	$y'' + 4y = \tan(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	7.139
18016	$y'' + 2y' + y = e^{-x} \ln(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.349
18017	$y'' - 2y' - 3y = 64xe^{-x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.970
18018	$y'' + 2y' + 5y = e^{-x} \sec(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	16.753

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
18019	$2y'' + 3y' + y = e^{-3x}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.246
18020	$y'' - 3y' + 2y = \frac{1}{1 + e^{-x}}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.053
18021	$y'' + y = \sec(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	2.922
18022	$y'' + y = \cot(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	2.683
18023	$y'' + y = \cot(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	5.141
18024	$y'' + y = x \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.526
18025	$y'' + y = \tan(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.029
18026	$y'' + y = \sec(x) \tan(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	2.520
18027	$y'' + y = \sec(x) \csc(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.283
18028	$(x^2 - 1)y'' - 2xy' + 2y = (x^2 - 1)^2$	[[_2nd_order, _with_linear_symmetries]]	✓	1.859
18029	$(x^2 + x)y'' + (-x^2 + 2)y' - (x + 2)y = x(x + 1)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	2.041
18030	$(1 - x)y'' + xy' - y = (1 - x)^2$	[[_2nd_order, _with_linear_symmetries]]	✓	2.284
18031	$xy'' - (x + 1)y' + y = x^2e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.580
18032	$x^2y'' - 2xy' + 2y = xe^{-x}$	[[_2nd_order, _with_linear_symmetries]]	✓	3.706
18033	$y''' - 3y'' + 2y' = 0$	[[_3rd_order, _missing_x]]	✓	0.052
18034	$y''' - 3y'' + 4y' - 2y = 0$	[[_3rd_order, _missing_x]]	✓	0.062
18035	$y''' - y = 0$	[[_3rd_order, _missing_x]]	✓	0.062

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
18036	$y''' + y = 0$	[[_3rd_order, _missing_x]]	✓	0.059
18037	$y''' + 3y'' + 3y' + y = 0$	[[_3rd_order, _missing_x]]	✓	0.055
18038	$y'''' + 4y''' + 6y'' + 4y' + y = 0$	[[_high_order, _missing_x]]	✓	0.056
18039	$y'''' - y = 0$	[[_high_order, _missing_x]]	✓	0.058
18040	$y'''' + 5y'' + 4y = 0$	[[_high_order, _missing_x]]	✓	0.065
18041	$y'''' + 2a^2y'' + a^4y = 0$	[[_high_order, _missing_x]]	✓	0.078
18042	$y'''' + 2a^2y'' + a^4y = 0$	[[_high_order, _missing_x]]	✓	0.414
18043	$y'''' + 2y''' + 2y'' + 2y' + y = 0$	[[_high_order, _missing_x]]	✓	0.073
18044	$y'''' + 2y''' - 2y'' - 6y' + 5y = 0$	[[_high_order, _missing_x]]	✓	0.078
18045	$y''' - 6y'' + 11y' - 6y = 0$	[[_3rd_order, _missing_x]]	✓	0.053
18046	$y'''' + y''' - 3y'' - 5y' - 2y = 0$	[[_high_order, _missing_x]]	✓	0.062
18047	$y^{(5)} - 6y'''' - 8y''' + 48y'' + 16y' - 96y = 0$	[[_high_order, _missing_x]]	✓	0.118
18048	$y'''' = 0$	[[_high_order, _quadrature]]	✓	0.059
18049	$y'''' = \sin(x) + 24$	[[_high_order, _quadrature]]	✓	0.148
18050	$y''' - 3y'' + 2y' = 10 + 42e^{3x}$	[[_3rd_order, _missing_y]]	✓	0.123
18051	$y''' - y' = 1$ i.c.	[[_3rd_order, _missing_x]]	✓	0.145
18052	$x^3y''' + 3x^2y'' = 0$	[[_3rd_order, _missing_y]]	✓	0.193
18053	$x^3y''' + x^2y'' - 2xy' + 2y = 0$	[[_3rd_order, _exact, _linear, _homogeneous]]	✓	0.115

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
18054	$x^3y''' + 2x^2y'' + xy' - y = 0$	[[_3rd_order, _with_linear_symmetries]]	✓	0.130
18055	$x^3y'''' + 8x^2y''' + 8xy'' - 8y' = 0$	[[_high_order, _missing_y]]	✓	0.269
18056	$y'' - 4y = e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.138
18057	$y'' - y = x^2e^{2x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.385
18058	$y'' + 4y' + 4y = 10x^3e^{-2x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.733
18059	$y'' - 2y' + y = e^x$	[[_2nd_order, _with_linear_symmetries]]	✓	0.722
18060	$y'' - y = e^{-x}$	[[_2nd_order, _with_linear_symmetries]]	✓	0.619
18061	$y'' - 2y' - 3y = 6e^{5x}$	[[_2nd_order, _with_linear_symmetries]]	✓	0.670
18062	$y'' - y' + y = x^3 - 3x^2 + 1$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	30.876
18063	$y''' - 2y' + y = 2x^3 - 3x^2 + 4x + 5$	[[_3rd_order, _linear, _nonhomogeneous]]	✓	0.330
18064	$4y'' + y = x^4$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	2.822
18065	$y^{(5)} - y''' = x^2$	[[_high_order, _missing_y]]	✓	0.127
18066	$y^{(6)} - y = x^{10}$	[[_high_order, _linear, _nonhomogeneous]]	✓	0.350
18067	$y'' + y' - y = -x^4 + 3x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.307
18068	$y'' + y = x^4$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.234
18069	$y''' - y'' = 12x - 2$	[[_3rd_order, _missing_y]]	✓	0.098
18070	$y''' + y'' = 9x^2 - 2x + 1$	[[_3rd_order, _missing_y]]	✓	0.129
18071	$y'' - 4y' + 3y = x^3e^{2x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.851

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
18072	$y'' - 7y' + 12y = e^{2x}(x^3 - 5x^2)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.963
18073	$y'' + 2y' + y = 2x^2e^{-2x} + 3e^{2x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.941
18074	$y''' - 8y = 16x^2$	[[_3rd_order, _with_linear_symmetries]]	✓	0.116
18075	$y'''' - y = -x^3 + 1$	[[_high_order, _linear, _nonhomogeneous]]	✓	0.119
18076	$y''' - \frac{y'}{4} = x$	[[_3rd_order, _missing_y]]	✓	0.098
18077	$y'''' = \frac{1}{x^3}$	[[_high_order, _quadrature]]	✓	0.217
18078	$y''' - y'' + y' = x + 1$	[[_3rd_order, _missing_y]]	✓	0.125
18079	$y''' + 2y'' = x$	[[_3rd_order, _missing_y]]	✓	0.112
18080	$y''' - 6y'' + 12y' - 8y = e^{2x}$	[[_3rd_order, _with_linear_symmetries]]	✓	0.132
18081	$y''' + 3y'' + 3y' + y = 12e^{-x}$	[[_3rd_order, _with_linear_symmetries]]	✓	0.130
18082	$y'' - 4y' + 4y = e^{2x} \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.010
18083	$y' = 2xy$	[_separable]	✓	0.441
18084	$y' + y = 1$	[_quadrature]	✓	0.233
18085	$xy' = y$	[_separable]	✓	0.320
18086	$x^2y' = y$	[_separable]	✗	0.050
18087	$y' = 1 + y^2$ i.c.	[_quadrature]	✓	0.142
18088	$y' = x - y$ i.c.	[[_linear, 'class A']]	✓	0.250
18089	$(x^2 + 1)y'' + 2xy' - 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.487
18090	$y'' + xy' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	1.089

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
18091	$y'' + xy' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.493
18092	$y'' + y' - xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.331
18093	$y'' + xy = 0$	[[_Emden, _Fowler]]	✓	0.409
18094	$(-x^2 + 1)y'' - xy' + n^2y = 0$	[_Gegenbauer, _2nd_order, _linear, ' _with_symmetry_[0,F(x)]']	✓	0.437
18095	$y'' - 2xy' + 2ny = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.361
18096	$x^3(x - 1)y'' - 2(x - 1)y' + 3xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.115
18097	$x^2(x^2 - 1)^2 y'' - x(1 - x)y' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.793
18098	$x^2y'' + (2 - x)y' = 0$	[[_2nd_order, _missing_y]]	✗	0.166
18099	$(3x + 1)xy'' - (x + 1)y' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.905
18100	$y'' + y \sin(x) = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.644
18101	$xy'' + y \sin(x) = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.067
18102	$x^2y'' + y \sin(x) = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.343
18103	$x^3y'' + y \sin(x) = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.477
18104	$x^4y'' + y \sin(x) = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.106
18105	$x^3y'' + (\cos(2x) - 1)y' + 2xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.778
18106	$4x^2y'' + (2x^4 - 5x)y' + (3x^2 + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.805
18107	$4xy'' + 2y' + y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, ' _with_symmetry_[0,F(x)]']]	✓	1.056

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
18108	$2xy'' + (3 - x)y' - y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.816
18109	$2xy'' + (x + 1)y' + 3y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.065
18110	$2x^2y'' + xy' - (x + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.799
18111	$x^2y'' + xy' + x^2y = 0$	[_Lienard]	✓	0.629
18112	$y'' + \frac{y'}{x^2} - \frac{y}{x^3} = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✗	0.105
18113	$y'' + \frac{ny'}{x^2} + \frac{qy}{x^3} = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.324
18114	$x^2y'' - 3xy' + (4x + 4)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.742
18115	$4x^2y'' - 8x^2y' + (4x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.809
18116	$xy'' + 2y' + xy = 0$	[_Lienard]	✓	0.763
18117	$x^2y'' - x^2y' + (x^2 - 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.867
18118	$xy'' - y' + 4x^3y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓	0.678
18119	$x^2y'' + xy' + (x^2 - 1)y = 0$	[_Bessel]	✓	1.535
18120	$x^2y'' + xy' + \left(x^2 - \frac{1}{4}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.040
18121	$x(1 - x)y'' + \left(\frac{3}{2} - 2x\right)y' + 2y = 0$	[_Jacobi]	✓	0.913
18122	$(2x^2 + 2x)y'' + (1 + 5x)y' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.951
18123	$(x^2 - 1)y'' + (5x + 4)y' + 4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	0.964

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
18124	$(x^2 - x - 6)y'' + (5 + 3x)y' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.939
18125	$x(1 - x)y'' + (1 - 3x)y' - y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	0.675
18126	$(-x^2 + 1)y'' - 2xy' + n(n + 1)y = 0$	[_Gegenbauer]	✓	1.229
18127	$x^2y'' + xy' + (-n^2 + x^2)y = 0$	[_Bessel]	✗	0.136
18128	$y' + y = 3e^{2x}$ i.c.	[[_linear, 'class A']]	✓	0.259
18129	$y'' - 4y' + 4y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	0.234
18130	$y'' + 2y' + 2y = 2$ i.c.	[[_2nd_order, _missing_x]]	✓	0.554
18131	$y'' + y' = 3x^2$ i.c.	[[_2nd_order, _missing_y]]	✓	0.290
18132	$y'' + 2y' + 5y = 3e^{-x} \sin(x)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.395
18133	$y'' - 2ay' + a^2y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	0.260
18134	$xy'' + (3x - 1)y' - (4x + 9)y = 0$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	0.308
18135	$xy'' + (2x + 3)y' + (x + 3)y = 3e^{-x}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✗	0.454
18136	$y'' + x^2y = 0$ i.c.	[[_Emden, _Fowler]]	✗	2.508
18137	$y'' + a^2y = f(x)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.597
18138	$y'' + 5y' + 6y = 4e^{3t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	0.333
18139	$y'' + y' - 6y = t$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	0.260
18140	$y'' - y' = t^2$ i.c.	[[_2nd_order, _missing_y]]	✓	0.327
18141	$y'' + 3y' + 2y = f(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	0.552

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
18142	$\begin{cases} x' = x + 3y \\ y' = 3x + y \end{cases}$ i.c.	system_of_ODEs	✓	0.638
18143	$\begin{cases} x' = x + 2y \\ y' = 3x + 2y \end{cases}$	system_of_ODEs	✓	0.538
18144	$\begin{cases} x' = x + 2y + t - 1 \\ y' = 3x + 2y - 5t - 2 \end{cases}$	system_of_ODEs	✓	0.734
18145	$\begin{cases} x' = x + y \\ y' = y \end{cases}$	system_of_ODEs	✓	0.440
18146	$\begin{cases} x' = x \\ y' = y \end{cases}$	system_of_ODEs	✓	0.431
18147	$\begin{cases} x' = -3x + 4y \\ y' = -2x + 3y \end{cases}$	system_of_ODEs	✓	0.513
18148	$\begin{cases} x' = 4x - 2y \\ y' = 5x + 2y \end{cases}$	system_of_ODEs	✓	0.665
18149	$\begin{cases} x' = 5x + 4y \\ y' = y - x \end{cases}$	system_of_ODEs	✓	0.525
18150	$\begin{cases} x' = 4x - 3y \\ y' = 8x - 6y \end{cases}$	system_of_ODEs	✓	0.524
18151	$\begin{cases} x' = 2x \\ y' = 3y \end{cases}$	system_of_ODEs	✓	0.467
18152	$\begin{cases} x' = -4x - y \\ y' = x - 2y \end{cases}$	system_of_ODEs	✓	0.276
18153	$\begin{cases} x' = 7x + 6y \\ y' = 2x + 6y \end{cases}$	system_of_ODEs	✓	0.336
18154	$\begin{cases} x' = x - 2y \\ y' = 4x + 5y \end{cases}$	system_of_ODEs	✓	0.594
18155	$\begin{cases} x' = x + y - 5t + 2 \\ y' = 4x - 2y - 8t - 8 \end{cases}$	system_of_ODEs	✓	0.793

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
18156	$\begin{bmatrix} x' = 2x \\ y' = 3y \end{bmatrix}$	system_of_ODEs	✓	0.479
18157	$\begin{bmatrix} x' = -x - 2y \\ y' = 4x - 5y \end{bmatrix}$	system_of_ODEs	✓	0.590
18158	$\begin{bmatrix} x' = -3x + 4y \\ y' = -2x + 3y \end{bmatrix}$	system_of_ODEs	✓	0.514
18159	$\begin{bmatrix} x' = 5x + 2y \\ y' = -17x - 5y \end{bmatrix}$	system_of_ODEs	✓	0.589
18160	$\begin{bmatrix} x' = -4x - y \\ y' = x - 2y \end{bmatrix}$	system_of_ODEs	✓	0.485
18161	$\begin{bmatrix} x' = 4x - 3y \\ y' = 8x - 6y \end{bmatrix}$	system_of_ODEs	✓	0.530
18162	$\begin{bmatrix} x' = 4x - 2y \\ y' = 5x + 2y \end{bmatrix}$	system_of_ODEs	✓	0.619
18163	$x'' + (5x^4 - 9x^2)x' + x^5 = 0$	[[_2nd_order, _missing_x]]	✗	2.864
18164	i.c. $x' = 3t^2 + 4t$	[_quadrature]	✓	0.604
18165	i.c. $x' = be^t$	[_quadrature]	✓	0.288
18166	i.c. $x' = \frac{1}{t^2 + 1}$	[_quadrature]	✓	0.587
18167	i.c. $x' = \frac{1}{\sqrt{t^2 + 1}}$	[_quadrature]	✓	0.337
18168	i.c. $x' = \cos(t)$	[_quadrature]	✓	0.624
18169	i.c. $x' = \frac{\cos(t)}{\sin(t)}$	[_quadrature]	✓	1.611
18170	i.c. $x' = x^2 - 3x + 2$	[_quadrature]	✓	3.632

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
18171	<i>i.c.</i> $x' = b e^x$	[_quadrature]	✓	1.309
18172	<i>i.c.</i> $x' = (x - 1)^2$	[_quadrature]	✓	1.022
18173	<i>i.c.</i> $x' = \sqrt{x^2 - 1}$	[_quadrature]	✓	10.636
18174	<i>i.c.</i> $x' = 2\sqrt{x}$	[_quadrature]	✓	1.392
18175	<i>i.c.</i> $x' = \tan(x)$	[_quadrature]	✓	1.497
18176	$3t^2x - xt + (3t^3x^2 + t^3x^4)x' = 0$	[_separable]	✓	3.056
18177	$1 + 2x + (-t^2 + 4)x' = 0$	[_separable]	✓	1.865
18178	$x' = \cos\left(\frac{x}{t}\right)$	[[_homogeneous, 'class A'], _dAlembert]	✓	4.161
18179	$(t^2 - x^2)x' = xt$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	6.648
18180	$e^{3t}x' + 3xe^{3t} = 2t$	[[_linear, 'class A']]	✓	2.059
18181	$2t + 3x + (3t - x)x' = t^2$	[_exact, _rational, [_1st_order, 'with_symmetry_[F(x),G(x)']], [_Abel, '2nd type', 'class A']]	✓	1.880
18182	$x' + 2x = e^t$	[[_linear, 'class A']]	✓	1.134
18183	$x' + x \tan(t) = 0$	[_separable]	✓	1.074
18184	$x' - x \tan(t) = 4 \sin(t)$	[_linear]	✓	1.561
18185	$t^3x' + (-3t^2 + 2)x = t^3$	[_linear]	✓	1.909
18186	$x' + 2xt + tx^4 = 0$	[_separable]	✓	2.093
18187	$tx' + x \ln(t) = t^2$	[_linear]	✓	1.716
18188	$tx' + xg(t) = h(t)$	[_linear]	✓	1.616
18189	$t^2x'' - 6tx' + 12x = 0$	[[_Emden, _Fowler]]	✓	1.117

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
18190	$x' = -\lambda x$	[_quadrature]	✓	0.807
18191	$\begin{bmatrix} x' = x \\ y' = x + 2y \end{bmatrix}$	system_of_ODEs	✓	0.421
18192	$t^2 x'' - 2tx' + 2x = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)']]]	✓	1.280
18193	$x'' - 5x' + 6x = 0$	[[_2nd_order, _missing_x]]	✓	0.515
18194	$x'' - 4x' + 4x = 0$	[[_2nd_order, _missing_x]]	✓	0.495
18195	$x'' - 4x' + 5x = 0$	[[_2nd_order, _missing_x]]	✓	0.888
18196	$x'' + 3x' = 0$	[[_2nd_order, _missing_x]]	✓	1.013
18197	$x'' - 3x' + 2x = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	0.717
18198	$x'' + x = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	2.932
18199	$x'' + 2x' + x = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	0.742
18200	$x'' - 2x' + 2x = 0$ i.c.	[[_2nd_order, _missing_x]]	✓	0.891
18201	$x'' - x = t^2$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	0.970
18202	$x'' - x = e^t$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓	1.082
18203	$x'' + 2x' + 4x = e^t \cos(2t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	39.718
18204	$x'' - x' + x = \sin(2t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	83.114
18205	$x'' + 4x' + 3x = t \sin(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.919
18206	$x'' + x = \cos(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓	6.847

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
18207	$x^2 y'' - \frac{x^2 y'^2}{2y} + 4xy' + 4y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _reducible, _mu_xy]]	✗	0.206
18208	$y' + cy = a$	[_quadrature]	✓	0.947
18209	$y'' + \frac{y'}{x} + k^2 y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓	1.098
18210	$y'' \sin(x) + \cos(x) y' + ny \sin(x) = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	1.519
18211	$y' = \frac{\sqrt{1-y^2} \arcsin(y)}{x}$	[_separable]	✓	386.878
18212	$v'' = \left(\frac{1}{v} + v'^4\right)^{1/3}$	[[_2nd_order, _missing_x]]	✗	9.939
18213	$v' + u^2 v = \sin(u)$	[_linear]	✓	2.353
18214	$\sqrt{y' + y} = (y'' + 2x)^{1/4}$	[NONE]	✗	31.644
18215	$v' + \frac{2v}{u} = 3$	[_linear]	✓	1.904
18216	$\sin(x) \cos(y)^2 + \cos(x)^2 y' = 0$	[_separable]	✓	3.579
18217	$y' + \sqrt{\frac{1-y^2}{-x^2+1}} = 0$	unknown	✓	1240.170
18218	$y - xy' = b(1 + x^2 y')$	[_separable]	✓	126.757
18219	$x' = k(A - nx)(M - mx)$	[_quadrature]	✓	18.167
18220	$y' = 1 + \frac{1}{x} - \frac{1}{y^2 + 2} - \frac{1}{x(y^2 + 2)}$	[_separable]	✓	213.631
18221	$y^2 = x(y - x) y'$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓	358.378
18222	$2x^2 y + y^3 - x^3 y' = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓	761.594

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
18223	$2ax + by + (2cy + bx + e)y' = g$	[[_homogeneous, 'class C'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓	3.390
18224	$\sec(x)^2 \tan(y)y' + \sec(y)^2 \tan(x) = 0$	[_separable]	✓	38.081
18225	$x + yy' = my$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓	10.129
18226	$\frac{2x}{y^3} + \left(\frac{1}{y^2} - \frac{3x^2}{y^4}\right)y' = 0$	[[_homogeneous, 'class A'], _exact, _rational, _dAlembert]	✓	4.920
18227	$\left(T + \frac{1}{\sqrt{t^2 - T^2}}\right)T' = \frac{T}{t\sqrt{t^2 - T^2}} - t$	[_exact]	✓	3.570
18228	$y' + xy = x$	[_separable]	✓	1.480
18229	$y' + \frac{y}{x} = \sin(x)$	[_linear]	✓	1.271
18230	$y' + \frac{y}{x} = \frac{\sin(x)}{y^3}$	[_Bernoulli]	✓	35.321
18231	$p' = \frac{p + at^3 - 2pt^2}{t(-t^2 + 1)}$	[_linear]	✓	1.490
18232	$(T \ln(t) - 1)T = tT'$	[_Bernoulli]	✓	2.372
18233	$y' + y \cos(x) = \frac{\sin(2x)}{2}$	[_linear]	✓	2.431
18234	$y - \cos(x)y' = y^2 \cos(x)(-\sin(x) + 1)$	[_Bernoulli]	✓	7.110
18235	$xy'^2 - y + 2y' = 0$	[_rational, _dAlembert]	✓	1.105
18236	$2y'^3 + y'^2 - y = 0$	[_quadrature]	✓	74.751
18237	$y' = e^{z-y'}$	[_quadrature]	✓	0.263
18238	$\sqrt{t^2 + T} = T'$	[[_homogeneous, 'class G']]	✓	4.627
18239	$(x^2 - 1)y'^2 = 1$	[_quadrature]	✓	0.379

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
18240	$y' = (x + y)^2$	[[_homogeneous, 'class C'], _Riccati]	✓	1.159
18241	$\theta'' = -p^2\theta$	[[_2nd_order, _missing_x]]	✓	3.096
18242	$\sec(\theta)^2 = \frac{ms'}{k}$	[_quadrature]	✓	0.320
18243	$y'' = \frac{m\sqrt{1+y'^2}}{k}$	[[_2nd_order, _missing_x]]	✓	0.594
18244	$\phi'' = \frac{4\pi n c}{\sqrt{v_0^2 + \frac{2e(\phi-V_0)}{m}}}$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓	10.487
18245	$y' = x(y^2 a + b)$	[_separable]	✓	2.421
18246	$n' = (n^2 + 1)x$	[_separable]	✓	1.722
18247	$v' + \frac{2v}{u} = 3v$	[_separable]	✓	1.215
18248	$\sqrt{-u^2 + 1} v' = 2u\sqrt{1 - v^2}$	[_separable]	✓	2.654
18249	$\sqrt{1 + v'} = \frac{e^u}{2}$	[_quadrature]	✓	0.263
18250	$\frac{y'}{x} = y \sin(x^2 - 1) - \frac{2y}{\sqrt{x}}$	[_separable]	✓	2.792
18251	$y' = 1 + \frac{2y}{x - y}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓	3.403
18252	$v' + 2vu = 2u$	[_separable]	✓	1.124
18253	$1 + v^2 + (u^2 + 1)vv' = 0$	[_separable]	✓	2.764
18254	$u \ln(u) v' + \sin(v)^2 = 1$	[_separable]	✓	3.989
18255	$4yy'^3 - 2x^2y'^2 + 4xyy' + x^3 = 16y^2$	[[_1st_order, _with_linear_symmetries]]	✓	123.131
18256	$\theta'' - p^2\theta = 0$	[[_2nd_order, _missing_x]]	✓	6.349
18257	$y'' + y = 0$	[[_2nd_order, _missing_x]]	✓	3.865

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
18258	$y'' + 12y = 7y'$	[[_2nd_order, _missing_x]]	✓	0.901
18259	$r'' - a^2r = 0$	[[_2nd_order, _missing_x]]	✓	6.772
18260	$y'''' - a^4y = 0$	[[_high_order, _missing_x]]	✓	0.151
18261	$v'' - 6v' + 13v = e^{-2u}$	[[_2nd_order, _with_linear_symmetries]]	✓	11.856
18262	$y'' + 4y' - y = \sin(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.709
18263	$y'' + 3y = \sin(x) + \frac{\sin(3x)}{3}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	4.831
18264	$5x' + x = \sin(3t)$	[[_linear, 'class A']]	✓	1.667
18265	$x'''' - 6x''' + 11x'' - 6x' = e^{-3t}$	[[_high_order, _missing_y]]	✓	0.121
18266	$x^4y'''' + x^3y''' - 20x^2y'' + 20xy' = 17x^6$	[[_high_order, _missing_y]]	✓	0.579
18267	$t^4x'''' - 2t^3x''' - 20t^2x'' + 12tx' + 16x = \cos(3 \ln(t))$	[[_high_order, _exact, _linear, _nonhomogeneous]]	✓	0.807
18268	$y''' - y'' - y' + y = 0$	[[_3rd_order, _missing_x]]	✓	0.194
18269	$y'''' - 3y''' + 3y'' - y' = e^{2x}$	[[_high_order, _missing_y]]	✓	0.122
18270	$y''' - y'' + y' - y = \cos(x)$	[[_3rd_order, _linear, _nonhomogeneous]]	✓	0.632
18271	$x^2y'' + 3xy' + y = \frac{1}{x}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓	2.380
18272	$y'' = c(1 + y^2)$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_xy]]	✓	0.478
18273	$y'' = c(1 + y^2)^{3/2}$	[[_2nd_order, _missing_x]]	✓	0.494

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
18274	$x^3y''' + x^2y'' + xy' + y = 0$	[[_3rd_order, _with_linear_symmetries]]	✓	0.177
18275	$y'' = -m^2y$	[[_2nd_order, _missing_x]]	✓	2.640
18276	$1 + y'^2 + \frac{my''}{\sqrt{1 + y'^2}} = 0$	[[_2nd_order, _missing_x]]	✓	72.381
18277	$y = xy' + y' - y^3$	[[_1st_order, _with_linear_symmetries], _Clairaut]	✓	0.347
18278	$xy'' + 2y' = xy$	[[_2nd_order, _with_linear_symmetries]]	✓	0.963
18279	$y - 2xy' - y^2y = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓	2.152
18280	$y' + \frac{xy}{x^2 + 1} = \frac{1}{x(x^2 + 1)}$	[_linear]	✓	1.317
18281	$y''' + \frac{3y''}{x} = 0$	[[_3rd_order, _missing_y]]	✓	0.397
18282	$x^2y'' - 5xy' + 5y = \frac{1}{x}$	[[_2nd_order, _with_linear_symmetries]]	✓	2.520
18283	$y'' + 4y' + 3y = 2e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓	0.887
18284	$v'' + \frac{2v'}{r} = 0$	[[_2nd_order, _missing_y]]	✓	0.429
18285	$y'' - 2yy' = 0$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _non-linear], _Lagerstrom, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓	0.740
18286	$y'' - y'^2 - yy'^3 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_y_y1]]	✓	0.388

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
18287	$(1 + y'^2)^{3/2} = ry''$	[[_2nd_order, _missing_x]]	✓	65.100
18288	$y'''y' - 3y''^2 + 3y''y'^2 - 2y'^4 - xy'^5 = 0$	[[_3rd_order, _missing_y], [_3rd_order, _with_exponential_symmetries], [_3rd_order, _with_linear_symmetries]]	✗	0.168
18289	$(1 + y^2)y'' - 2y'^2y - 2(1 + y^2)y' = y^2(1 + y^2)$	[[_2nd_order, _missing_x]]	✗	3.918
18290	$y^2y''' - (3yy' + 2xy^2)y'' + (2y'^2 + 2xyy' + 3y^2x^2)y' + x^3y^3 = 0$		✗	0.116
18291	$x^2y'' + xy' + y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓	1.640
18292	$(-x^2 + 1)y'' - xy' = 0$	[[_2nd_order, _missing_y]]	✓	0.692
18293	$x^3v''' + 2x^2v'' + v = 0$	[[_3rd_order, _with_linear_symmetries]]	✓	0.188
18294	$v'' + \frac{2xv'}{x^2 + 1} + \frac{v}{(x^2 + 1)^2} = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓	1.016
18295	$y' + \frac{y}{x} = -x^2 + 1$	[_linear]	✓	0.921
18296	$y' + \cot(x)y = \csc(x)^2$	[_linear]	✓	1.683
18297	$y' = x - y$	[[_linear, 'class A']]	✓	0.834
18298	$(x^2 + 1)y' + x^2y = x^3 - x^2 \arctan(x)$	[_linear]	✗	40.885
18299	$y' + \frac{xy}{x^2 + 1} = \frac{1}{x(x^2 + 1)}$	[_linear]	✓	1.262
18300	$x(-x^2 + 1)y' + (x^2 - 1)y = x^3$	[_linear]	✓	1.073

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
18301	$y' + y \cos(x) = \frac{\sin(2x)}{2}$	[_linear]	✓	2.604
18302	$x(-x^2 + 1)y' + (2x^2 - 1)y = ax^3$	[_linear]	✓	1.308
18303	$y' + y \sin(x) = y^2 \sin(x)$	[_separable]	✓	2.681
18304	$(-x^2 + 1)y' - xy = axy^2$	[_separable]	✓	2.734
18305	$y' + y \cos(x) = y^n \sin(2x)$	[_Bernoulli]	✓	7.696
18306	$3y^2y' + y^3 = x - 1$	[_rational, _Bernoulli]	✓	2.054
18307	$y' - \tan(x)y = y^4 \sec(x)$	[_Bernoulli]	✓	3.649
18308	$y\sqrt{x^2 - 1} + x\sqrt{y^2 - 1}y' = 0$	[_separable]	✓	2.656
18309	$(e^y + 1)\cos(x) + e^y \sin(x)y' = 0$	[_separable]	✓	2.449
18310	$\sqrt{2ay - y^2} \csc(x) + y \tan(x)y' = 0$	[_separable]	✓	8.545
18311	$y(y + 3)y' = x(3 + 2y)$	[_separable]	✓	2.302
18312	$x^3 - 3x^2y + 5xy^2 - 7y^3 + (y^4 + 2y^2 - x^3 + 5x^2y - 21xy^2)y' = 0$	[_exact, _rational]	✓	1.829
18313	$x^3 + 4xy + y^2 + (2x^2 + 2xy + 4y^3)y' = 0$	[_exact, _rational]	✓	1.934
18314	$\sin(x)\cos(y) + \cos(x)\sin(y)y' = 0$	[_separable]	✓	3.166
18315	$x^2 + \ln(y) + \frac{xy'}{y} = 0$	[_exact, [_1st_order, ['_with_symmetry_[F(x),G(x)*y+H(x)']]]]	✓	2.816
18316	$x(x - 2y)y' + x^2 + 2y^2 = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓	941.839
18317	$5xyy' - y^2 - x^2 = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓	233.014
18318	$(x^2 + 3xy - y^2)y' - 3y^2 = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	8.757

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
18319	$(x^2 + 2xy)y' - 3x^2 + 2xy - y^2 = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓	14.752
18320	$5xyy' - 4x^2 - y^2 = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓	18.473
18321	$(x^2 - 2xy)y' + x^2 - 3xy + 2y^2 = 0$	[_linear]	✓	2.175
18322	$3x^2y' + 2x^2 - 3y^2 = 0$	[[_homogeneous, 'class A'], _rational, _Riccati]	✓	3.753
18323	$(3x + 2y - 7)y' = 2x - 3y + 6$	[[_homogeneous, 'class C'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓	5.036
18324	$(6x - 5y + 4)y' = 2x - y + 1$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	55.519
18325	$(5x - 2y + 7)y' = x - 3y + 2$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	16.971
18326	$(x - 3y + 4)y' = 5x - 7y$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	8.198
18327	$(x - 3y + 4)y' = 2x - 6y + 7$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	2.527
18328	$(5x - 2y + 7)y' = 10x - 4y + 6$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	2.424
18329	$(2x - 2y + 5)y' = x - y + 3$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	2.539
18330	$(6x - 4y + 1)y' = 3x - 2y + 1$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	2.563
18331	$y'' + 3y' + 2y = 0$	[[_2nd_order, _missing_x]]	✓	1.734
18332	$y'' + 2y' - 2y = 0$	[[_2nd_order, _missing_x]]	✓	0.959

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
18333	$y''' - 3y'' + 2y' = 0$	[[_3rd_order, _missing_x]]	✓	0.098
18334	$2y''' + y'' - 4y' - 3y = 0$	[[_3rd_order, _missing_x]]	✓	0.098
18335	$y''' - 3y'' + 3y' - y = 0$	[[_3rd_order, _missing_x]]	✓	0.570
18336	$y''' + 3y'' + y' - 5y = 0$	[[_3rd_order, _missing_x]]	✓	0.089
18337	$2y''' - 3y'' + 2y' + 2y = 0$	[[_3rd_order, _missing_x]]	✓	0.103
18338	$y'''' - y = 0$	[[_high_order, _missing_x]]	✓	0.083
18339	$y'''' + 2y'' + y = 0$	[[_high_order, _missing_x]]	✓	0.111
18340	$y'' + 4y' + 3y = 2e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓	1.205
18341	$y''' + 4y'' + 3y' = x^2$	[[_3rd_order, _missing_y]]	✓	0.203
18342	$y'' - 4y' + 2y = x$	[[_2nd_order, _with_linear_symmetries]]	✓	1.355
18343	$y'' + 3y' - y = e^x$	[[_2nd_order, _with_linear_symmetries]]	✓	1.125
18344	$y''' + 5y'' + 6y' = x$	[[_3rd_order, _missing_y]]	✓	0.101
18345	$y''' - 6y'' + 11y' - 6y = x$	[[_3rd_order, _with_linear_symmetries]]	✓	0.199
18346	$y'' - 2y' + y = e^x$	[[_2nd_order, _with_linear_symmetries]]	✓	0.629
18347	$y'' - 2y' + y = x$	[[_2nd_order, _with_linear_symmetries]]	✓	0.743
18348	$y'' + y = \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	2.612
18349	$y''' + y'' - 4y' - 4y = x$	[[_3rd_order, _with_linear_symmetries]]	✓	0.112
18350	$y'' + y = \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.631

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
18351	$y''' - y'' + y' - y = \cos(x)$	[[_3rd_order, _linear, _nonhomogeneous]]	✓	0.566
18352	$y''' - 3y'' + 3y' - y = e^x$	[[_3rd_order, _with_linear_symmetries]]	✓	0.236
18353	$y'''' - y = x^4$	[[_high_order, _linear, _nonhomogeneous]]	✓	0.132
18354	$ey'' = \frac{P(\frac{L}{2} - x)}{2}$	[[_2nd_order, _quadrature]]	✓	1.012
18355	$ey'' = \frac{w(\frac{L^2}{4} - x^2)}{2}$	[[_2nd_order, _quadrature]]	✓	1.095
18356	$ey'' = -\frac{(wL + P)x}{2} - \frac{wx^2}{2}$	[[_2nd_order, _quadrature]]	✓	1.099
18357	$ey'' = -P(L - x)$	[[_2nd_order, _quadrature]]	✓	0.994
18358	$ey'' = -PL + (wL + P)x - \frac{w(L^2 + x^2)}{2}$	[[_2nd_order, _quadrature]]	✓	1.288
18359	$ey'' = P(-y + a)$	[[_2nd_order, _missing_x]]	✓	622.984
18360	$x^3y''' + 7x^2y'' + 8xy' = \ln(x)^2$	[[_3rd_order, _missing_y]]	✓	0.678
18361	$x^2y'' + 3xy' - 8y = x$	[[_2nd_order, _with_linear_symmetries]]	✓	3.178
18362	$x^3y''' - 3x^2y'' + 6xy' - 6y = x^3$	[[_3rd_order, _with_linear_symmetries]]	✓	0.353
18363	$x^3y''' + 2x^2y'' - 4xy' + 4y = \ln(x)$	[[_3rd_order, _with_linear_symmetries]]	✓	0.689
18364	$x^3y''' + 4x^2y'' + xy' - y = 0$	[[_3rd_order, _exact, _linear, _homogeneous]]	✓	0.159
18365	$xy'' + 2y' = 2x$	[[_2nd_order, _missing_y]]	✓	2.707
18366	$x^2y'' - xy' + y = \ln(x)$	[[_2nd_order, _with_linear_symmetries]]	✓	6.160

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
18367	$(x^2 - 1)y'' + 4xy' + 2y = 2x$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓	3.705
18368	$(x^2 + 1)y'' + 4xy' + 2y = x$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓	3.579
18369	$y'' - \cot(x)y' + \csc(x)^2 y = \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	31.615
18370	$(x^2 - x)y'' + (3x - 2)y' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	4.501
18371	$(3x^2 + x)y'' + 2(1 + 6x)y' + 6y = \sin(x)$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓	5.605
18372	$(x^3 + x^2 - 3x + 1)y''' + (9x^2 + 6x - 9)y'' + (18x + 6)y' + 6y = x^3$	[[_3rd_order, _fully, _exact, _linear]]	✗	0.046
18373	$x^2y''' + 5xy'' + 4y' = -\frac{1}{x^2}$	[[_3rd_order, _missing_y]]	✓	0.864
18374	$y'' = \cos(x)$	[[_2nd_order, _quadrature]]	✓	1.241
18375	$x^2y'' = \ln(x)$	[[_2nd_order, _quadrature]]	✓	0.405
18376	$y'' = -a^2y$	[[_2nd_order, _missing_x]]	✓	2.352
18377	$y'' = \frac{1}{y^2}$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓	714.540
18378	$yy'' - y'^2 = 0$	[[_2nd_order, _missing_x], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓	0.927
18379	$yy'' - y'^2 = 1$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓	19.293

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
18380	$(x^2 + 1)y'' - 1 - y'^2 = 0$	[[_2nd_order, _missing_y], [_2nd_order, _reducible, _mu_y_y1]]	✓	1.904
18381	$xy'' + 3y' = 3x$	[[_2nd_order, _missing_y]]	✓	3.823
18382	$x = y' + y''$	[[_2nd_order, _missing_y]]	✓	3.556
18383	$x = y + y'^2$	[[_homogeneous, 'class C'], _dAlembert]	✓	1.675
18384	$y = xy' - y'^2$	[[_1st_order, _with_linear_symmetries], _Clairaut]	✓	0.893
18385	$V'' + \frac{2V'}{r} = 0$	[[_2nd_order, _missing_y]]	✓	1.880
18386	$V'' + \frac{V'}{r} = 0$	[[_2nd_order, _missing_y]]	✓	2.080
18387	$\begin{bmatrix} z' + 7y - 3z = 0 \\ 7y' + 63y - 36z = 0 \end{bmatrix}$	system_of_ODEs	✓	0.506
18388	$\begin{bmatrix} z' + 2y' + 3y = 0 \\ y' + 3y - 2z = 0 \end{bmatrix}$	system_of_ODEs	✓	0.611
18389	$\begin{bmatrix} y' + 3y + z = 0 \\ z' + 3y + 5z = 0 \end{bmatrix}$	system_of_ODEs	✓	0.480
18390	$\begin{bmatrix} y' + 3y + 2z = 0 \\ z' + 2y - 4z = 0 \end{bmatrix}$	system_of_ODEs	✓	0.729
18391	$\begin{bmatrix} y' - 3y - 2z = 0 \\ z' + y - 2z = 0 \end{bmatrix}$	system_of_ODEs	✓	0.730
18392	$\begin{bmatrix} y' + z' + 6y = 0 \\ z' + 5y + z = 0 \end{bmatrix}$	system_of_ODEs	✓	0.605
18393	$\begin{bmatrix} z' + y' + 5y - 3z = x + e^x \\ y' + 2y - z = e^x \end{bmatrix}$	system_of_ODEs	✓	0.889

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
18394	$\begin{bmatrix} z' + y + 3z = e^x \\ y' + 3y + 4z = e^{2x} \end{bmatrix}$	system_of_ODEs	✓	0.923
18395	$\begin{bmatrix} z' - 3y + 2z = e^x \\ y' + 2y - z = e^{3x} \end{bmatrix}$	system_of_ODEs	✓	1.153
18396	$\begin{bmatrix} z' + 5y - 2z = x \\ y' + 4y + z = x \end{bmatrix}$	system_of_ODEs	✓	1.319
18397	$\begin{bmatrix} z' + 7y - 9z = e^x \\ y' - y - 3z = e^{2x} \end{bmatrix}$	system_of_ODEs	✓	1.750
18398	$\begin{bmatrix} y' - 2y - 2z = e^{3x} \\ z' + 5y - 2z = e^{4x} \end{bmatrix}$	system_of_ODEs	✓	1.635
18399	$y'^2 + xy' - y = 0$	[[_1st_order, _with_linear_symmetries], _Clairaut]	✓	0.407
18400	$y'' - \frac{2y'}{x} + \frac{2y}{x^2} = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	1.695
18401	$v'' + \frac{2v'}{r} = 0$	[[_2nd_order, _missing_y]]	✓	0.462
18402	$y'' - k^2y = 0$	[[_2nd_order, _missing_x]]	✓	3.988
18403	$(1 - x)y' - 1 - y = 0$	[_separable]	✓	1.391
18404	$y' + \sqrt{\frac{1 - y^2}{-x^2 + 1}} = 0$	unknown	✓	1690.547
18405	$y - xy' = a(y^2 + y')$	[_separable]	✓	191.412
18406	$3e^x \tan(y) + (1 - e^x) \sec(y)^2 y' = 0$	[_separable]	✓	510.199
18407	$x^2 + y^2 - 2xyy' = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓	454.347
18408	$y^2 + (xy + x^2)y' = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓	120.134

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
18409	$x^2y - (x^3 + y^3)y' = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	323.655
18410	$(4y + 3x)y' + y - 2x = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓	450.299
18411	$3y - 7x + 7 + (7y - 3x + 3)y' = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	3.437
18412	$(y - 3x + 3)y' = 2y - x - 4$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	5.693
18413	$x^2 - 4xy - 2y^2 + (y^2 - 4xy - 2x^2)y' = 0$	[[_homogeneous, 'class A'], _exact, _rational, _dAlembert]	✓	7.023
18414	$x + yy' + \frac{-y + xy'}{y^2 + x^2} = 0$	[[_1st_order, _with_linear_symmetries], _exact, _rational]	✓	1.363
18415	$a^2 - 2xy - y^2 - (x + y)^2y' = 0$	[_exact, _rational, [_1st_order, '_with_symmetry_[F(x),G(x)']]]	✓	1.521
18416	$2ax + by + g + (2cy + bx + e)y' = 0$	[[_homogeneous, 'class C'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓	3.584
18417	$(2x^2y + 4x^3 - 12xy^2 + 3y^2 - xe^y + e^{2x})y' + 12x^2y + 2xy^2 + 4x^3 - 4y^3 + 2ye^{2x} - e^y = 0$	[_exact]	✓	2.919
18418	$y - xy' + \ln(x) = 0$	[_linear]	✓	0.876
18419	$(xy + 1)y - (1 - xy)xy' = 0$	[[_homogeneous, 'class G'], _rational, [_Abel, '2nd type', 'class B']]	✓	1.288
18420	$a(xy' + 2y) = xyy'$	[_separable]	✓	1.654
18421	$x^4e^x - 2mxy^2 + 2mx^2yy' = 0$	[[_homogeneous, 'class D'], _Bernoulli]	✓	2.044
18422	$y(2xy + e^x) - e^xy' = 0$	[_Bernoulli]	✓	2.026

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
18423	$x^2y - 2xy^2 - (x^3 - 3x^2y)y' = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓	6.673
18424	$y(xy + 2y^2x^2) + x(xy - y^2x^2)y' = 0$	[[_homogeneous, 'class G'], _rational, [_Abel, '2nd type', 'class B']]	✓	1.553
18425	$x^2 + y^2 + 2x + 2yy' = 0$	[[_homogeneous, 'class D'], _rational, _Bernoulli]	✓	2.016
18426	$x^2 + y^2 - x^2yy' = 0$	[_rational, _Bernoulli]	✓	1.329
18427	$3x^2y^4 + 2xy + (2x^3y^3 - x^2)y' = 0$	[[_homogeneous, 'class G'], _rational]	✓	3.756
18428	$y^4 + 2y + (xy^3 + 2y^4 - 4x)y' = 0$	[_rational, [_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓	2.942
18429	$y^3 - 2x^2y + (2xy^2 - x^3)y' = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	85.610
18430	$2x^2y - 3y^4 + (3x^3 + 2xy^3)y' = 0$	[[_homogeneous, 'class G'], _rational]	✓	6.967
18431	$y^2 + 2x^2y + (2x^3 - xy)y' = 0$	[[_homogeneous, 'class G'], _rational, [_Abel, '2nd type', 'class B']]	✓	2.836
18432	$xy' - ay = x + 1$	[_linear]	✓	1.680
18433	$y' + y = e^{-x}$	[[_linear, 'class A']]	✓	0.964
18434	$\cos(x)^2 y' + y = \tan(x)$	[_linear]	✓	4.297
18435	$(x + 1)y' - ny = e^x(x + 1)^{n+1}$	[_linear]	✓	2.054
18436	$(x^2 + 1)y' + 2xy = 4x^2$	[_linear]	✓	1.321
18437	$y' + \frac{y}{x} = x^2y^6$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓	2.393
18438	$1 + y^2 = (\arctan(y) - x)y'$	[[_1st_order, '_with_symmetry_[F(x),G(y)]']]	✓	536.425

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
18439	$y' + \frac{2y}{x} = 3x^2y^{1/3}$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓	456.019
18440	$y' + \frac{xy}{-x^2 + 1} = x\sqrt{y}$	unknown	✓	356.733
18441	$3x(-x^2 + 1)y^2y' + (2x^2 - 1)y^3 = ax^3$	[_rational, _Bernoulli]	✓	97.450
18442	$(x + y)^2 y' = a^2$	[[_homogeneous, 'class C', _dAlembert]	✓	174.097
18443	$-y + xy' = \sqrt{y^2 + x^2}$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓	547.937
18444	$-y + xy' = x\sqrt{y^2 + x^2}$	[[_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]]]	✗	4.840
18445	$\sec(x)^2 \tan(y) + \sec(y)^2 \tan(x) y' = 0$	[_separable]	✓	37.369
18446	$(x^2 - x^2y) y' + y^2 + xy^2 = 0$	[_separable]	✓	1.638
18447	$y' + \frac{(-2x + 1)y}{x^2} = 1$	[_linear]	✓	1.304
18448	$3y' + \frac{2y}{x + 1} = \frac{x^3}{y^2}$	[_rational, _Bernoulli]	✓	2.423
18449	$2x - y + 1 + (2y - x - 1)y' = 0$	[[_homogeneous, 'class C', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓	3.001
18450	$y' + \frac{y}{\sqrt{-x^2 + 1}} = \frac{x + \sqrt{-x^2 + 1}}{(-x^2 + 1)^2}$	[_linear]	✓	3.489
18451	$xy' + \frac{y^2}{x} = y$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓	1.811
18452	$x(x^2 + y^2 - a^2) + y(x^2 - y^2 - b^2) y' = 0$	[_exact, _rational]	✓	1.821
18453	$y' + \frac{4xy}{x^2 + 1} = \frac{1}{(x^2 + 1)^3}$	[_linear]	✓	2.182

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
18454	$x^2y - (x^3 + y^3)y' = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	13.868
18455	$x(-x^2 + 1)y' + (2x^2 - 1)y = ax^3$	[_linear]	✓	1.191
18456	$x^2 + y^2 + 1 - 2xyy' = 0$	[_rational, _Bernoulli]	✓	1.812
18457	$x + yy' = m(-y + xy')$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓	3.676
18458	$y' + y \cos(x) = y^n \sin(2x)$	[_Bernoulli]	✓	5.617
18459	$(x + 1)y' + 1 = 2e^y$	[_separable]	✓	1.470
18460	$y' = x^3y^3 - xy$	[_Bernoulli]	✓	1.187
18461	$y + (ax^2y^n - 2x)y' = 0$	[[_homogeneous, 'class G'], _rational]	✓	1.346
18462	$(1 + 6y^2 - 3x^2y)y' = 3xy^2 - x^2$	[_exact, _rational]	✓	1.498
18463	$y(x^2 + y^2 + a^2)y' + x(x^2 + y^2 - a^2) = 0$	[_exact, _rational]	✓	1.889
18464	$(x^2y^3 + xy)y' = 1$	[[_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓	1.966
18465	$yy' = ax$	[_separable]	✓	3.168
18466	$\sqrt{a^2 + x^2}y' + y = \sqrt{a^2 + x^2} - x$	[_linear]	✓	1.800
18467	$(x + y)y' + x - y = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓	2.703
18468	$yy' + by^2 = a \cos(x)$	[_Bernoulli]	✓	2.743
18469	$2xy + (y^2 - x^2)y' = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	11.116
18470	$y - xy' = b(1 + x^2y')$	[_separable]	✓	1.502
18471	$3y + 2x + 4 - (4x + 6y + 5)y' = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓	1.487

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
18472	$(x^3y^3 + y^2x^2 + xy + 1)y + (x^3y^3 - y^2x^2 - xy + 1)xy' = 0$	[[_homogeneous, 'class G'], _rational]	✓	2.083
18473	$2y^2x^2 + y - (x^3y - 3x)y' = 0$	[[_homogeneous, 'class G'], _rational, [_Abel, '2nd type', 'class B']]	✓	2.602
18474	$y^2 + x^2y' = xyy'$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓	383.145
18475	$y' + \frac{ny}{x} = ax^{-n}$	[_linear]	✓	240.335
18476	$(x - y)^2y' = a^2$	[[_homogeneous, 'class C'], _dAlembert]	✓	51.046
18477	$y'^3 + 2xy'^2 - y^2y'^2 - 2xy^2y' = 0$	[_quadrature]	✓	4.030
18478	$y'^2 - ax^3 = 0$	[_quadrature]	✓	0.582
18479	$y'^3(x + 2y) + 3y'^2(x + y) + (2x + y)y' = 0$	[_quadrature]	✓	78.843
18480	$y'^3 = ax^4$	[_quadrature]	✓	0.940
18481	$4y^2y'^2 + 2y'xy(3x + 1) + 3x^3 = 0$	[_separable]	✓	20.232
18482	$y'^2 - 7y' + 12 = 0$	[_quadrature]	✓	1.653
18483	$x - yy' = ay'^2$	unknown	✓	1500.431
18484	$y = -ay' + \frac{c + a \arcsin(y')}{\sqrt{1 - y'^2}}$	[_quadrature]	✓	888.254
18485	$4y = x^2 + y'^2$	[[_homogeneous, 'class G']]	✓	3.225
18486	$xy'^2 - 2yy' + ax = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	1.490
18487	$y = 2y' + 3y'^2$	[_quadrature]	✓	0.812
18488	$x(1 + y'^2) = 1$	[_quadrature]	✓	0.484
18489	$x^2 = a^2(1 + y'^2)$	[_quadrature]	✓	0.243

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
18490	$y^2 = a^2(1 + y'^2)$	[_quadrature]	✓	1.091
18491	$y^2 + xyy' - x^2y'^2 = 0$	[_separable]	✓	0.652
18492	$y = y'^2y + 2xy'$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	1.970
18493	$y = (1 + y')x + y'^2$	[[_1st_order, _with_linear_symmetries], _dAlembert]	✓	0.536
18494	$x^2(y - xy') = y'^2y$	[[_1st_order, _with_linear_symmetries]]	✓	5.341
18495	$y = xy' + \arcsin(y')$	[_Clairaut]	✓	3.350
18496	$e^{4x}(y' - 1) + e^{2y}y'^2 = 0$	[[_homogeneous, 'class C'], _dAlembert]	✓	1.639
18497	$xy(y - xy') = x + yy'$	[_separable]	✓	5.612
18498	$y' + 2xy = y^2 + x^2$	[[_homogeneous, 'class C'], _Riccati]	✓	2.789
18499	$x^2y'^2 - 2xyy' + 2y^2 - x^2 = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	5.017
18500	$y = y'(x - b) + \frac{a}{y'}$	[[_1st_order, _with_linear_symmetries], _Clairaut]	✓	0.711
18501	$xy^2(y'^2 + 2) = 2y'y^3 + x^3$	[_separable]	✓	16.443
18502	$y = -xy' + x^4y'^2$	[[_homogeneous, 'class G'], _rational]	✓	3.773
18503	$y'^2 - 9y' + 18 = 0$	[_quadrature]	✓	1.114
18504	$ayy'^2 + (2x - b)y' - y = 0$	[[_homogeneous, 'class C'], _rational, _dAlembert]	✓	1.628
18505	$(-y + xy')^2 = a(1 + y'^2)(y^2 + x^2)^{3/2}$	[[_1st_order, _with_linear_symmetries]]	✓	100.286

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
18506	$(-y + xy')^2 = y^2 - \frac{2yy'}{x} + 1$	[_rational, [_1st_order, ['_with_symmetry_[F(x),G(x)*y+H(x)]]]]	✓	23.296
18507	$3y^2y'^2 - 2xyy' + 4y^2 - x^2 = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓	6.244
18508	$(y^2 + x^2)(1 + y')^2 - 2(x + y)(1 + y')(x + yy') + (x + yy')^2 = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	10.158
18509	$(yy' + nx)^2 = (y^2 + nx^2)(1 + y'^2)$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓	5.658
18510	$y^2(1 - y'^2) = b$	[_quadrature]	✓	72.718
18511	$(-y + xy')(x + yy') = h^2y'$	[_rational]	✓	123.604
18512	$y'^2 + 2y'y \cot(x) = y^2$	[_separable]	✓	1.825
18513	$\left(y'^2 - \frac{1}{a^2 - x^2}\right)\left(y' - \sqrt{\frac{y}{x}}\right) = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓	251.550
18514	$x + \frac{y'}{\sqrt{1 + y'^2}} = a$	[_quadrature]	✓	0.886
18515	$xyy'^2 + y'(3x^2 - 2y^2) - 6xy = 0$	[_separable]	✓	8.223
18516	$y'^3 - 4xyy' + 8y^2 = 0$	[[_1st_order, _with_linear_symmetries]]	✓	507.285
18517	$y'^3 - (y^2 + xy + x^2)y'^2 + (x^3y + y^2x^2 + xy^3)y' - x^3y^3 = 0$	[_quadrature]	✓	2.549
18518	$y'^3 + my'^2 = a(y + mx)$	[[_homogeneous, 'class C'], _dAlembert]	✓	30.802
18519	$e^{3x}(y' - 1) + y'^3e^{2y} = 0$	unknown	✓	31.026
18520	$\left(1 - y^2 + \frac{y^4}{x^2}\right)y'^2 - \frac{2yy'}{x} + \frac{y^2}{x^2} = 0$	['y=_G(x,y)']	✓	16.648
18521	$y - \frac{1}{\sqrt{1 + y'^2}} = b$	[_quadrature]	✓	32.873

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

*Continued from previous page*

#	ODE	CAS classification	Solved?	time (sec)
18522	$y = xy' + \frac{m}{y'}$	[[_homogeneous, 'class G', _rational, _Clairaut]	✓	0.542
18523	$y = 2xy' + y^2y'^3$	[[_1st_order, _with_linear_symmetries]]	✓	106.908
18524	$y = xy' + a\sqrt{1 + y'^2}$	[[_1st_order, _with_linear_symmetries], _rational, _Clairaut]	✓	9.283
18525	$y'^2 + xy' - y = 0$	[[_1st_order, _with_linear_symmetries], _Clairaut]	✓	0.387
18526	$y'\sqrt{x} = \sqrt{y}$	[_separable]	✓	34.188
18527	$x^2y'^2 - 3xyy' + 2y^2 + x^3 = 0$	[[_homogeneous, 'class G', _rational]	✓	76.680
18528	$(1 + y')^3 = \frac{7(x + y)(1 - y')^3}{4a}$	[[_homogeneous, 'class C', _dAlembert]	✓	34.905
18529	$y^2(1 + y'^2) = r^2$	[_quadrature]	✓	424.807
18530	$xy'^2 - (x - a)^2 = 0$	[_quadrature]	✓	0.460
18531	$y'^2 + 2xy' - y = 0$	[[_1st_order, _with_linear_symmetries], _dAlembert]	✓	0.560
18532	$ay'^3 = 27y$	[_quadrature]	✓	3.963
18533	$xy'^2 - 2yy' + ax = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓	3.621
18534	$x^3y'^2 + x^2yy' + a^3 = 0$	[[_homogeneous, 'class G']]	✓	24.017
18535	$y^2 - 2xyy' + y'^2(x^2 - 1) = m^2$	[[_1st_order, _with_linear_symmetries], _rational, _Clairaut]	✓	0.803
18536	$y = xy' + \sqrt{b^2 + a^2y'}$	[[_1st_order, _with_linear_symmetries], _rational, _Clairaut]	✓	3.877

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

*Continued from previous page*

#	ODE	CAS classification	Solved?	time (sec)
18537	$y = xy' - y'^2$	[[_1st_order, _with_linear_symmetries], _Clairaut]	✓	0.500
18538	$4y'^2 = 9x$	[_quadrature]	✓	0.419
18539	$4x(x-1)(-2+x)y'^2 - (3x^2-6x+2)^2 = 0$	[_quadrature]	✓	0.435
18540	$(8y'^3 - 27)x = 12y'^2y$	[[_1st_order, _with_linear_symmetries], _dAlembert]	✓	1.046
18541	$y'^2(-a^2 + x^2) - 2xyy' + y^2 - b^2 = 0$	[[_1st_order, _with_linear_symmetries], _Clairaut]	✓	6.636
18542	$(-y + xy')(x - yy') = 2y'$	[_rational]	✓	92.792
18543	$y'' + 3y' - 54y = 0$	[[_2nd_order, _missing_x]]	✓	0.780
18544	$y'' - m^2y = 0$	[[_2nd_order, _missing_x]]	✓	13.832
18545	$2y'' + 5y' - 12y = 0$	[[_2nd_order, _missing_x]]	✓	0.638
18546	$9y'' + 18y' - 16y = 0$	[[_2nd_order, _missing_x]]	✓	0.621
18547	$y''' - 3y'' + 4y = 0$	[[_3rd_order, _missing_x]]	✓	0.134
18548	$y'''' - y''' - 9y'' - 11y' - 4y = 0$	[[_high_order, _missing_x]]	✓	0.115
18549	$y'' + 8y' + 25y = 0$	[[_2nd_order, _missing_x]]	✓	2.322
18550	$y'''' - m^2y = 0$	[[_high_order, _missing_x]]	✓	0.098
18551	$y'''' - 4y''' + 8y'' - 8y' + 4y = 0$	[[_high_order, _missing_x]]	✓	0.069
18552	$y'' - 5y' + 6y = e^{4x}$	[[_2nd_order, _with_linear_symmetries]]	✓	0.630
18553	$y'' - y = 2 + 5x$	[[_2nd_order, _with_linear_symmetries]]	✓	0.651

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

*Continued from previous page*

#	ODE	CAS classification	Solved?	time (sec)
18554	$y'' + 2y' + y = 2e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓	0.631
18555	$y''' - y'' - 8y' + 12y = X(x)$	[[_3rd_order, _linear, _nonhomogeneous]]	✓	0.375
18556	$y''' + y = 3 + e^{-x} + 5e^{2x}$	[[_3rd_order, _linear, _nonhomogeneous]]	✓	0.145
18557	$y''' - y = (1 + e^x)^2$	[[_3rd_order, _linear, _nonhomogeneous]]	✓	0.269
18558	$y'' - 2y' + y = 3e^{\frac{5x}{2}}$	[[_2nd_order, _with_linear_symmetries]]	✓	0.760
18559	$y''' + 3y'' + 2y' = x^2$	[[_3rd_order, _missing_y]]	✓	0.117
18560	$y''' + 8y = x^4 + 2x + 1$	[[_3rd_order, _linear, _nonhomogeneous]]	✓	0.135
18561	$y''' + y'' - y' - y = \cos(2x)$	[[_3rd_order, _linear, _nonhomogeneous]]	✓	0.102
18562	$y'' + a^2y = \cos(ax)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.764
18563	$y'' - 4y = 2\sin\left(\frac{x}{2}\right)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.138
18564	$y''' + y = \sin(3x) - \cos\left(\frac{x}{2}\right)^2$	[[_3rd_order, _linear, _nonhomogeneous]]	✓	0.355
18565	$y'''' + y = xe^{2x}$	[[_high_order, _linear, _nonhomogeneous]]	✓	0.222
18566	$y'' + 3y' + 2y = e^{2x}\sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.231
18567	$y'' + 2y = x^2e^{3x} + e^x\cos(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	11.739
18568	$y'' + 4y = x\sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	3.492
18569	$y'' - y = x^2\cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.193
18570	$y'''' + 4y = 0$	[[_high_order, _missing_x]]	✓	0.163
18571	$y^{(5)} - 13y''' + 26y'' + 82y' + 104y = 0$	[[_high_order, _missing_x]]	✓	0.139

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
Continued from previous page

#	ODE	CAS classification	Solved?	time (sec)
18572	$y''' + 2y'' + y' = e^{2x} + x^2 + x$	[[_3rd_order, _missing_y]]	✓	0.152
18573	$y'' + 4y = \sin(3x) + e^x + x^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	6.207
18574	$y'' - 5y' + 6y = x + e^{mx}$	[[_2nd_order, _with_linear_symmetries]]	✓	0.829
18575	$y'' - a^2y = e^{ax} + e^{nx}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	4.194
18576	$y''' - 3y'' - 6y' + 8y = x$	[[_3rd_order, _with_linear_symmetries]]	✓	0.092
18577	$y'''' + y''' + y'' = x^2(bx + a)$	[[_high_order, _missing_y]]	✓	0.126
18578	$y''' - 13y' + 12y = x$	[[_3rd_order, _with_linear_symmetries]]	✓	0.086
18579	$y'''' + 2n^2y'' + n^4y = \cos(mx)$	[[_high_order, _linear, _nonhomogeneous]]	✓	0.148
18580	$y'''' + 2y'' + y = x^2 \cos(x)$	[[_high_order, _linear, _nonhomogeneous]]	✓	0.964
18581	$y'' + a^2y = \sec(ax)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.142
18582	$y'' - 2y' + y = x^2e^{3x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	1.316
18583	$y'' + n^2y = x^4e^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	17.934
18584	$y'''' - a^4y = x^4$	[[_high_order, _linear, _nonhomogeneous]]	✓	0.122
18585	$y'''' - 2y''' + y'' = x$	[[_high_order, _missing_y]]	✓	0.243
18586	$y'''' - y = e^x \cos(x)$	[[_high_order, _linear, _nonhomogeneous]]	✓	0.105
18587	$y'' + y' + y = \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	96.143
18588	$y''' - 7y' - 6y = e^{2x}(x + 1)$	[[_3rd_order, _linear, _nonhomogeneous]]	✓	0.111
18589	$y'' - 2y' + 4y = e^x \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	391.687

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Table 2.2 Main lookup table. Sorted sequentially by problem number.

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#	ODE	CAS classification	Solved?	time (sec)
18590	$y''' + 3y'' + 3y' + y = e^{-x}$	[[_3rd_order, _with_linear_symmetries]]	✓	0.797
18591	$y'''' - 2y''' - 3y'' + 4y' + 4y = e^x x^2$	[[_high_order, _linear, _nonhomogeneous]]	✓	0.218
18592	$y''' - 3y'' + 3y' - y = x e^x + e^x$	[[_3rd_order, _linear, _nonhomogeneous]]	✓	0.207
18593	$y'' - y = x \sin(x) + (x^2 + 1) e^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	190.173
18594	$y'' - 4y' + 3y = e^x \cos(2x) + \cos(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	160.967
18595	$y''' - 3y'' + 4y' - 2y = e^x + \cos(x)$	[[_3rd_order, _linear, _nonhomogeneous]]	✓	0.349
18596	$y'' - 9y' + 20y = 20x$	[[_2nd_order, _with_linear_symmetries]]	✓	153.252
18597	$y''' - 3y'' + 4y = e^{3x}$	[[_3rd_order, _with_linear_symmetries]]	✓	0.151
18598	$y''' + y = e^{2x} \sin(x) + e^{\frac{x}{2}} \sin\left(\frac{\sqrt{3}x}{2}\right)$	[[_3rd_order, _linear, _nonhomogeneous]]	✓	4.046
18599	$x^2 y'' - xy' + y = 2 \ln(x)$	[[_2nd_order, _with_linear_symmetries]]	✓	2.095
18600	$x^2 y'' + y = 3x^2$	[[_2nd_order, _with_linear_symmetries]]	✓	3.079
18601	$x^3 y''' + 3x^2 y'' + xy' + y = 0$	[[_3rd_order, _exact, _linear, _homogeneous]]	✓	0.179
18602	$x^4 y'''' + 6x^3 y''' + 9x^2 y'' + 3xy' + y = 0$	[[_high_order, _with_linear_symmetries]]	✓	0.175
18603	$x^2 y'' - 2xy' - 4y = x^4$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓	2.872
18604	$x^2 y'' + 5xy' + 4y = x^4$	[[_2nd_order, _with_linear_symmetries]]	✓	2.057
18605	$x^2 y'' + 2xy' - 20y = (x + 1)^2$	[[_2nd_order, _with_linear_symmetries]]	✓	1.642

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
Continued from previous page

#	ODE	CAS classification	Solved?	time (sec)
18606	$x^2y'' + 7xy' + 5y = x^5$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓	2.385
18607	$(5 + 2x)^2 y'' - 6(5 - 2x) y' + 8y = 0$	[[_2nd_order, _with_linear_symmetries]]	✗	0.700
18608	$(2x - 1)^3 y'' + (2x - 1) y' - 2y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓	1.642
18609	$y''' - \frac{4y''}{x} + \frac{5y'}{x^2} - \frac{2y}{x^3} = 1$	[[_3rd_order, _exact, _linear, _nonhomogeneous]]	✓	0.496
18610	$x^2y'' + 4xy' + 2y = e^x$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓	2.963
18611	$x^3y''' - 3x^2y'' + 7xy' - 8y = 0$	[[_3rd_order, _with_linear_symmetries]]	✓	0.113
18612	$(x + a)^2 y'' - 4(x + a) y' + 6y = x$	[[_2nd_order, _with_linear_symmetries]]	✓	1.751
18613	$x^3y''' + 6x^2y'' + 4xy' - 4y = 0$	[[_3rd_order, _with_linear_symmetries]]	✓	0.115
18614	$x^3y''' + 2x^2y'' + 2y = 10c + \frac{10}{x}$	[[_3rd_order, _exact, _linear, _nonhomogeneous]]	✓	0.622
18615	$16(x + 1)^4 y'''' + 96(x + 1)^3 y''' + 104(x + 1)^2 y'' + 8(x + 1) y' + y = x^2 + 4x + 3$	[[_high_order, _with_linear_symmetries]]	✗	0.055
18616	$x^2y'' + xy' - y = x^m$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓	2.628
18617	$x^2y'' - 3xy' + 4y = x^m$	[[_2nd_order, _with_linear_symmetries]]	✓	37.673
18618	$x^4y'''' + 6x^3y''' + 9x^2y'' + 3xy' + y = (\ln(x) + 1)^2$	[[_high_order, _linear, _nonhomogeneous]]	✓	0.970
18619	$x^4y''' + 2x^3y'' - x^2y' + xy = 1$	[[_3rd_order, _with_linear_symmetries]]	✓	0.346

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Table 2.2 Main lookup table. Sorted sequentially by problem number.  
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#	ODE	CAS classification	Solved?	time (sec)
18620	$x^2y'' + 3xy' + y = \frac{1}{(1-x)^2}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓	7.784
18621	$x^2y'' - (2m-1)xy' + (m^2+n^2)y = n^2x^m \ln(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	489.690
18622	$x^2y'' - 3xy' + y = \frac{\ln(x) \sin(\ln(x)) + 1}{x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	115.751
18623	$xy''' + (x^2 - 3)y'' + 4xy' + 2y = 0$	[[_3rd_order, _fully, _exact, _linear]]	✗	0.031
18624	$x^5y'' + 3x^3y' + (3-6x)x^2y = x^4 + 2x - 5$	[[_2nd_order, _linear, _nonhomogeneous]]	✓	178.519
18625	$xy'' + 2xy' + 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓	155.470
18626	$y'' + 2e^xy' + 2ye^x = x^2$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓	275.191
18627	$\sqrt{x}y'' + 2xy' + 3y = x$	[[_2nd_order, _with_linear_symmetries]]	✗	32.218
18628	$y'y'' - x^2yy' = xy^2$	[[_2nd_order, _exact, _nonlinear], [_2nd_order, _with_linear_symmetries], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_y_y1], [_2nd_order, _reducible, _mu_poly_yn]]	✗	429.931
18629	$x^2yy'' + (-y + xy')^2 - 3y^2 = 0$	[[_2nd_order, _exact, _nonlinear], [_2nd_order, _with_linear_symmetries], [_2nd_order, _reducible, _mu_xy]]	✓	123.223

## 2.3 Tables of first order ODEs broken by type of ODE

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2.3.3	first order ode homogA . . . . .	.1440
2.3.4	first order ode homogC . . . . .	.1498
2.3.5	first order ode homogD . . . . .	.1500
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2.3.7	first order ode homogG . . . . .	.1644
2.3.8	first order ode homog maple C . . . . .	.1645
2.3.9	first order ode bernoulli . . . . .	.1711
2.3.10	first order ode exact . . . . .	.1759
2.3.11	first order ode clairaut . . . . .	.1974
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2.3.13	first order ode isobaric . . . . .	.2042
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## 2.3.1 first order ode linear

Table 2.3: first order ode linear

#	ODE	CAS classification	Solved?
19	$y' = -y - \sin(x)$	[[_linear, 'class A']]	✓
20	$y' = x + y$	[[_linear, 'class A']]	✓
21	$y' = y - \sin(x)$	[[_linear, 'class A']]	✓
22	$y' = x - y$	[[_linear, 'class A']]	✓
23	$y' = y - x + 1$	[[_linear, 'class A']]	✓
24	$y' = x + 1 - y$	[[_linear, 'class A']]	✓
25	$y' = x^2 - y$	[[_linear, 'class A']]	✓
26	$y' = x^2 - y - 2$	[[_linear, 'class A']]	✓
37	$y' = x + y$ i.c.	[[_linear, 'class A']]	✓
38	$y' = y - x$ i.c.	[[_linear, 'class A']]	✓
41	$y' + 2xy = 0$	[_separable]	✓
43	$y' = y \sin(x)$	[_separable]	✓
44	$(x + 1)y' = 4y$	[_separable]	✓
49	$(-x^2 + 1)y' = 2y$	[_separable]	✓
57	$y' = 1 + x + y + xy$	[_separable]	✓
59	$y' = ye^x$ i.c.	[_separable]	✓
62	$y' = 4x^3y - y$ i.c.	[_separable]	✓
64	$\tan(x)y' = y$ i.c.	[_separable]	✓
65	$-y + xy' = 2x^2y$ i.c.	[_separable]	✓
74	$y' - 2y = 3e^{2x}$ i.c.	[[_linear, 'class A']]	✓
75	$y' + 3y = 2xe^{-3x}$	[[_linear, 'class A']]	✓
76	$y' - 2xy = e^{x^2}$	[_linear]	✓
77	$xy' + 2y = 3x$ i.c.	[_linear]	✓
78	$xy' + 5y = 7x^2$ i.c.	[_linear]	✓

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Table 2.3 first order ode linear  
Continued from previous page

#	ODE	CAS classification	Solved?
79	$2xy' + y = 10\sqrt{x}$	[_linear]	✓
80	$3xy' + y = 12x$	[_linear]	✓
81	$-y + xy' = x$	[_linear]	✓
	<i>i.c.</i>		
82	$2xy' - 3y = 9x^3$	[_linear]	✓
83	$xy' + y = 3xy$	[_separable]	✓
	<i>i.c.</i>		
84	$xy' + 3y = 2x^5$	[_linear]	✓
	<i>i.c.</i>		
85	$y' + y = e^x$	[[_linear, 'class A']]	✓
	<i>i.c.</i>		
86	$xy' - 3y = x^3$	[_linear]	✓
	<i>i.c.</i>		
87	$y' + 2xy = x$	[_separable]	✓
	<i>i.c.</i>		
88	$y' = (1 - y) \cos(x)$	[_separable]	✓
	<i>i.c.</i>		
89	$(x + 1)y' + y = \cos(x)$	[_linear]	✓
	<i>i.c.</i>		
90	$xy' = 2y + x^3 \cos(x)$	[_linear]	✓
91	$y' + y \cot(x) = \cos(x)$	[_linear]	✓
92	$y' = 1 + x + y + xy$	[_separable]	✓
	<i>i.c.</i>		
93	$xy' = 3y + x^4 \cos(x)$	[_linear]	✓
	<i>i.c.</i>		
94	$y' = 2xy + 3x^2 e^{x^2}$	[_linear]	✓
	<i>i.c.</i>		
95	$xy' + (2x - 3)y = 4x^4$	[_linear]	✓
96	$(x^2 + 4)y' + 3xy = x$	[_separable]	✓
	<i>i.c.</i>		
97	$(x^2 + 1)y' + 3x^3y = 6x e^{-\frac{3x^2}{2}}$	[_linear]	✓
	<i>i.c.</i>		
98	$\frac{1 - 4xy^2}{x'} = y^3$	[_linear]	✓
99	$\frac{x + y e^y}{x'} = 1$	[[_linear, 'class A']]	✓

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Table 2.3 first order ode linear  
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#	ODE	CAS classification	Solved?
100	$\frac{1+2xy}{x'} = y^2 + 1$	[_linear]	✓
101	$y' = 1 + 2xy$	[_linear]	✓
102	$2xy' = y + 2x \cos(x)$ i.c.	[_linear]	✓
103	$y' + p(x)y = 0$	[_separable]	✓
104	$y' + p(x)y = q(x)$	[_linear]	✓
146	$\frac{2x^{5/2} - 3y^{5/3}}{2x^{5/2}y^{2/3}} + \frac{(3y^{5/3} - 2x^{5/2})y'}{3x^{3/2}y^{5/3}} = 0$	[[_1st_order, __with_linear_symmetries], __exact, __rational]	✓
179	$x^3 + 3y - xy' = 0$	[_linear]	✓
183	$3y + x^4y' = 2xy$	[_separable]	✓
185	$2x^2y + x^3y' = 1$	[_linear]	✓
193	$y' + 3y = 3x^2e^{-3x}$	[[_linear, 'class A']]	✓
198	$xy' + 3y = \frac{3}{x^{3/2}}$	[_linear]	✓
199	$(x^2 - 1)y' + (x - 1)y = 1$	[_linear]	✓
203	$2y + (x + 1)y' = 3x + 3$	[_linear]	✓
206	$xy' + y = 2e^{2x}$	[_linear]	✓
207	$(2x + 1)y' + y = (2x + 1)^{3/2}$	[_linear]	✓
209	$y' = 3(y + 7)x^2$	[_separable]	✓
213	$y' = \frac{2xy + 2x}{x^2 + 1}$	[_separable]	✓
661	$y' = -y - \sin(x)$	[[_linear, 'class A']]	✓
662	$y' = x + y$	[[_linear, 'class A']]	✓
663	$y' = y - \sin(x)$	[[_linear, 'class A']]	✓
664	$y' = x - y$	[[_linear, 'class A']]	✓
665	$y' = y - x + 1$	[[_linear, 'class A']]	✓
666	$y' = x + 1 - y$	[[_linear, 'class A']]	✓
667	$y' = x^2 - y$	[[_linear, 'class A']]	✓
668	$y' = x^2 - y - 2$	[[_linear, 'class A']]	✓
677	$y' + 2xy = 0$	[_separable]	✓

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Table 2.3 first order ode linear  
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#	ODE	CAS classification	Solved?
679	$y' = y \sin(x)$	[_separable]	✓
680	$(x + 1) y' = 4y$	[_separable]	✓
685	$(-x^2 + 1) y' = 2y$	[_separable]	✓
692	$y' = 1 + x + y + xy$	[_separable]	✓
694	$y' = y e^x$	[_separable]	✓
	i.c.		
697	$y' = 4x^3 y - y$	[_separable]	✓
	i.c.		
699	$\tan(x) y' = y$	[_separable]	✓
	i.c.		
700	$-y + xy' = 2x^2 y$	[_separable]	✓
	i.c.		
705	$y' - 2y = 3e^{2x}$	[[_linear, 'class A']]	✓
	i.c.		
706	$y' + 3y = 2x e^{-3x}$	[[_linear, 'class A']]	✓
707	$y' - 2xy = e^{x^2}$	[_linear]	✓
708	$xy' + 2y = 3x$	[_linear]	✓
	i.c.		
709	$2xy' + y = 10\sqrt{x}$	[_linear]	✓
	i.c.		
710	$2xy' + y = 10\sqrt{x}$	[_linear]	✓
711	$3xy' + y = 12x$	[_linear]	✓
712	$-y + xy' = x$	[_linear]	✓
	i.c.		
713	$2xy' - 3y = 9x^3$	[_linear]	✓
714	$xy' + y = 3xy$	[_separable]	✓
	i.c.		
715	$xy' + 3y = 2x^5$	[_linear]	✓
	i.c.		
716	$y' + y = e^x$	[[_linear, 'class A']]	✓
	i.c.		
717	$xy' - 3y = x^3$	[_linear]	✓
	i.c.		
718	$y' + 2xy = x$	[_separable]	✓
	i.c.		

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Table 2.3 first order ode linear

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#	ODE	CAS classification	Solved?
719	$y' = (1 - y) \cos(x)$ i.c.	[_separable]	✓
720	$(x + 1)y' + y = \cos(x)$ i.c.	[_linear]	✓
721	$xy' = 2y + x^3 \cos(x)$	[_linear]	✓
722	$y' + y \cot(x) = \cos(x)$	[_linear]	✓
723	$y' = 1 + x + y + xy$ i.c.	[_separable]	✓
724	$xy' = 3y + x^4 \cos(x)$ i.c.	[_linear]	✓
725	$y' = 2xy + 3x^2 e^{x^2}$ i.c.	[_linear]	✓
726	$xy' + (2x - 3)y = 4x^4$	[_linear]	✓
727	$(x^2 + 4)y' + 3xy = x$ i.c.	[_separable]	✓
728	$(x^2 + 1)y' + 3x^3y = 6x e^{-\frac{3x^2}{2}}$ i.c.	[_linear]	✓
770	$\frac{2x^{5/2} - 3y^{5/3}}{2x^{5/2}y^{2/3}} + \frac{(3y^{5/3} - 2x^{5/2})y'}{3x^{3/2}y^{5/3}} = 0$	[[_1st_order, __with_linear_symmetries], __exact, _rational]	✓
771	$x^3 + 3y - xy' = 0$	[_linear]	✓
775	$3y + x^4y' = 2xy$	[_separable]	✓
777	$2x^2y + x^3y' = 1$	[_linear]	✓
785	$y' + 3y = 3x^2 e^{-3x}$	[[_linear, 'class A']]	✓
790	$xy' + 3y = \frac{3}{x^{3/2}}$	[_linear]	✓
791	$(x^2 - 1)y' + (x - 1)y = 1$	[_linear]	✓
795	$2y + (x + 1)y' = 3x + 3$	[_linear]	✓
798	$xy' + y = 2e^{2x}$	[_linear]	✓
799	$(2x + 1)y' + y = (2x + 1)^{3/2}$	[_linear]	✓
800	$y' = 3(y + 7)x^2$	[_separable]	✓
801	$y' = 3(y + 7)x^2$	[_separable]	✓
805	$y' = \frac{2xy + 2x}{x^2 + 1}$	[_separable]	✓

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Table 2.3 first order ode linear  
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#	ODE	CAS classification	Solved?
1098	$3y + y' = e^{-2t} + t$	[[_linear, 'class A']]	✓
1099	$-2y + y' = e^{2t}t^2$	[[_linear, 'class A']]	✓
1100	$y' + y = 1 + te^{-t}$	[[_linear, 'class A']]	✓
1101	$\frac{y}{t} + y' = 3 \cos(2t)$	[_linear]	✓
1102	$-2y + y' = 3e^t$	[[_linear, 'class A']]	✓
1103	$2y + ty' = \sin(t)$	[_linear]	✓
1104	$2ty + y' = 2te^{-t^2}$	[_linear]	✓
1105	$4ty + (t^2 + 1)y' = \frac{1}{(t^2 + 1)^2}$	[_linear]	✓
1106	$y + 2y' = 3t$	[[_linear, 'class A']]	✓
1107	$-y + ty' = t^2e^{-t}$	[_linear]	✓
1108	$y' + y = 5 \sin(2t)$	[[_linear, 'class A']]	✓
1109	$y + 2y' = 3t^2$	[[_linear, 'class A']]	✓
1110	$-y + y' = 2e^{2t}t$	[[_linear, 'class A']]	✓
i.c.			
1111	$2y + y' = te^{-2t}$	[[_linear, 'class A']]	✓
i.c.			
1112	$2y + ty' = t^2 - t + 1$	[_linear]	✓
i.c.			
1113	$\frac{2y}{t} + y' = \frac{\cos(t)}{t^2}$	[_linear]	✓
i.c.			
1114	$-2y + y' = e^{2t}$	[[_linear, 'class A']]	✓
i.c.			
1115	$2y + ty' = \sin(t)$	[_linear]	✓
i.c.			
1116	$4t^2y + t^3y' = e^{-t}$	[_linear]	✓
i.c.			
1117	$(t + 1)y + ty' = t$	[_linear]	✓
i.c.			
1118	$-\frac{y}{2} + y' = 2 \cos(t)$	[[_linear, 'class A']]	✓
i.c.			
1119	$-y + 2y' = e^{\frac{t}{3}}$	[[_linear, 'class A']]	✓
i.c.			

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Table 2.3 first order ode linear  
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#	ODE	CAS classification	Solved?
1120	$-2y + 3y' = e^{-\frac{\pi t}{2}}$ i.c.	[[_linear, 'class A']]	✓
1121	$(t + 1)y + ty' = 2te^{-t}$ i.c.	[_linear]	✓
1122	$2y + ty' = \frac{\sin(t)}{t}$ i.c.	[_linear]	✓
1123	$\cos(t)y + \sin(t)y' = e^t$ i.c.	[_linear]	✓
1124	$\frac{y}{2} + y' = 2\cos(t)$ i.c.	[[_linear, 'class A']]	✓
1125	$\frac{2y}{3} + y' = 1 - \frac{t}{2}$	[[_linear, 'class A']]	✓
1126	$\frac{y}{4} + y' = 3 + 2\cos(2t)$ i.c.	[[_linear, 'class A']]	✓
1127	$-y + y' = 1 + 3\sin(t)$	[[_linear, 'class A']]	✓
1128	$-\frac{3y}{2} + y' = 2e^t + 3t$	[[_linear, 'class A']]	✓
1166	$\ln(t)y + (t - 3)y' = 2t$	[_linear]	✓
1167	$y + (-4 + t)ty' = 0$ i.c.	[_separable]	✓
1168	$\tan(t)y + y' = \sin(t)$ i.c.	[_linear]	✓
1169	$2ty + (-t^2 + 4)y' = 3t^2$ i.c.	[_linear]	✓
1170	$2ty + (-t^2 + 4)y' = 3t^2$ i.c.	[_linear]	✓
1171	$y + \ln(t)y' = \cot(t)$	[_linear]	✓
1196	$2y + 2xy^2 + (2x + 2x^2y)y' = 0$	[_separable]	✓
1202	$\frac{y}{x} + 6x + (\ln(x) - 2)y' = 0$	[_linear]	✓
1211	$y' = -1 + e^{2x} + y$	[[_linear, 'class A']]	✓
1218	$y' = \frac{x^3 - 2y}{x}$	[_linear]	✓
1221	$y' = 3 - 6x + y - 2xy$	[_separable]	✓
1223	$xy + xy' = 1 - y$ i.c.	[_linear]	✓

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Table 2.3 first order ode linear  
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#	ODE	CAS classification	Solved?
1225	$xy' + 2y = \frac{\sin(x)}{x}$ i.c.	[_linear]	✓
1229	$y' + y = \frac{1}{1 + e^x}$	[_linear]	✓
1232	$(1 + e^x)y' = y - ye^x$	[_separable]	✓
1234	$y' = e^{2x} + 3y$	[[_linear, 'class A']]	✓
1235	$2y + y' = e^{-x^2-2x}$	[[_linear, 'class A']]	✓
1240	$(t + 1)y + ty' = e^{2t}$	[_linear]	✓
1245	$3t + 2y = -ty'$	[_linear]	✓
1520	$xy' + y = x^2$	[_linear]	✓
1521	$y' + 2xy = x$	[_separable]	✓
1530	$y' = \cos(x) - y \tan(x)$ i.c.	[_linear]	✓
1531	$y' = \frac{x^2 - 2x^2y + 2}{x^3}$ i.c.	[_linear]	✓
1538	$y' + 3x^2y = 0$	[_separable]	✓
1539	$xy' + y \ln(x) = 0$	[_separable]	✓
1540	$xy' + 3y = 0$	[_separable]	✓
1541	$x^2y' + y = 0$	[_separable]	✓
1542	$y' + \frac{(x+1)y}{x} = 0$ i.c.	[_separable]	✓
1543	$xy' + \left(1 + \frac{1}{\ln(x)}\right)y = 0$ i.c.	[_separable]	✓
1544	$xy' + (1 + x \cot(x))y = 0$ i.c.	[_separable]	✓
1545	$y' - \frac{2xy}{x^2+1} = 0$ i.c.	[_separable]	✓
1546	$y' + \frac{ky}{x} = 0$ i.c.	[_separable]	✓
1547	$y' + \tan(kx)y = 0$ i.c.	[_separable]	✓

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Table 2.3 first order ode linear

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#	ODE	CAS classification	Solved?
1549	$y' + \left(\frac{1}{x} - 1\right)y = -\frac{2}{x}$	[_linear]	✓
1550	$y' + 2xy = xe^{-x^2}$	[_linear]	✓
1551	$y' + \frac{2xy}{x^2 + 1} = \frac{e^{-x^2}}{x^2 + 1}$	[_linear]	✓
1552	$y' + \frac{y}{x} = \frac{7}{x^2} + 3$	[_linear]	✓
1553	$y' + \frac{4y}{x-1} = \frac{1}{(x-1)^5} + \frac{\sin(x)}{(x-1)^4}$	[_linear]	✓
1554	$xy' + (2x^2 + 1)y = x^3e^{-x^2}$	[_linear]	✓
1555	$xy' + 2y = \frac{2}{x^2} + 1$	[_linear]	✓
1556	$y' + y \tan(x) = \cos(x)$	[_linear]	✓
1557	$2y + (x+1)y' = \frac{\sin(x)}{x+1}$	[_linear]	✓
1558	$(-2+x)(x-1)y' - (4x-3)y = (-2+x)^3$	[_linear]	✓
1559	$y' + 2 \sin(x) \cos(x)y = e^{-\sin(x)^2}$	[_linear]	✓
1560	$x^2y' + 3xy = e^x$	[_linear]	✓
1561	$y' + 7y = e^{3x}$	[[_linear, 'class A']]	✓
1562	$(x^2 + 1)y' + 4xy = \frac{2}{x^2 + 1}$	[_linear]	✓
1563	$xy' + 3y = \frac{2}{x(x^2 + 1)}$	[_linear]	✓
1564	$y' + y \cot(x) = \cos(x)$	[_linear]	✓
1565	$y' + \frac{y}{x} = \frac{2}{x^2} + 1$	[_linear]	✓
1566	$(x-1)y' + 3y = \frac{1}{(x-1)^3} + \frac{\sin(x)}{(x-1)^2}$	[_linear]	✓
1567	$xy' + 2y = 8x^2$	[_linear]	✓
1568	$xy' - 2y = -x^2$	[_linear]	✓

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Table 2.3 first order ode linear  
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#	ODE	CAS classification	Solved?
1569	$y' + 2xy = x$ i.c.	[_separable]	✓
1570	$(x-1)y' + 3y = \frac{1+(x-1)\sec(x)^2}{(x-1)^3}$ i.c.	[_linear]	✓
1571	$(x+2)y' + 4y = \frac{2x^2+1}{x(x+2)^3}$ i.c.	[_linear]	✓
1572	$(x^2-1)y' - 2xy = x(x^2-1)$ i.c.	[_linear]	✓
1573	$xy' - 2y = -1$ i.c.	[_separable]	✓
1584	$(x^2+1)y' + xy = 0$	[_separable]	✓
1591	$y' + 2x(1+y) = 0$ i.c.	[_separable]	✓
1599	$(x+1)(-2+x)y' + y = 0$ i.c.	[_separable]	✓
1613	$y' = 2xy$	[_separable]	✓
1642	$y' = \frac{x+y}{x}$	[_linear]	✓
1680	$6y^2x^2 + 4x^3yy' = 0$	[_separable]	✓
1681	$3y \cos(x) + 4xe^x + 2x^3y + (3 \sin(x) + 3)y' = 0$	[_linear]	✓
1700	$\sin(x) - y \sin(x) - 2 \cos(x) + \cos(x)y' = 0$ i.c.	[_linear]	✓
1701	$(2x-1)(y-1) + (x+2)(x-3)y' = 0$ i.c.	[_separable]	✓
1713	$y - xy' = 0$	[_separable]	✓
1714	$3x^2y + 2x^3y' = 0$	[_separable]	✓
1716	$5xy + 2y + 5 + 2xy' = 0$	[_linear]	✓
1717	$xy + x + 2y + 1 + (x+1)y' = 0$	[_linear]	✓
1722	$x^2y + 4xy + 2y + (x^2+x)y' = 0$	[_separable]	✓
1723	$-y + (x^4-x)y' = 0$	[_separable]	✓
1730	$a \cos(x)y - y^2 \sin(x) + (b \cos(x)y - x \sin(x)y)y' = 0$	[_linear]	✓
1731	$x^4y^4 + x^5y^3y' = 0$	[_separable]	✓

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Table 2.3 first order ode linear  
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#	ODE	CAS classification	Solved?
2294	$y' + \sin(t)y = 0$ i.c.	[_separable]	✓
2295	$y' + e^{t^2}y = 0$ i.c.	[_separable]	✓
2296	$y' - 2ty = t$	[_separable]	✓
2297	$2ty + y' = t$ i.c.	[_separable]	✓
2298	$y' + y = \frac{1}{t^2 + 1}$ i.c.	[_linear]	✓
2299	$\cos(t)y + y' = 0$	[_separable]	✓
2300	$\sqrt{t} \sin(t)y + y' = 0$	[_separable]	✓
2301	$\frac{2ty}{t^2 + 1} + y' = \frac{1}{t^2 + 1}$	[_linear]	✓
2302	$y' + y = te^t$	[[_linear, 'class A']]	✓
2303	$t^2y + y' = 1$	[_linear]	✓
2304	$t^2y + y' = t^2$	[_separable]	✓
2305	$\frac{ty}{t^2 + 1} + y' = 1 - \frac{t^3y}{t^4 + 1}$	[_linear]	✓
2306	$\sqrt{t^2 + 1}y + y' = 0$ i.c.	[_separable]	✓
2307	$\sqrt{t^2 + 1}ye^{-t} + y' = 0$	[_separable]	✓
2308	$y' - 2ty = t$ i.c.	[_separable]	✓
2309	$ty + y' = t + 1$ i.c.	[_linear]	✓
2310	$y' + y = \frac{1}{t^2 + 1}$ i.c.	[_linear]	✓
2311	$y' - 2ty = 1$ i.c.	[_linear]	✓
2312	$ty + (t^2 + 1)y' = (t^2 + 1)^{5/2}$	[_linear]	✓
2313	$4ty + (t^2 + 1)y' = t$ i.c.	[_separable]	✓
2314	$\frac{y}{t} + y' = \frac{1}{t^2}$	[_linear]	✓
2315	$y' + \frac{y}{\sqrt{t}} = e^{\frac{\sqrt{t}}{2}}$	[_linear]	✓

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Table 2.3 first order ode linear  
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#	ODE	CAS classification	Solved?
2316	$\frac{y}{t} + y' = \cos(t) + \frac{\sin(t)}{t}$	[_linear]	✓
2317	$\tan(t)y + y' = \cos(t)\sin(t)$	[_linear]	✓
2319	$y' = (t+1)(y+1)$	[_separable]	✓
2329	$3ty' = \cos(t)y$	[_separable]	✓
2342	$2ty^3 + 3t^2y^2y' = 0$	[_separable]	✓
2360	$y' = t(y+1)$	[_separable]	✓
2472	$\cos(t)y + y' = 0$	[_separable]	✓
2473	$\sqrt{t}\sin(t)y + y' = 0$	[_separable]	✓
2474	$\frac{2ty}{t^2+1} + y' = \frac{1}{t^2+1}$	[_linear]	✓
2475	$y' + y = te^t$	[[_linear, 'class A']]	✓
2476	$t^2y + y' = 1$	[_linear]	✓
2477	$t^2y + y' = t^2$	[_separable]	✓
2478	$\frac{ty}{t^2+1} + y' = 1 - \frac{t^3y}{t^4+1}$	[_linear]	✓
2479	$\sqrt{t^2+1}y + y' = 0$	[_separable]	✓
2480	$\sqrt{t^2+1}ye^{-t} + y' = 0$	[_separable]	✓
2481	$\sqrt{t^2+1}ye^{-t} + y' = 0$	[_separable]	✓
2482	$y' - 2ty = t$	[_separable]	✓
2483	$ty + y' = t+1$	[_linear]	✓
2484	$y' + y = \frac{1}{t^2+1}$	[_linear]	✓
2485	$y' - 2ty = 1$	[_linear]	✓
2486	$ty + (t^2+1)y' = (t^2+1)^{5/2}$	[_linear]	✓
2487	$4ty + (t^2+1)y' = t$	[_separable]	✓

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Table 2.3 first order ode linear  
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#	ODE	CAS classification	Solved?
2488	$y' + y = \begin{cases} 2 & 0 \leq t \leq 1 \\ 0 & 1 < t \end{cases}$ i.c.	[[_linear, 'class A']]	✓
2490	$y' = (t + 1)(y + 1)$	[_separable]	✓
2500	$3ty' = \cos(t)y$ i.c.	[_separable]	✓
2514	$2ty^3 + 3t^2y^2y' = 0$ i.c.	[_separable]	✓
2519	$y' = 2t(y + 1)$ i.c.	[_separable]	✓
2535	$y' = t(y + 1)$ i.c.	[_separable]	✓
2841	$(x^2 + 1)y' + xy = 0$	[_separable]	✓
2844	$xy' + y = 0$	[_separable]	✓
2845	$y' = 2xy$	[_separable]	✓
2848	$(x + 1)y' - 1 + y = 0$	[_separable]	✓
2849	$\tan(x)y' - y = 1$	[_separable]	✓
2850	$y + 3 + \cot(x)y' = 0$	[_separable]	✓
2857	$xy + \sqrt{x^2 + 1}y' = 0$	[_separable]	✓
2858	$y = xy + x^2y'$	[_separable]	✓
2861	$y' = \frac{y}{x}$ i.c.	[_separable]	✓
2862	$xy' + 2y = 0$ i.c.	[_separable]	✓
2871	$x + y = xy'$	[_linear]	✓
2922	$y e^x - 2x + e^x y' = 0$	[[_linear, 'class A']]	✓
2925	$\frac{2}{y} - \frac{y}{x^2} + \left(\frac{1}{x} - \frac{2x}{y^2}\right)y' = 0$	[_separable]	✓
2937	$xy' + \ln(x) - y = 0$	[_linear]	✓
2953	$y(x^2 - 1) + x(x^2 + 1)y' = 0$ i.c.	[_separable]	✓
2958	$xy' + 2y = x^2$	[_linear]	✓
2959	$y' - xy = e^{\frac{x^2}{2}} \cos(x)$	[_linear]	✓

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Table 2.3 first order ode linear  
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#	ODE	CAS classification	Solved?
2960	$y' + 2xy = 2x e^{-x^2}$	[_linear]	✓
2961	$y' = y + 3 e^x x^2$	[[_linear, 'class A']]	✓
2962	$x' + x = e^{-y}$	[[_linear, 'class A']]	✓
2963	$yx' + (1 + y)x = e^y$	[_linear]	✓
2965	$xy' - 2x^4 - 2y = 0$	[_linear]	✓
2967	$y^2 x' + (y^2 + 2y)x = 1$	[_linear]	✓
2968	$xy' = 5y + x + 1$	[_linear]	✓
2969	$x^2 y' + y - 2xy - 2x^2 = 0$	[_linear]	✓
2970	$2y + (x + 1)y' = \frac{e^x}{x + 1}$	[_linear]	✓
2973	$\cos(\theta)r' = 2 + 2r \sin(\theta)$	[_linear]	✓
2974	$\sin(\theta)r' + 1 + r \tan(\theta) = \cos(\theta)$	[_linear]	✓
2975	$yx' = 2y e^{3y} + x(3y + 2)$	[_linear]	✓
2977	$y' + y \cot(x) - \sec(x) = 0$	[_linear]	✓
2979	$2y - xy - 3 + xy' = 0$	[_linear]	✓
	<i>i.c.</i>		
2981	$(x^2 - 1)y' + (x^2 - 1)^2 + 4y = 0$	[_linear]	✓
	<i>i.c.</i>		
3004	$(1 - x)y' - 1 - y = 0$	[_separable]	✓
3007	$x \ln(x)y' + y - x = 0$	[_linear]	✓
3020	$r' = r \cot(\theta)$	[_separable]	✓
3027	$y' + x + y \cot(x) = 0$	[_linear]	✓
3046	$xy' = x^4 + 4y$	[_linear]	✓
	<i>i.c.</i>		
3051	$2y + y' = 3 e^{2x}$	[[_linear, 'class A']]	✓
	<i>i.c.</i>		
3055	$2xy - 2y + 1 + x(x - 1)y' = 0$	[_linear]	✓
	<i>i.c.</i>		
3169	$y' + P(x)y = Q(x)$	[_linear]	✓
3285	$4y^2 = x^2 y'^2$	[_separable]	✓
3293	$y'^3 + (x + y - 2xy)y'^2 - 2y'xy(x + y) = 0$	[_quadrature]	✓
3334	$y^2 - 2xyy' + y'^2(x^2 - 1) = 0$	[_separable]	✓

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Table 2.3 first order ode linear  
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#	ODE	CAS classification	Solved?
3409	$y' = xy$	[_separable]	✓
3431	$y' = \frac{y}{t}$	[_separable]	✓
3438	$y' = (t^2 + 1)y$	[_separable]	✓
3440	$y' = 2y + e^{-3t}$	[[_linear, 'class A']]	✓
3441	$y' = 2y + e^{2t}$	[[_linear, 'class A']]	✓
3442	$y' = t - y$	[[_linear, 'class A']]	✓
3443	$2y + ty' = \sin(t)$	[_linear]	✓
3444	$y' = \tan(t)y + \sec(t)$	[_linear]	✓
3445	$y' = \frac{2ty}{t^2 + 1} + t + 1$	[_linear]	✓
3446	$y' = \tan(t)y + \sec(t)^3$	[_linear]	✓
3449	$ty' = y + t^3$	[_linear]	✓
3450	$y' = -\tan(t)y + \sec(t)$	[_linear]	✓
3451	$y' = \frac{2y}{t+1}$	[_separable]	✓
3452	$ty' = -y + t^3$	[_linear]	✓
3453	$y' + 4 \tan(2t)y = \tan(2t)$	[_separable]	✓
3454	$t \ln(t)y' = t \ln(t) - y$	[_linear]	✓
3455	$y' = \frac{2y}{-t^2 + 1} + 3$	[_linear]	✓
3456	$y' = -\cot(t)y + 6 \cos(t)^2$	[_linear]	✓
3458	$\frac{y'}{\tan(x)} - \frac{y}{x^2 + 1} = 0$	[_separable]	✓
3461	$2xy' + 3x + y = 0$	[_linear]	✓
3463	$(-x^2 + 1)y' + 4xy = (-x^2 + 1)^{3/2}$	[_linear]	✓
3464	$y' - y \cot(x) + \frac{1}{\sin(x)} = 0$	[_linear]	✓

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Table 2.3 first order ode linear  
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#	ODE	CAS classification	Solved?
3472	$y' + \frac{xy}{a^2 + x^2} = x$	[_linear]	✓
3474	$y' - \frac{y}{x} = 1$	[_linear]	✓
3475	$y' - y \tan(x) = 1$	[_linear]	✓
3478	$\sin(x) y' + 2y \cos(x) = 1$	[_linear]	✓
3515	$y' = 2xy$	[_separable]	✓
3518	$y' = \frac{y}{x \ln(x)}$	[_separable]	✓
3519	$y - (-2 + x) y' = 0$	[_separable]	✓
3520	$y' = \frac{2x(y-1)}{x^2+3}$	[_separable]	✓
3521	$y - xy' = 3 - 2x^2 y'$	[_separable]	✓
3524	$y' = \frac{x^2 y - 32}{-x^2 + 16} + 32$	[_linear]	✓
3525	$(x-a)(x-b) y' - y + c = 0$	[_separable]	✓
3527	$(-x^2 + 1) y' + xy = ax$	[_separable]	✓
3530	$y' - y = e^{2x}$	[[_linear, 'class A']]	✓
3531	$x^2 y' - 4xy = x^7 \sin(x)$	[_linear]	✓
3532	$y' + 2xy = 2x^3$	[_linear]	✓
3533	$y' + \frac{2xy}{x^2+1} = 4x$	[_linear]	✓
3534	$y' + \frac{2xy}{x^2+1} = \frac{4}{(x^2+1)^2}$	[_linear]	✓
3535	$2 \cos(x)^2 y' + y \sin(2x) = 4 \cos(x)^4$	[_linear]	✓
3536	$y' + \frac{y}{x \ln(x)} = 9x^2$	[_linear]	✓
3537	$y' - y \tan(x) = 8 \sin(x)^3$	[_linear]	✓
3538	$tx' + 2x = 4e^t$	[_linear]	✓
3539	$y' = \sin(x)(y \sec(x) - 2)$	[_linear]	✓
3540	$1 - y \sin(x) - \cos(x) y' = 0$	[_linear]	✓
3541	$y' - \frac{y}{x} = 2x^2 \ln(x)$	[_linear]	✓

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#	ODE	CAS classification	Solved?
3542	$y' + \alpha y = e^{\beta x}$	[[_linear, 'class A']]	✓
3562	$y' = \frac{y}{2x}$	[_separable]	✓
3593	$y' = 2xy$	[_separable]	✓
3596	$y' = \frac{y}{x \ln(x)}$	[_separable]	✓
3597	$y - (x - 1)y' = 0$	[_separable]	✓
3598	$y' = \frac{2x(y - 1)}{x^2 + 3}$	[_separable]	✓
3599	$y - xy' = 3 - 2x^2y'$	[_separable]	✓
3602	$y' = \frac{x^2y - 32}{-x^2 + 16} + 2$	[_separable]	✓
3603	$(x - a)(x - b)y' - y + c = 0$	[_separable]	✓
3605	$(-x^2 + 1)y' + xy = ax$ <i>i.c.</i>	[_separable]	✓
3610	$y' + y = 4e^x$	[[_linear, 'class A']]	✓
3611	$y' + \frac{2y}{x} = 5x^2$	[_linear]	✓
3612	$x^2y' - 4xy = x^7 \sin(x)$	[_linear]	✓
3613	$y' + 2xy = 2x^3$	[_linear]	✓
3614	$y' + \frac{2xy}{-x^2 + 1} = 4x$	[_linear]	✓
3615	$y' + \frac{2xy}{x^2 + 1} = \frac{4}{(x^2 + 1)^2}$	[_linear]	✓
3616	$2 \cos(x)^2 y' + y \sin(2x) = 4 \cos(x)^4$	[_linear]	✓
3617	$y' + \frac{y}{x \ln(x)} = 9x^2$	[_linear]	✓
3618	$y' - y \tan(x) = 8 \sin(x)^3$	[_linear]	✓
3619	$tx' + 2x = 4e^t$	[_linear]	✓
3620	$y' = \sin(x)(y \sec(x) - 2)$	[_linear]	✓
3621	$1 - y \sin(x) - \cos(x)y' = 0$	[_linear]	✓
3622	$y' - \frac{y}{x} = 2x^2 \ln(x)$	[_linear]	✓
3623	$y' + \alpha y = e^{\beta x}$	[[_linear, 'class A']]	✓
3624	$y' + \frac{my}{x} = \ln(x)$	[_linear]	✓

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Table 2.3 first order ode linear  
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#	ODE	CAS classification	Solved?
3625	$y' + \frac{2y}{x} = 4x$ i.c.	[_linear]	✓
3626	$\sin(x)y' - y \cos(x) = \sin(2x)$ i.c.	[_linear]	✓
3627	$x' + \frac{2x}{4-t} = 5$ i.c.	[_linear]	✓
3628	$y - e^x + y' = 0$ i.c.	[[_linear, 'class A']]	✓
3629	$y' - 2y = \begin{cases} 1 & x \leq 1 \\ 0 & 1 < x \end{cases}$ i.c.	[[_linear, 'class A']]	✓
3630	$y' - 2y = \begin{cases} 1-x & x < 1 \\ 0 & 1 \leq x \end{cases}$ i.c.	[[_linear, 'class A']]	✓
3632	$y' + \frac{y}{x} = \cos(x)$	[_linear]	✓
3633	$y' + y = e^{-2x}$	[[_linear, 'class A']]	✓
3634	$y' + y \cot(x) = 2 \cos(x)$	[_linear]	✓
3635	$-y + xy' = x^2 \ln(x)$	[_linear]	✓
3642	$y(x^2 - y^2) - x(x^2 - y^2)y' = 0$	[_separable]	✓
4093	$3y - 2x + (3x - 2)y' = 0$	[_linear]	✓
4097	$y' = \frac{y - 2x}{x}$	[_linear]	✓
4100	$y' + y = x^2 + 2$	[[_linear, 'class A']]	✓
4101	$y' - y \tan(x) = x$ i.c.	[_linear]	✓
4104	$xy' = x + y$ i.c.	[_linear]	✓
4107	$y' - 3y = e^{3x} + e^{-3x}$ i.c.	[[_linear, 'class A']]	✓
4109	$xy' + 2y = (2 + 3x)e^{3x}$ i.c.	[_linear]	✓
4116	$\cos(x)y' + y \sin(x) = 1$ i.c.	[_linear]	✓
4191	$y' - y = x^3$	[[_linear, 'class A']]	✓
4192	$y' + y \cot(x) = x$	[_linear]	✓

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Table 2.3 first order ode linear  
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#	ODE	CAS classification	Solved?
4193	$y' + y \cot(x) = \tan(x)$	[_linear]	✓
4194	$y' + y \tan(x) = \cot(x)$	[_linear]	✓
4195	$y' + y \ln(x) = x^{-x}$	[_linear]	✓
4196	$xy' + y = x$	[_linear]	✓
4197	$-y + xy' = x^3$	[_linear]	✓
4198	$xy' + ny = x^n$	[_linear]	✓
4199	$xy' - ny = x^n$	[_linear]	✓
4200	$(x^3 + x)y' + y = x$	[_linear]	✓
4201	$\cot(x)y' + y = x$	[_linear]	✓
4202	$\cot(x)y' + y = \tan(x)$	[_linear]	✓
4203	$\tan(x)y' + y = \cot(x)$	[_linear]	✓
4204	$\tan(x)y' = y - \cos(x)$	[_linear]	✓
4205	$y' + y \cos(x) = \sin(2x)$	[_linear]	✓
4206	$\cos(x)y' + y = \sin(2x)$	[_linear]	✓
4207	$y' + y \sin(x) = \sin(2x)$	[_linear]	✓
4208	$\sin(x)y' + y = \sin(2x)$	[_linear]	✓
4209	$\sqrt{x^2 + 1}y' + y = 2x$	[_linear]	✓
4210	$\sqrt{x^2 + 1}y' - y = 2\sqrt{x^2 + 1}$	[_linear]	✓
4211	$\sqrt{(x+a)(x+b)}(2y' - 3) + y = 0$	[_linear]	✓
4212	$\sqrt{(x+a)(x+b)}y' + y = \sqrt{x+a} - \sqrt{x+b}$	[_linear]	✓
4219	$xy' = y$	[_separable]	✓
4220	$(1-x)y' = y$	[_separable]	✓
4221	$y' = \frac{4xy}{x^2 + 1}$	[_separable]	✓
4222	$y' = \frac{2y}{x^2 - 1}$	[_separable]	✓
4224	$y' + 2xy = 0$	[_separable]	✓
4225	$\cot(x)y' = y$	[_separable]	✓

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Table 2.3 first order ode linear  
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#	ODE	CAS classification	Solved?
4227	$y' - 2xy = 2x$ i.c.	[_separable]	✓
4228	$xy' = xy + y$ i.c.	[_separable]	✓
4233	$(1 - x)y' = xy$	[_separable]	✓
4234	$(x^2 - 1)y' = (x^2 + 1)y$	[_separable]	✓
4254	$y + y \cos(xy) + (x + x \cos(xy))y' = 0$	[_separable]	✓
4257	$-\frac{\sin\left(\frac{x}{y}\right)}{y} + \frac{x \sin\left(\frac{x}{y}\right)y'}{y^2} = 0$	[_separable]	✓
4258	$1 + y + (1 - x)y' = 0$	[_separable]	✓
4269	$xy' - 3y = x^4$	[_linear]	✓
4270	$y' + y = \frac{1}{1 + e^{2x}}$	[_linear]	✓
4271	$(x^2 + 1)y' + 2xy = \cot(x)$	[_linear]	✓
4272	$y' + y = 2xe^{-x} + x^2$	[[_linear, 'class A']]	✓
4273	$y' + y \cot(x) = 2x \csc(x)$	[_linear]	✓
4274	$2y - x^3 = xy'$	[_linear]	✓
4280	$xy' + y = x \cos(x)$	[_linear]	✓
4283	$x^2 + y = xy'$	[_linear]	✓
4284	$xy' + y = x^2 \cos(x)$	[_linear]	✓
4289	$y' + 2xy = e^{-x^2}$	[_linear]	✓
4291	$(x^2 + 1)y' + 2xy = 4x^3$	[_linear]	✓
4295	$2xy + x^2y' = 0$	[_separable]	✓
4297	$\ln(x)y' + \frac{x+y}{x} = 0$	[_linear]	✓
4359	$1 + y \cos(x) - \sin(x)y' = 0$	[_linear]	✓
4367	$(2x + 3)y' = y + \sqrt{2x + 3}$	[_linear]	✓
4369	$y' = 1 + 3y \tan(x)$	[_linear]	✓
4370	$(\cos(x) + 1)y' = \sin(x)(\sin(x) + \sin(x)\cos(x) - y)$	[_linear]	✓
4371	$y' = (\sin(x)^2 - y)\cos(x)$	[_linear]	✓
4372	$(x + 1)y' - y = x(x + 1)^2$	[_linear]	✓

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Table 2.3 first order ode linear  
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#	ODE	CAS classification	Solved?
4398	$y' = \frac{y+2}{x+1}$	[_separable]	✓
4404	$y - 1 - xy + xy' = 0$	[_linear]	✓
4412	$xy + 2x^3y + x^2y' = 0$	[_separable]	✓
4437	$y \sin(x) + \cos(x)^2 - \cos(x)y' = 0$	[_linear]	✓
4440	$(\cos(x) + 1)y' + \sin(x)(\sin(x) + \sin(x)\cos(x) - y) = 0$	[_linear]	✓
4609	$y' = x + \sin(x) + y$	[[_linear, 'class A']]	✓
4610	$y' = x^2 + 3 \cosh(x) + 2y$	[[_linear, 'class A']]	✓
4611	$y' = a + bx + cy$	[[_linear, 'class A']]	✓
4612	$y' = a \cos(bx + c) + ky$	[[_linear, 'class A']]	✓
4613	$y' = a \sin(bx + c) + ky$	[[_linear, 'class A']]	✓
4614	$y' = a + b e^{kx} + cy$	[[_linear, 'class A']]	✓
4615	$y' = x(x^2 - y)$	[_linear]	✓
4616	$y' = x(e^{-x^2} + ay)$	[_linear]	✓
4617	$y' = x^2(ax^3 + by)$	[_linear]	✓
4618	$y' = a x^n y$	[_separable]	✓
4619	$y' = \sin(x) \cos(x) + y \cos(x)$	[_linear]	✓
4620	$y' = e^{\sin(x)} + y \cos(x)$	[_linear]	✓
4621	$y' = y \cot(x)$	[_separable]	✓
4622	$y' = 1 - y \cot(x)$	[_linear]	✓
4623	$y' = x \csc(x) - y \cot(x)$	[_linear]	✓
4624	$y' = (2 \csc(2x) + \cot(x))y$	[_separable]	✓
4625	$y' = \sec(x) - y \cot(x)$	[_linear]	✓
4626	$y' = e^x \sin(x) + y \cot(x)$	[_linear]	✓
4627	$y' + \csc(x) + 2y \cot(x) = 0$	[_linear]	✓
4628	$y' = 4 \csc(x) x \sec(x)^2 - 2y \cot(2x)$	[_linear]	✓
4629	$y' = 2 \cot(x)^2 \cos(2x) - 2y \csc(2x)$	[_linear]	✓
4630	$y' = 4 \csc(x) x (\sin(x)^3 + y)$	[_linear]	✓

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Table 2.3 first order ode linear  
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#	ODE	CAS classification	Solved?
4631	$y' = 4 \csc(x) x (1 - \tan(x)^2 + y)$	[_linear]	✓
4632	$y' = y \sec(x)$	[_separable]	✓
4633	$y' + \tan(x) = (1 - y) \sec(x)$	[_linear]	✓
4634	$y' = y \tan(x)$	[_separable]	✓
4635	$y' = \cos(x) + y \tan(x)$	[_linear]	✓
4636	$y' = \cos(x) - y \tan(x)$	[_linear]	✓
4637	$y' = \sec(x) - y \tan(x)$	[_linear]	✓
4638	$y' = \sin(2x) + y \tan(x)$	[_linear]	✓
4639	$y' = \sin(2x) - y \tan(x)$	[_linear]	✓
4640	$y' = \sin(x) + 2y \tan(x)$	[_linear]	✓
4641	$y' = 2 + 2 \sec(2x) + 2y \tan(2x)$	[_linear]	✓
4642	$y' = \csc(x) + 3y \tan(x)$	[_linear]	✓
4643	$y' = (a + \cos(\ln(x)) + \sin(\ln(x))) y$	[_separable]	✓
4644	$y' = 6 e^{2x} - y \tanh(x)$	[_linear]	✓
4645	$y' = f(x) f'(x) + f'(x) y$	[_linear]	✓
4646	$y' = f(x) + g(x) y$	[_linear]	✓
4679	$y' = \sin(x) (2 \sec(x)^2 - y)$	[_linear]	✓
4681	$y' = y \sec(x) + (\sin(x) - 1)^2$	[_linear]	✓
4738	$y' = \sec(x)^2 + y \sec(x) \operatorname{Cscx}(x)$	[_linear]	✓
4743	$xy' + x + y = 0$	[_linear]	✓
4744	$xy' + x^2 - y = 0$	[_linear]	✓
4745	$xy' = x^3 - y$	[_linear]	✓
4746	$xy' = 1 + x^3 + y$	[_linear]	✓
4747	$xy' = x^m + y$	[_linear]	✓
4748	$xy' = x \sin(x) - y$	[_linear]	✓
4749	$xy' = x^2 \sin(x) + y$	[_linear]	✓
4750	$xy' = x^n \ln(x) - y$	[_linear]	✓
4751	$xy' = \sin(x) - 2y$	[_linear]	✓

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Table 2.3 first order ode linear  
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#	ODE	CAS classification	Solved?
4752	$xy' = ay$	[_separable]	✓
4753	$xy' = 1 + x + ay$	[_linear]	✓
4754	$xy' = ax + by$	[_linear]	✓
4755	$xy' = x^2a + by$	[_linear]	✓
4756	$xy' = a + bx^n + cy$	[_linear]	✓
4757	$xy' + 2 + (3 - x)y = 0$	[_linear]	✓
4758	$xy' + x + (ax + 2)y = 0$	[_linear]	✓
4759	$xy' + (bx + a)y = 0$	[_separable]	✓
4760	$xy' = x^3 + (-2x^2 + 1)y$	[_linear]	✓
4761	$xy' = ax - (-bx^2 + 1)y$	[_linear]	✓
4762	$xy' + x + (-x^2a + 2)y = 0$	[_linear]	✓
4821	$(x + 1)y' = x^3(3x + 4) + y$	[_linear]	✓
4822	$(x + 1)y' = (x + 1)^4 + 2y$	[_linear]	✓
4823	$(x + 1)y' = e^x(x + 1)^{n+1} + ny$	[_linear]	✓
4829	$(x + a)y' = bx + y$	[_linear]	✓
4830	$(x + a)y' + bx^2 + y = 0$	[_linear]	✓
4831	$(x + a)y' = 2(x + a)^5 + 3y$	[_linear]	✓
4832	$(x + a)y' = b + cy$	[_separable]	✓
4833	$(x + a)y' = bx + cy$	[_linear]	✓
4836	$2xy' = 2x^3 - y$	[_linear]	✓
4842	$(-2x + 1)y' = 16 + 32x - 6y$	[_linear]	✓
4844	$2(1 - x)y' = 4x\sqrt{1 - x} + y$	[_linear]	✓
4849	$x^2y' = -y + a$	[_separable]	✓
4850	$x^2y' = a + bx + cx^2 + xy$	[_linear]	✓
4851	$x^2y' = a + bx + cx^2 - xy$	[_linear]	✓
4852	$x^2y' + (-2x + 1)y = x^2$	[_linear]	✓
4853	$x^2y' = a + bxy$	[_linear]	✓
4854	$x^2y' = (bx + a)y$	[_separable]	✓

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Table 2.3 first order ode linear  
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#	ODE	CAS classification	Solved?
4855	$x^2y' + x(x+2)y = x(1 - e^{-2x}) - 2$	[_linear]	✓
4856	$x^2y' + 2x(1-x)y = e^x(2e^x - 1)$	[_linear]	✓
4877	$(-x^2 + 1)y' = 1 - x^2 + y$	[_linear]	✓
4878	$(-x^2 + 1)y' + 1 = xy$	[_linear]	✓
4879	$(-x^2 + 1)y' = 5 - xy$	[_linear]	✓
4880	$(x^2 + 1)y' + a + xy = 0$	[_linear]	✓
4881	$(x^2 + 1)y' + a - xy = 0$	[_linear]	✓
4882	$(-x^2 + 1)y' + a - xy = 0$	[_linear]	✓
4883	$(-x^2 + 1)y' - x + xy = 0$	[_separable]	✓
4884	$(-x^2 + 1)y' - x^2 + xy = 0$	[_linear]	✓
4885	$(-x^2 + 1)y' + x^2 + xy = 0$	[_linear]	✓
4886	$(x^2 + 1)y' = x(x^2 + 1) - xy$	[_linear]	✓
4887	$(x^2 + 1)y' = x(3x^2 - y)$	[_linear]	✓
4888	$(-x^2 + 1)y' + 2xy = 0$	[_separable]	✓
4889	$(x^2 + 1)y' = 2x(x - y)$	[_linear]	✓
4890	$(x^2 + 1)y' = 2x(x^2 + 1)^2 + 2xy$	[_linear]	✓
4891	$(-x^2 + 1)y' + \cos(x) = 2xy$	[_linear]	✓
4892	$(x^2 + 1)y' = \tan(x) - 2xy$	[_linear]	✓
4893	$(-x^2 + 1)y' = a + 4xy$	[_linear]	✓
4894	$(x^2 + 1)y' = (2bx + a)y$	[_separable]	✓
4903	$(x^2 + 1)y' = 1 + x^2 - y \operatorname{arccot}(x)$	[_linear]	✓
4905	$(a^2 + x^2)y' = b + xy$	[_linear]	✓
4906	$(a^2 + x^2)y' = (b + y)(x + \sqrt{a^2 + x^2})$	[_separable]	✓
4910	$x(1-x)y' = a + (x+1)y$	[_linear]	✓
4911	$x(1-x)y' = 2 + 2xy$	[_linear]	✓
4912	$x(1-x)y' = 2xy - 2$	[_linear]	✓
4913	$x(x+1)y' = (-2x+1)y$	[_separable]	✓

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Table 2.3 first order ode linear

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#	ODE	CAS classification	Solved?
4914	$x(1-x)y' + (2x+1)y = a$	[_linear]	✓
4915	$x(1-x)y' = a + 2(2-x)y$	[_linear]	✓
4916	$x(1-x)y' + 2 - 3xy + y = 0$	[_linear]	✓
4917	$x(x+1)y' = (x+1)(x^2-1) + (x^2+x-1)y$	[_linear]	✓
4918	$(-2+x)(x-3)y' + x^2 - 8y + 3xy = 0$	[_linear]	✓
4920	$(x+a)^2 y' = 2(x+a)(b+y)$	[_separable]	✓
4922	$(x-a)(x-b)y' + ky = 0$	[_separable]	✓
4923	$(x-a)(x-b)y' = (x-a)(x-b) + (2x-a-b)y$	[_linear]	✓
4927	$2x^2 y' = y$	[_separable]	✓
4928	$2x^2 y' + x \cot(x) - 1 + 2x^2 y \cot(x) = 0$	[_linear]	✓
4931	$2(-x^2+1)y' = \sqrt{-x^2+1} + (x+1)y$	[_linear]	✓
4932	$x(-2x+1)y' + 1 + (1-4x)y = 0$	[_linear]	✓
4934	$2x(1-x)y' + x + (-2x+1)y = 0$	[_linear]	✓
4936	$2(x^2+x+1)y' = 1 + 8x^2 - (2x+1)y$	[_linear]	✓
4937	$4(x^2+1)y' - 4xy - x^2 = 0$	[_linear]	✓
4941	$x(ax+1)y' + a - y = 0$	[_separable]	✓
4943	$x^3 y' = a + b x^2 y$	[_linear]	✓
4944	$x^3 y' = 3 - x^2 + x^2 y$	[_linear]	✓
4953	$x(x^2+1)y' = x^2 a + y$	[_linear]	✓
4954	$x(-x^2+1)y' = x^2 a + y$	[_linear]	✓
4955	$x(x^2+1)y' = a x^3 + y$	[_linear]	✓
4956	$x(x^2+1)y' = a - x^2 y$	[_linear]	✓
4957	$x(x^2+1)y' = (-x^2+1)y$	[_separable]	✓
4958	$x(-x^2+1)y' = (x^2-x+1)y$	[_separable]	✓
4959	$x(-x^2+1)y' = a x^3 + (-2x^2+1)y$	[_linear]	✓
4960	$x(-x^2+1)y' = x^3(-x^2+1) + (-2x^2+1)y$	[_linear]	✓
4961	$x(x^2+1)y' = 2 - 4x^2 y$	[_linear]	✓
4962	$x(x^2+1)y' = x - (5x^2+3)y$	[_linear]	✓

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Table 2.3 first order ode linear

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#	ODE	CAS classification	Solved?
4973	$x(-x^3 + 1)y' = 2x - (-4x^3 + 1)y$	[_linear]	✓
4976	$x(-2x^3 + 1)y' = 2(-x^3 + 1)y$	[_separable]	✓
4978	$x^5y' = 1 - 3x^4y$	[_linear]	✓
4981	$x^n y' = a + b x^{n-1} y$	[_linear]	✓
4987	$\sqrt{x^2 + 1}y' = 2x - y$	[_linear]	✓
4990	$y'\sqrt{a^2 + x^2} + x + y = \sqrt{a^2 + x^2}$	[_linear]	✓
5009	$(1 - 4\cos(x)^2)y' = \tan(x)(1 + 4\cos(x)^2)y$	[_separable]	✓
5010	$(-\sin(x) + 1)y' + y\cos(x) = 0$	[_separable]	✓
5011	$(\cos(x) - \sin(x))y' + y(\cos(x) + \sin(x)) = 0$	[_separable]	✓
5012	$(a_0 + a_1 \sin(x)^2)y' + a_2 x(a_3 + a_1 \sin(x)^2) + a_1 y \sin(2x) = 0$	[_linear]	✓
5013	$(-e^x + x)y' + x e^x + (1 - e^x)y = 0$	[_linear]	✓
5014	$x \ln(x)y' = ax(\ln(x) + 1) - y$	[_linear]	✓
5036	$1 - y' = x + y$	[[_linear, 'class A']]	✓
5134	$(x + a)(x + b)y' = xy$	[_separable]	✓
5345	$y'^2 = y^2 x^2$	[_separable]	✓
5391	$y'^2 + yy' = x(x + y)$	[_quadrature]	✓
5404	$y'^2 - (1 + 2xy)y' + 2xy = 0$	[_quadrature]	✓
5406	$y'^2 - (x - y)yy' - xy^3 = 0$	[_separable]	✓
5409	$y'^2 - xy(y^2 + x^2)y' + x^4 y^4 = 0$	[_separable]	✓
5411	$y'^2 + 2y'y \cot(x) - y^2 = 0$	[_separable]	✓
5451	$xy'^2 - (2x + 3y)y' + 6y = 0$	[_quadrature]	✓
5455	$xy'^2 + (1 - x)yy' - y^2 = 0$	[_quadrature]	✓
5456	$xy'^2 + (1 - x^2y)y' - xy = 0$	[_quadrature]	✓
5472	$x^2 y'^2 = y^2$	[_separable]	✓
5474	$x^2 y'^2 = (x - y)^2$	[_linear]	✓
5476	$x^2 y'^2 - xy' + y(1 - y) = 0$	[_separable]	✓

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Table 2.3 first order ode linear

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#	ODE	CAS classification	Solved?
5485	$x^2y'^2 + 3xyy' + 2y^2 = 0$	[_separable]	✓
5487	$x^2y'^2 + 4xyy' - 5y^2 = 0$	[_separable]	✓
5489	$x^2y'^2 - 5xyy' + 6y^2 = 0$	[_separable]	✓
5501	$(a^2 - x^2)y'^2 - 2xyy' - y^2 = 0$	[_separable]	✓
5503	$4x^2y'^2 - 4xyy' = 8x^3 - y^2$	[_linear]	✓
5539	$xyy'^2 + (y^2 + x^2)y' + xy = 0$	[_separable]	✓
5540	$xyy'^2 + (x^2 - y^2)y' - xy = 0$	[_separable]	✓
5541	$xyy'^2 - (x^2 - y^2)y' - xy = 0$	[_separable]	✓
5544	$xyy'^2 + (3x^2 - 2y^2)y' - 6xy = 0$	[_separable]	✓
5615	$y'^3 - (2x + y^2)y'^2 + (x^2 - y^2 + 2xy^2)y' - (x^2 - y^2)y^2 = 0$	[_quadrature]	✓
5616	$y'^3 - (y^2 + xy + x^2)y'^2 + xy(y^2 + xy + x^2)y' - x^3y^3 = 0$	[_quadrature]	✓
5624	$xy'^3 - (x + x^2 + y)y'^2 + (x^2 + y + xy)y' - xy = 0$	[_quadrature]	✓
5685	$y \ln(y') + y' - y \ln(y) - xy = 0$	[_separable]	✓
5692	$y' - \frac{2y}{x+1} = (x+1)^2$	[_linear]	✓
5712	$y' + \frac{xy}{x^2+1} = \frac{1}{2x(x^2+1)}$	[_linear]	✓
5713	$x(-x^2+1)y' + (2x^2-1)y = ax^3$	[_linear]	✓
5714	$y' + \frac{y}{(-x^2+1)^{3/2}} = \frac{x + \sqrt{-x^2+1}}{(-x^2+1)^2}$	[_linear]	✓
5715	$y' + y \cos(x) = \frac{\sin(2x)}{2}$	[_linear]	✓
5716	$(x^2+1)y' + y = \arctan(x)$	[_linear]	✓
5770	$\frac{y - xy'}{y^2 + y'} = \frac{y - xy'}{1 + x^2y'}$	[_separable]	✓
5791	$7y - 3 + (2x+1)y' = 0$	[_separable]	✓
5839	$xy' + y = x^3$	[_linear]	✓
5842	$x' + 2xy = e^{-y^2}$	[_linear]	✓
5843	$r' = (r + e^{-\theta}) \tan(\theta)$	[_linear]	✓

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Table 2.3 first order ode linear  
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#	ODE	CAS classification	Solved?
5844	$y' - \frac{2xy}{x^2 + 1} = 1$	[_linear]	✓
5847	$\tan(\theta) r' - r = \tan(\theta)^2$	[_linear]	✓
5848	$y' + 2y = 3e^{-2x}$	[[_linear, 'class A']]	✓
5849	$y' + 2y = \frac{3e^{-2x}}{4}$	[[_linear, 'class A']]	✓
5850	$y' + 2y = \sin(x)$	[[_linear, 'class A']]	✓
5851	$y' + y \cos(x) = e^{2x}$	[_linear]	✓
5852	$y' + y \cos(x) = \frac{\sin(2x)}{2}$	[_linear]	✓
5853	$xy' + y = x \sin(x)$	[_linear]	✓
5854	$-y + xy' = x^2 \sin(x)$	[_linear]	✓
5858	$y' - y = e^x$	[[_linear, 'class A']]	✓
	<i>i.c.</i>		
5880	$2y - xy \ln(x) - 2x \ln(x) y' = 0$	[_separable]	✓
5881	$y' + ay = k e^{bx}$	[[_linear, 'class A']]	✓
5885	$y' + ay = b \sin(kx)$	[[_linear, 'class A']]	✓
5889	$y' + y \cos(x) = e^{-\sin(x)}$	[_linear]	✓
5892	$xy' + ay + b x^n = 0$	[_linear]	✓
5897	$(x^2 - 1) y' + 2xy - \cos(x) = 0$	[_linear]	✓
5902	$\cos(x) y' + y + (\sin(x) + 1) \cos(x) = 0$	[_linear]	✓
6025	$y' + y \tan(x) = 0$	[_separable]	✓
6029	$y' = e^{ax} + ay$	[[_linear, 'class A']]	✓
6093	$xy' = y$	[_separable]	✓
	<i>i.c.</i>		
6102	$y' - xy = x$	[_separable]	✓
	<i>i.c.</i>		
6105	$y' + y = e^x$	[[_linear, 'class A']]	✓
6106	$x^2 y' + 3xy = 1$	[_linear]	✓
6107	$y' + 2xy - x e^{-x^2} = 0$	[_linear]	✓
6108	$2xy' + y = 2x^{5/2}$	[_linear]	✓
6109	$\cos(x) y' + y = \cos(x)^2$	[_linear]	✓

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Table 2.3 first order ode linear  
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#	ODE	CAS classification	Solved?
6110	$y' + \frac{y}{\sqrt{x^2+1}} = \frac{1}{x + \sqrt{x^2+1}}$	[_linear]	✓
6111	$(1 + e^x)y' + 2ye^x = (1 + e^x)e^x$	[_linear]	✓
6112	$x \ln(x)y' + y = \ln(x)$	[_linear]	✓
6113	$(-x^2 + 1)y' = xy + 2x\sqrt{-x^2 + 1}$	[_linear]	✓
6114	$y' + y \tanh(x) = 2e^x$	[_linear]	✓
6115	$y' + y \cos(x) = \sin(2x)$	[_linear]	✓
6116	$x' = \cos(y) - x \tan(y)$	[_linear]	✓
6117	$x' + x - e^y = 0$	[[_linear, 'class A']]	✓
6118	$x' = \frac{3y^{2/3} - x}{3y}$	[_linear]	✓
6131	$(x - 1)y' + y - \frac{1}{x^2} + \frac{2}{x^3} = 0$	[_linear]	✓
6208	$x^2y' - xy = \frac{1}{x}$	[_linear]	✓
6218	$y + 2x - xy' = 0$	[_linear]	✓
6226	$\sin(x)^2 y' + \sin(x)^2 + (x + y) \sin(2x) = 0$	[_linear]	✓
6230	$\sin(\theta) \cos(\theta) r' - \sin(\theta)^2 = r \cos(\theta)^2$	[_linear]	✓
6232	$3x^2y + x^3y' = 0$	[_separable]	✓
6233	$-y + xy' = x^2$	[_linear]	✓
6237	$xy' = xy + y$	[_separable]	✓
6239	$y' = 3x^2y$	[_separable]	✓
6241	$xy' = y$	[_separable]	✓
6263	$x' = 3t^2x$	[_separable]	✓
6273	$y' = x^3(1 - y)$	[_separable]	✓
6280	$y' = x^2(1 + y)$	[_separable]	✓
6285	$y' = 2y - 2ty$	[_separable]	✓
6294	$x^2y' + \sin(x) - y = 0$	[_linear]	✓
6296	$(t^2 + 1)y' = ty - y$	[_separable]	✓

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Table 2.3 first order ode linear  
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#	ODE	CAS classification	Solved?
6297	$3t = e^t y' + \ln(t) y$	[_linear]	✓
6299	$3r = r' - \theta^3$	[[_linear, 'class A']]	✓
6300	$y' - y - e^{3x} = 0$	[[_linear, 'class A']]	✓
6301	$y' = \frac{y}{x} + 2x + 1$	[_linear]	✓
6302	$r' + r \tan(\theta) = \sec(\theta)$	[_linear]	✓
6303	$xy' + 2y = \frac{1}{x^3}$	[_linear]	✓
6304	$t + y + 1 - y' = 0$	[[_linear, 'class A']]	✓
6305	$y' = x^2 e^{-4x} - 4y$	[[_linear, 'class A']]	✓
6306	$yx' + 2x = 5y^3$	[_linear]	✓
6307	$xy' + 3x^2 + 3y = \frac{\sin(x)}{x}$	[_linear]	✓
6308	$(x^2 + 1)y' + xy - x = 0$	[_separable]	✓
6309	$(-x^2 + 1)y' - x^2 y = (x + 1)\sqrt{-x^2 + 1}$	[_linear]	✓
6310	$y' - \frac{y}{x} = x e^x$	[_linear]	✓
i.c.			
6311	$y' + 4y - e^{-x} = 0$	[[_linear, 'class A']]	✓
i.c.			
6312	$t^2 x' + 3xt = t^4 \ln(t) + 1$	[_linear]	✓
i.c.			
6313	$y' + \frac{3y}{x} + 2 = 3x$	[_linear]	✓
i.c.			
6314	$\cos(x)y' + y \sin(x) = 2x \cos(x)^2$	[_linear]	✓
i.c.			
6315	$\sin(x)y' + y \cos(x) = x \sin(x)$	[_linear]	✓
i.c.			
6316	$y' + y\sqrt{1 + \sin(x)^2} = x$	[_linear]	✓
i.c.			
6319	$y' + \frac{3y}{x} = x^2$	[_linear]	✓
6320	$x' = \alpha - \beta \cos\left(\frac{\pi t}{12}\right) - kx$	[[_linear, 'class A']]	✓
i.c.			
6322	$x^2 y + x^4 \cos(x) - x^3 y' = 0$	[_linear]	✓

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Table 2.3 first order ode linear  
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#	ODE	CAS classification	Solved?
6323	$x^{10/3} - 2y + xy' = 0$	[_linear]	✓
6341	$y' - 4y = 32x^2$	[[_linear, 'class A']]	✓
6343	$y' + \frac{3y}{x} = x^2 - 4x + 3$	[_linear]	✓
6399	$y' - y = e^{2x}$	[[_linear, 'class A']]	✓
6400	$x^2y' + 2xy - x + 1 = 0$	[_linear]	✓
	i.c.		
6401	$y' + y = (x + 1)^2$	[[_linear, 'class A']]	✓
	i.c.		
6402	$2xy + x^2y' = \sinh(x)$	[_linear]	✓
	i.c.		
6403	$y' + \frac{y}{1-x} + 2x - x^2 = 0$	[_linear]	✓
6404	$y' + \frac{y}{1-x} + x - x^2 = 0$	[_linear]	✓
6405	$(x^2 + 1)y' = xy + 1$	[_linear]	✓
6416	$y' - \frac{2y}{x} - x^2 = 0$	[_linear]	✓
6417	$y' + \frac{2y}{x} - x^3 = 0$	[_linear]	✓
6421	$y' + 2y = e^{3x}$	[[_linear, 'class A']]	✓
6422	$-y + xy' = x^2$	[_linear]	✓
6426	$(x^2 - 1)y' + 2xy = x$	[_separable]	✓
6427	$y' + y \tanh(x) = 2 \sinh(x)$	[_linear]	✓
6428	$xy' - 2y = x^3 \cos(x)$	[_linear]	✓
6432	$(x^3 + 1)y' = x^2y$	[_separable]	✓
	i.c.		
6441	$-y + xy' = x^3 + 3x^2 - 2x$	[_linear]	✓
6442	$y' + y \tan(x) = \sin(x)$	[_linear]	✓
6443	$-y + xy' = x^3 \cos(x)$	[_linear]	✓
	i.c.		
6444	$(x^2 + 1)y' + 3xy = 5x$	[_separable]	✓
	i.c.		
6445	$y' + y \cot(x) = 5e^{\cos(x)}$	[_linear]	✓
	i.c.		
6456	$(-x^2 + 1)y' = xy + 1$	[_linear]	✓

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Table 2.3 first order ode linear

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#	ODE	CAS classification	Solved?
6460	$y + (x^2 - 4x) y' = 0$	[_separable]	✓
6461	$y' - y \tan(x) = \cos(x) - 2x \sin(x)$ i.c.	[_linear]	✓
6463	$(x^2 + 1) y' = x(1 + y)$	[_separable]	✓
6464	$xy' + 2y = 3x - 1$ i.c.	[_linear]	✓
6467	$y' + \frac{y}{x} = \sin(2x)$ i.c.	[_linear]	✓
6471	$(-x^3 + 1) y' + x^2 y = x^2(-x^3 + 1)$	[_linear]	✓
6472	$y' + \frac{y}{x} = \sin(x)$ i.c.	[_linear]	✓
6474	$y' + \left(\frac{1}{x} - \frac{2x}{-x^2 + 1}\right) y = \frac{1}{-x^2 + 1}$	[_linear]	✓
6475	$(x^2 + 1) y' + xy = (x^2 + 1)^{3/2}$	[_linear]	✓
6478	$y' + y \cot(x) = \cos(x)$ i.c.	[_linear]	✓
6516	$y' - 5y = (x - 1) \sin(x) + (x + 1) \cos(x)$	[[_linear, 'class A']]	✓
6517	$y' - 5y = 3e^x - 2x + 1$	[[_linear, 'class A']]	✓
6518	$y' - 5y = e^x x^2 - x e^{5x}$	[[_linear, 'class A']]	✓
6524	$y' - y = e^x$	[[_linear, 'class A']]	✓
6525	$y' - y = x e^{2x} + 1$	[[_linear, 'class A']]	✓
6526	$y' - y = \sin(x) + \cos(2x)$	[[_linear, 'class A']]	✓
6534	$y' + \frac{4y}{x} = x^4$	[_linear]	✓
6543	$y' - \frac{y}{x} = x^2$	[_linear]	✓
6570	$xy' = 2y$	[_separable]	✓
6580	$4y + xy' = 0$	[_separable]	✓
6581	$1 + 2y + (-x^2 + 4) y' = 0$	[_separable]	✓
6583	$1 + y - (x + 1) y' = 0$	[_separable]	✓
6589	$1 + 2y - (4 - x) y' = 0$	[_separable]	✓
6590	$(x^2 + 1) y' + xy = 0$	[_separable]	✓

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Table 2.3 first order ode linear  
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#	ODE	CAS classification	Solved?
6600	$xy' + 2y = 0$ i.c.	[_separable]	✓
6642	$y' + y = 2x + 2$	[[_linear, 'class A']]	✓
6643	$y' - y = xy$	[_separable]	✓
6644	$-3y - (-2 + x)e^x + xy' = 0$	[_linear]	✓
6645	$i' - 6i = 10 \sin(2t)$	[[_linear, 'class A']]	✓
6650	$r' + 2r \cos(\theta) + \sin(2\theta) = 0$	[_linear]	✓
6655	$xy' = y(1 - x \tan(x)) + x^2 \cos(x)$	[_linear]	✓
6660	$xy' = 2y + x^3 e^x$ i.c.	[_linear]	✓
6661	$Li' + Ri = E \sin(2t)$ i.c.	[[_linear, 'class A']]	✓
6667	$x^2 y'^2 + xyy' - 6y^2 = 0$	[_separable]	✓
6668	$xy'^2 + (y - 1 - x^2)y' - x(y - 1) = 0$	[_quadrature]	✓
6795	$xy' = 1 - x + 2y$	[_linear]	✓
6843	$y' + xy = \frac{1}{x^3}$	[_linear]	✓
7060	$y' = y \sin(x)$	[_separable]	✓
7077	$y' = (y - 1)(x + 1)$	[_separable]	✓
7084	$y' - y = 2x - 3$	[[_linear, 'class A']]	✓
7086	$y' + y = 2x + 1$	[[_linear, 'class A']]	✓
7094	$y - 2xy + x^2 y' = 0$	[_separable]	✓
7115	$y'(y' + y) = x(x + y)$ i.c.	[_quadrature]	✓
7117	$x^2 y'^2 - 3xyy' + 2y^2 = 0$	[_separable]	✓
7120	$y' + \frac{x + 2y}{x} = 0$	[_linear]	✓
7122	$xy' = x + \frac{y}{2}$ i.c.	[_linear]	✓
7231	$y e^{xy} + x e^{xy} y' = 0$	[_separable]	✓
7259	$y' + y \cos(x) = 0$	[_separable]	✓
7260	$y' + y \cos(x) = \sin(x) \cos(x)$	[_linear]	✓

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Table 2.3 first order ode linear  
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#	ODE	CAS classification	Solved?
7268	$y' + y = e^x$	[[_linear, 'class A']]	✓
7269	$y' - 2y = x^2 + x$	[[_linear, 'class A']]	✓
7270	$3y' + y = 2e^{-x}$	[[_linear, 'class A']]	✓
7271	$y' + 3y = e^{ix}$	[[_linear, 'class A']]	✓
7272	$y' + iy = x$	[[_linear, 'class A']]	✓
7274	$Ly' + Ry = E \sin(\omega x)$ i.c.	[[_linear, 'class A']]	✓
7275	$Ly' + Ry = E e^{i\omega x}$ i.c.	[[_linear, 'class A']]	✓
7276	$y' + ay = b(x)$	[[_linear, 'class A']]	✓
7277	$y' + 2xy = x$	[_separable]	✓
7278	$xy' + y = 3x^3 - 1$	[_linear]	✓
7279	$y' + ye^x = 3e^x$	[_separable]	✓
7280	$y' - y \tan(x) = e^{\sin(x)}$	[_linear]	✓
7281	$y' + 2xy = xe^{-x^2}$	[_linear]	✓
7282	$y' + y \cos(x) = e^{-\sin(x)}$ i.c.	[_linear]	✓
7283	$2xy + x^2y' = 1$	[_linear]	✓
7284	$y' + 2y = b(x)$	[[_linear, 'class A']]	✓
7407	$y' = x^2y$	[_separable]	✓
7450	$xy' = 2y$	[_separable]	✓
7479	$y' = 1 + 2xy$	[_linear]	✓
7484	$y' = 4xy$	[_separable]	✓
7485	$y' + y \tan(x) = 0$	[_separable]	✓
7490	$y' - y \tan(x) = 0$	[_separable]	✓
7494	$x^2y' = y$ i.c.	[_separable]	✓
7501	$y' - xy = 0$	[_separable]	✓
7502	$y' + xy = x$	[_separable]	✓
7503	$y' + y = \frac{1}{1 + e^{2x}}$	[_linear]	✓
7504	$y' + y = 2xe^{-x} + x^2$	[[_linear, 'class A']]	✓

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Table 2.3 first order ode linear  
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#	ODE	CAS classification	Solved?
7505	$2y - x^3 = xy'$	[_linear]	✓
7506	$y' + 2xy = 0$	[_separable]	✓
7507	$xy' - 3y = x^4$	[_linear]	✓
7508	$(x^2 + 1)y' + 2xy = \cot(x)$	[_linear]	✓
7509	$y' + y \cot(x) = 2x \csc(x)$	[_linear]	✓
7510	$y - x + xy \cot(x) + xy' = 0$	[_linear]	✓
7511	$y' - xy = 0$	[_separable]	✓
i.c.			
7512	$y' - 2xy = 6x e^{x^2}$	[_linear]	✓
i.c.			
7514	$y' - \frac{y}{x} = x^2$	[_linear]	✓
i.c.			
7515	$y' + 4y = e^{-x}$	[[_linear, 'class A']]	✓
i.c.			
7516	$xy + x^2y' = 2x$	[_separable]	✓
i.c.			
7524	$xy' = 2x^2y + y \ln(x)$	[_separable]	✓
7525	$y' \sin(2x) = 2y + 2 \cos(x)$	[_linear]	✓
7530	$y + y \cos(xy) + (x + x \cos(xy))y' = 0$	[_separable]	✓
7534	$1 + y + (1 - x)y' = 0$	[_separable]	✓
7553	$xy' = 2x - 6y$	[_linear]	✓
7561	$2x + 3y - 1 - 4(x + 1)y' = 0$	[_linear]	✓
7593	$xy' + y = x$	[_linear]	✓
7594	$x^2y' + y = x^2$	[_linear]	✓
7595	$x^2y' = y$	[_separable]	✓
7599	$2xy + x^2y' = 0$	[_separable]	✓
7601	$-y + xy' = 2x$	[_linear]	✓
i.c.			
7602	$x^2y' - 2y = 3x^2$	[_linear]	✓
i.c.			
7608	$\frac{1}{y} - \frac{xy'}{y^2} = 0$	[_separable]	✓
7745	$y' + y = \cos(x)$	[[_linear, 'class A']]	✓

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Table 2.3 first order ode linear  
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#	ODE	CAS classification	Solved?
7749	$y' = 2xy$	[_separable]	✓
7759	$y' - y = x^2$	[[_linear, 'class A']]	✓
7761	$xy' = y$	[_separable]	✓
7763	$x^2y' = y$	[_separable]	✓
7765	$y' - \frac{y}{x} = x^2$	[_linear]	✓
7766	$y' + \frac{y}{x} = x$	[_linear]	✓
7770	$y' = x - y$	[[_linear, 'class A']]	✓
i.c.			
7891	$y' - 2y = x^2$	[[_linear, 'class A']]	✓
i.c.			
8111	$x^2y'^2 - y^2 = 0$	[_separable]	✓
8112	$xy'^2 - (2x + 3y)y' + 6y = 0$	[_quadrature]	✓
8113	$x^2y'^2 - 5xyy' + 6y^2 = 0$	[_separable]	✓
8114	$x^2y'^2 + xy' - y^2 - y = 0$	[_separable]	✓
8115	$xy'^2 + (1 - x^2y)y' - xy = 0$	[_quadrature]	✓
8116	$y'^2 - (x^2y + 3)y' + 3x^2y = 0$	[_quadrature]	✓
8118	$y'^2 - y^2x^2 = 0$	[_separable]	✓
8121	$y'^2 - xy(x + y)y' + x^3y^3 = 0$	[_separable]	✓
8128	$xy'^3 - (x + x^2 + y)y'^2 + (x^2 + y + xy)y' - xy = 0$	[_quadrature]	✓
8210	$6xy'^2 - (3x + 2y)y' + y = 0$	[_quadrature]	✓
8226	$x^2y'^2 = (x - y)^2$	[_linear]	✓
8229	$xy'^2 + (1 - x)yy' - y^2 = 0$	[_quadrature]	✓
8373	$y' = \frac{y}{x \ln(x)}$	[_separable]	✓
8375	$y' + \frac{2y}{x} = 5x^2$	[_linear]	✓
8376	$tx' + 2x = 4e^t$	[_linear]	✓
8399	$y' = x + \frac{\sec(x)y}{x}$	[_linear]	✓
8400	$y' = \frac{2y}{x}$	[_separable]	✓
i.c.			

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Table 2.3 first order ode linear  
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#	ODE	CAS classification	Solved?
8401	$y' = \frac{2y}{x}$	[_separable]	✓
8468	$y' = \frac{y\left(1 + \frac{a^2x}{\sqrt{a^2(x^2+1)}}\right)}{\sqrt{a^2(x^2+1)}}$	[_separable]	✓
8666	$y' = axy$	[_separable]	✓
8667	$y' = ax + y$	[[_linear, 'class A']]	✓
8668	$y' = ax + by$	[[_linear, 'class A']]	✓
8675	$cy' = ax + y$	[[_linear, 'class A']]	✓
8676	$cy' = ax + by$	[[_linear, 'class A']]	✓
8686	$y' = \sin(x) + y$	[[_linear, 'class A']]	✓
8688	$y' = \cos(x) + \frac{y}{x}$	[_linear]	✓
8712	$y'^2 = \frac{y^2}{x}$	[_separable]	✓
8838	$y' + y \cot(x) = 2 \cos(x)$	[_linear]	✓
9692	$y' + ay - ce^{bx} = 0$	[[_linear, 'class A']]	✓
9693	$y' + ay - b \sin(cx) = 0$	[[_linear, 'class A']]	✓
9694	$y' + 2xy - xe^{-x^2} = 0$	[_linear]	✓
9695	$y' + y \cos(x) - e^{2x} = 0$	[_linear]	✓
9696	$y' + y \cos(x) - \frac{\sin(2x)}{2} = 0$	[_linear]	✓
9697	$y' + y \cos(x) - e^{-\sin(x)} = 0$	[_linear]	✓
9698	$y' + y \tan(x) - \sin(2x) = 0$	[_linear]	✓
9699	$y' - (a + \cos(\ln(x)) + \sin(\ln(x)))y = 0$	[_separable]	✓
9700	$y' + f'(x)y - f(x)f'(x) = 0$	[_linear]	✓
9701	$y' + f(x)y - g(x) = 0$	[_linear]	✓
9780	$xy' + y - x \sin(x) = 0$	[_linear]	✓
9781	$xy' - y - \frac{x}{\ln(x)} = 0$	[_linear]	✓
9782	$xy' - y - x^2 \sin(x) = 0$	[_linear]	✓
9783	$xy' - y - \frac{x \cos(\ln(\ln(x)))}{\ln(x)} = 0$	[_linear]	✓
9784	$xy' + ay + bx^n = 0$	[_linear]	✓

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Table 2.3 first order ode linear  
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#	ODE	CAS classification	Solved?
9819	$2xy' - y - 2x^3 = 0$	[_linear]	✓
9822	$x^2y' + y - x = 0$	[_linear]	✓
9823	$x^2y' - y + x^2e^{x-\frac{1}{x}} = 0$	[_linear]	✓
9824	$x^2y' - (x-1)y = 0$	[_separable]	✓
9837	$(x^2+1)y' + xy - 1 = 0$	[_linear]	✓
9838	$(x^2+1)y' + xy - x(x^2+1) = 0$	[_linear]	✓
9839	$(x^2+1)y' + 2xy - 2x^2 = 0$	[_linear]	✓
9842	$(x^2-1)y' - xy + a = 0$	[_linear]	✓
9843	$(x^2-1)y' + 2xy - \cos(x) = 0$	[_linear]	✓
9850	$(x^2-5x+6)y' + 3xy - 8y + x^2 = 0$	[_linear]	✓
9863	$x(x^2+1)y' + x^2y = 0$	[_separable]	✓
9864	$x(x^2-1)y' - (2x^2-1)y + ax^3 = 0$	[_linear]	✓
9872	$(2x^4-x)y' - 2(x^3-1)y = 0$	[_separable]	✓
9881	$\sqrt{a^2+x^2}y' + y - \sqrt{a^2+x^2} + x = 0$	[_linear]	✓
9882	$x \ln(x)y' + y - ax(\ln(x)+1) = 0$	[_linear]	✓
9885	$\cos(x)y' + y + (\sin(x)+1)\cos(x) = 0$	[_linear]	✓
9887	$\sin(x)\cos(x)y' - y - \sin(x)^3 = 0$	[_linear]	✓
9889	$(a \sin(x)^2 + b)y' + ay \sin(2x) + Ax(a \sin(x)^2 + c) = 0$	[_linear]	✓
10082	$y'^2 + 2y'y \cot(x) - y^2 = 0$	[_separable]	✓
10084	$y'^2 + y(y-x)y' - xy^3 = 0$	[_separable]	✓
10126	$x^2y'^2 + 3xyy' + 2y^2 = 0$	[_separable]	✓
10127	$x^2y'^2 + 3xyy' + 3y^2 = 0$	[_separable]	✓
10128	$x^2y'^2 + 4xyy' - 5y^2 = 0$	[_separable]	✓
10130	$x^2y'^2 + (x^2y - 2xy + x^3)y' + (y^2 - x^2y)(1-x) = 0$	[_linear]	✓
10136	$(-a^2 + x^2)y'^2 + 2xyy' + y^2 = 0$	[_separable]	✓
10168	$xyy'^2 + (y^2 + x^2)y' + xy = 0$	[_separable]	✓

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Table 2.3 first order ode linear

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#	ODE	CAS classification	Solved?
10212	$y'^2 - axyy' + 2y^2a = 0$	[_separable]	✓
10213	$y'^3 - (y^2 + xy + x^2)y'^2 + (x^3y + y^2x^2 + xy^3)y' - x^3y^3 = 0$	[_quadrature]	✓
10252	$y \ln(y') + y' - y \ln(y) - xy = 0$	[_separable]	✓
11680	$g(x)y' = f_1(x)y + f_0(x)$	[_linear]	✓
11841	$y' = a \ln(x)^n y - abx \ln(x)^{n+1} y + b \ln(x) + b$	[_linear]	✓
12477	$y + x + xy' = 0$	[_linear]	✓
12495	$y' + y \cot(x) = \sec(x)$	[_linear]	✓
12496	$xy' + (x + 1)y = e^x$	[_linear]	✓
12497	$y' - \frac{2y}{x+1} = (x+1)^3$	[_linear]	✓
12498	$(x^3 + x)y' + 4x^2y = 2$	[_linear]	✓
12499	$x^2y' + (-2x + 1)y = x^2$	[_linear]	✓
12506	$y^2(3y - 6xy') - x(y - 2xy') = 0$	[_separable]	✓
12517	$x^3y - y^4 + (xy^3 - x^4)y' = 0$	[_separable]	✓
12519	$xy' - y + 2x^2y - x^3 = 0$	[_linear]	✓
12525	$y' - x^2y = x^5$	[_linear]	✓
12534	$y' + \frac{y}{(-x^2 + 1)^{3/2}} = \frac{x + \sqrt{-x^2 + 1}}{(-x^2 + 1)^2}$	[_linear]	✓
12537	$(x^2 + 1)y' + y = \arctan(x)$	[_linear]	✓
12539	$y' + y \cos(x) = \frac{\sin(2x)}{2}$	[_linear]	✓
12555	$(2xy' - y)^2 = 8x^3$	[_linear]	✓
12557	$y'^3 - (2x + y^2)y'^2 + (x^2 - y^2 + 2xy^2)y' - (x^2 - y^2)y^2 = 0$	[_quadrature]	✓
12583	$y'^2 + 2y'y \cot(x) = y^2$	[_separable]	✓
12585	$x^2y'^2 - 2(xy + 2y')y' + y^2 = 0$	[_separable]	✓
12701	$x' = \frac{2x}{t}$	[_separable]	✓
12706	$x' + 2x = t^2 + 4t + 7$	[[_linear, 'class A']]	✓
12707	$2tx' = x$	[_separable]	✓

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Table 2.3 first order ode linear  
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#	ODE	CAS classification	Solved?
12728	$x' = \frac{2x}{t+1}$	[_separable]	✓
12747	$x'e^{2t} + 2xe^{2t} = e^{-t}$ i.c.	[[_linear, 'class A']]	✓
12751	$x' = 2t^3x - 6$	[_linear]	✓
12754	$7t^2x' = 3x - 2t$	[_linear]	✓
12757	$x' = -\frac{2x}{t} + t$	[_linear]	✓
12758	$y' + y = e^t$	[[_linear, 'class A']]	✓
12759	$x' + 2xt = e^{-t^2}$	[_linear]	✓
12760	$tx' = -x + t^2$	[_linear]	✓
12761	$\theta' = -a\theta + e^{tb}$	[[_linear, 'class A']]	✓
12762	$(t^2 + 1)x' = -3xt + 6t$	[_separable]	✓
12763	$x' + \frac{5x}{t} = t + 1$ i.c.	[_linear]	✓
12764	$x' = \left(a + \frac{b}{t}\right)x$ i.c.	[_separable]	✓
12765	$R' + \frac{R}{t} = \frac{2}{t^2 + 1}$ i.c.	[_linear]	✓
12766	$N' = N - 9e^{-t}$	[[_linear, 'class A']]	✓
12767	$\cos(\theta)v' + v = 3$	[_separable]	✓
12768	$R' = \frac{R}{t} + te^{-t}$ i.c.	[_linear]	✓
12769	$y' + ay = \sqrt{t+1}$	[[_linear, 'class A']]	✓
12770	$x' = 2xt$	[_separable]	✓
12771	$x' + \frac{e^{-t}x}{t} = t$ i.c.	[_linear]	✓
12775	$x' + p(t)x = 0$	[_separable]	✓
12782	$x^3 + 3tx^2x' = 0$	[_separable]	✓
12922	$y' + y = x + 1$	[[_linear, 'class A']]	✓
12928	$y' + 3y = 3x^2e^{-3x}$	[[_linear, 'class A']]	✓
12929	$y' + 4xy = 8x$	[_separable]	✓

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Table 2.3 first order ode linear  
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#	ODE	CAS classification	Solved?
12934	$y' + 2y = 6e^x + 4xe^{-2x}$	[[_linear, 'class A']]	✓
12938 i.c.	$y' + y = 2xe^{-x}$	[[_linear, 'class A']]	✓
12939 i.c.	$y' + y = 2xe^{-x}$	[[_linear, 'class A']]	✓
12966	$4xy + (x^2 + 1)y' = 0$	[_separable]	✓
12967	$xy + 2x + y + 2 + (x^2 + 2x)y' = 0$	[_separable]	✓
12973	$x + y - xy' = 0$	[_linear]	✓
12990	$y' + \frac{3y}{x} = 6x^2$	[_linear]	✓
12991	$x^4y' + 2x^3y = 1$	[_linear]	✓
12992	$y' + 3y = 3x^2e^{-3x}$	[[_linear, 'class A']]	✓
12993	$y' + 4xy = 8x$	[_separable]	✓
12994	$x' + \frac{x}{t^2} = \frac{1}{t^2}$	[_separable]	✓
12995	$(u^2 + 1)v' + 4uv = 3u$	[_separable]	✓
12996	$xy' + \frac{(2x + 1)y}{x + 1} = x - 1$	[_linear]	✓
12997	$(x^2 + x - 2)y' + 3(x + 1)y = x - 1$	[_linear]	✓
12998	$xy' + xy + y - 1 = 0$	[_linear]	✓
13000	$r' + r \tan(t) = \cos(t)$	[_linear]	✓
13001	$\cos(t)r' + r \sin(t) - \cos(t)^4 = 0$	[_linear]	✓
13002	$\cos(x)^2 - y \cos(x) - (\sin(x) + 1)y' = 0$	[_linear]	✓
13003	$y \sin(2x) - \cos(x) + (1 + \sin(x)^2)y' = 0$	[_linear]	✓
13008 i.c.	$xy' - 2y = 2x^4$	[_linear]	✓
13009 i.c.	$y' + 3x^2y = x^2$	[_separable]	✓
13010 i.c.	$e^x(y - 3(1 + e^x)^2) + (1 + e^x)y' = 0$	[_linear]	✓
13011 i.c.	$2x(1 + y) - (x^2 + 1)y' = 0$	[_separable]	✓
13012 i.c.	$r' + r \tan(t) = \cos(t)^2$	[_linear]	✓

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Table 2.3 first order ode linear

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#	ODE	CAS classification	Solved?
13013	$x' - x = \sin(2t)$ i.c.	[[_linear, 'class A']]	✓
13016	$y' + y = \begin{cases} 2 & 0 \leq x < 1 \\ 0 & 1 \leq x \end{cases}$ i.c.	[[_linear, 'class A']]	✓
13017	$y' + y = \begin{cases} 5 & 0 \leq x < 10 \\ 1 & 10 \leq x \end{cases}$ i.c.	[[_linear, 'class A']]	✓
13018	$y' + y = \begin{cases} e^{-x} & 0 \leq x < 2 \\ e^{-2} & 2 \leq x \end{cases}$ i.c.	[[_linear, 'class A']]	✓
13019	$(x+2)y' + y = \begin{cases} 2x & 0 \leq x < 2 \\ 4 & 2 \leq x \end{cases}$ i.c.	[_linear]	✓
13020	$ay' + by = ke^{-\lambda x}$	[[_linear, 'class A']]	✓
13021	$y' + y = 2\sin(x) + 5\sin(2x)$	[[_linear, 'class A']]	✓
13027	$6x^2y - (x^3 + 1)y' = 0$	[_separable]	✓
13029	$y - 1 + x(x+1)y' = 0$	[_separable]	✓
13030	$x^2 - 2y + xy' = 0$	[_linear]	✓
13032	$e^{2x}y^2 + (ye^{2x} - 2y)y' = 0$	[_separable]	✓
13033	$8x^3y - 12x^3 + (x^4 + 1)y' = 0$	[_separable]	✓
13036	$(x+1)y' + xy = e^{-x}$	[_linear]	✓
13039	$(x^3 + 1)y' + 6x^2y = 6x^2$	[_separable]	✓
13047	$y' = \frac{xy}{x^2 + 1}$ i.c.	[_separable]	✓
13048	$y' + y = \begin{cases} 1 & 0 \leq x < 2 \\ 0 & 0 < x \end{cases}$ i.c.	[[_linear, 'class A']]	✓
13049	$(x+2)y' + y = \begin{cases} 2x & 0 \leq x \leq 2 \\ 4 & 2 < x \end{cases}$ i.c.	[_linear]	✓
13389	$x'e^{3t} + 3xe^{3t} = e^{-t}$ i.c.	[[_linear, 'class A']]	✓
13395	$x' = t^3(-x + 1)$ i.c.	[_separable]	✓

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Table 2.3 first order ode linear  
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#	ODE	CAS classification	Solved?
13397	$x' = t^2 x$	[_separable]	✓
13401	$xy' = ky$	[_separable]	✓
13402	$i' = p(t) i$	[_separable]	✓
13407	$y' + \frac{y}{x} = x^2$	[_linear]	✓
13408	$x' + xt = 4t$	[_separable]	✓
	i.c.		
13409	$z' = z \tan(y) + \sin(y)$	[_linear]	✓
13410	$y' + e^{-x} y = 1$	[_linear]	✓
	i.c.		
13411	$x' + x \tanh(t) = 3$	[_linear]	✓
13412	$y' + 2y \cot(x) = 5$	[_linear]	✓
	i.c.		
13413	$x' + 5x = t$	[[_linear, 'class A']]	✓
13414	$x' + \left(a + \frac{1}{t}\right) x = b$	[_linear]	✓
	i.c.		
13415	$T' = -k(T - \mu - a \cos(\omega(t - \phi)))$	[[_linear, 'class A']]	✓
13417	$1 + ye^x + xe^x y + (xe^x + 2)y' = 0$	[_linear]	✓
13527	$xy' + y = x^3$	[_linear]	✓
13529	$x' + 3x = e^{2t}$	[[_linear, 'class A']]	✓
13530	$y \sin(x) + \cos(x) y' = 1$	[_linear]	✓
13532	$x' = x + \sin(t)$	[[_linear, 'class A']]	✓
13534	$xyy'^2 - (y^2 + x^2)y' + xy = 0$	[_separable]	✓
13554	$x' + 5x = 10t + 2$	[[_linear, 'class A']]	✓
	i.c.		
13559	$x' - x \cot(t) = 4 \sin(t)$	[_linear]	✓
13568	$(x^2 - 1)y' + 2xy - \cos(x) = 0$	[_linear]	✓
13575	$y'^2 + 2y'y \cot(x) - y^2 = 0$	[_separable]	✓
13640	$\cos(x)y' + ye^{x^2} = \sinh(x)$	[_linear]	✓
13644	$5y' - xy = 0$	[_separable]	✓
13830	$y' + y \cos(x) = \frac{\sin(2x)}{2}$	[_linear]	✓

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Table 2.3 first order ode linear  
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#	ODE	CAS classification	Solved?
13838	$y - xy' = 0$	[_separable]	✓
13840	$1 + y - (1 - x)y' = 0$	[_separable]	✓
13842	$y - a + x^2y' = 0$	[_separable]	✓
13843	$z - (-a^2 + t^2)z' = 0$	[_separable]	✓
13846	$r' + r \tan(t) = 0$	[_separable]	✓
13852	$y + x + xy' = 0$	[_linear]	✓
13857	$t - s + ts' = 0$	[_linear]	✓
13862	$x + 2y + 1 - (2x - 3)y' = 0$	[_linear]	✓
13867	$y' - \frac{2y}{x+1} = (x+1)^3$	[_linear]	✓
13868	$y' - \frac{ay}{x} = \frac{x+1}{x}$	[_linear]	✓
13869	$(-x^2 + x)y' + (2x^2 - 1)y - ax^3 = 0$	[_linear]	✓
13870	$s' \cos(t) + s \sin(t) = 1$	[_linear]	✓
13871	$s' + s \cos(t) = \frac{\sin(2t)}{2}$	[_linear]	✓
13872	$y' - \frac{ny}{x} = e^x x^n$	[_linear]	✓
13873	$y' + \frac{ny}{x} = ax^{-n}$	[_linear]	✓
13874	$y' + y = e^{-x}$	[[_linear, 'class A']]	✓
13875	$y' + \frac{(-2x+1)y}{x^2} - 1 = 0$	[_linear]	✓
13897	$y = xy' + y'$	[_separable]	✓
13900	$y' = \frac{2y}{x} - \sqrt{3}$	[_linear]	✓
13955	$(x^2 + 1)y' - xy - \alpha = 0$	[_linear]	✓
13965	$y' + \frac{y}{x} = e^x$ i.c.	[_linear]	✓
13987	$-y + xy' = 0$	[_separable]	✓
13992	$y' - \frac{y}{x} = 1$	[_linear]	✓
13994	$2xy + x^2y' = 0$	[_separable]	✓
14002	$2xy' - y = 0$	[_separable]	✓
14009	$y' - 2xy = 0$	[_separable]	✓

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Table 2.3 first order ode linear  
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#	ODE	CAS classification	Solved?
14010	$y' + y = x^2 + 2x - 1$	[[_linear, 'class A']]	✓
14015	$x \ln(x) y' - (\ln(x) + 1) y = 0$	[_separable]	✓
14033	$y' = xy$	[_separable]	✓
14034	$y' = -xy$	[_separable]	✓
14037	$y' = x + y$	[[_linear, 'class A']]	✓
14038	$y' = xy$	[_separable]	✓
14040	$y' = \frac{y}{x}$	[_separable]	✓
14049	$y' = \frac{3y}{(x-5)(x+3)} + e^{-x}$	[_linear]	✓
14065	$y' = xy + \frac{1}{x^2 + 1}$ i.c.	[_linear]	✓
14066	$y' = \cos(x) + \frac{y}{x}$ i.c.	[_linear]	✓
14067	$y' = \frac{y}{x} + \tan(x)$ i.c.	[_linear]	✓
14068	$y' = \frac{y}{-x^2 + 4} + \sqrt{x}$ i.c.	[_linear]	✓
14069	$y' = \frac{y}{-x^2 + 4} + \sqrt{x}$ i.c.	[_linear]	✓
14070	$y' = y \cot(x) + \csc(x)$ i.c.	[_linear]	✓
14087	$y' = \frac{y}{x}$ i.c.	[_separable]	✓
14090	$y' = xy + x$ i.c.	[_separable]	✓
14092	$y - x^2 y' = 0$ i.c.	[_separable]	✓
14095	$y' = \frac{1 - xy}{x^2}$	[_linear]	✓
14099	$y' = xy + 2$ i.c.	[_linear]	✓
14100	$y' = \frac{y}{x}$ i.c.	[_separable]	✓

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Table 2.3 first order ode linear  
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#	ODE	CAS classification	Solved?
14101	$y' = \frac{y}{x-1} + x^2$ i.c.	[_linear]	✓
14102	$y' = \frac{y}{x} + \sin(x^2)$ i.c.	[_linear]	✓
14103	$y' = \frac{2y}{x} + e^x$ i.c.	[_linear]	✓
14104	$y' = y \cot(x) + \sin(x)$ i.c.	[_linear]	✓
14106	$y - xy' = 0$	[_separable]	✓
14107	$xy' + x^2 - y = 0$	[_linear]	✓
14110	$y(2x-1) + x(x+1)y' = 0$	[_separable]	✓
14112	$y' = x + y$ i.c.	[[_linear, 'class A']]	✓
14113	$y' = \frac{y}{x}$ i.c.	[_separable]	✓
14114	$y' = \frac{y}{x}$ i.c.	[_separable]	✓
14115	$y' = \frac{y}{-x^2+1} + \sqrt{x}$ i.c.	[_linear]	✓
14116	$y' = \frac{y}{-x^2+1} + \sqrt{x}$	[_linear]	✓
14117	$y' = \frac{y}{-x^2+1} + \sqrt{x}$ i.c.	[_linear]	✓
14277	$y' = \frac{y+1}{t+1}$	[_separable]	✓
14279	$y' = t^4 y$	[_separable]	✓
14289	$y' = \frac{2y+1}{t}$	[_separable]	✓
14292	$v' = t^2 v - 2 - 2v + t^2$	[_separable]	✓
14296	$w' = \frac{w}{t}$	[_separable]	✓
14298	$x' = -xt$ i.c.	[_separable]	✓
14299	$y' = ty$ i.c.	[_separable]	✓
14317	$y' = y + t + 1$	[[_linear, 'class A']]	✓

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Table 2.3 first order ode linear  
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#	ODE	CAS classification	Solved?
14319	$y' = 2y - t$ i.c.	[[_linear, 'class A']]	✓
14321	$y' = (t + 1)y$ i.c.	[_separable]	✓
14332	$y' = t^2 + t^2y$	[_separable]	✓
14333	$y' = t + ty$	[_separable]	✓
14340	$v' = 2V(t) - 2v$	[[_linear, 'class A']]	✓
14402	$y' = -4y + 9e^{-t}$	[[_linear, 'class A']]	✓
14403	$y' = -4y + 3e^{-t}$	[[_linear, 'class A']]	✓
14404	$y' = -3y + 4 \cos(2t)$	[[_linear, 'class A']]	✓
14405	$y' = 2y + \sin(2t)$	[[_linear, 'class A']]	✓
14406	$y' = 3y - 4e^{3t}$	[[_linear, 'class A']]	✓
14407	$y' = \frac{y}{2} + 4e^{\frac{t}{2}}$	[[_linear, 'class A']]	✓
14408	$y' + 2y = e^{\frac{t}{3}}$ i.c.	[[_linear, 'class A']]	✓
14409	$y' - 2y = 3e^{-2t}$ i.c.	[[_linear, 'class A']]	✓
14410	$y' + y = \cos(2t)$ i.c.	[[_linear, 'class A']]	✓
14411	$y' + 3y = \cos(2t)$ i.c.	[[_linear, 'class A']]	✓
14412	$y' - 2y = 7e^{2t}$ i.c.	[[_linear, 'class A']]	✓
14413	$y' + 2y = 3t^2 + 2t - 1$	[[_linear, 'class A']]	✓
14414	$y' + 2y = t^2 + 2t + 1 + e^{4t}$	[[_linear, 'class A']]	✓
14415	$y' + y = t^3 + \sin(3t)$	[[_linear, 'class A']]	✓
14416	$y' - 3y = 2t - e^{4t}$	[[_linear, 'class A']]	✓
14417	$y' + y = \cos(2t) + 3 \sin(2t) + e^{-t}$	[[_linear, 'class A']]	✓
14418	$y' = -\frac{y}{t} + 2$	[_linear]	✓
14419	$y' = \frac{3y}{t} + t^5$	[_linear]	✓
14420	$y' = -\frac{y}{t+1} + t^2$	[_linear]	✓

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Table 2.3 first order ode linear  
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#	ODE	CAS classification	Solved?
14421	$y' = -2ty + 4e^{-t^2}$	[_linear]	✓
14422	$y' - \frac{2ty}{t^2 + 1} = 3$	[_linear]	✓
14423	$y' - \frac{2y}{t} = t^3 e^t$	[_linear]	✓
14424	$y' = -\frac{y}{t+1} + 2$ i.c.	[_linear]	✓
14425	$y' = \frac{y}{t+1} + 4t^2 + 4t$ i.c.	[_linear]	✓
14426	$y' = -\frac{y}{t} + 2$ i.c.	[_linear]	✓
14427	$y' = -2ty + 4e^{-t^2}$ i.c.	[_linear]	✓
14428	$y' - \frac{2y}{t} = 2t^2$ i.c.	[_linear]	✓
14429	$y' - \frac{3y}{t} = 2t^3 e^{2t}$ i.c.	[_linear]	✓
14430	$y' = \sin(t)y + 4$	[_linear]	✓
14431	$y' = t^2 y + 4$	[_linear]	✓
14432	$y' = \frac{y}{t^2} + 4 \cos(t)$	[_linear]	✓
14433	$y' = y + 4 \cos(t^2)$	[[_linear, 'class A']]	✓
14434	$y' = -y e^{-t^2} + \cos(t)$	[_linear]	✓
14435	$y' = \frac{y}{\sqrt{t^3 - 3}} + t$	[_linear]	✓
14436	$y' = aty + 4e^{-t^2}$	[_linear]	✓
14437	$y' = t^r y + 4$	[_linear]	✓
14438	$v' + \frac{2v}{5} = 3 \cos(2t)$	[[_linear, 'class A']]	✓
14439	$y' = -2ty + 4e^{-t^2}$	[_linear]	✓
14440	$y' + 2y = 3e^{-2t}$	[[_linear, 'class A']]	✓
14447	$y' = y + e^{-t}$	[[_linear, 'class A']]	✓
14449	$y' = ty$	[_separable]	✓
14450	$y' = 3y + e^{7t}$	[[_linear, 'class A']]	✓

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Table 2.3 first order ode linear  
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#	ODE	CAS classification	Solved?
14451	$y' = \frac{ty}{t^2 + 1}$	[_separable]	✓
14452	$y' = -5y + \sin(3t)$	[[_linear, 'class A']]	✓
14453	$y' = t + \frac{2y}{t + 1}$	[_linear]	✓
14456	$y' = -3y + e^{-2t} + t^2$	[[_linear, 'class A']]	✓
14457	$x' = -xt$	[_separable]	✓
i.c.			
14458	$y' = 2y + \cos(4t)$	[[_linear, 'class A']]	✓
i.c.			
14459	$y' = 3y + 2e^{3t}$	[[_linear, 'class A']]	✓
i.c.			
14461	$y' + 5y = 3e^{-5t}$	[[_linear, 'class A']]	✓
i.c.			
14462	$y' = 2ty + 3te^{t^2}$	[_linear]	✓
i.c.			
14470	$y' = t^2y + 1 + y + t^2$	[_separable]	✓
14471	$y' = \frac{2y + 1}{t}$	[_separable]	✓
14657	$y' + 4y = e^{2x}$	[[_linear, 'class A']]	✓
14700	$y' + 3xy = 6x$	[_separable]	✓
14706	$(-2 + x)y' = y + 3$	[_separable]	✓
14712	$y' = 3x - y \sin(x)$	[_linear]	✓
14716	$y' + xy = 4x$	[_separable]	✓
14717	$y' + 4y = x^2$	[[_linear, 'class A']]	✓
14718	$y' = xy - 3x - 2y + 6$	[_separable]	✓
14728	$y' = 2x - 1 + 2xy - y$	[_separable]	✓
i.c.			
14731	$y' = xy - 4x$	[_separable]	✓
14737	$y' = xy - 4x$	[_separable]	✓
14738	$y' = xy - 3x - 2y + 6$	[_separable]	✓
14741	$y' = \frac{y}{x}$	[_separable]	✓
14754	$y' = 2x - 1 + 2xy - y$	[_separable]	✓
i.c.			

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Table 2.3 first order ode linear  
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#	ODE	CAS classification	Solved?
14759	$x^2y' + 3x^2y = \sin(x)$	[[_linear, 'class A']]	✓
14763	$y' = 1 + xy + 3y$	[_linear]	✓
14766	$y' = y \sin(x)$	[_separable]	✓
14768	$xy' + \cos(x^2) = 827y$	[_linear]	✓
14770	$y' + 2y = 20e^{3x}$	[[_linear, 'class A']]	✓
14771	$y' = 4y + 16x$	[[_linear, 'class A']]	✓
14772	$y' - 2xy = x$	[_separable]	✓
14773	$xy' + 3y - 10x^2 = 0$	[_linear]	✓
14774	$2xy + x^2y' = \sin(x)$	[_linear]	✓
14775	$xy' = \sqrt{x} + 3y$	[_linear]	✓
14776	$y \sin(x) + \cos(x) y' = \cos(x)^2$	[_linear]	✓
14777	$xy' + (5x + 2)y = \frac{20}{x}$	[_linear]	✓
14778	$2\sqrt{x}y' + y = 2xe^{-\sqrt{x}}$	[_linear]	✓
14781	$y' + 5y = e^{-3x}$	[[_linear, 'class A']]	✓
i.c.			
14782	$xy' + 3y = 20x^2$	[_linear]	✓
i.c.			
14783	$xy' = y + x^2 \cos(x)$	[_linear]	✓
i.c.			
14784	$(x^2 + 1)y' = x(3 + 3x^2 - y)$	[_linear]	✓
i.c.			
14785	$y' + 6xy = \sin(x)$	[_linear]	✓
i.c.			
14786	$x^2y' + xy = \sqrt{x} \sin(x)$	[_linear]	✓
i.c.			
14787	$-y + xy' = x^2e^{-x^2}$	[_linear]	✓
i.c.			
14831	$2x(1 + y) - y' = 0$	[_separable]	✓
14835	$xy' = 2y - 6x^3$	[_linear]	✓
14842	$4xy - 6 + x^2y' = 0$	[_linear]	✓
14845	$3y - x^3 + xy' = 0$	[_linear]	✓
14848	$2 + 2x^2 - 2xy + (x^2 + 1)y' = 0$	[_linear]	✓

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Table 2.3 first order ode linear  
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#	ODE	CAS classification	Solved?
14864	$y' - 3y = 12e^{2x}$	[[_linear, 'class A']]	✓
14869	$2y - 6x + (x + 1)y' = 0$	[_linear]	✓
14875	$y' + 2y = \sin(x)$	[[_linear, 'class A']]	✓
14882	$y' = x(6y + e^{x^2})$	[_linear]	✓
14884	$x^2y' + 3xy = 6e^{-x^2}$	[_linear]	✓
14942	$xy' + 3y = e^{2x}$	[_linear]	✓
15467	$y' + xy = 0$	[_separable]	✓
15468	$y' + y = \sin(x)$	[[_linear, 'class A']]	✓
15480	$y' = -\frac{2y}{x} - 3$	[_linear]	✓
15497 i.c.	$y' + y = \sin(t)$	[[_linear, 'class A']]	✓
15510	$xy' + y = \cos(x)$	[_linear]	✓
15518	$y' + y \cos(x) = 0$	[_separable]	✓
15519	$y' - y = \sin(x)$	[[_linear, 'class A']]	✓
15532 i.c.	$y' + 2y = x^2$	[[_linear, 'class A']]	✓
15539	$y' = y + \frac{1}{-t + 1}$	[_linear]	✓
15543 i.c.	$y' = y\sqrt{t}$	[_separable]	✓
15545	$ty' = y$	[_separable]	✓
15546 i.c.	$y' = \tan(t)y$	[_separable]	✓
15556 i.c.	$ty' + y = t^3$	[_linear]	✓
15557 i.c.	$t^3y' + t^4y = 2t^3$	[_linear]	✓
15558 i.c.	$2y' + ty = \ln(t)$	[_linear]	✓
15559 i.c.	$y' + y \sec(t) = t$	[_linear]	✓
15560 i.c.	$y' + \frac{y}{t-3} = \frac{1}{t-1}$	[_linear]	✓

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Table 2.3 first order ode linear  
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#	ODE	CAS classification	Solved?
15561	$(t-2)y' + (t^2-4)y = \frac{1}{t+2}$ i.c.	[_linear]	✓
15562	$y' + \frac{y}{\sqrt{-t^2+4}} = t$ i.c.	[_linear]	✓
15563	$y' + \frac{y}{\sqrt{-t^2+4}} = t$ i.c.	[_linear]	✓
15564	$ty' + y = t \sin(t)$ i.c.	[_linear]	✓
15565	$y' + \tan(t)y = \sin(t)$ i.c.	[_linear]	✓
15577	$y' = \frac{y+1}{t+1}$	[_separable]	✓
15578	$y' = \frac{2+y}{2t+1}$	[_separable]	✓
15622	$y' = \frac{y+3}{3x+1}$ i.c.	[_separable]	✓
15625	$y' = \frac{3y+1}{x+3}$ i.c.	[_separable]	✓
15626	$y' = y \cos(t)$ i.c.	[_separable]	✓
15629	$y' + yf(t) = 0$ i.c.	[_separable]	✓
15630	$y' = -\frac{y-2}{-2+x}$ i.c.	[_separable]	✓
15640	$y' = yf(t)$ i.c.	[_separable]	✓
15642	$y' - y = 2e^{-t}$	[[_linear, 'class A']]	✓
15643	$y' - y = 2 \cos(t)$	[[_linear, 'class A']]	✓
15644	$y' - y = t^2 - 2t$	[[_linear, 'class A']]	✓
15645	$y' - y = 4te^{-t}$	[[_linear, 'class A']]	✓
15646	$ty' + y = t^2$	[_linear]	✓
15647	$ty' + y = t$	[_linear]	✓
15648	$xy' + y = xe^x$	[_linear]	✓
15649	$xy' + y = e^{-x}$	[_linear]	✓

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Table 2.3 first order ode linear  
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#	ODE	CAS classification	Solved?
15650	$y' - \frac{2ty}{t^2 + 1} = 2$	[_linear]	✓
15651	$y' - \frac{4ty}{4t^2 + 1} = 4t$	[_linear]	✓
15652	$y' = 2x + \frac{xy}{x^2 - 1}$	[_linear]	✓
15653	$y' + y \cot(t) = \cos(t)$	[_linear]	✓
15654	$y' - \frac{3ty}{t^2 - 4} = t$	[_linear]	✓
15655	$y' - \frac{4ty}{4t^2 - 9} = t$	[_linear]	✓
15656	$y' - \frac{9xy}{9x^2 + 49} = x$	[_linear]	✓
15657	$y' + 2y \cot(x) = \cos(x)$	[_linear]	✓
15658	$y' + xy = x^3$	[_linear]	✓
15659	$y' - xy = x$	[_separable]	✓
15661	$y' - x = y$	[[_linear, 'class A']]	✓
15663	$x' = \frac{3xt^2}{-t^3 + 1}$	[_separable]	✓
15664	$p' = t^3 + \frac{p}{t}$	[_linear]	✓
15665	$v' + v = e^{-s}$	[[_linear, 'class A']]	✓
15666	$y' - y = 4e^t$	[[_linear, 'class A']]	✓
15667	$y' + y = e^{-t}$	[[_linear, 'class A']]	✓
15668	$y' + 3t^2y = e^{-t^3}$	[_linear]	✓
15669	$y' + 2ty = 2t$	[_separable]	✓
15670	$ty' + y = \cos(t)$	[_linear]	✓
15671	$ty' + y = 2te^t$	[_linear]	✓
15672	$(1 + e^t)y' + e^ty = t$	[_linear]	✓
15673	$(t^2 + 4)y' + 2ty = 2t$	[_separable]	✓

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Table 2.3 first order ode linear  
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#	ODE	CAS classification	Solved?
15674	$x' = x + t + 1$ i.c.	[[_linear, 'class A']]	✓
15675	$y' = e^{2t} + 2y$ i.c.	[[_linear, 'class A']]	✓
15676	$y' - \frac{y}{t} = \ln(t)$	[_linear]	✓
15678	$y' + y = \begin{cases} 4 & 0 \leq t < 2 \\ 0 & 2 \leq t \end{cases}$ i.c.	[[_linear, 'class A']]	✓
15679	$y' + y = \begin{cases} t & 0 \leq t < 1 \\ 0 & 1 \leq t \end{cases}$ i.c.	[[_linear, 'class A']]	✓
15680	$y' - y = \sin(2t)$	[[_linear, 'class A']]	✓
15681	$y' + y = 5e^{2t}$	[[_linear, 'class A']]	✓
15682	$y' + y = e^{-t}$	[[_linear, 'class A']]	✓
15683	$y' + y = 2 - e^{2t}$	[[_linear, 'class A']]	✓
15684	$y' - 5y = t$	[[_linear, 'class A']]	✓
15685	$y' + 3y = 27t^2 + 9$	[[_linear, 'class A']]	✓
15686	$y' - \frac{y}{2} = 5 \cos(t) + 2e^t$	[[_linear, 'class A']]	✓
15687	$y' + 4y = 8 \cos(4t)$	[[_linear, 'class A']]	✓
15688	$y' + 10y = 2e^t$	[[_linear, 'class A']]	✓
15689	$y' - 3y = 27t^2$	[[_linear, 'class A']]	✓
15690	$y' - y = 2e^t$	[[_linear, 'class A']]	✓
15691	$y' + y = 4 + 3e^t$	[[_linear, 'class A']]	✓
15692	$y' + y = 2 \cos(t) + t$	[[_linear, 'class A']]	✓
15693	$y' + \frac{y}{2} = \sin(t)$ i.c.	[[_linear, 'class A']]	✓
15694	$y' - \frac{y}{2} = \sin(t)$ i.c.	[[_linear, 'class A']]	✓
15695	$ty' + y = t \cos(t)$	[_linear]	✓
15696	$y' + y = t$ i.c.	[[_linear, 'class A']]	✓
15697	$y' + y = \sin(t)$ i.c.	[[_linear, 'class A']]	✓

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Table 2.3 first order ode linear  
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#	ODE	CAS classification	Solved?
15698	$y' + y = \cos(t)$ i.c.	[[_linear, 'class A']]	✓
15699	$y' + y = e^t$ i.c.	[[_linear, 'class A']]	✓
15702	$y \cos(ty) + t \cos(ty) y' = 0$	[_separable]	✓
15703	$y \sec(t)^2 + 2t + \tan(t) y' = 0$	[_linear]	✓
15708	$e^{ty} + \frac{t e^{ty} y'}{y} = 0$	[_separable]	✓
15711	$y^2 + 2tyy' = 0$	[_separable]	✓
15712	$\frac{3t^2}{y} - \frac{t^3 y'}{y^2} = 0$	[_separable]	✓
15721	$-2ty^2 \sin(t^2) + 2y \cos(t^2) y' = 0$	[_separable]	✓
15729	$2ty^2 + 2t^2 yy' = 0$ i.c.	[_separable]	✓
15730	$1 + \frac{y}{t^2} - \frac{y'}{t} = 0$ i.c.	[_linear]	✓
15731	$2ty + 3t^2 + (t^2 - 1) y' = 0$ i.c.	[_linear]	✓
15741	$t^2 y + t^3 y' = 0$	[_separable]	✓
15742	$y(2e^t + 4t) + 3(e^t + t^2) y' = 0$	[_separable]	✓
15771	$2y - 3t + ty' = 0$	[_linear]	✓
15776	$t - y + ty' = 0$	[_linear]	✓
15789	$t + y - ty' = 0$ i.c.	[_linear]	✓
15799	$y' - \frac{2y}{x} = -x^2 y$	[_separable]	✓
15808	$y = t(y' + 1) + 2y' + 1$	[_linear]	✓
15820	$y' = \frac{(4 - 7x)(2y - 3)}{(x - 1)(2x - 5)}$	[_separable]	✓
15821	$y' + 3y = -10 \sin(t)$	[[_linear, 'class A']]	✓
15824	$y - x + y' = 0$	[[_linear, 'class A']]	✓
15833	$y' + ty = t$	[_separable]	✓
15834	$x' + \frac{x}{y} = y^2$	[_linear]	✓

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Table 2.3 first order ode linear  
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#	ODE	CAS classification	Solved?
15835	$tr' + r = t \cos(t)$	[_linear]	✓
15852 i.c.	$y' = -\frac{y}{t-2}$	[_separable]	✓
15976	$y' - 4y = t^2$	[[_linear, 'class A']]	✓
15977 i.c.	$y' + y = \cos(2t)$	[[_linear, 'class A']]	✓
15978 i.c.	$y' - y = e^{4t}$	[[_linear, 'class A']]	✓
15979 i.c.	$y' + 4y = e^{-4t}$	[[_linear, 'class A']]	✓
15980	$y' + 4y = te^{-4t}$	[[_linear, 'class A']]	✓
16351	$xy' + y = \cos(x)$	[_linear]	✓
16352	$y' + 2y = e^x$	[[_linear, 'class A']]	✓
16353	$(-x^2 + 1)y' + xy = 2x$	[_separable]	✓
16355	$y' = x + y$	[[_linear, 'class A']]	✓
16356	$y' = y - x$	[[_linear, 'class A']]	✓
16357	$y' = \frac{x}{2} - y + \frac{3}{2}$	[[_linear, 'class A']]	✓
16359	$y' = (y - 1)x$	[_separable]	✓
16362	$y' = y - x^2$	[[_linear, 'class A']]	✓
16363	$y' = x^2 + 2x - y$	[[_linear, 'class A']]	✓
16364	$y' = \frac{1+y}{x-1}$	[_separable]	✓
16367	$y' = 2x - y$	[[_linear, 'class A']]	✓
16368	$y' = x^2 + y$	[[_linear, 'class A']]	✓
16369	$y' = -\frac{y}{x}$	[_separable]	✓
16376 i.c.	$y' = x + y$	[[_linear, 'class A']]	✓
16377 i.c.	$y' = 2y - 2x^2 - 3$	[[_linear, 'class A']]	✓
16378 i.c.	$xy' = 2x - y$	[_linear]	✓
16381 i.c.	$\sin(x)y' - y \cos(x) = 0$	[_separable]	✓

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Table 2.3 first order ode linear  
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#	ODE	CAS classification	Solved?
16393	$y' = ax + by + c$	[[_linear, 'class A']]	✓
16395	$xy' + y = a(xy + 1)$	[_linear]	✓
16397	$y' = \frac{y}{x}$	[_separable]	✓
16410	$(x + 1)y' = y - 1$	[_separable]	✓
16411	$y' = 2x(\pi + y)$	[_separable]	✓
16414	$x - y + xy' = 0$	[_linear]	✓
16421	$x + y - 2 + (1 - x)y' = 0$	[_linear]	✓
16433	$y' + 2y = e^{-x}$	[[_linear, 'class A']]	✓
16434	$x^2 - xy' = y$	[_linear]	✓
16435	$y' - 2xy = 2x e^{x^2}$	[_linear]	✓
16436	$y' + 2xy = e^{-x^2}$	[_linear]	✓
16437	$\cos(x)y' - y \sin(x) = 2x$	[_linear]	✓
16438	$xy' - 2y = x^3 \cos(x)$	[_linear]	✓
16439	$y' - y \tan(x) = \frac{1}{\cos(x)^3}$	[_linear]	✓
16440	$x \ln(x)y' - y = 3x^3 \ln(x)^2$	[_linear]	✓
16442	$y' + y \cos(x) = \cos(x)$	[_separable]	✓
16445	$y' - y e^x = 2x e^{e^x}$	[_linear]	✓
16446	$y' + x e^x y = e^{(1-x)e^x}$	[_linear]	✓
16447	$y' - y \ln(2) = 2^{\sin(x)}(\cos(x) - 1) \ln(2)$	[[_linear, 'class A']]	✓
16448	$y' - y = -2e^{-x}$	[[_linear, 'class A']]	✓
16449	$\sin(x)y' - y \cos(x) = -\frac{\sin(x)^2}{x^2}$	[_linear]	✓
16450	$x^2 y' \cos\left(\frac{1}{x}\right) - y \sin\left(\frac{1}{x}\right) = -1$	[_linear]	✓

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Table 2.3 first order ode linear  
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#	ODE	CAS classification	Solved?
16451	$2xy' - y = 1 - \frac{2}{\sqrt{x}}$ i.c.	[_linear]	✓
16452	$x^2y' + y = (x^2 + 1)e^x$ i.c.	[_linear]	✓
16453	$xy' + y = 2x$	[_linear]	✓
16454	$\sin(x)y' + y \cos(x) = 1$	[_linear]	✓
16455	$\cos(x)y' - y \sin(x) = -\sin(2x)$ i.c.	[_linear]	✓
16459	$y' + 3xy = ye^{x^2}$	[_separable]	✓
16477	$\frac{xy}{\sqrt{x^2+1}} + 2xy - \frac{y}{x} + (\sqrt{x^2+1} + x^2 - \ln(x))y' = 0$	[_separable]	✓
16484	$x^2 + y - xy' = 0$	[_linear]	✓
16486	$2x^2y + 2y + 5 + (2x^3 + 2x)y' = 0$	[_linear]	✓
16494	$y'^2 - 2yy' = y^2(-1 + e^{2x})$	[_separable]	✓
16496	$x^2y'^2 + 3xyy' + 2y^2 = 0$	[_separable]	✓
16497	$y'^2 - (2x + y)y' + x^2 + xy = 0$	[_quadrature]	✓
16544	$x \sin(x)y' + (\sin(x) - x \cos(x))y = \sin(x) \cos(x) - x$	[_linear]	✓
16550	$2xye^{x^2} - x \sin(x) + e^{x^2}y' = 0$	[_linear]	✓
16555	$(2x - 1)y' - 2y = \frac{1 - 4x}{x^2}$	[_linear]	✓
16558	$y'(3x^2 - 2x) - y(6x - 2) = 0$	[_separable]	✓
16999	$x^2y' = y - xy$ i.c.	[_separable]	✓
17013	$y' + 4y = t + e^{-2t}$	[[_linear, 'class A']]	✓
17014	$y' - 2y = e^{2t}t^2$	[[_linear, 'class A']]	✓
17015	$y' + y = te^{-t} + 1$	[[_linear, 'class A']]	✓
17016	$y' + \frac{y}{t} = 5 + \cos(2t)$	[_linear]	✓
17017	$y' - 2y = 3e^t$	[[_linear, 'class A']]	✓
17018	$ty' + 2y = \sin(t)$	[_linear]	✓
17019	$y' + 2ty = 16te^{-t^2}$	[_linear]	✓

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Table 2.3 first order ode linear

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#	ODE	CAS classification	Solved?
17020	$(t^2 + 1)y' + 4ty = \frac{1}{(t^2 + 1)^2}$	[_linear]	✓
17021	$2y' + y = 3t$	[[_linear, 'class A']]	✓
17022	$ty' - y = t^3 e^{-t}$	[_linear]	✓
17023	$y' + y = 5 \sin(2t)$	[[_linear, 'class A']]	✓
17024	$2y' + y = 3t^2$	[[_linear, 'class A']]	✓
17025	$y' - y = 2t e^{2t}$	[[_linear, 'class A']]	✓
i.c.			
17026	$y' + 2y = t e^{-2t}$	[[_linear, 'class A']]	✓
i.c.			
17027	$ty' + 4y = t^2 - t + 1$	[_linear]	✓
i.c.			
17028	$y' + \frac{2y}{t} = \frac{\cos(t)}{t^2}$	[_linear]	✓
i.c.			
17029	$y' - 2y = e^{2t}$	[[_linear, 'class A']]	✓
i.c.			
17030	$ty' + 2y = \sin(t)$	[_linear]	✓
i.c.			
17031	$t^3 y' + 4t^2 y = e^{-t}$	[_linear]	✓
i.c.			
17032	$ty' + (t + 1)y = t$	[_linear]	✓
i.c.			
17033	$y' - \frac{y}{3} = 3 \cos(t)$	[[_linear, 'class A']]	✓
i.c.			
17034	$2y' - y = e^{\frac{t}{3}}$	[[_linear, 'class A']]	✓
i.c.			
17035	$-2y + 3y' = e^{-\frac{\pi t}{2}}$	[[_linear, 'class A']]	✓
i.c.			
17036	$ty' + (t + 1)y = 2t e^{-t}$	[_linear]	✓
i.c.			
17037	$ty' + 2y = \frac{\sin(t)}{t}$	[_linear]	✓
i.c.			
17038	$\sin(t)y' + y \cos(t) = e^t$	[_linear]	✓
i.c.			
17039	$y' + \frac{y}{2} = 2 \cos(t)$	[[_linear, 'class A']]	✓
i.c.			

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Table 2.3 first order ode linear  
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#	ODE	CAS classification	Solved?
17040	$y' + \frac{4y}{3} = 1 - \frac{t}{4}$ i.c.	[[_linear, 'class A']]	✓
17041	$y' + \frac{y}{4} = 3 + 2 \cos(2t)$ i.c.	[[_linear, 'class A']]	✓
17042	$y' - y = 1 + 3 \sin(t)$ i.c.	[[_linear, 'class A']]	✓
17043	$y' - \frac{3y}{2} = 3t + 3e^t$ i.c.	[[_linear, 'class A']]	✓
17044	$y' - 6y = t^6 e^{6t}$	[[_linear, 'class A']]	✓
17045	$y' + \frac{y}{t} = 3 \cos(2t)$	[_linear]	✓
17046	$ty' + 2y = \sin(t)$	[_linear]	✓
17047	$2y' + y = 3t^2$	[[_linear, 'class A']]	✓
17048	$(t - 3)y' + \ln(t)y = 2t$ i.c.	[_linear]	✓
17049	$t(-4 + t)y' + y = 0$ i.c.	[_separable]	✓
17050	$y' + \tan(t)y = \sin(t)$ i.c.	[_linear]	✓
17051	$(-t^2 + 4)y' + 2ty = 3t^2$ i.c.	[_linear]	✓
17052	$(-t^2 + 4)y' + 2ty = 3t^2$ i.c.	[_linear]	✓
17053	$\ln(t)y' + y = \cot(t)$ i.c.	[_linear]	✓
17069	$y' + 2y = \begin{cases} 1 & 0 \leq t \leq 1 \\ 0 & 1 < t \end{cases}$ i.c.	[[_linear, 'class A']]	✓
17070	$y' + \left( \begin{cases} 2 & 0 \leq t \leq 1 \\ 1 & 1 < t \end{cases} \right) y = 0$ i.c.	[_separable]	✓
17074	$2y + 2xy^2 + (2x + 2x^2y)y' = 0$	[_separable]	✓
17080	$\frac{y}{x} + 6x + (\ln(x) - 2)y' = 0$	[_linear]	✓
17090	$y' = e^{2x} + y - 1$	[[_linear, 'class A']]	✓
17122	$xy' + (x + 1)y = x$	[_linear]	✓

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Table 2.3 first order ode linear  
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#	ODE	CAS classification	Solved?
17124	$\frac{\sqrt{x} y'}{y} = 1$	[_separable]	✓
17125	$5xy^2 + 5y + (5x^2y + 5x) y' = 0$	[_separable]	✓
17127	$(2 - x) y' = y + 2(2 - x)^5$	[_linear]	✓
17583	$\cos(x) y' = y \sin(x) + \cos(x)^2$	[_linear]	✓
17584	$y' = 2xy - x^3 + x$	[_linear]	✓
17585	$y' + \frac{xy}{x^2 + 1} = \frac{1}{x(x^2 + 1)}$	[_linear]	✓
17599	$y' = ky + f(x)$	[[_linear, 'class A']]	✓
17609	$y' = 2xy - x^3 + x$	[_linear]	✓
17614	$y'^3 - (y^2 + xy + x^2) y'^2 + (x^3y + y^2x^2 + xy^3) y' - x^3y^3 = 0$	[_quadrature]	✓
17733	$xy' = 2y$	[_separable]	✓
17757	$y' = 2xy$	[_separable]	✓
17760	$y' + y \tan(x) = 0$	[_separable]	✓
17761	$y' - y \tan(x) = 0$	[_separable]	✓
17776	$y' = 1 + 2xy$	[_linear]	✓
17786	$xy' = 2x + 3y$	[_linear]	✓
17796	$2x + 3y - 1 - 4(x + 1) y' = 0$	[_linear]	✓
17803	$y + y \cos(xy) + (x + x \cos(xy)) y' = 0$	[_separable]	✓
17806	$-\frac{\sin\left(\frac{x}{y}\right)}{y} + \frac{x \sin\left(\frac{x}{y}\right) y'}{y^2} = 0$	[_separable]	✓
17807	$1 + y + (1 - x) y' = 0$	[_separable]	✓
17837	$-y + xy' = 2x^2 - 3$	[_linear]	✓
17843	$y' + \frac{y}{x} = \sin(x)$	[_linear]	✓
17845	$xy' - 3y = x^4$	[_linear]	✓
17846	$y' + y = \frac{1}{1 + e^{2x}}$	[_linear]	✓
17847	$(x^2 + 1) y' + 2xy = \cot(x)$	[_linear]	✓
17848	$y' + y = 2x e^{-x} + x^2$	[[_linear, 'class A']]	✓
17849	$y' + y \cot(x) = 2x \csc(x)$	[_linear]	✓

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Table 2.3 first order ode linear  
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#	ODE	CAS classification	Solved?
17850	$2y - x^3 = xy'$	[_linear]	✓
17851	$y - x + xy \cot(x) + xy' = 0$	[_linear]	✓
17852	$y' - 2xy = 6x e^{x^2}$	[_linear]	✓
17853	$x \ln(x) y' + y = 3x^3$	[_linear]	✓
17854	$y - 2xy - x^2 + x^2 y' = 0$	[_linear]	✓
17862	$y' \sin(2x) = 2y + 2 \cos(x)$	[_linear]	✓
17886	$x^2 + y = xy'$	[_linear]	✓
17887	$xy' + y = x^2 \cos(x)$	[_linear]	✓
17893	$y' + 2xy = e^{-x^2}$	[_linear]	✓
17895	$(x^2 + 1) y' + 2xy = 4x^3$	[_linear]	✓
17901	$y' = 1 + 3y \tan(x)$	[_linear]	✓
17907	$\frac{y - x}{(x + y)^3} - \frac{2xy'}{(x + y)^3} = 0$	[_linear]	✓
17911	$x(x^2 + 1) y' + 2y = (x^2 + 1)^3$	[_linear]	✓
17913	$e^{x^2 y} (1 + 2x^2 y) + x^3 e^{x^2 y} y' = 0$	[_linear]	✓
17921	$xy + y - 1 + xy' = 0$	[_linear]	✓
17924	$x' + x \cot(y) = \sec(y)$	[_linear]	✓
18177	$1 + 2x + (-t^2 + 4) x' = 0$	[_separable]	✓
18180	$x' e^{3t} + 3x e^{3t} = 2t$	[[_linear, 'class A']]	✓
18182	$x' + 2x = e^t$	[[_linear, 'class A']]	✓
18183	$x' + x \tan(t) = 0$	[_separable]	✓
18184	$x' - x \tan(t) = 4 \sin(t)$	[_linear]	✓
18185	$t^3 x' + (-3t^2 + 2) x = t^3$	[_linear]	✓
18187	$tx' + x \ln(t) = t^2$	[_linear]	✓
18188	$tx' + xg(t) = h(t)$	[_linear]	✓
18213	$v' + u^2 v = \sin(u)$	[_linear]	✓
18215	$v' + \frac{2v}{u} = 3$	[_linear]	✓
18218	$y - xy' = b(1 + x^2 y')$	[_separable]	✓

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Table 2.3 first order ode linear  
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#	ODE	CAS classification	Solved?
18228	$y' + xy = x$	[_separable]	✓
18229	$y' + \frac{y}{x} = \sin(x)$	[_linear]	✓
18231	$p' = \frac{p + at^3 - 2pt^2}{t(-t^2 + 1)}$	[_linear]	✓
18233	$y' + y \cos(x) = \frac{\sin(2x)}{2}$	[_linear]	✓
18247	$v' + \frac{2v}{u} = 3v$	[_separable]	✓
18250	$\frac{y'}{x} = y \sin(x^2 - 1) - \frac{2y}{\sqrt{x}}$	[_separable]	✓
18252	$v' + 2uv = 2u$	[_separable]	✓
18264	$5x' + x = \sin(3t)$	[[_linear, 'class A']]	✓
18280	$y' + \frac{xy}{x^2 + 1} = \frac{1}{x(x^2 + 1)}$	[_linear]	✓
18295	$y' + \frac{y}{x} = -x^2 + 1$	[_linear]	✓
18296	$y' + y \cot(x) = \csc(x)^2$	[_linear]	✓
18297	$y' = x - y$	[[_linear, 'class A']]	✓
18299	$y' + \frac{xy}{x^2 + 1} = \frac{1}{x(x^2 + 1)}$	[_linear]	✓
18300	$x(-x^2 + 1)y' + (x^2 - 1)y = x^3$	[_linear]	✓
18301	$y' + y \cos(x) = \frac{\sin(2x)}{2}$	[_linear]	✓
18302	$x(-x^2 + 1)y' + (2x^2 - 1)y = ax^3$	[_linear]	✓
18321	$(x^2 - 2xy)y' + x^2 - 3xy + 2y^2 = 0$	[_linear]	✓
18403	$(1 - x)y' - 1 - y = 0$	[_separable]	✓
18418	$y - xy' + \ln(x) = 0$	[_linear]	✓
18432	$xy' - ay = x + 1$	[_linear]	✓
18433	$y' + y = e^{-x}$	[[_linear, 'class A']]	✓
18434	$\cos(x)^2 y' + y = \tan(x)$	[_linear]	✓
18435	$(x + 1)y' - ny = e^x(x + 1)^{n+1}$	[_linear]	✓
18436	$(x^2 + 1)y' + 2xy = 4x^2$	[_linear]	✓
18447	$y' + \frac{(-2x + 1)y}{x^2} = 1$	[_linear]	✓

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Table 2.3 first order ode linear

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#	ODE	CAS classification	Solved?
18450	$y' + \frac{y}{\sqrt{-x^2+1}} = \frac{x + \sqrt{-x^2+1}}{(-x^2+1)^2}$	[_linear]	✓
18453	$y' + \frac{4xy}{x^2+1} = \frac{1}{(x^2+1)^3}$	[_linear]	✓
18455	$x(-x^2+1)y' + (2x^2-1)y = ax^3$	[_linear]	✓
18466	$\sqrt{a^2+x^2}y' + y = \sqrt{a^2+x^2} - x$	[_linear]	✓
18470	$y - xy' = b(1 + x^2y')$	[_separable]	✓
18475	$y' + \frac{ny}{x} = ax^{-n}$	[_linear]	✓
18512	$y'^2 + 2y'y \cot(x) = y^2$	[_separable]	✓
18515	$xyy'^2 + (3x^2 - 2y^2)y' - 6xy = 0$	[_separable]	✓
18517	$y'^3 - (y^2 + xy + x^2)y'^2 + (x^3y + y^2x^2 + xy^3)y' - x^3y^3 = 0$	[_quadrature]	✓



## 2.3.2 first order ode separable

Table 2.4: first order ode separable

#	ODE	CAS classification	Solved?
27	<i>i.c.</i> $y' = 2y^2x^2$	[_separable]	✓
28	<i>i.c.</i> $y' = x \ln(y)$	[_separable]	✓
33	<i>i.c.</i> $yy' = x - 1$	[_separable]	✓
34	<i>i.c.</i> $yy' = x - 1$	[_separable]	✓
41	$y' + 2xy = 0$	[_separable]	✓
42	$y' + 2xy^2 = 0$	[_separable]	✓
43	$y' = y \sin(x)$	[_separable]	✓
44	$(x + 1)y' = 4y$	[_separable]	✓
45	$2\sqrt{x}y' = \sqrt{1 - y^2}$	[_separable]	✓
48	$y' = 2x \sec(y)$	[_separable]	✓
49	$(-x^2 + 1)y' = 2y$	[_separable]	✓
50	$(x + 1)^2y' = (1 + y)^2$	[_separable]	✓
51	$y' = xy^3$	[_separable]	✓
52	$yy' = x(1 + y^2)$	[_separable]	✓
53	$y^3y' = (1 + y^4) \cos(x)$	[_separable]	✓
54	$y' = \frac{1 + \sqrt{x}}{1 + \sqrt{y}}$	[_separable]	✓
55	$y' = \frac{(x - 1)y^5}{x^2(2y^3 - y)}$	[_separable]	✓
56	$(x^2 + 1) \tan(y)y' = x$	[_separable]	✓
57	$y' = 1 + x + y + xy$	[_separable]	✓
58	$x^2y' = 1 - x^2 + y^2 - y^2x^2$	[_separable]	✓
59	<i>i.c.</i> $y' = ye^x$	[_separable]	✓
60	<i>i.c.</i> $y' = 3x^2(1 + y^2)$	[_separable]	✓
61	<i>i.c.</i> $2yy' = \frac{x}{\sqrt{x^2 - 16}}$	[_separable]	✓

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Table 2.4 first order ode separable  
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#	ODE	CAS classification	Solved?
62	$y' = 4x^3y - y$ i.c.	[_separable]	✓
64	$\tan(x)y' = y$ i.c.	[_separable]	✓
65	$-y + xy' = 2x^2y$ i.c.	[_separable]	✓
66	$y' = 2xy^2 + 3y^2x^2$ i.c.	[_separable]	✓
67	$y' = 6e^{2x-y}$ i.c.	[_separable]	✓
68	$2\sqrt{x}y' = \cos(y)^2$ i.c.	[_separable]	✓
83	$xy' + y = 3xy$ i.c.	[_separable]	✓
87	$y' + 2xy = x$ i.c.	[_separable]	✓
88	$y' = (1 - y)\cos(x)$ i.c.	[_separable]	✓
92	$y' = 1 + x + y + xy$ i.c.	[_separable]	✓
96	$(x^2 + 4)y' + 3xy = x$ i.c.	[_separable]	✓
103	$y' + p(x)y = 0$	[_separable]	✓
124	$y^2y' + 2xy^3 = 6x$	[_separable]	✓
146	$\frac{2x^{5/2} - 3y^{5/3}}{2x^{5/2}y^{2/3}} + \frac{(3y^{5/3} - 2x^{5/2})y'}{3x^{3/2}y^{5/3}} = 0$	[[_1st_order, __with_linear_symmetries], __exact, __rational]	✓
180	$xy^2 + 3y^2 - x^2y' = 0$	[_separable]	✓
183	$3y + x^4y' = 2xy$	[_separable]	✓
184	$2xy^2 + x^2y' = y^2$	[_separable]	✓
188	$y' = 1 + x^2 + y^2 + y^2x^2$	[_separable]	✓
191	$4xy^2 + y' = 5x^4y^2$	[_separable]	✓
197	$3x^5y^2 + x^3y' = 2y^2$	[_separable]	✓
202	$9y^2x^2 + x^{3/2}y' = y^2$	[_separable]	✓
209	$y' = 3(y + 7)x^2$	[_separable]	✓

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Table 2.4 first order ode separable  
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#	ODE	CAS classification	Solved?
210	$y' = xy^3 - xy$	[_separable]	✓
213	$y' = \frac{2xy + 2x}{x^2 + 1}$	[_separable]	✓
214	$y' = \frac{\sqrt{y} - y}{\tan(x)}$	[_separable]	✓
669	$y' = 2y^2x^2$	[_separable]	✓
	<i>i.c.</i>		
670	$y' = x \ln(y)$	[_separable]	✓
673	$yy' = x - 1$	[_separable]	✓
	<i>i.c.</i>		
674	$yy' = x - 1$	[_separable]	✓
	<i>i.c.</i>		
677	$y' + 2xy = 0$	[_separable]	✓
678	$y' + 2xy^2 = 0$	[_separable]	✓
679	$y' = y \sin(x)$	[_separable]	✓
680	$(x + 1)y' = 4y$	[_separable]	✓
681	$2\sqrt{x}y' = \sqrt{1 - y^2}$	[_separable]	✓
684	$y' = 2x \sec(y)$	[_separable]	✓
685	$(-x^2 + 1)y' = 2y$	[_separable]	✓
686	$(x^2 + 1)y' = (1 + y)^2$	[_separable]	✓
687	$y' = xy^3$	[_separable]	✓
688	$yy' = x(1 + y^2)$	[_separable]	✓
689	$y' = \frac{1 + \sqrt{x}}{1 + \sqrt{y}}$	[_separable]	✓
690	$y' = \frac{(x - 1)y^5}{x^2(2y^3 - y)}$	[_separable]	✓
691	$(x^2 + 1) \tan(y)y' = x$	[_separable]	✓
692	$y' = 1 + x + y + xy$	[_separable]	✓
693	$x^2y' = 1 - x^2 + y^2 - y^2x^2$	[_separable]	✓
694	$y' = ye^x$	[_separable]	✓
	<i>i.c.</i>		
695	$y' = 3x^2(1 + y^2)$	[_separable]	✓
	<i>i.c.</i>		

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Table 2.4 first order ode separable  
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#	ODE	CAS classification	Solved?
696	$2yy' = \frac{x}{\sqrt{x^2 - 16}}$ i.c.	[_separable]	✓
697	$y' = 4x^3y - y$ i.c.	[_separable]	✓
699	$\tan(x)y' = y$ i.c.	[_separable]	✓
700	$-y + xy' = 2x^2y$ i.c.	[_separable]	✓
701	$y' = 2xy^2 + 3y^2x^2$ i.c.	[_separable]	✓
702	$y' = 6e^{2x-y}$ i.c.	[_separable]	✓
703	$2\sqrt{x}y' = \cos(y)^2$ i.c.	[_separable]	✓
714	$xy' + y = 3xy$ i.c.	[_separable]	✓
718	$y' + 2xy = x$ i.c.	[_separable]	✓
719	$y' = (1 - y)\cos(x)$ i.c.	[_separable]	✓
723	$y' = 1 + x + y + xy$ i.c.	[_separable]	✓
727	$(x^2 + 4)y' + 3xy = x$ i.c.	[_separable]	✓
748	$y^2y' + 2xy^3 = 6x$	[_separable]	✓
770	$\frac{2x^{5/2} - 3y^{5/3}}{2x^{5/2}y^{2/3}} + \frac{(3y^{5/3} - 2x^{5/2})y'}{3x^{3/2}y^{5/3}} = 0$	[[_1st_order, _with_linear_symmetries], _exact, _rational]	✓
772	$xy^2 + 3y^2 - x^2y' = 0$	[_separable]	✓
775	$3y + x^4y' = 2xy$	[_separable]	✓
776	$2xy^2 + x^2y' = y^2$	[_separable]	✓
780	$y' = 1 + x^2 + y^2 + y^2x^2$	[_separable]	✓
789	$3x^5y^2 + x^3y' = 2y^2$	[_separable]	✓
794	$9y^2x^2 + x^{3/2}y' = y^2$	[_separable]	✓
800	$y' = 3(y + 7)x^2$	[_separable]	✓

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Table 2.4 first order ode separable  
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#	ODE	CAS classification	Solved?
801	$y' = 3(y + 7)x^2$	[_separable]	✓
802	$y' = xy^3 - xy$	[_separable]	✓
805	$y' = \frac{2xy + 2x}{x^2 + 1}$	[_separable]	✓
806	$y' = \cot(x)(\sqrt{y} - y)$	[_separable]	✓
1129	$y' = \frac{x^2}{y}$	[_separable]	✓
1130	$y' = \frac{x^2}{(x^3 + 1)y}$	[_separable]	✓
1131	$\sin(x)y^2 + y' = 0$	[_separable]	✓
1132	$y' = \frac{3x^2 - 1}{3 + 2y}$	[_separable]	✓
1133	$y' = \cos(x)^2 \cos(2y)^2$	[_separable]	✓
1134	$xy' = \sqrt{1 - y^2}$	[_separable]	✓
1136	$y' = \frac{x^2}{1 + y^2}$	[_separable]	✓
1137	$y' = (-2x + 1)y^2$	[_separable]	✓
i.c.			
1138	$y' = \frac{-2x + 1}{y}$	[_separable]	✓
i.c.			
1139	$x + yy'e^{-x} = 0$	[_separable]	✓
i.c.			
1140	$r' = \frac{r^2}{x}$	[_separable]	✓
i.c.			
1141	$y' = \frac{2x}{y + x^2y}$	[_separable]	✓
i.c.			
1142	$y' = \frac{xy^2}{\sqrt{x^2 + 1}}$	[_separable]	✓
i.c.			
1143	$y' = \frac{2x}{1 + 2y}$	[_separable]	✓
i.c.			
1144	$y' = \frac{x(x^2 + 1)}{4y^3}$	[_separable]	✓
i.c.			

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Table 2.4 first order ode separable  
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#	ODE	CAS classification	Solved?
1145	$y' = \frac{-e^x + 3x^2}{-5 + 2y}$ i.c.	[_separable]	✓
1146	$y' = \frac{e^{-x} - e^x}{3 + 4y}$ i.c.	[_separable]	✓
1147	$\sin(2x) + \cos(3y)y' = 0$ i.c.	[_separable]	✓
1148	$\sqrt{-x^2 + 1}y^2y' = \arcsin(x)$ i.c.	[_separable]	✓
1149	$y' = \frac{3x^2 + 1}{-6y + 3y^2}$ i.c.	[_separable]	✓
1150	$y' = \frac{3x^2}{-4 + 3y^2}$ i.c.	[_separable]	✓
1151	$y' = 2y^2 + xy^2$ i.c.	[_separable]	✓
1152	$y' = \frac{2 - e^x}{3 + 2y}$ i.c.	[_separable]	✓
1153	$y' = \frac{2 \cos(2x)}{3 + 2y}$ i.c.	[_separable]	✓
1154	$y' = 2(x + 1)(1 + y^2)$ i.c.	[_separable]	✓
1155	$y' = \frac{t(4 - y)y}{3}$	[_separable]	✓
1156	$y' = \frac{ty(4 - y)}{t + 1}$	[_separable]	✓
1167	$t(-4 + t)y' + y = 0$ i.c.	[_separable]	✓
1172	$y' = \frac{t^2 + 1}{3y - y^2}$	[_separable]	✓
1173	$y' = \frac{\cot(t)y}{y + 1}$	[_separable]	✓
1174	$y' = -\frac{4t}{y}$	[_separable]	✓
1175	$y' = 2ty^2$	[_separable]	✓
1177	$y' = \frac{t^2}{(t^3 + 1)y}$	[_separable]	✓

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Table 2.4 first order ode separable  
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#	ODE	CAS classification	Solved?
1178	$y' = t(3 - y)y$	[_separable]	✓
1193	$3 + 2x + (2y - 2)y' = 0$	[_separable]	✓
1196	$2y + 2xy^2 + (2x + 2x^2y)y' = 0$	[_separable]	✓
1204	$\frac{x}{(y^2 + x^2)^{3/2}} + \frac{yy'}{(y^2 + x^2)^{3/2}} = 0$	[_separable]	✓
1207	$x^2y^3 + x(1 + y^2)y' = 0$	[_separable]	✓
1209	$(x + 2)\sin(y) + x\cos(y)y' = 0$	[_separable]	✓
1219	$y' = \frac{\cos(x) + 1}{2 - \sin(y)}$	[_separable]	✓
1221	$y' = 3 - 6x + y - 2xy$	[_separable]	✓
1224	$y' = \frac{4x^3 + 1}{y(2 + 3y)}$	[_separable]	✓
1227	$\frac{-x^2 + x + 1}{x^2} + \frac{yy'}{y - 2} = 0$	[_separable]	✓
1230	$y' = 1 + 2x + y^2 + 2xy^2$	[_separable]	✓
1232	$(1 + e^x)y' = y - ye^x$	[_separable]	✓
1237	$y' = e^{x+y}$	[_separable]	✓
1239	$y' = \frac{x^2 - 1}{1 + y^2}$	[_separable]	✓
	<i>i.c.</i>		
1241	$2\cos(x)\sin(x)\sin(y) + \cos(y)\sin(x)^2y' = 0$	[_separable]	✓
1521	$y' + 2xy = x$	[_separable]	✓
1522	$2y' + x(y^2 - 1) = 0$	[_separable]	✓
1523	$y' = x^2(1 + y^2)$	[_separable]	✓
1532	$y' = x(1 + y^2)$	[_separable]	✓
	<i>i.c.</i>		
1533	$y' = -\frac{y(1 + y)}{x}$	[_separable]	✓
	<i>i.c.</i>		
1538	$y' + 3x^2y = 0$	[_separable]	✓
1539	$xy' + y\ln(x) = 0$	[_separable]	✓
1540	$xy' + 3y = 0$	[_separable]	✓
1541	$x^2y' + y = 0$	[_separable]	✓

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Table 2.4 first order ode separable  
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#	ODE	CAS classification	Solved?
1542	$y' + \frac{(x+1)y}{x} = 0$ i.c.	[_separable]	✓
1543	$xy' + \left(1 + \frac{1}{\ln(x)}\right)y = 0$ i.c.	[_separable]	✓
1544	$xy' + (1 + x \cot(x))y = 0$ i.c.	[_separable]	✓
1545	$y' - \frac{2xy}{x^2 + 1} = 0$ i.c.	[_separable]	✓
1546	$y' + \frac{ky}{x} = 0$ i.c.	[_separable]	✓
1547	$y' + \tan(kx)y = 0$ i.c.	[_separable]	✓
1569	$y' + 2xy = x$ i.c.	[_separable]	✓
1573	$xy' - 2y = -1$ i.c.	[_separable]	✓
1578	$y' = \frac{3x^2 + 2x + 1}{y - 2}$	[_separable]	✓
1579	$\sin(x) \sin(y) + \cos(y)y' = 0$	[_separable]	✓
1580	$xy' + y^2 + y = 0$	[_separable]	✓
1581	$(3y^3 + 3y \cos(y) + 1)y' + \frac{(2x+1)y}{x^2+1} = 0$	[_separable]	✓
1582	$x^2yy' = (y^2 - 1)^{3/2}$	[_separable]	✓
1583	$y' = x^2(1 + y^2)$	[_separable]	✓
1584	$(x^2 + 1)y' + xy = 0$	[_separable]	✓
1585	$y' = (x - 1)(y - 1)(y - 2)$	[_separable]	✓
1586	$(y - 1)^2 y' = 2x + 3$	[_separable]	✓
1587	$y' = \frac{x^2 + 3x + 2}{y - 2}$ i.c.	[_separable]	✓
1588	$y' + x(y^2 + y) = 0$ i.c.	[_separable]	✓
1589	$(3y^2 + 4y)y' + 2x + \cos(x) = 0$ i.c.	[_separable]	✓

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Table 2.4 first order ode separable  
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#	ODE	CAS classification	Solved?
1590	$y' + \frac{(1+y)(y-1)(y-2)}{x+1} = 0$ i.c.	[_separable]	✓
1591	$y' + 2x(1+y) = 0$ i.c.	[_separable]	✓
1592	$y' = 2xy(1+y^2)$ i.c.	[_separable]	✓
1593	$y'(x^2+2) = 4x(y^2+2y+1)$	[_separable]	✓
1594	$y' = -2x(y^3-3y+2)$ i.c.	[_separable]	✓
1595	$y' = \frac{2x}{1+2y}$ i.c.	[_separable]	✓
1597	$x + yy' = 0$ i.c.	[_separable]	✓
1598	$y' + x^2(1+y)(y-2)^2 = 0$	[_separable]	✓
1599	$(x+1)(-2+x)y' + y = 0$ i.c.	[_separable]	✓
1600	$y' = \frac{1+y^2}{x^2+1}$	[_separable]	✓
1601	$y'\sqrt{-x^2+1} + \sqrt{1-y^2} = 0$	[_separable]	✓
1602	$y' = \frac{\cos(x)}{\sin(y)}$ i.c.	[_separable]	✓
1613	$y' = 2xy$	[_separable]	✓
1617	$y' = x(y^2-1)^{2/3}$	[_separable]	✓
1620	$y' = \frac{\tan(y)}{x-1}$	[_separable]	✓
1622	$y' = 3x(y-1)^{1/3}$ i.c.	[_separable]	✓
1623	$y' = 3x(y-1)^{1/3}$ i.c.	[_separable]	✓
1624	$y' = 3x(y-1)^{1/3}$ i.c.	[_separable]	✓
1636	$y' - xy = xy^{3/2}$ i.c.	[_separable]	✓
1680	$6y^2x^2 + 4x^3yy' = 0$	[_separable]	✓

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Table 2.4 first order ode separable

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#	ODE	CAS classification	Solved?
1690	$\frac{1}{x} + 2x + \left(\frac{1}{y} + 2y\right) y' = 0$	[_separable]	✓
1692	$\frac{x}{(y^2 + x^2)^{3/2}} + \frac{yy'}{(y^2 + x^2)^{3/2}} = 0$	[_separable]	✓
1699	$(y^3 - 1)e^x + 3y^2(1 + e^x)y' = 0$	[_separable]	✓
1701	$(2x - 1)(y - 1) + (x + 2)(x - 3)y' = 0$	[_separable]	✓
1712	$-y^2 + x^2y' = 0$	[_separable]	✓
1713	$y - xy' = 0$	[_separable]	✓
1714	$3x^2y + 2x^3y' = 0$	[_separable]	✓
1722	$x^2y + 4xy + 2y + (x^2 + x)y' = 0$	[_separable]	✓
1723	$-y + (x^4 - x)y' = 0$	[_separable]	✓
1726	$y \sin(y) + x(\sin(y) - y \cos(y))y' = 0$	[_separable]	✓
1727	$ay + bxy + (cx + dxy)y' = 0$	[_separable]	✓
1729	$2y + 3(x^2 + x^2y^3)y' = 0$	[_separable]	✓
1731	$x^4y^4 + x^5y^3y' = 0$	[_separable]	✓
1732	$y(x \cos(x) + 2 \sin(x)) + x(1 + y)y' = 0$	[_separable]	✓
2299	$y \cos(t) + y' = 0$	[_separable]	✓
2300	$\sqrt{t} \sin(t)y + y' = 0$	[_separable]	✓
2304	$t^2y + y' = t^2$	[_separable]	✓
2306	$\sqrt{t^2 + 1}y + y' = 0$	[_separable]	✓
2307	$\sqrt{t^2 + 1}y e^{-t} + y' = 0$	[_separable]	✓
2308	$-2ty + y' = t$	[_separable]	✓
2313	$(t^2 + 1)y' + 4ty = t$	[_separable]	✓
2318	$(t^2 + 1)y' = 1 + y^2$	[_separable]	✓
2319	$y' = (t + 1)(y + 1)$	[_separable]	✓
2320	$y' = 1 - t + y^2 - ty^2$	[_separable]	✓
2321	$y' = e^{3+t+y}$	[_separable]	✓

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Table 2.4 first order ode separable  
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#	ODE	CAS classification	Solved?
2322	$\cos(y) \sin(t) y' = \cos(t) \sin(y)$	[_separable]	✓
2323	$t^2(1+y^2) + 2yy' = 0$ i.c.	[_separable]	✓
2324	$y' = \frac{2t}{y+t^2y}$ i.c.	[_separable]	✓
2325	$\sqrt{t^2+1} y' = \frac{ty^3}{\sqrt{t^2+1}}$ i.c.	[_separable]	✓
2326	$y' = \frac{3t^2+4t+2}{-2+2y}$ i.c.	[_separable]	✓
2327	$\cos(y) y' = -\frac{t \sin(y)}{t^2+1}$ i.c.	[_separable]	✓
2329	$3ty' = y \cos(t)$ i.c.	[_separable]	✓
2342	$2ty^3 + 3t^2y^2y' = 0$ i.c.	[_separable]	✓
2360	$y' = t(y+1)$ i.c.	[_separable]	✓
2361	$y' = t\sqrt{1-y^2}$ i.c.	[_separable]	✓
2472	$y \cos(t) + y' = 0$	[_separable]	✓
2473	$\sqrt{t} \sin(t) y + y' = 0$	[_separable]	✓
2477	$t^2y + y' = t^2$	[_separable]	✓
2479	$\sqrt{t^2+1} y + y' = 0$ i.c.	[_separable]	✓
2480	$\sqrt{t^2+1} y e^{-t} + y' = 0$ i.c.	[_separable]	✓
2481	$\sqrt{t^2+1} y e^{-t} + y' = 0$ i.c.	[_separable]	✓
2482	$-2ty + y' = t$ i.c.	[_separable]	✓
2487	$(t^2+1) y' + 4ty = t$ i.c.	[_separable]	✓
2489	$(t^2+1) y' = 1+y^2$	[_separable]	✓
2490	$y' = (t+1)(y+1)$	[_separable]	✓

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Table 2.4 first order ode separable  
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#	ODE	CAS classification	Solved?
2491	$y' = 1 - t + y^2 - ty^2$	[_separable]	✓
2492	$y' = e^{3+t+y}$	[_separable]	✓
2493	$\cos(y) \sin(t) y' = \cos(t) \sin(y)$	[_separable]	✓
2494	$t^2(1 + y^2) + 2yy' = 0$	[_separable]	✓
2495	$y' = \frac{2t}{y + t^2y}$	[_separable]	✓
2496	$\sqrt{1 + y^2} y' = \frac{ty^3}{\sqrt{t^2 + 1}}$	[_separable]	✓
2497	$y' = \frac{3t^2 + 4t + 2}{-2 + 2y}$	[_separable]	✓
2498	$\cos(y) y' = -\frac{t \sin(y)}{t^2 + 1}$	[_separable]	✓
2500	$3ty' = y \cos(t)$	[_separable]	✓
2514	$2ty^3 + 3t^2y^2y' = 0$	[_separable]	✓
2519	$y' = 2t(y + 1)$	[_separable]	✓
2535	$y' = t(y + 1)$	[_separable]	✓
2536	$y' = ty^a$	[_separable]	✓
2537	$y' = t\sqrt{1 - y^2}$	[_separable]	✓
2841	$(x^2 + 1) y' + xy = 0$	[_separable]	✓
2842	$xy^2 + x + (y - x^2y) y' = 0$	[_separable]	✓
2843	$1 + y^2 + (x^2 + 1) y' = 0$	[_separable]	✓
2844	$xy' + y = 0$	[_separable]	✓
2845	$y' = 2xy$	[_separable]	✓
2846	$xy^2 + x + (x^2y - y) y' = 0$	[_separable]	✓
2847	$\sqrt{-x^2 + 1} + \sqrt{1 - y^2} y' = 0$	[_separable]	✓
2848	$(x + 1) y' - 1 + y = 0$	[_separable]	✓

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Table 2.4 first order ode separable  
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#	ODE	CAS classification	Solved?
2849	$\tan(x)y' - y = 1$	[_separable]	✓
2850	$y + 3 + \cot(x)y' = 0$	[_separable]	✓
2851	$y' = \frac{x}{y}$	[_separable]	✓
2853	$xy' + y = y^2$	[_separable]	✓
2854	$\sin(x)\cos(y)^2 + \cos(x)^2y' = 0$	[_separable]	✓
2855	$\sec(x)\cos(y)^2 = \cos(x)\sin(y)y'$	[_separable]	✓
2856	$xy' + y = xy(y' - 1)$	[_separable]	✓
2857	$xy + \sqrt{x^2 + 1}y' = 0$	[_separable]	✓
2858	$y = x^2y' + xy$	[_separable]	✓
2859	$\tan(x)\sin(x)^2 + \cos(x)^2\cot(y)y' = 0$	[_separable]	✓
2860	$y^2 + yy' + x^2yy' - 1 = 0$	[_separable]	✓
2861	$y' = \frac{y}{x}$	[_separable]	✓
i.c.			
2862	$xy' + 2y = 0$	[_separable]	✓
i.c.			
2863	$\sin(x)\cos(y) + \cos(x)\sin(y)y' = 0$	[_separable]	✓
i.c.			
2864	$x^2y' + y^2 = 0$	[_separable]	✓
i.c.			
2867	$1 + y^2 = \frac{y'}{x^3(x-1)}$	[_separable]	✓
i.c.			
2869	$(x^2 + x + 1)y' = y^2 + 2y + 5$	[_separable]	✓
i.c.			
2870	$(x^2 - 2x - 8)y' = y^2 + y - 2$	[_separable]	✓
i.c.			
2925	$\frac{2}{y} - \frac{y}{x^2} + \left(\frac{1}{x} - \frac{2x}{y^2}\right)y' = 0$	[_separable]	✓
2939	$(x - 2xy)y' + 2y = 0$	[_separable]	✓
2953	$y(x^2 - 1) + x(x^2 + 1)y' = 0$	[_separable]	✓
i.c.			
2991	$y' - xy = \frac{x}{y}$	[_separable]	✓

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Table 2.4 first order ode separable  
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#	ODE	CAS classification	Solved?
2993	$r' + \left(r - \frac{1}{r}\right)\theta = 0$	[_separable]	✓
2996	$\cos(y)y' + (\sin(y) - 1)\cos(x) = 0$	[_separable]	✓
3004	$(1 - x)y' - 1 - y = 0$	[_separable]	✓
3011	$2y + 6 = xy y'$	[_separable]	✓
3015	$y - xy' = 2y^2 + 2y'$	[_separable]	✓
3016	$\tan(y) = (3x + 4)y'$	[_separable]	✓
3020	$r' = r \cot(\theta)$	[_separable]	✓
3024	$y' = \cos(y)\cos(x)^2$	[_separable]	✓
3028	$-6 + 3x = xy y'$	[_separable]	✓
3031	$xy' + y(1 + y^2) = 0$	[_separable]	✓
3033	$3e^x \tan(y) = (1 - e^x)\sec(y)^2 y'$	[_separable]	✓
3040	$x\sqrt{1-y} - y'\sqrt{-x^2+1} = 0$	[_separable]	✓
3042	$x e^{-y^2} + yy' = 0$	[_separable]	✓
3052	$4xy^2 + (x^2 + 1)y' = 0$	[_separable]	✓
3057	$2(x^2 + 1)y' = (2y^2 - 1)xy$	[_separable]	✓
3285	$4y^2 = x^2 y'^2$	[_separable]	✓
3291	$y^2 y'^2 + xy y' - 2x^2 = 0$	[_separable]	✓
3293	$y'^3 + (x + y - 2xy)y'^2 - 2y'xy(x + y) = 0$	[_quadrature]	✓
3296	$y = x + 3\ln(y')$	[_separable]	✓
3334	$y^2 - 2xy y' + y'^2(x^2 - 1) = 0$	[_separable]	✓
3409	$y' = xy$	[_separable]	✓
3410	$y' = y^2 x^2$	[_separable]	✓
3411	$y' = -x e^y$	[_separable]	✓
3412	$y' \sin(y) = x^2$	[_separable]	✓
3413	$xy' = \sqrt{1 - y^2}$	[_separable]	✓

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Table 2.4 first order ode separable  
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#	ODE	CAS classification	Solved?
3427	$y' = \frac{e^t}{y}$ i.c.	[_separable]	✓
3431	$y' = \frac{y}{t}$	[_separable]	✓
3432	$y' = -\frac{t}{y}$	[_separable]	✓
3438	$y' = (t^2 + 1)y$	[_separable]	✓
3451	$y' = \frac{2y}{t+1}$ i.c.	[_separable]	✓
3457	$y' - xy^3 = 0$	[_separable]	✓
3458	$\frac{y'}{\tan(x)} - \frac{y}{x^2+1} = 0$	[_separable]	✓
3459	$x^2y' + xy^2 = 4y^2$	[_separable]	✓
3470	$y' = \tan(x) \cos(y) (\cos(y) + \sin(y))$	[_separable]	✓
3473	$y' = \frac{4y^2}{x^2} - y^2$	[_separable]	✓
3515	$y' = 2xy$	[_separable]	✓
3516	$y' = \frac{y^2}{x^2+1}$	[_separable]	✓
3517	$e^{x+y}y' - 1 = 0$	[_separable]	✓
3518	$y' = \frac{y}{x \ln(x)}$	[_separable]	✓
3519	$y - (-2+x)y' = 0$	[_separable]	✓
3520	$y' = \frac{2x(y-1)}{x^2+3}$	[_separable]	✓
3521	$y - xy' = 3 - 2x^2y'$	[_separable]	✓
3522	$y' = \frac{\cos(x-y)}{\sin(x)\sin(y)} - 1$	[_separable]	✓
3523	$y' = \frac{x(y^2-1)}{2(-2+x)(x-1)}$	[_separable]	✓
3525	$(x-a)(x-b)y' - y + c = 0$	[_separable]	✓
3526	$(x^2+1)y' + y^2 = -1$ i.c.	[_separable]	✓
3527	$(-x^2+1)y' + xy = ax$ i.c.	[_separable]	✓

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Table 2.4 first order ode separable  
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#	ODE	CAS classification	Solved?
3528	$y' = 1 - \frac{\sin(x+y)}{\sin(y)\cos(x)}$ i.c.	[_separable]	✓
3529	$y' = y^3 \sin(x)$	[_separable]	✓
3562	$y' = \frac{y}{2x}$	[_separable]	✓
3593	$y' = 2xy$	[_separable]	✓
3594	$y' = \frac{y^2}{x^2 + 1}$	[_separable]	✓
3595	$e^{x+y}y' - 1 = 0$	[_separable]	✓
3596	$y' = \frac{y}{x \ln(x)}$	[_separable]	✓
3597	$y - (x-1)y' = 0$	[_separable]	✓
3598	$y' = \frac{2x(y-1)}{x^2+3}$	[_separable]	✓
3599	$y - xy' = 3 - 2x^2y'$	[_separable]	✓
3600	$y' = \frac{\cos(x-y)}{\sin(x)\sin(y)} - 1$	[_separable]	✓
3601	$y' = \frac{x(y^2-1)}{2(-2+x)(x-1)}$	[_separable]	✓
3602	$y' = \frac{x^2y-32}{-x^2+16} + 2$	[_separable]	✓
3603	$(x-a)(x-b)y' - y + c = 0$	[_separable]	✓
3604	$(x^2+1)y' + y^2 = -1$ i.c.	[_separable]	✓
3605	$(-x^2+1)y' + xy = ax$ i.c.	[_separable]	✓
3606	$y' = 1 - \frac{\sin(x+y)}{\sin(y)\cos(x)}$ i.c.	[_separable]	✓
3607	$y' = y^3 \sin(x)$ i.c.	[_separable]	✓
3642	$y(x^2-y^2) - x(x^2-y^2)y' = 0$	[_separable]	✓
3669	$(1-\sqrt{3})y' + y \sec(x) = y^{\sqrt{3}} \sec(x)$	[_separable]	✓
3683	$\sec(y)^2 y' + \frac{\tan(y)}{2\sqrt{x+1}} = \frac{1}{2\sqrt{x+1}}$	[_separable]	✓
4094	$x^2 + x - 1 + (2xy + y)y' = 0$	[_separable]	✓

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Table 2.4 first order ode separable  
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#	ODE	CAS classification	Solved?
4095	$e^{2y} + (x+1)y' = 0$	[_separable]	✓
4096	$(x+1)y' - y^2x^2 = 0$	[_separable]	✓
4102	$y' = e^{x-2y}$ i.c.	[_separable]	✓
4105	$e^{-y} + (x^2+1)y' = 0$ i.c.	[_separable]	✓
4110	$2 \sin(3x) \sin(2y)y' - 3 \cos(3x) \cos(2y) = 0$ i.c.	[_separable]	✓
4111	$xyy' = (x+1)(1+y)$ i.c.	[_separable]	✓
4190	$yy' = x$	[_separable]	✓
4213	$3y^2y' = 2x - 1$	[_separable]	✓
4214	$y' = 6xy^2$	[_separable]	✓
4215	$y' = e^y \sin(x)$	[_separable]	✓
4216	$y' = e^{x-y}$	[_separable]	✓
4217	$y' = x \sec(y)$	[_separable]	✓
4219	$xy' = y$	[_separable]	✓
4220	$(1-x)y' = y$	[_separable]	✓
4221	$y' = \frac{4xy}{x^2+1}$	[_separable]	✓
4222	$y' = \frac{2y}{x^2-1}$	[_separable]	✓
4223	$-y^2 + x^2y' = 0$ i.c.	[_separable]	✓
4224	$y' + 2xy = 0$ i.c.	[_separable]	✓
4225	$\cot(x)y' = y$ i.c.	[_separable]	✓
4226	$y' = xe^{-2y}$ i.c.	[_separable]	✓
4227	$y' - 2xy = 2x$ i.c.	[_separable]	✓
4228	$xy' = xy + y$ i.c.	[_separable]	✓
4230	$x \cos(y)y' = 1 + \sin(y)$ i.c.	[_separable]	✓

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Table 2.4 first order ode separable

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#	ODE	CAS classification	Solved?
4231	$xy' = 2y(y - 1)$ i.c.	[_separable]	✓
4232	$2xy' = 1 - y^2$ i.c.	[_separable]	✓
4233	$(1 - x)y' = xy$	[_separable]	✓
4234	$(x^2 - 1)y' = (x^2 + 1)y$	[_separable]	✓
4235	$y' = e^x(1 + y^2)$	[_separable]	✓
4236	$e^y y' + 2x = 2x e^y$	[_separable]	✓
4237	$e^{2x} y y' + 2x = 0$ i.c.	[_separable]	✓
4238	$xyy' = \sqrt{y^2 - 9}$ i.c.	[_separable]	✓
4254	$y + y \cos(xy) + (x + x \cos(xy))y' = 0$	[_separable]	✓
4255	$\cos(x) \cos(y)^2 + 2 \sin(x) \sin(y) \cos(y) y' = 0$	[_separable]	✓
4257	$-\frac{\sin\left(\frac{x}{y}\right)}{y} + \frac{x \sin\left(\frac{x}{y}\right) y'}{y^2} = 0$	[_separable]	✓
4258	$1 + y + (1 - x)y' = 0$	[_separable]	✓
4265	$y - (x + xy^3)y' = 0$	[_separable]	✓
4295	$2xy + x^2 y' = 0$	[_separable]	✓
4301	$x^2(1 + y^2)y' + y^2(x^2 + 1) = 0$	[_separable]	✓
4302	$x(x - 1)y' = \cot(y)$	[_separable]	✓
4303	$ry' = \frac{(a^2 - r^2) \tan(y)}{a^2 + r^2}$	[_separable]	✓
4304	$\sqrt{x^2 + 1}y' + \sqrt{1 + y^2} = 0$	[_separable]	✓
4305	$y' = \frac{x(1 + y^2)}{y(x^2 + 1)}$ i.c.	[_separable]	✓
4307	$\cos(y)^2 + (1 + e^{-x}) \sin(y) y' = 0$	[_separable]	✓
4309	$x \cos(y)^2 + e^x \tan(y) y' = 0$	[_separable]	✓
4310	$x(1 + y^2) + (1 + 2y)e^{-x} y' = 0$	[_separable]	✓
4311	$xy^3 + e^{x^2} y' = 0$	[_separable]	✓
4312	$x \cos(y)^2 + \tan(y) y' = 0$	[_separable]	✓

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Table 2.4 first order ode separable  
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#	ODE	CAS classification	Solved?
4313	$xy^3 + (1 + y)e^{-x}y' = 0$	[_separable]	✓
4361	$1 - (y - 2xy)y' = 0$	[_separable]	✓
4398	$y' = \frac{y + 2}{x + 1}$	[_separable]	✓
4412	$xy + 2x^3y + x^2y' = 0$	[_separable]	✓
4429	$y \ln(x) \ln(y) + y' = 0$	[_separable]	✓
4618	$y' = ax^ny$	[_separable]	✓
4621	$y' = y \cot(x)$	[_separable]	✓
4624	$y' = (2 \csc(2x) + \cot(x))y$	[_separable]	✓
4632	$y' = y \sec(x)$	[_separable]	✓
4634	$y' = y \tan(x)$	[_separable]	✓
4643	$y' = (a + \cos(\ln(x)) + \sin(\ln(x)))y$	[_separable]	✓
4671	$y' = xy(y + 3)$	[_separable]	✓
4675	$y' = axy^2$	[_separable]	✓
4676	$y' = x^n(a + by^2)$	[_separable]	✓
4682	$y' + \tan(x)(1 - y^2) = 0$	[_separable]	✓
4684	$y' = (a + by + cy^2)f(x)$	[_separable]	✓
4690	$y' = xy^3$	[_separable]	✓
4695	$y' + y^3 \sec(x) \tan(x) = 0$	[_separable]	✓
4709	$y' = \cos(y) \cos(x)^2$	[_separable]	✓
4710	$y' = \sec(x)^2 \cot(y) \cos(y)$	[_separable]	✓
4715	$y' + \tan(x) \sec(x) \cos(y)^2 = 0$	[_separable]	✓
4716	$y' = \cot(x) \cot(y)$	[_separable]	✓
4717	$y' + \cot(x) \cot(y) = 0$	[_separable]	✓
4718	$y' = \sin(x) (\csc(y) - \cot(y))$	[_separable]	✓
4719	$y' = \tan(x) \cot(y)$	[_separable]	✓
4720	$y' + \tan(x) \cot(y) = 0$	[_separable]	✓
4721	$y' + \sin(2x) \csc(2y) = 0$	[_separable]	✓
4723	$y' = \cos(x) \sec(y)^2$	[_separable]	✓

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Table 2.4 first order ode separable  
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#	ODE	CAS classification	Solved?
4724	$y' = \sec(x)^2 \sec(y)^3$	[_separable]	✓
4727	$y' + \csc(2x) \sin(2y) = 0$	[_separable]	✓
4731	$y' = e^{x+y}$	[_separable]	✓
4732	$y' = e^x(a + be^{-y})$	[_separable]	✓
4733	$y \ln(x) \ln(y) + y' = 0$	[_separable]	✓
4737	$y' = f(x)g(y)$	[_separable]	✓
4752	$xy' = ay$	[_separable]	✓
4759	$xy' + (bx + a)y = 0$	[_separable]	✓
4766	$xy' = a + by^2$	[_separable]	✓
4787	$xy' = y(1 + y^2)$	[_separable]	✓
4792	$xy' = 4y - 4\sqrt{y}$	[_separable]	✓
4793	$xy' + 2y = \sqrt{1 + y^2}$	[_separable]	✓
4802	$xy' = (-2x^2 + 1) \cot(y)^2$	[_separable]	✓
4803	$xy' = y - \cot(y)^2$	[_separable]	✓
4809	$xy' + \tan(y) = 0$	[_separable]	✓
4815	$xy' = y \ln(y)$	[_separable]	✓
4832	$(x + a)y' = b + cy$	[_separable]	✓
4834	$(x + a)y' = y(1 - ay)$	[_separable]	✓
4838	$2xy' = y(1 + y^2)$	[_separable]	✓
4839	$2xy' + y(1 + y^2) = 0$	[_separable]	✓
4841	$2xy' + 4y + a + \sqrt{a^2 - 4b - 4cy} = 0$	[_separable]	✓
4843	$(2x + 1)y' = 4e^{-y} - 2$	[_separable]	✓
4849	$x^2y' = -y + a$	[_separable]	✓
4854	$x^2y' = (bx + a)y$	[_separable]	✓
4859	$x^2y' = a + by^2$	[_separable]	✓
4883	$(-x^2 + 1)y' - x + xy = 0$	[_separable]	✓
4888	$(-x^2 + 1)y' + 2xy = 0$	[_separable]	✓
4894	$(x^2 + 1)y' = (2bx + a)y$	[_separable]	✓

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Table 2.4 first order ode separable  
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#	ODE	CAS classification	Solved?
4895	$(x^2 + 1) y' = 1 + y^2$	[_separable]	✓
4896	$(-x^2 + 1) y' = 1 - y^2$	[_separable]	✓
4899	$(x^2 + 1) y' + xy(1 - y) = 0$	[_separable]	✓
4900	$(-x^2 + 1) y' = xy(1 + ay)$	[_separable]	✓
4906	$(a^2 + x^2) y' = (b + y) (x + \sqrt{a^2 + x^2})$	[_separable]	✓
4909	$(a^2 + x^2) y' + xy + bxy^2 = 0$	[_separable]	✓
4913	$x(x + 1) y' = (-2x + 1) y$	[_separable]	✓
4919	$x(x + a) y' = (b + cy) y$	[_separable]	✓
4920	$(x + a)^2 y' = 2(x + a) (b + y)$	[_separable]	✓
4922	$(x - a) (x - b) y' + ky = 0$	[_separable]	✓
4924	$(x - a) (x - b) y' = cy^2$	[_separable]	✓
4925	$(x - a) (x - b) y' + k(y - a) (y - b) = 0$	[_separable]	✓
4927	$2x^2 y' = y$	[_separable]	✓
4939	$(bx^2 + a) y' = A + By^2$	[_separable]	✓
4940	$(bx^2 + a) y' = cxy \ln(y)$	[_separable]	✓
4941	$x(ax + 1) y' + a - y = 0$	[_separable]	✓
4948	$x^3 y' = (x + 1) y^2$	[_separable]	✓
4957	$x(x^2 + 1) y' = (-x^2 + 1) y$	[_separable]	✓
4958	$x(-x^2 + 1) y' = (x^2 - x + 1) y$	[_separable]	✓
4972	$(-x^4 + 1) y' = 2x(1 - y^2)$	[_separable]	✓
4976	$x(-2x^3 + 1) y' = 2(-x^3 + 1) y$	[_separable]	✓
4988	$y' \sqrt{-x^2 + 1} = 1 + y^2$	[_separable]	✓
4989	$(x - \sqrt{x^2 + 1}) y' = y + \sqrt{1 + y^2}$	[_separable]	✓
4991	$y' \sqrt{b^2 + x^2} = \sqrt{y^2 + a^2}$	[_separable]	✓
4992	$y' \sqrt{b^2 - x^2} = \sqrt{a^2 - y^2}$	[_separable]	✓
4993	$xy' \sqrt{a^2 + x^2} = y \sqrt{b^2 + y^2}$	[_separable]	✓
4994	$xy' \sqrt{-a^2 + x^2} = y \sqrt{y^2 - b^2}$	[_separable]	✓

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Table 2.4 first order ode separable  
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#	ODE	CAS classification	Solved?
4998	$y' \sqrt{x^3 + 1} = \sqrt{y^3 + 1}$	[_separable]	✓
4999	$y' \sqrt{x(1-x)(-ax+1)} = \sqrt{y(1-y)(1-ay)}$	[_separable]	✓
5000	$y' \sqrt{-x^4 + 1} = \sqrt{1 - y^4}$	[_separable]	✓
5001	$y' \sqrt{x^4 + x^2 + 1} = \sqrt{1 + y^2 + y^4}$	[_separable]	✓
5005	$y'(x^3 + 1)^{2/3} + (y^3 + 1)^{2/3} = 0$	[_separable]	✓
5006	$y'(4x^3 + a_1 x + a_0)^{2/3} + (a_0 + a_1 y + 4y^3)^{2/3} = 0$	[_separable]	✓
5009	$(1 - 4 \cos(x)^2) y' = \tan(x) (1 + 4 \cos(x)^2) y$	[_separable]	✓
5010	$(-\sin(x) + 1) y' + y \cos(x) = 0$	[_separable]	✓
5011	$(\cos(x) - \sin(x)) y' + y(\cos(x) + \sin(x)) = 0$	[_separable]	✓
5015	$yy' + x = 0$	[_separable]	✓
5016	$yy' + x e^{x^2} = 0$	[_separable]	✓
5019	$yy' + x e^{-x}(1 + y) = 0$	[_separable]	✓
5025	$yy' = ax + bxy^2$	[_separable]	✓
5031	$(1 + y) y' = x^2(1 - y)$	[_separable]	✓
5074	$3yy' + 5 \cot(x) \cot(y) \cos(y)^2 = 0$	[_separable]	✓
5075	$3(2 - y) y' + xy = 0$	[_separable]	✓
5101	$xyy' + 1 + y^2 = 0$	[_separable]	✓
5108	$xyy' = a + by^2$	[_separable]	✓
5110	$xyy' = (x^2 + 1)(1 - y^2)$	[_separable]	✓
5114	$x(1 + y) y' - (1 - x) y = 0$	[_separable]	✓
5115	$x(1 - y) y' + (x + 1) y = 0$	[_separable]	✓
5116	$x(1 - y) y' + (1 - x) y = 0$	[_separable]	✓
5121	$x(a + y) y' = y(Bx + A)$	[_separable]	✓
5133	$y(1 - x) y' + x(1 - y) = 0$	[_separable]	✓
5134	$(x + a)(x + b) y' = xy$	[_separable]	✓
5136	$2xyy' + a + y^2 = 0$	[_separable]	✓
5156	$x(a + by) y' = cy$	[_separable]	✓
5165	$x^2(1 - y) y' + (1 - x) y = 0$	[_separable]	✓

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Table 2.4 first order ode separable  
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#	ODE	CAS classification	Solved?
5166	$x^2(1-y)y' + (x+1)y^2 = 0$	[_separable]	✓
5167	$(x^2+1)yy' + x(1-y^2) = 0$	[_separable]	✓
5174	$2(x+1)xyy' = 1+y^2$	[_separable]	✓
5182	$xy(bx^2+a)y' = A+By^2$	[_separable]	✓
5185	$yy'\sqrt{x^2+1} + x\sqrt{1+y^2} = 0$	[_separable]	✓
5186	$(1+y)y'\sqrt{x^2+1} = y^3$	[_separable]	✓
5188	$y^2y' + x(2-y) = 0$	[_separable]	✓
5189	$y^2y' = x(1+y^2)$	[_separable]	✓
5203	$y(1+y)y' = x(x+1)$	[_separable]	✓
5229	$x(1-y^2)y' = (x^2+1)y$	[_separable]	✓
5236	$x(a+y)^2y' = by^2$	[_separable]	✓
5253	$x^2y^2y' + 1 - x + x^3 = 0$	[_separable]	✓
5258	$x^2(a+y)^2y' = (x^2+1)(y^2+a^2)$	[_separable]	✓
5259	$(x^2+1)(1+y^2)y' + 2xy(1-y^2) = 0$	[_separable]	✓
5260	$(x^2+1)(1+y^2)y' + 2xy(1-y^2)^2 = 0$	[_separable]	✓
5263	$x^3(1+y^2)y' + 3x^2y = 0$	[_separable]	✓
5275	$y(1+2y^2)y' = x(2x^2+1)$	[_separable]	✓
5281	$xy^3y' = (-x^2+1)(1+y^2)$	[_separable]	✓
5311	$y'\sqrt{b^2+y^2} = \sqrt{a^2+x^2}$	[_separable]	✓
5312	$y'\sqrt{b^2-y^2} = \sqrt{a^2-x^2}$	[_separable]	✓
5313	$y'\sqrt{y} = \sqrt{x}$	[_separable]	✓
5317	$(y+\sqrt{1+y^2})(x^2+1)^{3/2}y' = 1+y^2$	[_separable]	✓
5318	$(y+\sqrt{1+y^2})(x^2+1)^{3/2}y' = 1+y^2$	[_separable]	✓
5332	$y'(1+\sinh(x))\sinh(y) + \cosh(x)(\cosh(y)-1) = 0$	[_separable]	✓
5345	$y'^2 = y^2x^2$	[_separable]	✓
5404	$y'^2 - (1+2xy)y' + 2xy = 0$	[_quadrature]	✓
5406	$y'^2 - (x-y)yy' - xy^3 = 0$	[_separable]	✓

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Table 2.4 first order ode separable  
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#	ODE	CAS classification	Solved?
5409	$y'^2 - xy(y^2 + x^2)y' + x^4y^4 = 0$	[_separable]	✓
5451	$xy'^2 - (2x + 3y)y' + 6y = 0$	[_quadrature]	✓
5455	$xy'^2 + y(1 - x)y' - y^2 = 0$	[_quadrature]	✓
5456	$xy'^2 + (1 - x^2y)y' - xy = 0$	[_quadrature]	✓
5472	$x^2y'^2 = y^2$	[_separable]	✓
5476	$x^2y'^2 - xy' + y(1 - y) = 0$	[_separable]	✓
5485	$x^2y'^2 + 3xyy' + 2y^2 = 0$	[_separable]	✓
5487	$x^2y'^2 + 4xyy' - 5y^2 = 0$	[_separable]	✓
5488	$x^2y'^2 - 4x(y + 2)y' + 4y(y + 2) = 0$	[_separable]	✓
5489	$x^2y'^2 - 5xyy' + 6y^2 = 0$	[_separable]	✓
5501	$(a^2 - x^2)y'^2 - 2xyy' - y^2 = 0$	[_separable]	✓
5527	$yy'^2 + (x - y)y' - x = 0$	[_quadrature]	✓
5530	$yy'^2 + (x - y^2)y' - xy = 0$	[_quadrature]	✓
5539	$xyy'^2 + (y^2 + x^2)y' + xy = 0$	[_separable]	✓
5540	$xyy'^2 + (x^2 - y^2)y' - xy = 0$	[_separable]	✓
5541	$xyy'^2 - (x^2 - y^2)y' - xy = 0$	[_separable]	✓
5544	$xyy'^2 + (3x^2 - 2y^2)y' - 6xy = 0$	[_separable]	✓
5552	$y^2y'^2 - (x + 1)yy' + x = 0$	[_quadrature]	✓
5569	$4y^2y'^2 + 2(3x + 1)xyy' + 3x^3 = 0$	[_separable]	✓
5616	$y'^3 - (y^2 + xy + x^2)y'^2 + xy(y^2 + xy + x^2)y' - x^3y^3 = 0$	[_quadrature]	✓
5617	$y'^3 - (x^2 + xy^2 + y^4)y'^2 + xy^2(x^2 + xy^2 + y^4)y' - x^3y^6 = 0$	[_quadrature]	✓
5624	$xy'^3 - (x + x^2 + y)y'^2 + (x^2 + y + xy)y' - xy = 0$	[_quadrature]	✓
5662	$2(1 + y)^{3/2} + 3xy' - 3y = 0$	[_separable]	✓
5685	$y \ln(y') + y' - y \ln(y) - xy = 0$	[_separable]	✓
5699	$x(1 - y)y' + (x + 1)y = 0$	[_separable]	✓
5700	$y^2 + xy^2 + (x^2 - x^2y)y' = 0$	[_separable]	✓

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Table 2.4 first order ode separable  
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#	ODE	CAS classification	Solved?
5701	$xy(x^2 + 1)y' - 1 - y^2 = 0$	[_separable]	✓
5702	$1 + y^2 - (y + \sqrt{1 + y^2})(x^2 + 1)^{3/2}y' = 0$	[_separable]	✓
5703	$\sin(x)\cos(y) - \cos(x)\sin(y)y' = 0$	[_separable]	✓
5704	$\sec(x)^2 \tan(y) + \sec(y)^2 \tan(x)y' = 0$	[_separable]	✓
5717	$(-x^2 + 1)z' - zx = axz^2$	[_separable]	✓
5749	$\frac{\sqrt{fx^4 + cx^3 + cx^2 + bx + a}y'}{\sqrt{a + by + cy^2 + cy^3 + fy^4}} = -1$	[_separable]	✓
5770	$\frac{y - xy'}{y^2 + y'} = \frac{y - xy'}{1 + x^2y'}$	[_separable]	✓
5791	$7y - 3 + (2x + 1)y' = 0$	[_separable]	✓
5859	$y' + \frac{y}{x} = \frac{y^2}{x}$ i.c.	[_separable]	✓
5870	$y' \sin(y) + \sin(x)\cos(y) = \sin(x)$	[_separable]	✓
5880	$2y - xy \ln(x) - 2x \ln(x)y' = 0$	[_separable]	✓
5886	$xy' - y^2 + 1 = 0$	[_separable]	✓
5899	$(x^2 - 1)y' + xy - 3xy^2 = 0$	[_separable]	✓
5900	$(x^2 - 1)y' - 2xy \ln(y) = 0$	[_separable]	✓
5914	$(2y^3 + y)y' - 2x^3 - x = 0$	[_separable]	✓
5915	$y' - e^{x-y} + e^x = 0$	[_separable]	✓
6025	$y' + y \tan(x) = 0$	[_separable]	✓
6031	$x(1 - y)y' + (x + 1)y = 0$	[_separable]	✓
6032	$y' = axy^2$	[_separable]	✓
6033	$y^2 + xy^2 + (x^2 - x^2y)y' = 0$	[_separable]	✓
6034	$xy(x^2 + 1)y' = 1 + y^2$	[_separable]	✓
6035	$\frac{x}{1 + y} = \frac{yy'}{x + 1}$	[_separable]	✓
6037	$y' = \frac{1 + y^2}{x^2 + 1}$	[_separable]	✓
6038	$\sin(x)\cos(y) = \cos(x)\sin(y)y'$	[_separable]	✓
6039	$axy' + 2y = xy y'$	[_separable]	✓

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Table 2.4 first order ode separable  
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#	ODE	CAS classification	Solved?
6093	$xy' = y$ i.c.	[_separable]	✓
6094	$x\sqrt{1-y^2} + y\sqrt{-x^2+1}y' = 0$ i.c.	[_separable]	✓
6095	$\sin(x)y' = y \ln(y)$ i.c.	[_separable]	✓
6096	$xyy' + 1 + y^2 = 0$ i.c.	[_separable]	✓
6098	$y' = \frac{2xy^2 + x}{x^2y - y}$ i.c.	[_separable]	✓
6099	$yy' + xy^2 - 8x = 0$ i.c.	[_separable]	✓
6100	$y' + 2xy^2 = 0$ i.c.	[_separable]	✓
6102	$y' - xy = x$ i.c.	[_separable]	✓
6104	$(x + xy)y' + y = 0$ i.c.	[_separable]	✓
6121	$3xy^2y' + 3y^3 = 1$	[_separable]	✓
6209	$x \ln(y)y' - y \ln(x) = 0$	[_separable]	✓
6217	$u(-v + 1) + v^2(1 - u)u' = 0$	[_separable]	✓
6228	$y' + xy = \frac{x}{y}$	[_separable]	✓
6232	$3x^2y + x^3y' = 0$ i.c.	[_separable]	✓
6237	$xy' = xy + y$	[_separable]	✓
6239	$y' = 3x^2y$	[_separable]	✓
6241	$xy' = y$	[_separable]	✓
6259	$y' = \frac{ye^{x+y}}{x^2 + 2}$	[_separable]	✓
6260	$(xy^2 + 3y^2)y' - 2x = 0$	[_separable]	✓
6262	$xy' = \frac{1}{y^3}$	[_separable]	✓
6263	$x' = 3xt^2$	[_separable]	✓
6264	$x' = \frac{te^{-t-2x}}{x}$	[_separable]	✓

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Table 2.4 first order ode separable  
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#	ODE	CAS classification	Solved?
6265	$y' = \frac{x}{y^2\sqrt{x+1}}$	[_separable]	✓
6266	$xv' = \frac{1-4v^2}{3v}$	[_separable]	✓
6267	$y' = \frac{\sec(y)^2}{x^2+1}$	[_separable]	✓
6268	$y' = 3x^2(1+y^2)^{3/2}$	[_separable]	✓
6270	$x + xy^2 + e^{x^2}yy' = 0$	[_separable]	✓
6271	$\frac{y'}{y} + ye^{\cos(x)}\sin(x) = 0$	[_separable]	✓
6272	$y' = (1+y^2)\tan(x)$ i.c.	[_separable]	✓
6273	$y' = x^3(1-y)$ i.c.	[_separable]	✓
6274	$\frac{y'}{2} = \sqrt{1+y}\cos(x)$ i.c.	[_separable]	✓
6275	$x^2y' = \frac{4x^2-x-2}{(x+1)(1+y)}$ i.c.	[_separable]	✓
6276	$\frac{y'}{\theta} = \frac{y\sin(\theta)}{y^2+1}$ i.c.	[_separable]	✓
6277	$x^2 + 2yy' = 0$ i.c.	[_separable]	✓
6278	$y' = 2t\cos(y)^2$ i.c.	[_separable]	✓
6279	$y' = 8x^3e^{-2y}$ i.c.	[_separable]	✓
6280	$y' = x^2(1+y)$ i.c.	[_separable]	✓
6281	$\sqrt{y} + (x+1)y' = 0$ i.c.	[_separable]	✓
6283	$y' = \frac{e^{x^2}}{y^2}$ i.c.	[_separable]	✓
6284	$y' = \sqrt{\sin(x)+1}(1+y^2)$ i.c.	[_separable]	✓
6285	$y' = 2y - 2ty$ i.c.	[_separable]	✓

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Table 2.4 first order ode separable  
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#	ODE	CAS classification	Solved?
6288	$y' = (x - 3)(1 + y)^{2/3}$	[_separable]	✓
6289	$y' = xy^3$	[_separable]	✓
6290	$y' = xy^3$ i.c.	[_separable]	✓
6291	$y' = xy^3$ i.c.	[_separable]	✓
6292	$y' = xy^3$ i.c.	[_separable]	✓
6296	$(t^2 + 1)y' = ty - y$	[_separable]	✓
6308	$(x^2 + 1)y' + xy - x = 0$	[_separable]	✓
6324	$\sqrt{-2y - y^2} + (-x^2 + 2x + 3)y' = 0$	[_separable]	✓
6340	$y' = \frac{e^{x+y}}{y-1}$	[_separable]	✓
6344	$2xy^3 - (-x^2 + 1)y' = 0$	[_separable]	✓
6345	$y^2t^3 + \frac{t^4y'}{y^6} = 0$	[_separable]	✓
6406	$y' + xy = xy^2$	[_separable]	✓
6420	$(x + 1)^2y' = 1 + y^2$	[_separable]	✓
6424	$x \cos(y)y' - \sin(y) = 0$	[_separable]	✓
6426	$(x^2 - 1)y' + 2xy = x$	[_separable]	✓
6431	$x(-3 + y)y' = 4y$	[_separable]	✓
6432	$(x^3 + 1)y' = x^2y$ i.c.	[_separable]	✓
6433	$x^3 + (1 + y)^2y' = 0$	[_separable]	✓
6434	$\cos(y) + (1 + e^{-x})\sin(y)y' = 0$ i.c.	[_separable]	✓
6435	$x^2(1 + y) + y^2(x - 1)y' = 0$	[_separable]	✓
6457	$xyy' - (x + 1)\sqrt{y - 1} = 0$	[_separable]	✓
6460	$y + (x^2 - 4x)y' = 0$	[_separable]	✓
6463	$(x^2 + 1)y' = x(1 + y)$	[_separable]	✓
6466	$y' = e^{-2y+3x}$ i.c.	[_separable]	✓

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Table 2.4 first order ode separable  
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#	ODE	CAS classification	Solved?
6473	$y' + x + xy^2 = 0$ i.c.	[_separable]	✓
6476	$x(1 + y^2) - (x^2 + 1)yy' = 0$	[_separable]	✓
6477	$\frac{r \tan(\theta) r'}{a^2 - r^2} = 1$ i.c.	[_separable]	✓
6570	$xy' = 2y$	[_separable]	✓
6571	$yy' + x = 0$	[_separable]	✓
6580	$4y + xy' = 0$	[_separable]	✓
6581	$1 + 2y + (-x^2 + 4)y' = 0$	[_separable]	✓
6582	$y^2 - x^2y' = 0$	[_separable]	✓
6583	$1 + y - (x + 1)y' = 0$	[_separable]	✓
6589	$1 + 2y - (4 - x)y' = 0$	[_separable]	✓
6590	$(x^2 + 1)y' + xy = 0$	[_separable]	✓
6594	$xyy' = (1 + y)(1 - x)$	[_separable]	✓
6597	$1 + (-x^2 + 1)\cot(y)y' = 0$	[_separable]	✓
6600	$xy' + 2y = 0$ i.c.	[_separable]	✓
6602	$\cos(y) + (1 + e^{-x})\sin(y)y' = 0$ i.c.	[_separable]	✓
6633	$1 + y^2 = (x^2 + x)y'$	[_separable]	✓
6643	$y' - y = xy$	[_separable]	✓
6652	$yy' - xy^2 + x = 0$	[_separable]	✓
6667	$x^2y'^2 + xyy' - 6y^2 = 0$	[_separable]	✓
6668	$xy'^2 + (y - 1 - x^2)y' - x(y - 1) = 0$	[_quadrature]	✓
7058	$y' = \frac{x^2}{y}$	[_separable]	✓
7059	$y' = \frac{x^2}{(x^3 + 1)y}$	[_separable]	✓
7060	$y' = y \sin(x)$	[_separable]	✓
7061	$xy' = \sqrt{1 - y^2}$	[_separable]	✓
7062	$y' = \frac{x^2}{1 + y^2}$	[_separable]	✓

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Table 2.4 first order ode separable  
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#	ODE	CAS classification	Solved?
7063	$xyy' = \sqrt{1+y^2}$	[_separable]	✓
7064	$(x^2 - 1)y' + 2xy^2 = 0$ i.c.	[_separable]	✓
7066	$xy' + y = y^2$ i.c.	[_separable]	✓
7067	$2x^2yy' + y^2 = 2$	[_separable]	✓
7068	$y' - xy^2 = 2xy$	[_separable]	✓
7070	$y' = \frac{3x^2 + 4x + 2}{2y - 2}$ i.c.	[_separable]	✓
7071	$e^x - (1 + e^x)yy' = 0$ i.c.	[_separable]	✓
7072	$\frac{y}{x-1} + \frac{xy'}{1+y} = 0$	[_separable]	✓
7073	$x + 2x^3 + (2y^3 + y)y' = 0$	[_separable]	✓
7074	$\frac{1}{\sqrt{x}} + \frac{y'}{\sqrt{y}} = 0$	[_separable]	✓
7075	$\frac{1}{\sqrt{-x^2+1}} + \frac{y'}{\sqrt{1-y^2}} = 0$	[_separable]	✓
7076	$2x\sqrt{1-y^2} + yy' = 0$	[_separable]	✓
7077	$y' = (y-1)(x+1)$	[_separable]	✓
7078	$y' = e^{x-y}$	[_separable]	✓
7079	$y' = \frac{\sqrt{y}}{\sqrt{x}}$	[_separable]	✓
7080	$y' = \frac{\sqrt{y}}{x}$	[_separable]	✓
7081	$z' = 10^{x+z}$	[_separable]	✓
7091	$y^2 + xy^2 + (x^2 - x^2y)y' = 0$	[_separable]	✓
7092	$(1+y^2)(e^{2x} - e^y y') - (1+y)y' = 0$	[_separable]	✓
7094	$y - 2xy + x^2y' = 0$	[_separable]	✓
7117	$x^2y'^2 - 3xyy' + 2y^2 = 0$	[_separable]	✓
7152	$2x + 3 + (2y - 2)y' = 0$	[_separable]	✓
7178	$y' = x^2(1+y^2)$	[_separable]	✓

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Table 2.4 first order ode separable  
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#	ODE	CAS classification	Solved?
7179	$y' = \frac{x^2}{1-y^2}$	[_separable]	✓
7180	$y' = \frac{3x^2 + 4x + 2}{2y - 2}$ i.c.	[_separable]	✓
7188	$y' = -\frac{2}{t} + \frac{y}{t} + \frac{y^2}{t}$	[_separable]	✓
7231	$y e^{xy} + x e^{xy} y' = 0$	[_separable]	✓
7259	$y' + y \cos(x) = 0$	[_separable]	✓
7277	$y' + 2xy = x$	[_separable]	✓
7279	$y' + y e^x = 3 e^x$	[_separable]	✓
7407	$y' = x^2 y$	[_separable]	✓
7408	$yy' = x$	[_separable]	✓
7409	$y' = \frac{x^2 + x}{y - y^2}$	[_separable]	✓
7410	$y' = \frac{e^{x-y}}{1 + e^x}$	[_separable]	✓
7411	$y' = y^2 x^2 - 4x^2$	[_separable]	✓
7450	$xy' = 2y$	[_separable]	✓
7451	$yy' = e^{2x}$	[_separable]	✓
7483	$x^5 y' + y^5 = 0$	[_separable]	✓
7484	$y' = 4xy$	[_separable]	✓
7485	$y' + y \tan(x) = 0$	[_separable]	✓
7486	$1 + y^2 + (x^2 + 1) y' = 0$	[_separable]	✓
7487	$y \ln(y) - xy' = 0$	[_separable]	✓
7488	$xy' = (-4x^2 + 1) \tan(y)$	[_separable]	✓
7489	$y' \sin(y) = x^2$	[_separable]	✓
7490	$y' - y \tan(x) = 0$	[_separable]	✓
7491	$xyy' = y - 1$	[_separable]	✓
7492	$xy^2 - x^2 y' = 0$	[_separable]	✓
7493	$yy' = x + 1$ i.c.	[_separable]	✓

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Table 2.4 first order ode separable  
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#	ODE	CAS classification	Solved?
7494	$x^2 y' = y$ i.c.	[_separable]	✓
7495	$\frac{y'}{x^2 + 1} = \frac{x}{y}$ i.c.	[_separable]	✓
7496	$y^2 y' = x + 2$ i.c.	[_separable]	✓
7497	$y' = y^2 x^2$ i.c.	[_separable]	✓
7498	$(1 + y) y' = -x^2 + 1$ i.c.	[_separable]	✓
7520	$y' + xy = xy^4$	[_separable]	✓
7524	$xy' = 2x^2 y + y \ln(x)$	[_separable]	✓
7530	$y + y \cos(xy) + (x + x \cos(xy)) y' = 0$	[_separable]	✓
7531	$\cos(x) \cos(y)^2 + 2 \sin(x) \sin(y) \cos(y) y' = 0$	[_separable]	✓
7534	$1 + y + (1 - x) y' = 0$	[_separable]	✓
7540	$x \ln(y) + xy + (y \ln(x) + xy) y' = 0$	[_separable]	✓
7595	$x^2 y' = y$	[_separable]	✓
7596	$\sec(x) y' = \sec(y)$	[_separable]	✓
7599	$2xy + x^2 y' = 0$	[_separable]	✓
7600	$-\sin(x) \sin(y) + \cos(x) \cos(y) y' = 0$	[_separable]	✓
7603	$y^2 y' = x$ i.c.	[_separable]	✓
7604	$\csc(x) y' = \csc(y)$ i.c.	[_separable]	✓
7607	$2x \cos(y) - x^2 \sin(y) y' = 0$ i.c.	[_separable]	✓
7608	$\frac{1}{y} - \frac{xy'}{y^2} = 0$	[_separable]	✓
7749	$y' = 2xy$	[_separable]	✓
7761	$xy' = y$	[_separable]	✓
7763	$x^2 y' = y$	[_separable]	✓
8111	$x^2 y'^2 - y^2 = 0$	[_separable]	✓
8112	$xy'^2 - (2x + 3y) y' + 6y = 0$	[_quadrature]	✓

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Table 2.4 first order ode separable  
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#	ODE	CAS classification	Solved?
8113	$x^2y'^2 - 5xyy' + 6y^2 = 0$	[_separable]	✓
8114	$x^2y'^2 + xy' - y^2 - y = 0$	[_separable]	✓
8115	$xy'^2 + (1 - x^2y)y' - xy = 0$	[_quadrature]	✓
8116	$y'^2 - (x^2y + 3)y' + 3x^2y = 0$	[_quadrature]	✓
8118	$y'^2 - y^2x^2 = 0$	[_separable]	✓
8120	$yy'^2 + (x - y^2)y' - xy = 0$	[_quadrature]	✓
8121	$y'^2 - y'xy(x + y) + x^3y^3 = 0$	[_separable]	✓
8124	$xyy'^2 + (-1 + xy^2)y' - y = 0$	[_quadrature]	✓
8128	$xy'^3 - (x + x^2 + y)y'^2 + (x^2 + y + xy)y' - xy = 0$	[_quadrature]	✓
8210	$6xy'^2 - (3x + 2y)y' + y = 0$	[_quadrature]	✓
8215	$y^2y'^2 - (x + 1)yy' + x = 0$	[_quadrature]	✓
8229	$xy'^2 + y(1 - x)y' - y^2 = 0$	[_quadrature]	✓
8373	$y' = \frac{y}{x \ln(x)}$	[_separable]	✓
8374	$(x^2 + 1)y' + y^2 = -1$ i.c.	[_separable]	✓
8389	$y' = \frac{\cos(y) \sec(x)}{x}$	[_separable]	✓
8390	$y' = x(\cos(y) + y)$	[_separable]	✓
8391	$y' = \frac{\sec(x) (\sin(y) + y)}{x}$	[_separable]	✓
8392	$y' = \left(5 + \frac{\sec(x)}{x}\right) (\sin(y) + y)$	[_separable]	✓
8400	$y' = \frac{2y}{x}$ i.c.	[_separable]	✓
8401	$y' = \frac{2y}{x}$	[_separable]	✓
8402	$y' = \frac{\ln(1 + y^2)}{\ln(x^2 + 1)}$	[_separable]	✓
8411	$y = xy' + x^2y'^2$	[_separable]	✓
8468	$y' = \frac{y \left(1 + \frac{a^2x}{\sqrt{a^2(x^2+1)}}\right)}{\sqrt{a^2(x^2+1)}}$	[_separable]	✓

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Table 2.4 first order ode separable  
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#	ODE	CAS classification	Solved?
8658	$x^2y' + e^{-y} = 0$	[_separable]	✓
8666	$y' = axy$	[_separable]	✓
8726	$y' = e^{x+y}$	[_separable]	✓
9699	$y' - (a + \cos(\ln(x)) + \sin(\ln(x)))y = 0$	[_separable]	✓
9719	$y' - xy^2 - 3xy = 0$	[_separable]	✓
9721	$y' - ax^n(1 + y^2) = 0$	[_separable]	✓
9725	$y' + f(x)(y^2 + 2ay + b) = 0$	[_separable]	✓
9750	$y' - \frac{\sqrt{y^2 - 1}}{\sqrt{x^2 - 1}} = 0$	[_separable]	✓
9751	$y' - \frac{\sqrt{x^2 - 1}}{\sqrt{y^2 - 1}} = 0$	[_separable]	✓
9753	$y' - \frac{1 + y^2}{ y + \sqrt{1 + y} (x + 1)^{3/2}} = 0$	[_separable]	✓
9756	$y' - \frac{\sqrt{ y(y - 1)(-1 + ay) }}{\sqrt{ x(x - 1)(ax - 1) }} = 0$	[_separable]	✓
9757	$y' - \frac{\sqrt{1 - y^4}}{\sqrt{-x^4 + 1}} = 0$	[_separable]	✓
9762	$\frac{y'}{-R1(x, \sqrt{a_4x^4 + a_3x^3 + a_2x^2 + a_1x + a_0})} = 0$ R2( $y, \sqrt{\frac{b_4y^4 + b_3y^3 + b_2y^2 + b_1y + b_0}{b_4y^4 + b_3y^3 + b_2y^2 + b_1y + b_0}}$ )	[_separable]	✓
9765	$y' - e^{x-y} + e^x = 0$	[_separable]	✓
9786	$xy' - y^2 + 1 = 0$	[_separable]	✓
9807	$xy' - y \ln(y) = 0$	[_separable]	✓
9820	$(2x + 1)y' - 4e^{-y} + 2 = 0$	[_separable]	✓
9824	$x^2y' - (x - 1)y = 0$	[_separable]	✓
9847	$(x^2 - 1)y' + axy^2 + xy = 0$	[_separable]	✓
9848	$(x^2 - 1)y' - 2xy \ln(y) = 0$	[_separable]	✓
9863	$x(x^2 + 1)y' + x^2y = 0$	[_separable]	✓
9872	$(2x^4 - x)y' - 2(x^3 - 1)y = 0$	[_separable]	✓
9879	$\sqrt{x^2 - 1}y' - \sqrt{y^2 - 1} = 0$	[_separable]	✓
9880	$y'\sqrt{-x^2 + 1} - y\sqrt{y^2 - 1} = 0$	[_separable]	✓

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Table 2.4 first order ode separable

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#	ODE	CAS classification	Solved?
9888	$\sin(2x)y' + \sin(2y) = 0$	[_separable]	✓
9899	$yy' + xy^2 - 4x = 0$	[_separable]	✓
9931	$2xyy' + 2y^2 + 1 = 0$	[_separable]	✓
9945	$x^2(y-1)y' + (x-1)y = 0$	[_separable]	✓
9997	$2y^3y' + xy^2 = 0$	[_separable]	✓
9998	$(2y^3 + y)y' - 2x^3 - x = 0$	[_separable]	✓
10020	$\frac{y' f_\nu(x)(-y + y^{p+1})}{y-1} - \frac{g_\nu(x)(-y + y^{q+1})}{y-1} = 0$	[_separable]	✓
10024	$\sqrt{y^2 - 1}y' - \sqrt{x^2 - 1} = 0$	[_separable]	✓
10036	$y'(\sin(x) + 1)\sin(y) + \cos(x)(\cos(y) - 1) = 0$	[_separable]	✓
10042	$x \cos(y)y' + \sin(y) = 0$	[_separable]	✓
10047	$\cos(x)\sin(y)y' + \sin(x)\cos(y) = 0$	[_separable]	✓
10048	$3y'\sin(x)\sin(y) + 5\cos(x)^4y = 0$	[_separable]	✓
10084	$y'^2 + y(y-x)y' - xy^3 = 0$	[_separable]	✓
10126	$x^2y'^2 + 3xyy' + 2y^2 = 0$	[_separable]	✓
10128	$x^2y'^2 + 4xyy' - 5y^2 = 0$	[_separable]	✓
10129	$x^2y'^2 - 4x(y+2)y' + 4y(y+2) = 0$	[_separable]	✓
10130	$x^2y'^2 + (x^2y - 2xy + x^3)y' + (y^2 - x^2y)(1-x) = 0$	[_linear]	✓
10136	$(-a^2 + x^2)y'^2 + 2xyy' + y^2 = 0$	[_separable]	✓
10158	$yy'^2 - (y-x)y' - x = 0$	[_quadrature]	✓
10168	$xyy'^2 + (y^2 + x^2)y' + xy = 0$	[_separable]	✓
10192	$xy^2y'^2 - 2y^3y' + 2xy^2 - x^3 = 0$	[_separable]	✓
10213	$y'^3 - (y^2 + xy + x^2)y'^2 + (xy^3 + y^2x^2 + x^3y)y' - x^3y^3 = 0$	[_quadrature]	✓
10252	$y \ln(y') + y' - y \ln(y) - xy = 0$	[_separable]	✓
11679	$y' = f(x)g(y)$	[_separable]	✓
12479	$\sec(x)\cos(y)^2 - \cos(x)\sin(y)y' = 0$	[_separable]	✓
12480	$(x+1)y^2 - x^3y' = 0$	[_separable]	✓
12481	$2xy(1-y^2) + (x^2+1)(1+y^2)y' = 0$	[_separable]	✓

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Table 2.4 first order ode separable  
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#	ODE	CAS classification	Solved?
12482	$\sin(x) \cos(y)^2 + \cos(x)^2 y' = 0$	[_separable]	✓
12487	$y^3 + x^3 y' = 0$	[_separable]	✓
12501	$yy' + xy^2 = x$	[_separable]	✓
12502	$y' \sin(y) + \sin(x) \cos(y) = \sin(x)$	[_separable]	✓
12506	$y^2(3y - 6xy') - x(y - 2xy') = 0$	[_separable]	✓
12517	$x^3 y - y^4 + (xy^3 - x^4) y' = 0$	[_separable]	✓
12523	$x\sqrt{1-y^2} + y\sqrt{-x^2+1} y' = 0$	[_separable]	✓
12524	$\sqrt{1-y^2} + y'\sqrt{-x^2+1} = 0$	[_separable]	✓
12528	$(1-x)y + x(1-y)y' = 0$	[_separable]	✓
12535	$(-x^2+1)y' - xy = axy^2$	[_separable]	✓
12541	$(1-x)y - (1+y)xy' = 0$	[_separable]	✓
12542	$3x^2 y + (x^3 + x^3 y^2) y' = 0$	[_separable]	✓
12585	$x^2 y'^2 - 2(xy + 2y') y' + y^2 = 0$	[_separable]	✓
12701	$x' = \frac{2x}{t}$	[_separable]	✓
12702	$x' = -\frac{t}{x}$	[_separable]	✓
12707	$2tx' = x$	[_separable]	✓
12728	$x' = \frac{2x}{t+1}$	[_separable]	✓
12729	$\theta' = t\sqrt{t^2+1} \sec(\theta)$	[_separable]	✓
12730	$(2u+1)u' - t - 1 = 0$	[_separable]	✓
12731	$R' = (t+1)(1+R^2)$	[_separable]	✓
12733	$(t+1)x' + x^2 = 0$	[_separable]	✓
12736	$x' = 2tx^2$	[_separable]	✓
	<i>i.c.</i>		
12737	$x' = t^2 e^{-x}$	[_separable]	✓
	<i>i.c.</i>		
12739	$x' = e^{t+x}$	[_separable]	✓
	<i>i.c.</i>		
12740	$T' = 2at(T^2 - a^2)$	[_separable]	✓
	<i>i.c.</i>		

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Table 2.4 first order ode separable  
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#	ODE	CAS classification	Solved?
12741	$y' = t^2 \tan(y)$ i.c.	[_separable]	✓
12742	$x' = \frac{(4 + 2t)x}{\ln(x)}$ i.c.	[_separable]	✓
12743	$y' = \frac{2ty^2}{t^2 + 1}$ i.c.	[_separable]	✓
12744	$x' = \frac{t^2}{1 - x^2}$ i.c.	[_separable]	✓
12745	$x' = 6t(x - 1)^{2/3}$	[_separable]	✓
12750	$y' = -y^2 e^{-t^2}$ i.c.	[_separable]	✓
12752	$\cos(t) x' - 2x \sin(x) = 0$	[_separable]	✓
12762	$(t^2 + 1) x' = -3xt + 6t$	[_separable]	✓
12764	$x' = \left(a + \frac{b}{t}\right) x$ i.c.	[_separable]	✓
12767	$\cos(\theta) v' + v = 3$	[_separable]	✓
12770	$x' = 2xt$	[_separable]	✓
12775	$x' + p(t)x = 0$	[_separable]	✓
12778	$x' = -\frac{x}{t} + \frac{1}{tx^2}$	[_separable]	✓
12782	$x^3 + 3tx^2 x' = 0$	[_separable]	✓
12785	$x + 3tx^2 x' = 0$	[_separable]	✓
12786	$x^2 - t^2 x' = 0$	[_separable]	✓
12787	$t \cot(x) x' = -2$	[_separable]	✓
12929	$y' + 4xy = 8x$	[_separable]	✓
12945	$y' = x^2 \sin(y)$ i.c.	[_separable]	✓
12946	$y' = \frac{y^2}{-2 + x}$ i.c.	[_separable]	✓
12955	$\frac{(2s - 1)s'}{t} + \frac{s - s^2}{t^2} = 0$	[_separable]	✓
12966	$4xy + (x^2 + 1)y' = 0$	[_separable]	✓

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Table 2.4 first order ode separable  
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#	ODE	CAS classification	Solved?
12967	$xy + 2x + y + 2 + (x^2 + 2x)y' = 0$	[_separable]	✓
12968	$2r(s^2 + 1) + (r^4 + 1)s' = 0$	[_separable]	✓
12969	$\csc(y) + \sec(x)y' = 0$	[_separable]	✓
12970	$\tan(\theta) + 2r\theta' = 0$	[_separable]	✓
12971	$(e^v + 1)\cos(u) + e^v(1 + \sin(u))v' = 0$	[_separable]	✓
12972	$(4 + x)(1 + y^2) + y(x^2 + 3x + 2)y' = 0$	[_separable]	✓
12980	$y + 2 + y(4 + x)y' = 0$	[_separable]	✓
	i.c.		
12981	$8\cos(y)^2 + \csc(x)^2y' = 0$	[_separable]	✓
	i.c.		
12982	$(3x + 8)(y^2 + 4) - 4y(x^2 + 5x + 6)y' = 0$	[_separable]	✓
	i.c.		
12993	$y' + 4xy = 8x$	[_separable]	✓
12994	$x' + \frac{x}{t^2} = \frac{1}{t^2}$	[_separable]	✓
12995	$(u^2 + 1)v' + 4vu = 3u$	[_separable]	✓
13004	$y' - \frac{y}{x} = -\frac{y^2}{x}$	[_separable]	✓
13006	$y' + \left(4y - \frac{8}{y^3}\right)x = 0$	[_separable]	✓
13007	$x' + \frac{(t+1)x}{2t} = \frac{t+1}{xt}$	[_separable]	✓
13009	$y' + 3x^2y = x^2$	[_separable]	✓
	i.c.		
13011	$2x(1 + y) - (x^2 + 1)y' = 0$	[_separable]	✓
	i.c.		
13023	$(1 + y)y' + x(2y + y^2) = x$	[_separable]	✓
13027	$6x^2y - (x^3 + 1)y' = 0$	[_separable]	✓
13029	$y - 1 + x(x + 1)y' = 0$	[_separable]	✓
13032	$e^{2x}y^2 + (e^{2x}y - 2y)y' = 0$	[_separable]	✓
13033	$8x^3y - 12x^3 + (x^4 + 1)y' = 0$	[_separable]	✓
13038	$x^2y' + xy = xy^3$	[_separable]	✓
13039	$(x^3 + 1)y' + 6x^2y = 6x^2$	[_separable]	✓

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Table 2.4 first order ode separable  
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#	ODE	CAS classification	Solved?
13042	$2y^2 + 8 + (-x^2 + 1)yy' = 0$ i.c.	[_separable]	✓
13045	$4xyy' = 1 + y^2$ i.c.	[_separable]	✓
13047	$y' = \frac{xy}{x^2 + 1}$ i.c.	[_separable]	✓
13395	$x' = t^3(-x + 1)$ i.c.	[_separable]	✓
13396	$y' = (1 + y^2) \tan(x)$ i.c.	[_separable]	✓
13397	$x' = xt^2$	[_separable]	✓
13399	$y' = y^2 e^{-t^2}$	[_separable]	✓
13401	$xy' = ky$	[_separable]	✓
13402	$i' = p(t) i$	[_separable]	✓
13408	$x' + xt = 4t$ i.c.	[_separable]	✓
13421	$V'(x) + 2yy' = 0$	[_separable]	✓
13422	$\left(\frac{1}{y} - a\right)y' + \frac{2}{x} - b = 0$	[_separable]	✓
13524	$\tan(y) - \cot(x)y' = 0$	[_separable]	✓
13531	$y' = e^{x-y}$	[_separable]	✓
13534	$xyy'^2 - (y^2 + x^2)y' + xy = 0$	[_separable]	✓
13538	$y = xy' + \frac{1}{y}$	[_separable]	✓
13624	$y' = ye^{x+y}(x^2 + 1)$	[_separable]	✓
13625	$x^2y' = 1 + y^2$	[_separable]	✓
13627	$x(e^y + 4) = e^{x+y}y'$	[_separable]	✓
13631	$y' = xe^{y^2-x}$	[_separable]	✓
13633	$x(1 + y)^2 = (x^2 + 1)ye^y y'$	[_separable]	✓
13644	$5y' - xy = 0$	[_separable]	✓
13838	$y - xy' = 0$	[_separable]	✓
13839	$(1 + u)v + (1 - v)uv' = 0$	[_separable]	✓
13840	$1 + y - (1 - x)y' = 0$	[_separable]	✓

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Table 2.4 first order ode separable  
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#	ODE	CAS classification	Solved?
13841	$(t^2 + xt^2) x' + x^2 + tx^2 = 0$	[_separable]	✓
13842	$y - a + x^2 y' = 0$	[_separable]	✓
13843	$z - (-a^2 + t^2) z' = 0$	[_separable]	✓
13844	$y' = \frac{1 + y^2}{x^2 + 1}$	[_separable]	✓
13845	$1 + s^2 - \sqrt{t} s' = 0$	[_separable]	✓
13846	$r' + r \tan(t) = 0$	[_separable]	✓
13847	$(x^2 + 1) y' - \sqrt{1 - y^2} = 0$	[_separable]	✓
13848	$y' \sqrt{-x^2 + 1} - \sqrt{1 - y^2} = 0$	[_separable]	✓
13849	$3e^x \tan(y) + (1 - e^x) \sec(y)^2 y' = 0$	[_separable]	✓
13850	$x - xy^2 + (y - x^2 y) y' = 0$	[_separable]	✓
13877	$(-x^2 + 1) y' - xy + axy^2 = 0$	[_separable]	✓
13889	$\frac{x^2 y'}{(x - y)^2} - \frac{y^2}{(x - y)^2} = 0$	[_separable]	✓
13897	$y = xy' + y'$	[_separable]	✓
13952	$\frac{x^2 y'}{(x - y)^2} - \frac{y^2}{(x - y)^2} = 0$	[_separable]	✓
13960	$3e^x \tan(y) + (1 - e^x) \sec(y)^2 y' = 0$	[_separable]	✓
13987	$-y + xy' = 0$	[_separable]	✓
13994	$2xy + x^2 y' = 0$	[_separable]	✓
14002	$2xy' - y = 0$	[_separable]	✓
14009	$y' - 2xy = 0$	[_separable]	✓
14012	$y' = x\sqrt{y}$	[_separable]	✓
14015	$x \ln(x) y' - (\ln(x) + 1) y = 0$	[_separable]	✓
14033	$y' = xy$	[_separable]	✓
14034	$y' = -xy$	[_separable]	✓
14038	$y' = xy$	[_separable]	✓
14039	$y' = \frac{x}{y}$	[_separable]	✓
14040	$y' = \frac{y}{x}$	[_separable]	✓

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Table 2.4 first order ode separable  
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#	ODE	CAS classification	Solved?
14045	$y' = e^{x-y}$	[_separable]	✓
14051	$y' = \frac{1}{xy}$	[_separable]	✓
14055	$y' = \frac{x}{y^2}$	[_separable]	✓
14056	$y' = \frac{\sqrt{y}}{x}$	[_separable]	✓
14057	$y' = \frac{xy}{1-y}$	[_separable]	✓
14071	$y' = -x\sqrt{1-y^2}$	[_separable]	✓
14086	$y' = x e^{y-x^2}$	[_separable]	✓
14087	$y' = \frac{y}{x}$	[_separable]	✓
14088	$y' = \frac{2x}{y}$	[_separable]	✓
14090	$y' = x + xy$	[_separable]	✓
14091	$x e^y + y' = 0$	[_separable]	✓
14092	$y - x^2 y' = 0$	[_separable]	✓
14094	$2xyy' + y^2 = -1$	[_separable]	✓
14100	$y' = \frac{y}{x}$	[_separable]	✓
14105	$x - yy' = 0$	[_separable]	✓
14106	$y - xy' = 0$	[_separable]	✓
14108	$xy(1-y) - 2y' = 0$	[_separable]	✓
14109	$x(1-y^3) - 3y^2 y' = 0$	[_separable]	✓
14110	$y(2x-1) + x(x+1)y' = 0$	[_separable]	✓
14113	$y' = \frac{y}{x}$	[_separable]	✓
14114	$y' = \frac{y}{x}$	[_separable]	✓

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Table 2.4 first order ode separable  
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#	ODE	CAS classification	Solved?
14124	$y' = -\frac{3x^2}{2y}$ i.c.	[_separable]	✓
14125	$y' = -\frac{3x^2}{2y}$ i.c.	[_separable]	✓
14126	$y' = -\frac{3x^2}{2y}$ i.c.	[_separable]	✓
14127	$y' = -\frac{3x^2}{2y}$ i.c.	[_separable]	✓
14128	$y' = \frac{\sqrt{y}}{x}$ i.c.	[_separable]	✓
14129	$y' = \frac{\sqrt{y}}{x}$ i.c.	[_separable]	✓
14130	$y' = \frac{\sqrt{y}}{x}$ i.c.	[_separable]	✓
14131	$y' = \frac{\sqrt{y}}{x}$ i.c.	[_separable]	✓
14132	$y' = 3xy^{1/3}$ i.c.	[_separable]	✓
14133	$y' = 3xy^{1/3}$ i.c.	[_separable]	✓
14134	$y' = 3xy^{1/3}$ i.c.	[_separable]	✓
14135	$y' = 3xy^{1/3}$ i.c.	[_separable]	✓
14136	$y' = 3xy^{1/3}$ i.c.	[_separable]	✓
14147	$y' = x\sqrt{1-y^2}$ i.c.	[_separable]	✓
14148	$y' = x\sqrt{1-y^2}$ i.c.	[_separable]	✓
14149	$y' = x\sqrt{1-y^2}$ i.c.	[_separable]	✓
14150	$y' = x\sqrt{1-y^2}$ i.c.	[_separable]	✓

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Table 2.4 first order ode separable  
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#	ODE	CAS classification	Solved?
14277	$y' = \frac{y+1}{t+1}$	[_separable]	✓
14278	$y' = t^2 y^2$	[_separable]	✓
14279	$y' = t^4 y$	[_separable]	✓
14284	$y' = 2ty^2 + 3y^2$	[_separable]	✓
14285	$y' = \frac{t}{y}$	[_separable]	✓
14286	$y' = \frac{t}{t^2 y + y}$	[_separable]	✓
14287	$y' = ty^{1/3}$	[_separable]	✓
14289	$y' = \frac{2y+1}{t}$	[_separable]	✓
14291	$y' = \frac{4t}{1+3y^2}$	[_separable]	✓
14292	$v' = t^2 v - 2 - 2v + t^2$	[_separable]	✓
14293	$y' = \frac{1}{ty + t + y + 1}$	[_separable]	✓
14294	$y' = \frac{e^t y}{1+y^2}$	[_separable]	✓
14296	$w' = \frac{w}{t}$	[_separable]	✓
14298	$x' = -xt$	[_separable]	✓
i.c.			
14299	$y' = ty$	[_separable]	✓
i.c.			
14301	$y' = t^2 y^3$	[_separable]	✓
i.c.			
14303	$y' = \frac{t}{y - t^2 y}$	[_separable]	✓
i.c.			
14305	$y' = ty^2 + 2y^2$	[_separable]	✓
i.c.			
14306	$x' = \frac{t^2}{x + t^3 x}$	[_separable]	✓
i.c.			
14308	$y' = (1 + y^2) t$	[_separable]	✓
i.c.			
14310	$y' = 2ty^2 + 3t^2 y^2$	[_separable]	✓
i.c.			

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Table 2.4 first order ode separable  
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#	ODE	CAS classification	Solved?
14321	$y' = (t + 1)y$ i.c.	[_separable]	✓
14331	$y' = ty + ty^2$	[_separable]	✓
14332	$y' = t^2 + t^2y$	[_separable]	✓
14333	$y' = t + ty$	[_separable]	✓
14360	$y' = \frac{1}{(y + 1)(t - 2)}$ i.c.	[_separable]	✓
14362	$y' = \frac{t}{y - 2}$ i.c.	[_separable]	✓
14444	$y' = \frac{(t^2 - 4)(y + 1)e^y}{(t - 1)(3 - y)}$	[_separable]	✓
14449	$y' = ty$	[_separable]	✓
14451	$y' = \frac{ty}{t^2 + 1}$	[_separable]	✓
14457	$x' = -xt$ i.c.	[_separable]	✓
14460	$y' = t^2y^3 + y^3$ i.c.	[_separable]	✓
14463	$y' = \frac{(t + 1)^2}{(y + 1)^2}$ i.c.	[_separable]	✓
14464	$y' = 2ty^2 + 3t^2y^2$ i.c.	[_separable]	✓
14466	$y' = \frac{t^2}{y + t^3y}$ i.c.	[_separable]	✓
14470	$y' = t^2y + 1 + y + t^2$	[_separable]	✓
14471	$y' = \frac{2y + 1}{t}$	[_separable]	✓
14659	$yy' = 2x$	[_separable]	✓
14700	$y' + 3xy = 6x$	[_separable]	✓
14703	$x^2y' + xy^2 = x$	[_separable]	✓
14706	$(-2 + x)y' = y + 3$	[_separable]	✓
14707	$(y - 2)y' = x - 3$	[_separable]	✓
14711	$y' = 3y^2 - y^2 \sin(x)$	[_separable]	✓

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Table 2.4 first order ode separable  
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#	ODE	CAS classification	Solved?
14716	$y' + xy = 4x$	[_separable]	✓
14718	$y' = xy - 3x - 2y + 6$	[_separable]	✓
14720	$yy' = e^{x-3y^2}$	[_separable]	✓
14721	$y' = \frac{x}{y}$	[_separable]	✓
14723	$xyy' = y^2 + 9$	[_separable]	✓
14724	$y' = \frac{1+y^2}{x^2+1}$	[_separable]	✓
14725	$\cos(y)y' = \sin(x)$	[_separable]	✓
14726	$y' = e^{2x-3y}$	[_separable]	✓
14727	$y' = \frac{x}{y}$	[_separable]	✓
	i.c.		
14728	$y' = 2x - 1 + 2xy - y$	[_separable]	✓
	i.c.		
14729	$yy' = xy^2 + x$	[_separable]	✓
	i.c.		
14731	$y' = xy - 4x$	[_separable]	✓
14733	$yy' = xy^2 - 9x$	[_separable]	✓
14735	$y' = e^{x+y^2}$	[_separable]	✓
14737	$y' = xy - 4x$	[_separable]	✓
14738	$y' = xy - 3x - 2y + 6$	[_separable]	✓
14739	$y' = 3y^2 - y^2 \sin(x)$	[_separable]	✓
14741	$y' = \frac{y}{x}$	[_separable]	✓
14742	$y' = \frac{6x^2 + 4}{3y^2 - 4y}$	[_separable]	✓
14743	$(x^2 + 1)y' = 1 + y^2$	[_separable]	✓
14744	$(y^2 - 1)y' = 4xy^2$	[_separable]	✓
14747	$y' = 3xy^3$	[_separable]	✓
14748	$y' = \frac{2 + \sqrt{x}}{2 + \sqrt{y}}$	[_separable]	✓
14749	$y' - 3y^2x^2 = -3x^2$	[_separable]	✓
14750	$y' - 3y^2x^2 = 3x^2$	[_separable]	✓

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Table 2.4 first order ode separable  
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#	ODE	CAS classification	Solved?
14753	$yy' = \sin(x)$ i.c.	[_separable]	✓
14754	$y' = 2x - 1 + 2xy - y$ i.c.	[_separable]	✓
14755	$xy' = y^2 - y$ i.c.	[_separable]	✓
14756	$xy' = y^2 - y$ i.c.	[_separable]	✓
14757	$y' = \frac{y^2 - 1}{xy}$ i.c.	[_separable]	✓
14758	$(y^2 - 1)y' = 4xy$ i.c.	[_separable]	✓
14766	$y' = y \sin(x)$	[_separable]	✓
14772	$y' - 2xy = x$	[_separable]	✓
14820	$2 - 2x + 3y^2y' = 0$	[_separable]	✓
14824	$1 + e^y + x e^y y' = 0$	[_separable]	✓
14826	$1 + y^4 + xy^3y' = 0$	[_separable]	✓
14830	$3y + 3y^2 + (2x + 4xy)y' = 0$	[_separable]	✓
14831	$2x(1 + y) - y' = 0$	[_separable]	✓
14836	$xy' = 2y^2 - 6y$	[_separable]	✓
14837	$4y^2 - y^2x^2 + y' = 0$	[_separable]	✓
14851	$y' = \frac{1}{xy - 3x}$	[_separable]	✓
14854	$\sin(y) + (x + 1) \cos(y) y' = 0$	[_separable]	✓
14860	$y' = xy^2 + 3y^2 + x + 3$	[_separable]	✓
14874	$y^2 - y^2 \cos(x) + y' = 0$	[_separable]	✓
14877	$y' = y^3 - y^3 \cos(x)$	[_separable]	✓
14879	$y' = e^{4x+3y}$	[_separable]	✓
14881	$y' = e^{4x+3y}$	[_separable]	✓
15467	$y' + xy = 0$	[_separable]	✓
15478	$y' = -\frac{x}{y}$	[_separable]	✓

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Table 2.4 first order ode separable  
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#	ODE	CAS classification	Solved?
15508	$y' = \frac{(x-4)y^3}{x^3(y-2)}$	[_separable]	✓
15518	$y' + y \cos(x) = 0$	[_separable]	✓
15541	$\frac{y'}{t} = \sqrt{y}$ i.c.	[_separable]	✓
15543	$y' = y\sqrt{t}$ i.c.	[_separable]	✓
15545	$ty' = y$	[_separable]	✓
15546	$y' = y \tan(t)$ i.c.	[_separable]	✓
15567	$y' = ty^2$ i.c.	[_separable]	✓
15568	$y' = -\frac{t}{y}$ i.c.	[_separable]	✓
15570	$y' = \frac{x}{y^2}$	[_separable]	✓
15571	$\frac{1}{2\sqrt{t}} + y^2 y' = 0$	[_separable]	✓
15572	$y' = \frac{\sqrt{y}}{x^2}$	[_separable]	✓
15574	$6 + 4t^3 + \left(5 + \frac{9}{y^8}\right) y' = 0$	[_separable]	✓
15575	$\frac{6}{t^9} - \frac{6}{t^3} + t^7 + \left(9 + \frac{1}{s^2} - 4s^8\right) s' = 0$	[_separable]	✓
15576	$4 \sinh(4y) y' = 6 \cosh(3x)$	[_separable]	✓
15577	$y' = \frac{y+1}{t+1}$	[_separable]	✓
15578	$y' = \frac{2+y}{2t+1}$	[_separable]	✓
15579	$\frac{3}{t^2} = \left(\frac{1}{\sqrt{y}} + \sqrt{y}\right) y'$	[_separable]	✓
15580	$3 \sin(x) - 4 \cos(y) y' = 0$	[_separable]	✓
15581	$\cos(y) y' = 8 \sin(8t)$	[_separable]	✓
15583	$(5x^5 - 4 \cos(x)) x' + 2 \cos(9t) + 2 \sin(7t) = 0$	[_separable]	✓
15584	$\cosh(6t) + 5 \sinh(4t) + 20 \sinh(y) y' = 0$	[_separable]	✓
15585	$y' = e^{2y+10t}$	[_separable]	✓

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Table 2.4 first order ode separable

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#	ODE	CAS classification	Solved?
15586	$y' = e^{3y+2t}$	[_separable]	✓
15587	$\sin(t)^2 = \cos(y)^2 y'$	[_separable]	✓
15588	$3 \sin(t) - \sin(3t) = (\cos(4y) - 4 \cos(y)) y'$	[_separable]	✓
15589	$x' = \frac{\sec(t)^2}{\sec(x) \tan(x)}$	[_separable]	✓
15590	$\left(2 - \frac{5}{y^2}\right) y' + 4 \cos(x)^2 = 0$	[_separable]	✓
15592	$\tan(y) \sec(y)^2 y' + \cos(2x)^3 \sin(2x) = 0$	[_separable]	✓
15593	$y' = \frac{(1 + 2e^y) e^{-y}}{t \ln(t)}$	[_separable]	✓
15594	$x \sin(x^2) = \frac{\cos(\sqrt{y}) y'}{\sqrt{y}}$	[_separable]	✓
15595	$\frac{-2 + x}{x^2 - 4x + 3} = \frac{\left(1 - \frac{1}{y}\right)^2 y'}{y^2}$	[_separable]	✓
15596	$\frac{\cos(y) y'}{(1 - \sin(y))^2} = \sin(x)^3 \cos(x)$	[_separable]	✓
15597	$y' = \frac{(5 - 2 \cos(x))^3 \sin(x) \cos(y)^4}{\sin(y)}$	[_separable]	✓
15598	$\frac{\sqrt{\ln(x)}}{x} = \frac{e^{\frac{3}{y}} y'}{y}$	[_separable]	✓
15599	$y' = \frac{5^{-t}}{y^2}$	[_separable]	✓
15600	$y' = t^2 y^2 + y^2 - t^2 - 1$	[_separable]	✓
15602	$4(x-1)^2 y' - 3(y+3)^2 = 0$	[_separable]	✓
15603	$y' = \sin(t-y) + \sin(y+t)$	[_separable]	✓
15614	$y' = \frac{\sqrt{t}}{y}$	[_separable]	✓
	i.c.		
15616	$y' = \frac{e^t}{y+1}$	[_separable]	✓
	i.c.		
15617	$y' = e^{t-y}$	[_separable]	✓
	i.c.		
15621	$y' = \frac{\sin(x)}{\cos(y) + 1}$	[_separable]	✓
	i.c.		

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Table 2.4 first order ode separable  
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#	ODE	CAS classification	Solved?
15622	$y' = \frac{y+3}{3x+1}$ i.c.	[_separable]	✓
15623	$y' = e^{x-y}$ i.c.	[_separable]	✓
15624	$y' = e^{2x-y}$ i.c.	[_separable]	✓
15625	$y' = \frac{3y+1}{x+3}$ i.c.	[_separable]	✓
15626	$y' = y \cos(t)$ i.c.	[_separable]	✓
15627	$y' = y^2 \cos(t)$ i.c.	[_separable]	✓
15628	$y' = \sqrt{y} \cos(t)$ i.c.	[_separable]	✓
15629	$y' + yf(t) = 0$ i.c.	[_separable]	✓
15630	$y' = -\frac{y-2}{-2+x}$ i.c.	[_separable]	✓
15640	$y' = yf(t)$ i.c.	[_separable]	✓
15659	$y' - xy = x$	[_separable]	✓
15663	$x' = \frac{3xt^2}{-t^3+1}$	[_separable]	✓
15669	$y' + 2ty = 2t$ i.c.	[_separable]	✓
15673	$(t^2+4)y' + 2ty = 2t$ i.c.	[_separable]	✓
15701	$\frac{t}{\sqrt{t^2+y^2}} + \frac{yy'}{\sqrt{t^2+y^2}} = 0$	[_separable]	✓
15702	$y \cos(ty) + t \cos(ty) y' = 0$	[_separable]	✓
15704	$3ty^2 + y^3 y' = 0$	[_separable]	✓
15708	$e^{ty} + \frac{t e^{ty} y'}{y} = 0$	[_separable]	✓
15711	$y^2 + 2tyy' = 0$	[_separable]	✓
15712	$\frac{3t^2}{y} - \frac{t^3 y'}{y^2} = 0$	[_separable]	✓

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Table 2.4 first order ode separable  
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#	ODE	CAS classification	Solved?
15717	$\sin(y)^2 + t \sin(2y) y' = 0$	[_separable]	✓
15721	$-2ty^2 \sin(t^2) + 2y \cos(t^2) y' = 0$	[_separable]	✓
15729	$2ty^2 + 2t^2 yy' = 0$ i.c.	[_separable]	✓
15741	$t^2y + t^3y' = 0$	[_separable]	✓
15742	$y(2e^t + 4t) + 3(e^t + t^2) y' = 0$	[_separable]	✓
15762	$y' - \frac{y}{t} = \frac{y^2}{t}$	[_separable]	✓
15766	$2 \ln(t) - \ln(4y^2) y' = 0$	[_separable]	✓
15768	$\frac{\sin(2t)}{\cos(2y)} + \frac{\ln(y) y'}{\ln(t)} = 0$	[_separable]	✓
15769	$\sqrt{t^2 + 1} + yy' = 0$	[_separable]	✓
15799	$y' - \frac{2y}{x} = -x^2y$	[_separable]	✓
15813	$y' = \frac{2t^5}{5y^2}$	[_separable]	✓
15814	$\cos(4x) - 8y' \sin(y) = 0$	[_separable]	✓
15815	$y' - \frac{y}{t} = \frac{y^2}{t}$	[_separable]	✓
15816	$y' = \frac{e^{8y}}{t}$	[_separable]	✓
15817	$y' = \frac{e^{5t}}{y^4}$	[_separable]	✓
15818	$-\frac{1}{x^5} + \frac{1}{x^3} = (2y^4 - 6y^9) y'$	[_separable]	✓
15819	$y' = \frac{y e^{-2t}}{\ln(y)}$	[_separable]	✓
15820	$y' = \frac{(4-7x)(2y-3)}{(x-1)(2x-5)}$	[_separable]	✓
15833	$y' + ty = t$	[_separable]	✓
15850	$y' = ty^3$ i.c.	[_separable]	✓
15851	$y' = \frac{t}{y^3}$ i.c.	[_separable]	✓
15852	$y' = -\frac{y}{t-2}$ i.c.	[_separable]	✓

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Table 2.4 first order ode separable  
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#	ODE	CAS classification	Solved?
16341	$y' = \frac{x}{y}$	[_separable]	✓
16353	$(-x^2 + 1)y' + xy = 2x$	[_separable]	✓
16359	$y' = x(y - 1)$	[_separable]	✓
16364	$y' = \frac{1 + y}{x - 1}$	[_separable]	✓
16369	$y' = -\frac{y}{x}$	[_separable]	✓
16379	$1 + y^2 + (x^2 + 1)y' = 0$	[_separable]	✓
16380	$1 + y^2 + xyy' = 0$	[_separable]	✓
16381	$\sin(x)y' - y \cos(x) = 0$	[_separable]	✓
	i.c.		
16382	$1 + y^2 = xy'$	[_separable]	✓
16383	$x\sqrt{1 + y^2} + yy'\sqrt{x^2 + 1} = 0$	[_separable]	✓
16384	$x\sqrt{1 - y^2} + y\sqrt{-x^2 + 1}y' = 0$	[_separable]	✓
	i.c.		
16386	$y \ln(y) + xy' = 1$	[_separable]	✓
	i.c.		
16387	$y' = a^{x+y}$	[_separable]	✓
16388	$e^y(x^2 + 1)y' - 2x(1 + e^y) = 0$	[_separable]	✓
16389	$2x\sqrt{1 - y^2} = (x^2 + 1)y'$	[_separable]	✓
16390	$e^x \sin(y)^3 + (1 + e^{2x}) \cos(y)y' = 0$	[_separable]	✓
16391	$y^2 \sin(x) + \cos(x)^2 \ln(y)y' = 0$	[_separable]	✓
16396	$a^2 + y^2 + 2x\sqrt{ax - x^2}y' = 0$	[_separable]	✓
	i.c.		
16397	$y' = \frac{y}{x}$	[_separable]	✓
	i.c.		
16407	$x^3y' - \sin(y) = 1$	[_separable]	✓
	i.c.		
16408	$(x^2 + 1)y' - \frac{\cos(2y)^2}{2} = 0$	[_separable]	✓
	i.c.		
16410	$(x + 1)y' = y - 1$	[_separable]	✓
16411	$y' = 2x(\pi + y)$	[_separable]	✓

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Table 2.4 first order ode separable  
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#	ODE	CAS classification	Solved?
16442	$y' + y \cos(x) = \cos(x)$ i.c.	[_separable]	✓
16456	$y' + 2xy = 2xy^2$	[_separable]	✓
16459	$y' + 3xy = ye^{x^2}$	[_separable]	✓
16464	$y' - y \cos(x) = y^2 \cos(x)$	[_separable]	✓
16477	$\frac{xy}{\sqrt{x^2+1}} + 2xy - \frac{y}{x} + (\sqrt{x^2+1} + x^2 - \ln(x)) y' = 0$	[_separable]	✓
16496	$x^2 y'^2 + 3xyy' + 2y^2 = 0$	[_separable]	✓
16557	$y' + \cos\left(\frac{x}{2} + \frac{y}{2}\right) = \cos\left(\frac{x}{2} - \frac{y}{2}\right)$	[_separable]	✓
16558	$y'(3x^2 - 2x) - y(6x - 2) = 0$	[_separable]	✓
16565	$(x-1)(y^2 - y + 1) = (y-1)(x^2 + x + 1)y'$	[_separable]	✓
16574	$\sin(\ln(x)) - \cos(\ln(y))y' = 0$	[_separable]	✓
16601	$xy = y' \ln\left(\frac{y'}{x}\right)$	[_separable]	✓
16976	$y' = \frac{x^4}{y}$	[_separable]	✓
16977	$y' = \frac{x^2(x^3 + 1)}{y}$	[_separable]	✓
16978	$y' + y^3 \sin(x) = 0$	[_separable]	✓
16979	$y' = \frac{7x^2 - 1}{7 + 5y}$	[_separable]	✓
16980	$y' = \sin(2x)^2 \cos(y)^2$	[_separable]	✓
16981	$xy' = \sqrt{1 - y^2}$	[_separable]	✓
16982	$yy' = (xy^2 + x)e^{x^2}$	[_separable]	✓
16983	$y' = \frac{x^2 + e^{-x}}{y^2 - e^y}$	[_separable]	✓
16984	$y' = \frac{x^2}{1 + y^2}$	[_separable]	✓
16985	$y' = \frac{\sec(x)^2}{y^3 + 1}$	[_separable]	✓
16987	$y' = x(y - y^2)$	[_separable]	✓
16988	$y' = (1 - 12x)y^2$ i.c.	[_separable]	✓

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Table 2.4 first order ode separable  
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#	ODE	CAS classification	Solved?
16989	$y' = \frac{3 - 2x}{y}$ i.c.	[_separable]	✓
16990	$x + ye^{-x}y' = 0$ i.c.	[_separable]	✓
16991	$r' = \frac{r^2}{\theta}$ i.c.	[_separable]	✓
16992	$y' = \frac{3x}{y + x^2y}$ i.c.	[_separable]	✓
16993	$y' = \frac{2x}{1 + 2y}$ i.c.	[_separable]	✓
16994	$y' = 2xy^2 + 4x^3y^2$ i.c.	[_separable]	✓
16995	$y' = x^2e^{-3y}$ i.c.	[_separable]	✓
16996	$y' = (1 + y^2) \tan(2x)$ i.c.	[_separable]	✓
16997	$y' = \frac{x(x^2 + 1)y^5}{6}$ i.c.	[_separable]	✓
16998	$y' = \frac{3x^2 - e^x}{2y - 11}$ i.c.	[_separable]	✓
16999	$x^2y' = y - xy$ i.c.	[_separable]	✓
17000	$y' = \frac{e^{-x} - e^x}{3 + 4y}$ i.c.	[_separable]	✓
17001	$2yy' = \frac{x}{\sqrt{x^2 - 4}}$ i.c.	[_separable]	✓
17002	$\sin(2x) + \cos(3y)y' = 0$ i.c.	[_separable]	✓
17003	$y^2\sqrt{-x^2 + 1}y' = \arcsin(x)$ i.c.	[_separable]	✓
17004	$y' = \frac{3x^2 + 1}{12y^2 - 12y}$ i.c.	[_separable]	✓
17005	$y' = \frac{2x^2}{2y^2 - 6}$ i.c.	[_separable]	✓

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Table 2.4 first order ode separable  
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#	ODE	CAS classification	Solved?
17006	$y' = 2y^2 + xy^2$ i.c.	[_separable]	✓
17007	$y' = \frac{6 - e^x}{3 + 2y}$ i.c.	[_separable]	✓
17008	$y' = \frac{2 \cos(2x)}{10 + 2y}$ i.c.	[_separable]	✓
17009	$y' = 2(x + 1)(1 + y^2)$ i.c.	[_separable]	✓
17010	$y' = \frac{ty(4 - y)}{3}$ i.c.	[_separable]	✓
17011	$y' = \frac{ty(4 - y)}{t + 1}$ i.c.	[_separable]	✓
17049	$t(-4 + t)y' + y = 0$ i.c.	[_separable]	✓
17058	$y' = \frac{t^2 + 1}{3y - y^2}$	[_separable]	✓
17059	$y' = \frac{\cot(t)y}{y + 1}$	[_separable]	✓
17062	$y' = -\frac{4t}{y}$ i.c.	[_separable]	✓
17063	$y' = 2ty^2$ i.c.	[_separable]	✓
17065	$y' = \frac{t^2}{y(t^3 + 1)}$ i.c.	[_separable]	✓
17066	$y' = ty(3 - y)$	[_separable]	✓
17070	$y' + \left( \begin{array}{cc} 2 & 0 \leq t \leq 1 \\ 1 & 1 < t \end{array} \right) y = 0$ i.c.	[_separable]	✓
17071	$2x + 3 + (2y - 2)y' = 0$	[_separable]	✓
17074	$2y + 2xy^2 + (2x + 2x^2y)y' = 0$	[_separable]	✓
17081	$x \ln(y) + xy + (y \ln(x) + xy)y' = 0$	[_separable]	✓
17082	$\frac{x}{(y^2 + x^2)^{3/2}} + \frac{yy'}{(y^2 + x^2)^{3/2}} = 0$	[_separable]	✓
17085	$x^2y^3 + x(1 + y^2)y' = 0$	[_separable]	✓

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Table 2.4 first order ode separable  
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#	ODE	CAS classification	Solved?
17088	$(x + 2) \sin(y) + x \cos(y) y' = 0$	[_separable]	✓
17097	$yy' = x + 1$	[_separable]	✓
17098	$(y^4 + 1) y' = x^4 + 1$	[_separable]	✓
17100	$x(x - 1) y' = y(1 + y)$	[_separable]	✓
17113	$5(t^2 + 1) y' = 4ty(y^3 - 1)$	[_separable]	✓
17124	$\frac{\sqrt{x} y'}{y} = 1$	[_separable]	✓
17125	$5xy^2 + 5y + (5x^2y + 5x) y' = 0$	[_separable]	✓
17570	$x\sqrt{1 + y^2} + yy'\sqrt{x^2 + 1} = 0$ i.c.	[_separable]	✓
17571	$\sec(x)^2 \tan(y) + \sec(y)^2 \tan(x) y' = 0$	[_separable]	✓
17572	$\sqrt{1 - y^2} + y'\sqrt{-x^2 + 1} = 0$	[_separable]	✓
17612	$yy'^2 + y'(x - y) - x = 0$	[_quadrature]	✓
17614	$y'^3 - (y^2 + xy + x^2) y'^2 + (xy^3 + y^2x^2 + x^3y) y' - x^3y^3 = 0$	[_quadrature]	✓
17733	$xy' = 2y$	[_separable]	✓
17734	$yy' = e^{2x}$	[_separable]	✓
17754	$xyy' = y - 1$	[_separable]	✓
17755	$x^5y' + y^5 = 0$	[_separable]	✓
17756	$xy' = (-2x^2 + 1) \tan(y)$	[_separable]	✓
17757	$y' = 2xy$	[_separable]	✓
17758	$y' \sin(y) = x^2$	[_separable]	✓
17760	$y' + y \tan(x) = 0$	[_separable]	✓
17761	$y' - y \tan(x) = 0$	[_separable]	✓
17762	$1 + y^2 + (x^2 + 1) y' = 0$	[_separable]	✓
17763	$y \ln(y) - xy' = 0$	[_separable]	✓
17770	$y' = e^{-2y+3x}$ i.c.	[_separable]	✓
17772	$e^{-y} + (x^2 + 1) y' = 0$ i.c.	[_separable]	✓

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Table 2.4 first order ode separable

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#	ODE	CAS classification	Solved?
17773	$3 \cos(3x) \cos(2y) - 2 \sin(3x) \sin(2y) y' = 0$ i.c.	[_separable]	✓
17775	$xyy' = (x+1)(1+y)$ i.c.	[_separable]	✓
17803	$y + y \cos(xy) + (x + x \cos(xy)) y' = 0$	[_separable]	✓
17804	$\cos(x) \cos(y)^2 + 2 \sin(x) \sin(y) \cos(y) y' = 0$	[_separable]	✓
17806	$-\frac{\sin\left(\frac{x}{y}\right)}{y} + \frac{x \sin\left(\frac{x}{y}\right) y'}{y^2} = 0$	[_separable]	✓
17807	$1 + y + (1-x) y' = 0$	[_separable]	✓
17813	$x \ln(y) + xy + (y \ln(x) + xy) y' = 0$	[_separable]	✓
17816	$\frac{x}{(y^2 + x^2)^{3/2}} + \frac{yy'}{(y^2 + x^2)^{3/2}} = 0$	[_separable]	✓
17824	$(x+2) \sin(y) + x \cos(y) y' = 0$	[_separable]	✓
17832	$y - xy' = xy^3 y'$	[_separable]	✓
17836	$y^2 - y + xy' = 0$	[_separable]	✓
17882	$xy' + y = x^2 y' + y^2$	[_separable]	✓
17905	$3x^2 \ln(y) + \frac{x^3 y'}{y} = 0$	[_separable]	✓
18176	$3xt^2 - xt + (3t^3 x^2 + t^3 x^4) x' = 0$	[_separable]	✓
18177	$1 + 2x + (-t^2 + 4) x' = 0$	[_separable]	✓
18183	$x' + x \tan(t) = 0$	[_separable]	✓
18186	$x' + 2xt + tx^4 = 0$	[_separable]	✓
18211	$y' = \frac{\sqrt{1-y^2} \arcsin(y)}{x}$	[_separable]	✓
18216	$\sin(x) \cos(y)^2 + \cos(x)^2 y' = 0$	[_separable]	✓
18218	$y - xy' = b(1 + x^2 y')$	[_separable]	✓
18220	$y' = 1 + \frac{1}{x} - \frac{1}{y^2 + 2} - \frac{1}{x(y^2 + 2)}$	[_separable]	✓
18224	$\sec(x)^2 \tan(y) y' + \sec(y)^2 \tan(x) = 0$	[_separable]	✓
18228	$y' + xy = x$	[_separable]	✓
18245	$y' = x(y^2 a + b)$	[_separable]	✓
18246	$n' = (n^2 + 1) x$	[_separable]	✓

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Table 2.4 first order ode separable  
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#	ODE	CAS classification	Solved?
18247	$v' + \frac{2v}{u} = 3v$	[_separable]	✓
18248	$\sqrt{-u^2 + 1} v' = 2u\sqrt{1 - v^2}$	[_separable]	✓
18250	$\frac{y'}{x} = y \sin(x^2 - 1) - \frac{2y}{\sqrt{x}}$	[_separable]	✓
18252	$v' + 2vu = 2u$	[_separable]	✓
18253	$1 + v^2 + (u^2 + 1)vv' = 0$	[_separable]	✓
18254	$u \ln(u) v' + \sin(v)^2 = 1$	[_separable]	✓
18303	$y' + y \sin(x) = y^2 \sin(x)$	[_separable]	✓
18304	$(-x^2 + 1) y' - xy = axy^2$	[_separable]	✓
18308	$y\sqrt{x^2 - 1} + x\sqrt{y^2 - 1} y' = 0$	[_separable]	✓
18309	$(1 + e^y) \cos(x) + e^y \sin(x) y' = 0$	[_separable]	✓
18310	$\sqrt{2ay - y^2} \csc(x) + y \tan(x) y' = 0$	[_separable]	✓
18311	$y(y + 3) y' = x(3 + 2y)$	[_separable]	✓
18314	$\cos(x) \sin(y) y' + \sin(x) \cos(y) = 0$	[_separable]	✓
18403	$(1 - x) y' - 1 - y = 0$	[_separable]	✓
18405	$y - xy' = a(y^2 + y')$	[_separable]	✓
18406	$3e^x \tan(y) + (1 - e^x) \sec(y)^2 y' = 0$	[_separable]	✓
18420	$a(xy' + 2y) = xyy'$	[_separable]	✓
18445	$\sec(x)^2 \tan(y) + \sec(y)^2 \tan(x) y' = 0$	[_separable]	✓
18446	$y^2 + xy^2 + (x^2 - x^2y) y' = 0$	[_separable]	✓
18459	$(x + 1) y' + 1 = 2e^y$	[_separable]	✓
18465	$yy' = ax$	[_separable]	✓
18470	$y - xy' = b(1 + x^2y')$	[_separable]	✓
18481	$4y^2y'^2 + 2(3x + 1) xyy' + 3x^3 = 0$	[_separable]	✓
18497	$xy(y - xy') = yy' + x$	[_separable]	✓
18501	$xy^2(y'^2 + 2) = 2y^3y' + x^3$	[_separable]	✓
18515	$xyy'^2 + y'(3x^2 - 2y^2) - 6xy = 0$	[_separable]	✓

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Table 2.4 first order ode separable  
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#	ODE	CAS classification	Solved?
18517	$y'^3 - (y^2 + xy + x^2) y'^2 + (xy^3 + y^2x^2 + x^3y) y' - x^3y^3 = 0$	[_quadrature]	✓
18526	$\sqrt{x} y' = \sqrt{y}$	[_separable]	✓

## 2.3.3 first order ode homogA

Table 2.5: first order ode homogA

#	ODE	CAS classification	Solved?
77	<i>i.c.</i> $xy' + 2y = 3x$	[_linear]	✓
80	$3xy' + y = 12x$	[_linear]	✓
105	$(x + y)y' = x - y$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
106	$2xyy' = x^2 + 2y^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
107	$xy' = y + 2\sqrt{xy}$	[[_homogeneous, 'class A', _dAlembert]]	✓
108	$y'(x - y) = x + y$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
109	$x(x + y)y' = (x - y)y$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
110	$(x + 2y)y' = y$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
111	$xy^2y' = x^3 + y^3$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
112	$x^2y' = xy + x^2e^{\frac{y}{x}}$	[[_homogeneous, 'class A', _dAlembert]]	✓
113	$x^2y' = xy + y^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
114	$xyy' = x^2 + 3y^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
115	$(x^2 - y^2)y' = 2xy$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
116	$xyy' = y^2 + x\sqrt{4x^2 + y^2}$	[[_homogeneous, 'class A', _dAlembert]]	✓
118	$yy' + x = \sqrt{y^2 + x^2}$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
119	$x(x + y)y' + y(3x + y) = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
135	$2x + 3y + (3x + 2y)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓

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Table 2.5 first order ode homogA  
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#	ODE	CAS classification	Solved?
136	$4x - y + (6y - x)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
137	$3x^2 + 2y^2 + (4xy + 6y^2)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]]	✓
146	$\frac{2x^{5/2} - 3y^{5/3}}{2x^{5/2}y^{2/3}} + \frac{(3y^{5/3} - 2x^{5/2})y'}{3x^{3/2}y^{5/3}} = 0$	[[_1st_order, _with_linear_symmetries], _exact, _rational]	✓
166	$y' = -\frac{y(2x^3 - y^3)}{x(2y^3 - x^3)}$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
181	$xy + y^2 - x^2y' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
186	$2xy + x^2y' = y^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
189	$x^2y' = xy + 3y^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
190	$6xy^3 + 2y^4 + (9y^2x^2 + 8xy^3)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class B']]]	✓
192	$x^3y' = x^2y - y^3$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
196	$2x^2y - x^3y' = y^3$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
211	$y' = -\frac{3x^2 + 2y^2}{4xy}$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
212	$y' = \frac{3y + x}{y - 3x}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
708	<i>i.c.</i> $xy' + 2y = 3x$	[_linear]	✓
711	$3xy' + y = 12x$	[_linear]	✓
729	$(x + y)y' = x - y$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
730	$2xyy' = y^2 + x^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
731	$xy' = y + 2\sqrt{xy}$	[[_homogeneous, 'class A', _dAlembert]]	✓

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Table 2.5 first order ode homogA  
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#	ODE	CAS classification	Solved?
732	$y'(x - y) = x + y$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
733	$x(x + y)y' = (x - y)y$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
734	$(x + 2y)y' = y$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
735	$xy^2y' = x^3 + y^3$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
736	$x^2y' = xy + x^2e^{\frac{y}{x}}$	[[_homogeneous, 'class A', _dAlembert]]	✓
737	$x^2y' = xy + y^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
738	$xyy' = x^2 + 3y^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
739	$(x^2 - y^2)y' = 2xy$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
740	$xyy' = y^2 + x\sqrt{4x^2 + y^2}$	[[_homogeneous, 'class A', _dAlembert]]	✓
742	$yy' + x = \sqrt{y^2 + x^2}$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
743	$x(x + y)y' + y(3x + y) = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
759	$2x + 3y + (3x + 2y)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
760	$4x - y + (6y - x)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
761	$3x^2 + 2y^2 + (4xy + 6y^2)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]]	✓
770	$\frac{2x^{5/2} - 3y^{5/3}}{2x^{5/2}y^{2/3}} + \frac{(3y^{5/3} - 2x^{5/2})y'}{3x^{3/2}y^{5/3}} = 0$	[[_1st_order, _with_linear_symmetries], _exact, _rational]]	✓
773	$xy + y^2 - x^2y' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓

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Table 2.5 first order ode homogA

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#	ODE	CAS classification	Solved?
778	$2xy + x^2y' = y^2$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
781	$x^2y' = xy + 3y^2$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
782	$6xy^3 + 2y^4 + (9y^2x^2 + 8xy^3)y' = 0$	[[_homogeneous, 'class A'], _exact, _rational, [_Abel, '2nd type', 'class B']]	✓
784	$x^3y' = x^2y - y^3$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
788	$2x^2y - x^3y' = y^3$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
803	$y' = \frac{-3x^2 - 2y^2}{4xy}$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
804	$y' = \frac{3y + x}{y - 3x}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
1158	$y' = \frac{y^2 + xy + x^2}{x^2}$	[[_homogeneous, 'class A'], _rational, _Riccati]	✓
1159	$y' = \frac{x^2 + 3y^2}{2xy}$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
1160	$y' = \frac{4y - 3x}{2x - y}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
1161	$y' = -\frac{4x + 3y}{2x + y}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
1162	$y' = \frac{3y + x}{x - y}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
1163	$x^2 + 3xy + y^2 - x^2y' = 0$	[[_homogeneous, 'class A'], _rational, _Riccati]	✓
1164	$y' = \frac{x^2 - 3y^2}{2xy}$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
1165	$y' = \frac{3y^2 - x^2}{2xy}$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
1174	$y' = -\frac{4t}{y}$	[_separable]	✓

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Table 2.5 first order ode homogA

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#	ODE	CAS classification	Solved?
1194	$2x + 4y + (2x - 2y)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
1196	$2y + 2xy^2 + (2x + 2x^2y)y' = 0$	[_separable]	✓
1197	$y' = \frac{-ax - by}{bx + cy}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
1198	$y' = \frac{-ax + by}{bx - cy}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
1204	$\frac{x}{(y^2 + x^2)^{3/2}} + \frac{yy'}{(y^2 + x^2)^{3/2}} = 0$	[_separable]	✓
1205	<i>i.c.</i> $2x - y + (2y - x)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
1217	$3xy + y^2 + (xy + x^2)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
1231	<i>i.c.</i> $x + y + (x + 2y)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
1243	$xy' = e^{\frac{y}{x}}x + y$	[[_homogeneous, 'class A', _dAlembert]]	✓
1245	$3t + 2y = -ty'$	[_linear]	✓
1246	$y' = \frac{x + y}{x - y}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
1247	$2xy + 3y^2 - (x^2 + 2xy)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
1540	$xy' + 3y = 0$	[_separable]	✓
1546	<i>i.c.</i> $y' + \frac{ky}{x} = 0$	[_separable]	✓
1597	<i>i.c.</i> $yy' + x = 0$	[_separable]	✓
1615	$y' = \frac{2x + 3y}{x - 4y}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓

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Table 2.5 first order ode homogA  
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#	ODE	CAS classification	Solved?
1626	$y' = \frac{y + x e^{-\frac{y}{x}}}{x}$	[[_homogeneous, 'class A', _dAlembert]	✓
1628	$x^2 y' = y^2 + xy - x^2$ i.c.	[[_homogeneous, 'class A', _rational, _Riccati]	✓
1643	$y' = \frac{y^2 + 2xy}{x^2}$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
1644	$xy^3 y' = y^4 + x^4$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
1645	$y' = \frac{y}{x} + \sec\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A', _dAlembert]	✓
1646	$x^2 y' = y^2 + xy + x^2$	[[_homogeneous, 'class A', _rational, _Riccati]	✓
1647	$xyy' = x^2 + 2y^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
1648	$y' = \frac{2y^2 + x^2 e^{-\frac{y^2}{x^2}}}{2xy}$	[[_homogeneous, 'class A']]	✓
1649	$y' = \frac{xy + y^2}{x^2}$ i.c.	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
1650	$y' = \frac{x^3 + y^3}{xy^2}$ i.c.	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
1651	$xyy' + x^2 + y^2 = 0$ i.c.	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
1652	$y' = \frac{y^2 - 3xy - 5x^2}{x^2}$ i.c.	[[_homogeneous, 'class A', _rational, _Riccati]	✓
1653	$x^2 y' = 2x^2 + y^2 + 4xy$ i.c.	[[_homogeneous, 'class A', _rational, _Riccati]	✓
1654	$xyy' = 3x^2 + 4y^2$ i.c.	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
1655	$y' = \frac{x + y}{x - y}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
1657	$y' = \frac{y^3 + 2xy^2 + x^2 y + x^3}{x(x + y)^2}$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
1658	$y' = \frac{x + 2y}{2x + y}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓

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Table 2.5 first order ode homogA  
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#	ODE	CAS classification	Solved?
1659	$y' = \frac{y}{y - 2x}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
1660	$y' = \frac{xy^2 + 2y^3}{x^3 + x^2y + xy^2}$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
1661	$y' = \frac{x^3 + x^2y + 3y^3}{x^3 + 3xy^2}$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
1662	<i>i.c.</i> $x^2y' = y^2 + xy - 4x^2$	[[_homogeneous, 'class A'], _rational, _Riccati]	✓
1663	$xyy' = x^2 - xy + y^2$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
1664	$y' = \frac{2y^2 - xy + 2x^2}{xy + 2x^2}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
1665	$y' = \frac{y^2 + xy + x^2}{xy}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
1680	$6y^2x^2 + 4x^3yy' = 0$	[_separable]	✓
1685	$4x + 7y + (3x + 4y)y' = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
1687	$2x + y + (2x + 2y)y' = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
1692	$\frac{x}{(y^2 + x^2)^{3/2}} + \frac{yy'}{(y^2 + x^2)^{3/2}} = 0$	[_separable]	✓
1702	$7x + 4y + (4x + 3y)y' = 0$	[[_homogeneous, 'class A'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
1707	$x^2 + y^2 + 2xyy' = 0$	[[_homogeneous, 'class A'], _exact, _rational, _Bernoulli]	✓
1712	$-y^2 + x^2y' = 0$	[_separable]	✓
1714	$3x^2y + 2x^3y' = 0$	[_separable]	✓
1718	$27xy^2 + 8y^3 + (18x^2y + 12xy^2)y' = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓

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#	ODE	CAS classification	Solved?
1731	$x^4y^4 + x^5y^3y' = 0$	[_separable]	✓
2330 i.c.	$ty' = y + \sqrt{t^2 + y^2}$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
2331	$2tyy' = 3y^2 - t^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
2332	$(t - \sqrt{ty})y' = y$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
2333	$y' = \frac{y+t}{t-y}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
2334	$e^{\frac{t}{y}}(-t+y)y' + y(1 + e^{\frac{t}{y}}) = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
2342 i.c.	$2ty^3 + 3t^2y^2y' = 0$	[_separable]	✓
2346 i.c.	$3ty + y^2 + (t^2 + ty)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
2501	$y' = \frac{2y}{t} + \frac{y^2}{t^2}$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
2502 i.c.	$ty' = y + \sqrt{t^2 + y^2}$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
2503	$2tyy' = 3y^2 - t^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
2504	$(t - \sqrt{ty})y' = y$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
2505	$y' = \frac{y+t}{t-y}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
2506	$e^{\frac{t}{y}}(-t+y)y' + y(1 + e^{\frac{t}{y}}) = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
2514 i.c.	$2ty^3 + 3t^2y^2y' = 0$	[_separable]	✓
2518 i.c.	$3ty + y^2 + (t^2 + ty)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
2844	$xy' + y = 0$	[_separable]	✓
2851	$y' = \frac{x}{y}$	[_separable]	✓

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#	ODE	CAS classification	Solved?
2862	$xy' + 2y = 0$ i.c.	[_separable]	✓
2864	$x^2y' + y^2 = 0$ i.c.	[_separable]	✓
2872	$(x + y)y' + x = y$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
2873	$-y + xy' = \sqrt{xy}$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
2874	$y' = \frac{2x - y}{4y + x}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
2876	$yy' + x = 2y$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
2877	$xy' - y + \sqrt{y^2 - x^2} = 0$	[[_homogeneous, 'class A', _dAlembert]]	✓
2878	$y^2 + x^2 = xyy'$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
2879	$(xy - x^2)y' - y^2 = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
2880	$xy' + y = 2\sqrt{xy}$	[[_homogeneous, 'class A', _dAlembert]]	✓
2881	$x + y + y'(x - y) = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
2882	$y(x^2 - xy + y^2) + xy'(y^2 + xy + x^2) = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
2883	$xy' - y - x \sin\left(\frac{y}{x}\right) = 0$	[[_homogeneous, 'class A', _dAlembert]]	✓
2884	$y' = \frac{y}{x} + \cosh\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A', _dAlembert]]	✓
2885	$y^2 + x^2 = 2xyy'$ i.c.	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
2886	$\left(\frac{x}{y} + \frac{y}{x}\right)y' + 1 = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
2887	$e^{\frac{y}{x}}x + y = xyy'$ i.c.	[[_homogeneous, 'class A', _dAlembert]]	✓

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Table 2.5 first order ode homogA  
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#	ODE	CAS classification	Solved?
2888	$y' = \frac{x+y}{x-y}$ i.c.	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
2889	$y' = \frac{y}{x} + \tan\left(\frac{y}{x}\right)$ i.c.	[[_homogeneous, 'class A', _dAlembert]]	✓
2890	$(3xy - 2x^2)y' = 2y^2 - xy$ i.c.	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
2891	$y' = \frac{y}{x - k\sqrt{y^2 + x^2}}$	[[_homogeneous, 'class A', _dAlembert]]	✓
2892	$y^2(yy' - x) + x^3 = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
2893	$y' = \frac{y}{x} + \tanh\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A', _dAlembert]]	✓
2914	$x + y + (x - 2y)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
2915	$3x + y + (3y + x)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
2919	$2xy - (y^2 + x^2)y' = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
2934	$\frac{x^2 + 3y^2}{x(3x^2 + 4y^2)} + \frac{(2x^2 + y^2)y'}{y(3x^2 + 4y^2)} = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlem- bert]]	✓
2935	$\frac{x^2 - y^2}{x(2x^2 + y^2)} + \frac{(x^2 + 2y^2)y'}{y(2x^2 + y^2)} = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlem- bert]]	✓
2964	$y + (2x - 3y)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
2986	$xyy' = x^2 - y^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
2989	$x^2y' + y^2 = xy$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
3005	$y^2 + (xy + x^2)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓

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Table 2.5 first order ode homogA

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#	ODE	CAS classification	Solved?
3006	$2x + y - (x - 2y)y' = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
3014	$x^2y - (x^3 + y^3)y' = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
3019	$y + (-2y + 3x)y' = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
3021	$(3x + 4y)y' + 2x + y = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
3026	$1 + e^{\frac{x}{y}} + e^{\frac{x}{y}} \left(1 - \frac{x}{y}\right) y' = 0$	[[_homogeneous, 'class A'], _exact, _dAlembert]	✓
3032	$y\sqrt{y^2 + x^2} + xy = x^2y'$	[[_homogeneous, 'class A'], _dAlembert]	✓
3036	$y \cos\left(\frac{x}{y}\right) - \left(y + x \cos\left(\frac{x}{y}\right)\right) y' = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓
3041	$xy - y^2 - x^2y' = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
3045	$(-2x^2 - 3xy)y' + y^2 = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
3049	$y^2 + x^2 = 2xyy'$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
3050	$3xy + (3x^2 + y^2)y' = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
3056	$y^3 + 2x^2y + (-3x^3 - 2xy^2)y' = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
3285	$4y^2 = x^2y'^2$	[_separable]	✓
3288	$x(-1 + y'^2) = 2yy'$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
3291	$y^2y'^2 + xyy' - 2x^2 = 0$	[_separable]	✓
3292	$y^2y'^2 - 2xyy' + 2y^2 = x^2$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
3295	$y = y'x(1 + y')$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
3298	$yy'^2 - 2xy' + y = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓

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#	ODE	CAS classification	Solved?
3300	$x(-1 + y'^2) = 2yy'$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
3301	$4x - 2yy' + xy'^2 = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
3303	$yy'^2 = 3xy' + y$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
3306	$(1 + y'^2)x = (x + y)y'$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
3308	$y + 2xy' = xy'^2$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
3311	$x + 2yy' = xy'^2$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
3312	$4x - 2yy' + xy'^2 = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
3314	$(1 + y'^2)y = 2xy'$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
3315	$2x + xy'^2 = 2yy'$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
3317	$4xy'^2 + 2xy' = y$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
3318	$y = y'x(1 + y')$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
3432	$y' = -\frac{t}{y}$	[_separable]	✓
3461	$2xy' + 3x + y = 0$	[_linear]	✓
3467	$(y - x)y' + 2x + 3y = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
3476	$y' - \frac{y^2}{x^2} = \frac{1}{4}$ i.c.	[[_homogeneous, 'class A'], _rational, _Riccati]	✓
3477	$y' - \frac{y^2}{x^2} = \frac{1}{4}$	[[_homogeneous, 'class A'], _rational, _Riccati]	✓
3544	$(3x - y)y' = 3y$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
3545	$y' = \frac{(x + y)^2}{2x^2}$	[[_homogeneous, 'class A'], _rational, _Riccati]	✓

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Table 2.5 first order ode homogA

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#	ODE	CAS classification	Solved?
3546	$\sin\left(\frac{y}{x}\right)(-y + xy') = x \cos\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A', _dAlembert]	✓
3549	$x(x^2 - y^2) - x(y^2 + x^2)y' = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
3550	$xy' + y \ln(x) = y \ln(y)$	[[_homogeneous, 'class A', _dAlembert]	✓
3551	$y' = \frac{y^2 + 2xy - 2x^2}{x^2 - xy + y^2}$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
3552	$2xyy' - 2y^2 - x^2e^{-\frac{y^2}{x^2}} = 0$	[[_homogeneous, 'class A']]	✓
3553	$x^2y' = y^2 + 3xy + x^2$	[[_homogeneous, 'class A', _rational, _Riccati]	✓
3554	$yy' = \sqrt{y^2 + x^2} - x$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
3555	$2x(2x + y)y' = y(4x - y)$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
3556	$xy' = x \tan\left(\frac{y}{x}\right) + y$	[[_homogeneous, 'class A', _dAlembert]	✓
3557	$y' = \frac{x\sqrt{y^2 + x^2} + y^2}{xy}$	[[_homogeneous, 'class A', _dAlembert]	✓
3562	$y' = \frac{y}{2x}$	[_separable]	✓
3636	$y' = \frac{y^2 + xy + x^2}{x^2}$	[[_homogeneous, 'class A', _rational, _Riccati]	✓
3637	$(3x - y)y' = 3y$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
3638	$y' = \frac{(x + y)^2}{2x^2}$	[[_homogeneous, 'class A', _rational, _Riccati]	✓
3639	$\sin\left(\frac{y}{x}\right)(-y + xy') = x \cos\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A', _dAlembert]	✓
3643	$xy' + y \ln(x) = y \ln(y)$	[[_homogeneous, 'class A', _dAlembert]	✓
3644	$y' = \frac{y^2 + 2xy - 2x^2}{x^2 - xy + y^2}$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
3645	$2xyy' - 2y^2 - x^2e^{-\frac{y^2}{x^2}} = 0$	[[_homogeneous, 'class A']]	✓

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#	ODE	CAS classification	Solved?
3646	$x^2y' = y^2 + 3xy + x^2$	[[_homogeneous, 'class A'], _rational, _Riccati]	✓
3647	$yy' = \sqrt{y^2 + x^2} - x$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
3648	$2x(2x + y)y' = y(4x - y)$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
3649	$xy' = x \tan\left(\frac{y}{x}\right) + y$	[[_homogeneous, 'class A'], _dAlembert]	✓
3650	$y' = \frac{x\sqrt{y^2 + x^2} + y^2}{xy}$	[[_homogeneous, 'class A'], _dAlembert]	✓
3651 i.c.	$y' = \frac{4y - 2x}{x + y}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
3652 i.c.	$y' = \frac{2x - y}{4y + x}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
3653 i.c.	$y' = \frac{y - \sqrt{y^2 + x^2}}{x}$	[[_homogeneous, 'class A'], _dAlembert]	✓
3655	$y' = \frac{x + ay}{ax - y}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
3656 i.c.	$y' = \frac{x + \frac{y}{2}}{\frac{x}{2} - y}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
3682 i.c.	$\frac{y'}{y} - \frac{2 \ln(y)}{x} = \frac{1 - 2 \ln(x)}{x}$	[[_homogeneous, 'class A'], _dAlembert]	✓
4098	$x^3 + y^3 - xy^2y' = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
4103	$y' = \frac{y^2 + x^2}{2x^2}$	[[_homogeneous, 'class A'], _rational, _Riccati]	✓
4112 i.c.	$y' = \frac{2x - y}{2x + y}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
4190	$yy' = x$	[_separable]	✓
4196	$xy' + y = x$	[_linear]	✓

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#	ODE	CAS classification	Solved?
4223	<i>i.c.</i> $-y^2 + x^2y' = 0$	[_separable]	✓
4240	$xyy' = 2x^2 - y^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
4241	$x^2 - y^2 + xyy' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
4242	$x^2y' - 2xy - 2y^2 = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
4243	$x^2y' = 3(y^2 + x^2) \arctan\left(\frac{y}{x}\right) + xy$	[[_homogeneous, 'class A', _dAlembert]	✓
4244	$x \sin\left(\frac{y}{x}\right) y' = y \sin\left(\frac{y}{x}\right) + x$	[[_homogeneous, 'class A', _dAlembert]	✓
4254	$y + y \cos(xy) + (x + x \cos(xy)) y' = 0$	[_separable]	✓
4261	$(3x^2 - y^2) y' - 2xy = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
4267	$(x + y) y' = y - x$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
4277	$xy' = \sqrt{y^2 + x^2}$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
4281	$(xy - x^2) y' = y^2$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
4290	$y^2 - 3xy - 2x^2 = (x^2 - xy) y'$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
4295	$2xy + x^2y' = 0$	[_separable]	✓
4300	<i>i.c.</i> $\frac{x}{y^2 + x^2} + \frac{y}{x^2} + \left(\frac{y}{y^2 + x^2} - \frac{1}{x}\right) y' = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]	✓
4314	$y' + \frac{x}{y} + 2 = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
4315	$-y + xy' = x \cot\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A', _dAlembert]	✓
4316	$x \cos\left(\frac{y}{x}\right)^2 - y + xy' = 0$	[[_homogeneous, 'class A', _dAlembert]	✓

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Table 2.5 first order ode homogA

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#	ODE	CAS classification	Solved?
4317	$xy' = y(1 + \ln(y) - \ln(x))$	[[_homogeneous, 'class A', _dAlembert]	✓
4318	$xy + (y^2 + x^2)y' = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
4319	$(1 - e^{-\frac{y}{x}})y' + 1 - \frac{y}{x} = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
4320	$x^2 - xy + y^2 - xy y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
4333	$2xy + (x^2 + 2xy + y^2)y' = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
4347	$x - \sqrt{y^2 + x^2} + (y - \sqrt{y^2 + x^2})y' = 0$	[[_homogeneous, 'class G', _dAlembert]	✓
4386	$xy'(y' + 2) = y$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
4399	$xy' = y - e^{\frac{y}{x}}x$	[[_homogeneous, 'class A', _dAlembert]	✓
4401	$2\sqrt{xy} - y - xy' = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
4402	$y' = e^{\frac{xy'}{y}}$	[[_homogeneous, 'class A', _dAlembert]	✓
4405	$-y + xy' = x \tan\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A', _dAlembert]	✓
4413	$4x - 2yy' + xy'^2 = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
4422	$x - y \cos\left(\frac{y}{x}\right) + x \cos\left(\frac{y}{x}\right)y' = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
4441	$x + \sin\left(\frac{y}{x}\right)^2(y - xy') = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
4743	$xy' + x + y = 0$	[_linear]	✓
4752	$xy' = ay$	[_separable]	✓
4754	$xy' = ax + by$	[_linear]	✓
4798	$xy' = y + a\sqrt{y^2 + b^2x^2}$	[[_homogeneous, 'class A', _dAlembert]	✓
4800	$xy' + x - y + x \cos\left(\frac{y}{x}\right) = 0$	[[_homogeneous, 'class A', _dAlembert]	✓

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#	ODE	CAS classification	Solved?
4801	$xy' = y - x \cos\left(\frac{y}{x}\right)^2$	[[_homogeneous, 'class A', _dAlembert]	✓
4805	$xy' - y + x \sec\left(\frac{y}{x}\right) = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
4806	$xy' = y + x \sec\left(\frac{y}{x}\right)^2$	[[_homogeneous, 'class A', _dAlembert]	✓
4808	$xy' = y + x \sin\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A', _dAlembert]	✓
4811	$xy' = y - x \tan\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A', _dAlembert]	✓
4813	$xy' = e^{\frac{y}{x}}x + y$	[[_homogeneous, 'class A', _dAlembert]	✓
4814	$xy' = x + y + e^{\frac{y}{x}}x$	[[_homogeneous, 'class A', _dAlembert]	✓
4816	$xy' = (1 + \ln(x) - \ln(y))y$	[[_homogeneous, 'class A', _dAlembert]	✓
4818	$xy' = y - 2x \tanh\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A', _dAlembert]	✓
4857	$x^2y' + x^2 + xy + y^2 = 0$	[[_homogeneous, 'class A', _rational, _Riccati]	✓
4860	$x^2y' = (x + ay)y$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
4861	$x^2y' = (ax + by)y$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
4862	$x^2y' + x^2a + bxy + cy^2 = 0$	[[_homogeneous, 'class A', _rational, _Riccati]	✓
4938	$ax^2y' = x^2 + axy + b^2y^2$	[[_homogeneous, 'class A', _rational, _Riccati]	✓
4951	$x^3y' = (2x^2 + y^2)y$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
4965	$2x^3y' = (x^2 - y^2)y$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
4966	$2x^3y' = (3x^2 + y^2a)y$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
5015	$yy' + x = 0$	[_separable]	✓
5018	$yy' + ax + by = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓

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Table 2.5 first order ode homogA  
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#	ODE	CAS classification	Solved?
5032	$(x + y)y' + y = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
5033	$y'(x - y) = y$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
5034	$(x + y)y' + x - y = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
5035	$(x + y)y' = x - y$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
5039	$y'(x - y) = \left(e^{-\frac{x}{y}} + 1\right)y$	[[_homogeneous, 'class A', _dAlembert]]	✓
5044	$(2x + y)y' + x - 2y = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
5051	$(4x - y)y' + 2x - 5y = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
5060	$(x - 2y)y' = y$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
5061	$(x + 2y)y' + 2x - y = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
5062	$(x - 2y)y' + 2x + y = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
5081	$(4y + x)y' + 4x - y = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
5088	$(7x + 5y)y' + 10x + 8y = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
5097	$(ax + by)y' + x = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class C', _dAlem- bert]]	✓
5098	$(ax + by)y' + y = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓

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Table 2.5 first order ode homogA

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#	ODE	CAS classification	Solved?
5099	$(ax + by)y' + bx + ay = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
5100	$(ax + by)y' = bx + ay$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
5103	$xyy' + x^2 + y^2 = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
5106	$xyy' = x^2 - xy + y^2$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
5107	$xyy' + 2x^2 - 2xy - y^2 = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
5111	$xyy' + x^2 \operatorname{arccot}\left(\frac{y}{x}\right) - y^2 = 0$	[[_homogeneous, 'class A', _dAlembert]]	✓
5112	$xyy' + x^2 e^{-\frac{2y}{x}} - y^2 = 0$	[[_homogeneous, 'class A', _dAlembert]]	✓
5122	$x(x + y)y' + y^2 = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
5123	$x(x - y)y' + y^2 = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
5124	$x(x + y)y' = y^2 + x^2$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
5125	$x(x - y)y' + 2x^2 + 3xy - y^2 = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
5126	$x(x + y)y' - y(x + y) + x\sqrt{x^2 - y^2} = 0$	[[_homogeneous, 'class A', _dAlembert]]	✓
5128	$x(2x + y)y' = x^2 + xy - y^2$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
5129	$x(4x - y)y' + 4x^2 - 6xy - y^2 = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
5138	$x^2 + y^2 + 2xyy' = 0$	[[_homogeneous, 'class A', _exact, _rational, _Bernoulli]]	✓

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Table 2.5 first order ode homogA  
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#	ODE	CAS classification	Solved?
5139	$2xyy' = y^2 + x^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
5143	$x(x - 2y)y' + y^2 = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
5144	$x(x + 2y)y' + (2x - y)y = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
5145	$x(x - 2y)y' + (2x - y)y = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class B']]	✓
5150	$x(2x + 3y)y' = y^2$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
5151	$x(2x + 3y)y' + 3(x + y)^2 = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
5154	$axy y' = y^2 + x^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
5155	$axy y' + x^2 - y^2 = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
5157	$x(x - ay)y' = y(y - ax)$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
5173	$x^2(x - 2y)y' = 2x^3 - 4xy^2 + y^3$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class C'], _dAlem- bert]	✓
5176	$x^2(4x - 3y)y' = (6x^2 - 3xy + 2y^2)y$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class C'], _dAlem- bert]	✓
5181	$8x^3yy' + 3x^4 - 6y^2x^2 - y^4 = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5192	$xy + (y^2 + x^2)y' = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5193	$(y^2 + x^2)y' = xy$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5194	$(x^2 - y^2)y' = 2xy$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓

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Table 2.5 first order ode homogA

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#	ODE	CAS classification	Solved?
5195	$(x^2 - y^2) y' + x(x + 2y) = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]	✓
5196	$(y^2 + x^2) y' + 2x(2x + y) = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]	✓
5201	$(3x^2 - y^2) y' = 2xy$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5210	$(x^2 + 2xy - y^2) y' + x^2 - 2xy + y^2 = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5211	$(x + y)^2 y' = x^2 - 2xy + 5y^2$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5213	$(2x^2 + 4xy - y^2) y' = x^2 - 4xy - 2y^2$	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]	✓
5214	$(3x + y)^2 y' = 4(3x + 2y) y$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5219	$(2x^2 + 3y^2) y' + x(3x + y) = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5221	$(3x^2 + 2xy + 4y^2) y' + 2x^2 + 6xy + y^2 = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]	✓
5225	$(x^2 + y^2 a) y' = xy$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5226	$(x^2 + xy + y^2 a) y' = x^2 a + xy + y^2$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5227	$(x^2 a + 2xy - y^2 a) y' + x^2 - 2axy - y^2 = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5228	$(x^2 a + 2bxy + cy^2) y' + kx^2 + 2axy + by^2 = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]	✓
5234	$x(2x^2 + y^2) y' = (2x^2 + 3y^2) y$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5237	$x(x^2 - xy + y^2) y' + (y^2 + xy + x^2) y = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5238	$x(x^2 - xy - y^2) y' = (x^2 + xy - y^2) y$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5239	$x(x^2 + axy + y^2) y' = (x^2 + bxy + y^2) y$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓

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Table 2.5 first order ode homogA

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#	ODE	CAS classification	Solved?
5240	$x(x^2 - 2y^2) y' = (2x^2 - y^2) y$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5241	$x(x^2 + 2y^2) y' = (2x^2 + 3y^2) y$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5242	$2x(5x^2 + y^2) y' = x^2y - y^3$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5243	$x(x^2 + axy + 2y^2) y' = (ax + 2y) y^2$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5251	$x(x^2 - 6y^2) y' = 4(x^2 + 3y^2) y$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5267	$(x^3 - y^3) y' + x^2y = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5268	$(x^3 + y^3) y' + x^2(ax + 3y) = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]	✓
5272	$(3x^2 + y^2) yy' + x(x^2 + 3y^2) = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]	✓
5274	$2y^3y' = x^3 - xy^2$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5276	$(3x^2 + 2y^2) yy' + x^3 = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5277	$(5x^2 + 2y^2) yy' + x(x^2 + 5y^2) = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]	✓
5279	$(3x^3 + 6x^2y - 3xy^2 + 20y^3) y' + 4x^3 + 9x^2y + 6xy^2 - y^3 = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]	✓
5280	$(x^3 + ay^3) y' = x^2y$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5283	$x(2x^3 + y^3) y' = (2x^3 - x^2y + y^3) y$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5284	$x(2x^3 - y^3) y' = (x^3 - 2y^3) y$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5285	$x(x^3 + 3x^2y + y^3) y' = (3x^2 + y^2) y^2$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5286	$x(x^3 - 2y^3) y' = (2x^3 - y^3) y$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓

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Table 2.5 first order ode homogA  
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#	ODE	CAS classification	Solved?
5301	$(ax^3 + (ax + by)^3)yy' + x((ax + by)^3 + by^3) = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5313	$y'\sqrt{y} = \sqrt{x}$	[_separable]	✓
5315	$y'\sqrt{xy} + x - y = \sqrt{xy}$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5316	$(x - 2\sqrt{xy})y' = y$	[[_homogeneous, 'class A', _dAlembert]	✓
5319	$(x - \sqrt{y^2 + x^2})y' = y$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5321	$x(x + \sqrt{y^2 + x^2})y' + y\sqrt{y^2 + x^2} = 0$	[[_homogeneous, 'class G', _dAlembert]	✓
5322	$xy(x + \sqrt{x^2 - y^2})y' = xy^2 - (x^2 - y^2)^{3/2}$	[[_1st_order, __with_lin- ear_symmetries], _dAlem- bert]	✓
5328	$x(x - y \tan(\frac{y}{x}))y' + (x + y \tan(\frac{y}{x}))y = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
5428	$xy'^2 = y$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5429	$xy'^2 + x - 2y = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5434	$xy'^2 + xy' - y = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5438	$xy'^2 - yy' + ax = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5440	$xy'^2 - yy' + ay = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5445	$xy'^2 - (3x - y)y' + y = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
5448	$xy'^2 - 2yy' + ax = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5449	$xy'^2 - 2yy' + x + 2y = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5451	$xy'^2 - (2x + 3y)y' + 6y = 0$	[_quadrature]	✓
5453	$xy'^2 + ayy' + bx = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
5455	$xy'^2 + y(1 - x)y' - y^2 = 0$	[_quadrature]	✓

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Table 2.5 first order ode homogA  
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#	ODE	CAS classification	Solved?
5461	$3xy'^2 - 6yy' + x + 2y = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5465	$4xy'^2 + 2xy' - y = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5472	$x^2y'^2 = y^2$	[_separable]	✓
5473	$x^2y'^2 + x^2 - y^2 = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5474	$x^2y'^2 = (x - y)^2$	[_linear]	✓
5482	$x^2y'^2 - x(x - 2y)y' + y^2 = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5485	$x^2y'^2 + 3xyy' + 2y^2 = 0$	[_separable]	✓
5487	$x^2y'^2 + 4xyy' - 5y^2 = 0$	[_separable]	✓
5489	$x^2y'^2 - 5xyy' + 6y^2 = 0$	[_separable]	✓
5491	$x^2y'^2 + (2x + y)yy' + y^2 = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
5492	$x^2y'^2 + (2x - y)yy' + y^2 = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
5504	$ax^2y'^2 - 2axy' + a(-a + 1)x^2 + y^2 = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5505	$(-a^2 + 1)x^2y'^2 - 2xyy' - a^2x^2 + y^2 = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
5520	$yy'^2 = a^2x$	[[_homogeneous, 'class A', _dAlembert]	✓
5522	$yy'^2 + 2axy' - ay = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5523	$yy'^2 - 4a^2xy' + a^2y = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
5524	$yy'^2 + axy' + by = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5527	$yy'^2 + y'(x - y) - x = 0$	[_quadrature]	✓
5528	$yy'^2 - (x + y)y' + y = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5530	$yy'^2 + (x - y^2)y' - xy = 0$	[_quadrature]	✓
5532	$(x + y)y'^2 + 2xy' - y = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓

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Table 2.5 first order ode homogA

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#	ODE	CAS classification	Solved?
5539	$xyy'^2 + (y^2 + x^2)y' + xy = 0$	[_separable]	✓
5540	$xyy'^2 + (x^2 - y^2)y' - xy = 0$	[_separable]	✓
5541	$xyy'^2 - (x^2 - y^2)y' - xy = 0$	[_separable]	✓
5544	$xyy'^2 + (3x^2 - 2y^2)y' - 6xy = 0$	[_separable]	✓
5545	$x(x - 2y)y'^2 - 2xyy' - 2xy + y^2 = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5546	$x(x - 2y)y'^2 + 6xyy' - 2xy + y^2 = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
5552	$y^2y'^2 - (x + 1)yy' + x = 0$	[_quadrature]	✓
5553	$y^2y'^2 + 2xyy' + x^2 = 0$	[_separable]	✓
5555	$y^2y'^2 - 2xyy' - x^2 + 2y^2 = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5561	$((-a + 1)x^2 + y^2)y'^2 + 2axyy'$ $+ x^2 + (-a + 1)y^2 = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5562	$((-4a^2 + 1)x^2 + y^2)y'^2 - 8a^2xyy'$ $+ x^2 + (-4a^2 + 1)y^2 = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
5563	$((-a^2 + 1)x^2 + y^2)y'^2 + 2a^2xyy'$ $+ x^2 + (-a^2 + 1)y^2 = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5564	$(x + y)^2 y'^2 = y^2$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
5565	$(x + y)^2 y'^2 - (x^2 - xy - 2y^2)y' - (x - y)y = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
5568	$3y^2y'^2 - 2xyy' - x^2 + 4y^2 = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
5569	$4y^2y'^2 + 2(3x + 1)xyy' + 3x^3 = 0$	[_separable]	✓
5570	$(x^2 - 4y^2)y'^2 + 6xyy' - 4x^2 + y^2 = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
5573	$(-a^2 + 1)y^2y'^2 - 3a^2xyy' - a^2x^2 + y^2 = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5579	$4x^2y^2y'^2 = (y^2 + x^2)^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓

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Table 2.5 first order ode homogA

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#	ODE	CAS classification	Solved?
5635	$yy'^3 - 3xy' + 3y = 0$	[[_1st_order, __with_linear_symmetries], _dAlembert]	✓
5637	$(x + 2y)y'^3 + 3(x + y)y'^2 + (2x + y)y' = 0$	[_quadrature]	✓
5669	$\sqrt{(x^2a + y^2)(1 + y'^2)} - yy' - ax = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
5689	$y' = \frac{xy}{x^2 - y^2}$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
5694	$\frac{2x}{y^3} + \frac{(y^2 - 3x^2)y'}{y^4} = 0$	[[_homogeneous, 'class A'], _exact, _rational, _dAlembert]	✓
5705	$(y - x)y' + y = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
5706	$(2\sqrt{xy} - x)y' + y = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓
5708	$x - y \cos\left(\frac{y}{x}\right) + x \cos\left(\frac{y}{x}\right)y' = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓
5709	$(7x + 5y)y' + 10x + 8y = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
5734	$(7x + 5y)y' + 10x + 8y = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
5735	$x^2 + 2xy - y^2 + (y^2 + 2xy - x^2)y' = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
5736	$y^2 + (xy + x^2)y' = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
5753	$y'^2 + \frac{2xy'}{y} - 1 = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
5763	$y = xy' + x\sqrt{1 + y'^2}$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
5769	$y - 2xy' = xy'^2$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
5771	$2xy + (y^2 + x^2)y' = 0$	[[_homogeneous, 'class A'], _exact, _rational, _dAlembert]	✓

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Table 2.5 first order ode homogA

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#	ODE	CAS classification	Solved?
5772	$(x + \sqrt{y^2 - xy})y' - y = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5773	$x + y - y'(x - y) = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
5774	$xy' - y - x \sin\left(\frac{y}{x}\right) = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
5775	$2x^2y + y^3 + (xy^2 - 2x^3)y' = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5776	$y^2 + (x\sqrt{y^2 - x^2} - xy)y' = 0$	[[_homogeneous, 'class G', _dAlembert]	✓
5777	$\frac{y \cos\left(\frac{y}{x}\right)}{x} - \left(\frac{x \sin\left(\frac{y}{x}\right)}{y} + \cos\left(\frac{y}{x}\right)\right)y' = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
5778	$y + x \ln\left(\frac{y}{x}\right)y' - 2xy' = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
5779	$2ye^{\frac{x}{y}} + (y - 2xe^{\frac{x}{y}})y' = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
5780	$e^{\frac{y}{x}}x - y \sin\left(\frac{y}{x}\right) + x \sin\left(\frac{y}{x}\right)y' = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
5781	$y^2 + x^2 = 2xyy'$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
5782	$e^{\frac{y}{x}}x + y = xy'$	[[_homogeneous, 'class A', _dAlembert]	✓
5783	$y' - \frac{y}{x} + \csc\left(\frac{y}{x}\right) = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
5784	$xy - y^2 - x^2y' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
5865	$y' = 1 + \frac{y}{x} - \frac{y^2}{x^2}$	[[_homogeneous, 'class A', _rational, _Riccati]	✓
5874	$(x^2 - y^2)y' = 2xy$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5888	$xy' = e^{\frac{y}{x}}x + x + y$	[[_homogeneous, 'class A', _dAlembert]	✓
5893	$xy' - y - x \sin\left(\frac{y}{x}\right) = 0$	[[_homogeneous, 'class A', _dAlembert]	✓

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Table 2.5 first order ode homogA

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#	ODE	CAS classification	Solved?
5894	$(xy - x^2)y' + y^2 - 3xy - 2x^2 = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
5896	$x^2y' + x^2 + xy + y^2 = 0$	[[_homogeneous, 'class A', _rational, _Riccati]]	✓
5906	$xyy' + x^2 + y^2 = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
5907	$2xyy' + 3x^2 - y^2 = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
5908	$(2xy^3 - x^4)y' + 2x^3y - y^4 = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
5910	$(y^2 + x^2)y' + 2x(2x + y) = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlem- bert]]	✓
5912	$2y^3y' + xy^2 - x^3 = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
6027	$yy'^2 + 2xy' - y = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
6125	$x^2y' + y^2 - xy = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
6126	$yy' = -x + \sqrt{y^2 + x^2}$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
6127	$xy + (y^2 - x^2)y' = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
6128	$y^2 - xy + (xy + x^2)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
6130	$y' = \frac{y}{x} - \tan\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A', _dAlembert]]	✓
6224	$(2x + y)y' - x + 2y = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
6232	$3x^2y + x^3y' = 0$ <i>i.c.</i>	[_separable]]	✓
6425	$(x^3 + xy^2)y' = 2y^3$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
6436	$(2y - x)y' = 2x + y$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓

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Table 2.5 first order ode homogA

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#	ODE	CAS classification	Solved?
6437	$xy + y^2 + (x^2 - xy)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
6438	$x^3 + y^3 = 3xy^2y'$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
6439	$y - 3x + (4y + 3x)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
6440	$(x^3 + 3xy^2)y' = y^3 + 3x^2y$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
6458	$x^2 - 2xy + 5y^2 = (x^2 + 2xy + y^2)y'$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
6462	$y' = \frac{y^2 + 2xy}{x^2 + 2xy}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
6465	<i>i.c.</i> $x^2y' = y^2 - xyy'$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
6468	$x^2y' + y^2 = xyy'$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
6469	$2xyy' = x^2 - y^2$	[[_homogeneous, 'class A', _exact, _rational, _Bernoulli]]	✓
6570	$xy' = 2y$	[_separable]	✓
6571	$yy' + x = 0$	[_separable]	✓
6573	$2x^3y' = y(3x^2 + y^2)$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
6580	$4y + xy' = 0$	[_separable]	✓
6582	$y^2 - x^2y' = 0$	[_separable]	✓
6585	$x \sin\left(\frac{y}{x}\right) - y \cos\left(\frac{y}{x}\right) + x \cos\left(\frac{y}{x}\right)y' = 0$	[[_homogeneous, 'class A', _dAlembert]]	✓
6587	$y\sqrt{y^2 + x^2} - x(x + \sqrt{y^2 + x^2})y' = 0$	[[_homogeneous, 'class G', _dAlembert]]	✓
6591	$x + 2y + (2x + 3y)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓

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#	ODE	CAS classification	Solved?
6595	$y^2 - x^2 + xyy' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
6598	$x^3 + y^3 + 3xy^2y' = 0$	[[_homogeneous, 'class A', _exact, _rational, _Bernoulli]	✓
6600	$xy' + 2y = 0$ i.c.	[_separable]	✓
6601	$xyy' + x^2 + y^2 = 0$ i.c.	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
6616	$y(x - 2y) - x^2y' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
6617	$xyy' + x^2 + y^2 = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
6618	$x^2 + y^2 + 2xyy' = 0$	[[_homogeneous, 'class A', _exact, _rational, _Bernoulli]	✓
6667	$x^2y'^2 + xyy' - 6y^2 = 0$	[_separable]	✓
6669	$4x - 2yy' + xy'^2 = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
6671	$8yy'^2 - 2xy' + y = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
6676	$xy'^2 - yy' - y = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
6681	$yy'^2 - xy' + 3y = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
6684	$4x - 2yy' + xy'^2 = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
6685	$xy'^2 - 2yy' + x + 2y = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
6691	$(1 + y'^2)(x - y)^2 = (yy' + x)^2$	[[_homogeneous, 'class A', _dAlembert]	✓
7074	$\frac{1}{\sqrt{x}} + \frac{y'}{\sqrt{y}} = 0$	[_separable]	✓
7079	$y' = \frac{\sqrt{y}}{\sqrt{x}}$	[_separable]	✓
7093	$x - y + (x + y)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓

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#	ODE	CAS classification	Solved?
7096	$x^2y' + y^2 = xyy'$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
7097	$(y^2 + x^2)y' = 2xy$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
7098	$-y + xy' = x \tan\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A', _dAlembert]]	✓
7099	$xy' = y - e^{\frac{y}{x}}x$	[[_homogeneous, 'class A', _dAlembert]]	✓
7100	$-y + xy' = (x + y) \ln\left(\frac{x + y}{x}\right)$	[[_homogeneous, 'class A', _dAlembert]]	✓
7101	$xy' = y \cos\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A', _dAlembert]]	✓
7102	$y + \sqrt{xy} - xy' = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
7104	$x + y - y'(x - y) = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
7105	$x^2 + 2xy - y^2 + (y^2 + 2xy - x^2)y' = 0$ i.c.	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
7106	$-y + xy' = yy'$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
7107	$y^2 + (x^2 - xy)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
7108	$y^2 + xy + x^2 = x^2y'$	[[_homogeneous, 'class A', _rational, _Riccati]]	✓
7109	$\frac{1}{x^2 - xy + y^2} = \frac{y'}{2y^2 - xy}$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
7110	$y' = \frac{2xy}{3x^2 - y^2}$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
7111	$y' = \frac{x}{y} + \frac{y}{x}$ i.c.	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
7112	$xy' = y + \sqrt{y^2 - x^2}$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
7113	$(2\sqrt{xy} - x)y' + y = 0$	[[_homogeneous, 'class A', _dAlembert]]	✓

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#	ODE	CAS classification	Solved?
7114	$xy' = y \ln\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A', _dAlembert]	✓
7116	$(xy' + y)^2 = y^2 y'$	[[_homogeneous, 'class A', _dAlembert]	✓
7117	$x^2 y'^2 - 3xyy' + 2y^2 = 0$	[_separable]	✓
7119	$yy'^2 + 2xy' - y = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
7120	$y' + \frac{x+2y}{x} = 0$	[_linear]	✓
7121	$y' = \frac{y}{x+y}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
7122	$xy' = x + \frac{y}{2}$ i.c.	[_linear]	✓
7153	$2x + 4y + (2x - 2y)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
7181	$xy' - 2\sqrt{xy} = y$	[[_homogeneous, 'class A', _dAlembert]	✓
7185	$x^2 y' + y^2 - xy = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
7186	$x + y - y'(x - y) = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
7231	$y e^{xy} + x e^{xy} y' = 0$	[_separable]	✓
7236	$x^2 + y^2 - 2xyy' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
7237	$x^2 - y^2 + 2xyy' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
7240	$x + yy' + y - xy' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
7408	$yy' = x$	[_separable]	✓
7415	$y' = \frac{x+y}{x-y}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓

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#	ODE	CAS classification	Solved?
7416	$y' = \frac{y^2}{xy + x^2}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
7417	$y' = \frac{y^2 + xy + x^2}{x^2}$	[[_homogeneous, 'class A'], _rational, _Riccati]	✓
7418	$y' = \frac{y + x e^{-\frac{2y}{x}}}{x}$	[[_homogeneous, 'class A'], _dAlembert]	✓
7450	$xy' = 2y$	[_separable]	✓
7457	$y' = \frac{xy}{y^2 + x^2}$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
7458	$2xyy' = y^2 + x^2$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
7460	$y' = \frac{y^2}{xy - x^2}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
7483	$x^5y' + y^5 = 0$	[_separable]	✓
7530	$y + y \cos(xy) + (x + x \cos(xy))y' = 0$	[_separable]	✓
7547	$x^2 - 2y^2 + xyy' = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
7548	$x^2y' - 3xy - 2y^2 = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
7549	$x^2y' = 3(y^2 + x^2) \arctan\left(\frac{y}{x}\right) + xy$	[[_homogeneous, 'class A'], _dAlembert]	✓
7550	$x \sin\left(\frac{y}{x}\right) y' = y \sin\left(\frac{y}{x}\right) + x$	[[_homogeneous, 'class A'], _dAlembert]	✓
7551	$xy' = y + 2x e^{-\frac{y}{x}}$	[[_homogeneous, 'class A'], _dAlembert]	✓
7552	$x - y - (x + y)y' = 0$	[[_homogeneous, 'class A'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
7553	$xy' = 2x - 6y$	[_linear]	✓
7554	$xy' = \sqrt{y^2 + x^2}$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
7555	$x^2y' = y^2 + 2xy$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
7556	$x^3 + y^3 - xy^2y' = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓

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#	ODE	CAS classification	Solved?
7565	$y' = \sin\left(\frac{y}{x}\right) - \cos\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A', _dAlembert]	✓
7566	$e^{\frac{x}{y}} - \frac{yy'}{x} = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
7567	$y' = \frac{x^2 - xy}{y^2 \cos\left(\frac{x}{y}\right)}$	[[_homogeneous, 'class A', _dAlembert]	✓
7568	$y' = \frac{y \tan\left(\frac{y}{x}\right)}{x}$	[[_homogeneous, 'class A', _dAlembert]	✓
7593	$xy' + y = x$	[_linear]	✓
7597	$y' = \frac{y^2 + x^2}{x^2 - y^2}$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
7598	$y' = \frac{x + 2y}{2x - y}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
7599	$2xy + x^2y' = 0$	[_separable]	✓
7605	$y' = \frac{x + y}{x - y}$ i.c.	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
7606	$y' = \frac{x^2 + 2y^2}{x^2 - 2y^2}$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
8111	$x^2y'^2 - y^2 = 0$	[_separable]	✓
8112	$xy'^2 - (2x + 3y)y' + 6y = 0$	[_quadrature]	✓
8113	$x^2y'^2 - 5xyy' + 6y^2 = 0$	[_separable]	✓
8119	$(x + y)^2 y'^2 = y^2$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
8120	$yy'^2 + (x - y^2)y' - xy = 0$	[_quadrature]	✓
8122	$(4x - y)y'^2 + 6y'(x - y) + 2x - 5y = 0$	[_quadrature]	✓
8123	$(x - y)^2 y'^2 = y^2$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
8125	$(y^2 + x^2)^2 y'^2 = 4y^2x^2$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓

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Table 2.5 first order ode homogA

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#	ODE	CAS classification	Solved?
8126	$(x+y)^2 y'^2 + (2y^2 + xy - x^2) y' + (y-x)y = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
8127	$xy(y^2 + x^2) (-1 + y'^2) = y'(x^4 + y^2 x^2 + y^4)$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
8130	$4x - 2yy' + xy'^2 = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
8146	$4x - 2yy' + xy'^2 = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
8210	$6xy'^2 - (3x + 2y) y' + y = 0$	[_quadrature]	✓
8215	$y^2 y'^2 - (x+1) yy' + x = 0$	[_quadrature]	✓
8226	$x^2 y'^2 = (x-y)^2$	[_linear]	✓
8229	$xy'^2 + y(1-x) y' - y^2 = 0$	[_quadrature]	✓
8230	$yy'^2 - (x+y) y' + y = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
8377	$y' = \frac{2x-y}{4y+x}$ i.c.	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
8400	$y' = \frac{2y}{x}$ i.c.	[_separable]	✓
8401	$y' = \frac{2y}{x}$	[_separable]	✓
8410	$x^2 y' + y^2 = xyy'$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
8418	$y' = \frac{5x^2 - xy + y^2}{x^2}$	[[_homogeneous, 'class A', _rational, _Riccati]]	✓
8427	$yy' - y = x$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
8432	$y = xy'^2$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
8562	$y' = e^{-\frac{y}{x}}$	[[_homogeneous, 'class A', _dAlembert]]	✓
8711	$y'^2 = \frac{y}{x}$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓

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#	ODE	CAS classification	Solved?
9803	$xy' + a\sqrt{y^2 + x^2} - y = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
9806	$xy' - e^{\frac{y}{x}}x - y - x = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
9812	$xy' - y - x \sin\left(\frac{y}{x}\right) = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
9813	$xy' + x - y + x \cos\left(\frac{y}{x}\right) = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
9814	$xy' + x \tan\left(\frac{y}{x}\right) - y = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
9825	$x^2y' + y^2 + xy + x^2 = 0$	[[_homogeneous, 'class A', _rational, _Riccati]	✓
9826	$x^2y' - y^2 - xy = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
9827	$x^2y' - y^2 - xy - x^2 = 0$	[[_homogeneous, 'class A', _rational, _Riccati]	✓
9856	$3x^2y' - 7y^2 - 3xy - x^2 = 0$	[[_homogeneous, 'class A', _rational, _Riccati]	✓
9893	$yy' + ay + x = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
9900	$yy' - x e^{\frac{x}{y}} = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
9912	$(2y - x)y' - y - 2x = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
9921	$xyy' + x^2 + y^2 = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
9928	$(xy - x^2)y' + y^2 - 3xy - 2x^2 = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
9930	$2xyy' - y^2 + x^2a = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
9935	$x(2x + 3y)y' + 3(x + y)^2 = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
9951	$(2x^2y - x^3)y' + y^3 - 4xy^2 + 2x^3 = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class C'], _dAlem- bert]	✓

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#	ODE	CAS classification	Solved?
9960	$(y^2 + x^2)y' + 2x(2x + y) = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]	✓
9961	$(y^2 + x^2)y' - y^2 = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
9965	$(y^2 - x^2)y' + 2xy = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
9970	$x^2 + 2xy - y^2 + (y^2 + 2xy - x^2)y' = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
9973	$(4y^2 + x^2)y' - xy = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
9974	$(3x^2 + 2xy + 4y^2)y' + y^2 + 6xy + 2x^2 = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]	✓
9979	$(y^2a + 2bxy + cx^2)y' + by^2 + 2cxy + dx^2 = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]	✓
9984	$x(y^2 + xy - x^2)y' - y^3 + xy^2 + x^2y = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
9986	$2x(5x^2 + y^2)y' + y^3 - x^2y = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
9995	$(y^3 - x^3)y' - x^2y = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
9997	$2y^3y' + xy^2 = 0$	[_separable]	✓
9999	$(2y^3 + 5x^2y)y' + 5xy^2 + x^3 = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]	✓
10000	$(3x^3 + 6x^2y - 3xy^2 + 20y^3)y' - y^3 + 6xy^2 + 9x^2y + 4x^3 = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]	✓
10004	$(2xy^3 - x^4)y' + 2x^3y - y^4 = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
10014	$y(y^3 - 2x^3)y' + (2y^3 - x^3)x = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
10015	$y((bx + ay)^3 + bx^3)y' + x((bx + ay)^3 + ay^3) = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
10026	$(x + \sqrt{y^2 + x^2})y' - y = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓

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#	ODE	CAS classification	Solved?
10027	$(y\sqrt{y^2+x^2} + (y^2-x^2)\sin(\alpha) - 2xy\cos(\alpha))y' + x\sqrt{y^2+x^2} + 2xy\sin(\alpha) + (y^2-x^2)\cos(\alpha) = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
10038	$xy' \cot\left(\frac{y}{x}\right) + 2x \sin\left(\frac{y}{x}\right) - y \cot\left(\frac{y}{x}\right) = 0$	[[_homogeneous, 'class A']]	✓
10052	$(-y + xy') \cos\left(\frac{y}{x}\right)^2 + x = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
10053	$(y \sin\left(\frac{y}{x}\right) - x \cos\left(\frac{y}{x}\right))xy' - (x \cos\left(\frac{y}{x}\right) + y \sin\left(\frac{y}{x}\right))y = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
10095	$xy'^2 - y = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
10096	$xy'^2 + x - 2y = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
10099	$xy'^2 + xy' - y = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
10104	$xy'^2 + (y - 3x)y' + y = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
10106	$xy'^2 - yy' + ay = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
10107	$xy'^2 + 2yy' - x = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
10109	$xy'^2 - 2yy' - x = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
10110	$4x - 2yy' + xy'^2 = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
10111	$xy'^2 - 2yy' + x + 2y = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
10112	$xy'^2 + ayy' + bx = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
10126	$x^2y'^2 + 3xyy' + 2y^2 = 0$	[_separable]	✓
10128	$x^2y'^2 + 4xyy' - 5y^2 = 0$	[_separable]	✓
10131	$x^2y'^2 - y(y - 2x)y' + y^2 = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
10140	$(a^2 - 1)x^2y'^2 + 2xyy' - y^2 + a^2x^2 = 0$	[[_homogeneous, 'class A', _dAlembert]	✓

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Table 2.5 first order ode homogA

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#	ODE	CAS classification	Solved?
10141	$a x^2 y'^2 - 2axy y' + y^2 - a(a-1)x^2 = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
10151	$yy'^2 + 2xy' - y = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
10152	$yy'^2 + 2xy' - 9y = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
10153	$yy'^2 - 2xy' + y = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
10154	$yy'^2 - 4xy' + y = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
10155	$yy'^2 - 4a^2 xy' + a^2 y = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓
10156	$yy'^2 + axy' + by = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
10158	$yy'^2 - (y-x)y' - x = 0$	[_quadrature]	✓
10159	$(x+y)y'^2 + 2xy' - y = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
10162	$4yy'^2 + 2xy' - y = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
10168	$xyy'^2 + (y^2 + x^2)y' + xy = 0$	[_separable]	✓
10170	$(2xy - x^2)y'^2 + 2xyy' + 2xy - y^2 = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
10171	$(2xy - x^2)y'^2 - 6xyy' - y^2 + 2xy = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓
10181	$(y^2 - a^2 x^2)y'^2 + 2xyy' + (-a^2 + 1)x^2 = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓
10182	$((-a+1)x^2 + y^2)y'^2 + 2axy'+ x^2 + (-a+1)y^2 = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
10184	$3y^2 y'^2 - 2xyy' - x^2 + 4y^2 = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓
10186	$(-a^2 + 1)y^2 y'^2 - 2a^2 xy y' + y^2 - a^2 x^2 = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
10192	$xy^2 y'^2 - 2y^3 y' + 2xy^2 - x^3 = 0$	[_separable]	✓
10203	$(y^2 + x^2) f\left(\frac{x}{\sqrt{y^2 + x^2}}\right) (1 + y'^2)- (-y + xy')^2 = 0$	[[_homogeneous, 'class A']]	✓

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#	ODE	CAS classification	Solved?
10204	$(y^2 + x^2) f\left(\frac{y}{\sqrt{y^2 + x^2}}\right) (1 + y'^2) - (-y + xy')^2 = 0$	[[_homogeneous, 'class A']]	✓
10227	$2yy'^3 - yy'^2 + 2xy' - x = 0$	[_quadrature]	✓
10244	$x\left(\sqrt{1 + y'^2} + y'\right) - y = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
10245	$ax\sqrt{1 + y'^2} + xy' - y = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓
10246	$y\sqrt{1 + y'^2} - ayy' - ax = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
11682	$y' = f\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A'], _dAlembert]	✓
12475	$\frac{y^2 - 2x^2}{xy^2 - x^3} + \frac{(2y^2 - x^2)y'}{y^3 - x^2y} = 0$	[[_homogeneous, 'class A'], _exact, _rational, _dAlembert]	✓
12476	$\frac{1}{\sqrt{y^2 + x^2}} + \left(\frac{1}{y} - \frac{x}{y\sqrt{y^2 + x^2}}\right) y' = 0$	[[_homogeneous, 'class A'], _exact, _rational, _dAlembert]	✓
12477	$xy' + x + y = 0$	[_linear]	✓
12483	$e^{\frac{y}{x}}x + y - xy' = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓
12484	$2x^2y + 3y^3 - (x^3 + 2xy^2)y' = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
12485	$x^2y' + y^2 - xy = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
12486	$2x^2y + y^3 - x^3y' = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
12487	$y^3 + x^3y' = 0$	[_separable]	✓
12488	$x + y \cos\left(\frac{y}{x}\right) - x \cos\left(\frac{y}{x}\right) y' = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓
12506	$y^2(3y - 6xy') - x(y - 2xy') = 0$	[_separable]	✓
12508	$x^2y' + y^2 - xy = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
12510	$x + y - y'(x - y) = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓

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#	ODE	CAS classification	Solved?
12511	$x^2 + y^2 - 2xyy' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
12514	$3x^2 + 6xy + 3y^2 + (2x^2 + 3xy) y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
12518	$y^2 - x^2 + 2myx + (my^2 - mx^2 - 2xy) y' = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
12521	$x + yy' + y - xy' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
12529	$(y - x) y' + y = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
12532	$x \sin\left(\frac{y}{x}\right) - y \cos\left(\frac{y}{x}\right) + x \cos\left(\frac{y}{x}\right) y' = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
12545	$y^3 - 2x^2y + (2xy^2 - x^3) y' = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
12548	$1 + e^{\frac{y}{x}} + e^{\frac{x}{y}} \left(1 - \frac{x}{y}\right) y' = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
12551	$(2\sqrt{xy} - x) y' + y = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
12553	$xy'^2 - 2yy' - x = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
12559	$4xy'^2 + 2xy' - y = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
12560	$xy'^2 - 2yy' - x = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
12564	$x + y'y(2y'^2 + 3) = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
12565	$a^2yy'^2 - 2xy' + y = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
12566	$xy'^2 - 2yy' - x = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
12573	$(y^2 + x^2)(1 + y')^2 - 2(x + y)(1 + y')(yy' + x) + (yy' + x)^2 = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
12575	$a^2yy'^2 - 2xy' + y = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓

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#	ODE	CAS classification	Solved?
12580	$3xy'^2 - 6yy' + x + 2y = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
12589	$xy'^2 - 2yy' - x = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
12701	$x' = \frac{2x}{t}$	[_separable]	✓
12702	$x' = -\frac{t}{x}$	[_separable]	✓
12707	$2tx' = x$	[_separable]	✓
12746	$x' = \frac{4t^2 + 3x^2}{2xt}$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
12749	$y' = \frac{y^2 + 2ty}{t^2}$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
12776	$x' = \frac{2x}{3t} + \frac{2t}{x}$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
12779	$t^2y' + 2ty - y^2 = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
12782	$x^3 + 3tx^2x' = 0$	[_separable]	✓
12786	$x^2 - t^2x' = 0$	[_separable]	✓
12926	$x^2 + y^2 + 2xyy' = 0$	[[_homogeneous, 'class A', _exact, _rational, _Bernoulli]	✓
12948	$3x + 2y + (2x + y)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
12964	$y^2 + 2xy - x^2y' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
12974	$2xy + 3y^2 - (x^2 + 2xy)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
12975	$v^3 + (u^3 - uv^2)v' = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
12976	$x \tan\left(\frac{y}{x}\right) + y - xy' = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
12977	$(2s^2 + 2st + t^2)s' + s^2 + 2st - t^2 = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlem- bert]	✓

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#	ODE	CAS classification	Solved?
12978	$x^3 + y^2\sqrt{y^2 + x^2} - xy\sqrt{y^2 + x^2}y' = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
12979	$\sqrt{x+y} + \sqrt{x-y} + (\sqrt{x-y} - \sqrt{x+y})y' = 0$	[[_homogeneous, 'class C', _dAlembert]	✓
12983 i.c.	$x^2 + 3y^2 - 2xyy' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
12984 i.c.	$2x - 5y + (4x - y)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
12985 i.c.	$3x^2 + 9xy + 5y^2 - (6x^2 + 4xy)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
12986	$x + 2y + (2x - y)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
12987	$3x - y - (x + y)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
12988	$x^2 + 2y^2 + (4xy - y^2)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlem- bert]	✓
12989	$2x^2 + 2xy + y^2 + (x^2 + 2xy)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class B']]	✓
13031	$3x - 5y + (x + y)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
13034	$2x^2 + xy + y^2 + 2x^2y' = 0$	[[_homogeneous, 'class A', _rational, _Riccati]	✓
13037	$y' = \frac{2x - 7y}{3y - 8x}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
13040	$y' = \frac{2x^2 + y^2}{2xy - x^2}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
13041 i.c.	$x^2 + y^2 - 2xyy' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
13046 i.c.	$y' = \frac{2x + 7y}{2x - 2y}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓

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#	ODE	CAS classification	Solved?
13050	$x^2y' + xy = \frac{y^3}{x}$ i.c.	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
13401	$xy' = ky$	[_separable]	✓
13423	$xy + y^2 + x^2 - x^2y' = 0$	[[_homogeneous, 'class A', _rational, _Riccati]	✓
13424	$x' = \frac{x^2 + t\sqrt{x^2 + t^2}}{xt}$	[[_homogeneous, 'class A', _dAlembert]	✓
13533	$x(\ln(x) - \ln(y))y' - y = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
13534	$xyy'^2 - (y^2 + x^2)y' + xy = 0$	[_separable]	✓
13536	$x' = e^{\frac{x}{t}} + \frac{x}{t}$	[[_homogeneous, 'class A', _dAlembert]	✓
13553	$(x - y)y - x^2y' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
13565	$(x - y)y - x^2y' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
13571	$(y^2 - x^2)y' + 2xy = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
13832	$yy'^2 + 2xy' - y = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
13851	$y - x + (x + y)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
13852	$xy' + x + y = 0$	[_linear]	✓
13853	$x + y + (y - x)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
13855	$(7x + 5y)y' + 10x + 8y = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
13856	$2\sqrt{st} - s + ts' = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
13858	$xy^2y' = x^3 + y^3$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
13859	$x \cos\left(\frac{y}{x}\right)(xy' + y) = y \sin\left(\frac{y}{x}\right)(-y + xy')$	[[_homogeneous, 'class A', _dAlembert]	✓

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#	ODE	CAS classification	Solved?
13863	$\frac{y - xy'}{\sqrt{y^2 + x^2}} = m$	[[_homogeneous, 'class A', _dAlembert]	✓
13864	$\frac{yy' + x}{\sqrt{y^2 + x^2}} = m$	[[_homogeneous, 'class A', _exact, _dAlembert]	✓
13866	$yy' = -x + \sqrt{y^2 + x^2}$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
13887	$\frac{x}{(x+y)^2} + \frac{(2x+y)y'}{(x+y)^2} = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class C'], _dAlembert]	✓
13888	$\frac{1}{x^2} + \frac{3y^2}{x^4} = \frac{2yy'}{x^3}$	[[_homogeneous, 'class A', _exact, _rational, _Bernoulli]	✓
13889	$\frac{x^2y'}{(x-y)^2} - \frac{y^2}{(x-y)^2} = 0$	[_separable]	✓
13894	$y = yy'^2 + 2xy'$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
13900	$y' = \frac{2y}{x} - \sqrt{3}$	[_linear]	✓
13952	$\frac{x^2y'}{(x-y)^2} - \frac{y^2}{(x-y)^2} = 0$	[_separable]	✓
13956	$x \cos\left(\frac{y}{x}\right) y' = y \cos\left(\frac{y}{x}\right) - x$	[[_homogeneous, 'class A', _dAlembert]	✓
13994	$2xy + x^2y' = 0$	[_separable]	✓
14002	$2xy' - y = 0$	[_separable]	✓
14039	$y' = \frac{x}{y}$	[_separable]	✓
14047	$y' = \frac{2x-y}{3y+x}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
14050	$y' = \frac{xy}{y^2 + x^2}$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
14054	$y' = \frac{y}{y-x}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
14088	$y' = \frac{2x}{y}$	[_separable]	✓
	<i>i.c.</i>		

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Table 2.5 first order ode homogA

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#	ODE	CAS classification	Solved?
14096	$y' = -\frac{y(2x+y)}{x(x+2y)}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
14105	$x - yy' = 0$	[_separable]	✓
14140	$y' = \frac{y}{y-x}$ i.c.	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
14141	$y' = \frac{y}{y-x}$ i.c.	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
14142	$y' = \frac{y}{y-x}$ i.c.	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
14143	$y' = \frac{y}{y-x}$ i.c.	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
14145	$y' = \frac{xy}{y^2+x^2}$ i.c.	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
14285	$y' = \frac{t}{y}$	[_separable]	✓
14418	$y' = -\frac{y}{t} + 2$	[_linear]	✓
14426	$y' = -\frac{y}{t} + 2$ i.c.	[_linear]	✓
14659	$yy' = 2x$	[_separable]	✓
14721	$y' = \frac{x}{y}$	[_separable]	✓
14727	$y' = \frac{x}{y}$ i.c.	[_separable]	✓
14792	$x^2y' - xy = y^2$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
14793	$y' = \frac{x}{y} + \frac{y}{x}$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
14794	$\cos\left(\frac{y}{x}\right)\left(y' - \frac{y}{x}\right) = 1 + \sin\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A'], _dAlembert]	✓

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Table 2.5 first order ode homogA

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#	ODE	CAS classification	Solved?
14795	$y' = \frac{x-y}{x+y}$ i.c.	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
14797	$y' - \frac{3y}{x} = \frac{y^2}{x^2}$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
14800	$y' = \frac{y}{x} + \frac{x^2}{y^2}$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
14805	$(x+y)y' = y$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
14806	$(2xy + 2x^2)y' = x^2 + 2xy + 2y^2$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
14810	$-y + xy' = \sqrt{xy + x^2}$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
14818	$2xy + y^2 + (x^2 + 2xy)y' = 0$	[[_homogeneous, 'class A'], _exact, _rational, [_Abel, '2nd type', 'class B']]	✓
14822	$4x^3y + (x^4 - y^4)y' = 0$	[[_homogeneous, 'class A'], _exact, _rational, _dAlem- bert]	✓
14840	$xyy' - y^2 = \sqrt{x^4 + y^2x^2}$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
14844	$x^3 + y^3 + xy^2y' = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
14856	$xyy' = 2y^2 + 2x^2$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
14858	$y' = \frac{x+2y}{2x-y}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
14859	$y' = \frac{y}{x} + \tan\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A'], _dAlembert]	✓
14865	$xyy' = y^2 + xy + x^2$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
15465	$2x - y - yy' = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓

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Table 2.5 first order ode homogA  
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#	ODE	CAS classification	Solved?
15478	$y' = -\frac{x}{y}$	[_separable]	✓
15480	$y' = -\frac{2y}{x} - 3$	[_linear]	✓
15509	$y' = \frac{y^2 + 2xy}{x^2}$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
15526	$2x - 3y + (2y - 3x)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
15568	$y' = -\frac{t}{y}$	[_separable]	✓
i.c.			
15615	$y' = \sqrt{\frac{y}{t}}$	[[_homogeneous, 'class A', _dAlembert]	✓
i.c.			
15647	$ty' + y = t$	[_linear]	✓
15701	$\frac{t}{\sqrt{t^2 + y^2}} + \frac{yy'}{\sqrt{t^2 + y^2}} = 0$	[_separable]	✓
15702	$y \cos(ty) + t \cos(ty)y' = 0$	[_separable]	✓
15704	$3ty^2 + y^3y' = 0$	[_separable]	✓
15708	$e^{ty} + \frac{te^{ty}y'}{y} = 0$	[_separable]	✓
15711	$y^2 + 2tyy' = 0$	[_separable]	✓
15712	$\frac{3t^2}{y} - \frac{t^3y'}{y^2} = 0$	[_separable]	✓
15715	$2ty + (t^2 + y^2)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlem- bert]	✓
15718	$3t^2 + 3y^2 + 6tyy' = 0$	[[_homogeneous, 'class A', _exact, _rational, _Bernoulli]	✓
15727	$-\frac{y^2e^{\frac{y}{t}}}{t^2} + 1 + e^{\frac{y}{t}}\left(1 + \frac{y}{t}\right)y' = 0$	[[_homogeneous, 'class A', _exact, _dAlembert]	✓
15728	$2t \sin\left(\frac{y}{t}\right) - y \cos\left(\frac{y}{t}\right) + t \cos\left(\frac{y}{t}\right)y' = 0$	[[_homogeneous, 'class A', _exact, _dAlembert]	✓
15729	$2ty^2 + 2t^2yy' = 0$	[_separable]	✓
i.c.			
15741	$t^2y + t^3y' = 0$	[_separable]	✓

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#	ODE	CAS classification	Solved?
15744	$2ty + y^2 - t^2y' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
15752	$\frac{9t}{5} + 2y + (2t + 2y)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
15753	$2t + \frac{19y}{10} + \left(\frac{19t}{10} + 2y\right)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
15761	$y' - \frac{y}{t} = \frac{y^2}{t^2}$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
15764	$\cos\left(\frac{t}{y+t}\right) + e^{\frac{2y}{t}}y' = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
15765	$y \ln\left(\frac{t}{y}\right) + \frac{t^2y'}{y+t} = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
15767	$\frac{2}{t} + \frac{1}{y} + \frac{ty'}{y^2} = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
15770	$2t + (y - 3t)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class C'], _dAlem- bert]	✓
15771	$2y - 3t + ty' = 0$	[_linear]	✓
15772	$ty - y^2 + t(t - 3y)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
15773	$t^2 + ty + y^2 - ty'y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
15774	$t^3 + y^3 - ty^2y' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
15775	$y' = \frac{t + 4y}{4t + y}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
15777	$y + (y + t)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
15778	$2t^2 - 7ty + 5y^2 + ty'y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓

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Table 2.5 first order ode homogA  
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#	ODE	CAS classification	Solved?
15780	$y^2 = (ty - 4t^2) y'$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
15781	$y - (3\sqrt{ty} + t) y' = 0$	[[_homogeneous, 'class A', _dAlembert]]	✓
15782	$(t^2 - y^2) y' + y^2 + ty = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
15783	$tyy' - t^2 e^{-\frac{y}{t}} - y^2 = 0$	[[_homogeneous, 'class A', _dAlembert]]	✓
15784	$y' = \frac{1}{\frac{2ye^{-\frac{t}{y}}}{t} + \frac{t}{y}}$	[[_homogeneous, 'class A', _dAlembert]]	✓
15785	$t(\ln(t) - \ln(y)) y' = y$	[[_homogeneous, 'class A', _dAlembert]]	✓
15788 i.c.	$y' = \frac{4y^2 - t^2}{2ty}$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
15790 i.c.	$ty' - y - \sqrt{t^2 + y^2} = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
15791 i.c.	$t^3 + y^2 \sqrt{t^2 + y^2} - ty \sqrt{t^2 + y^2} y' = 0$	[[_homogeneous, 'class A', _dAlembert]]	✓
15792 i.c.	$y^3 - t^3 - ty^2 y' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
15793 i.c.	$ty^3 - (t^4 + y^4) y' = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
15810	$t^{1/3} y^{2/3} + t + (t^{2/3} y^{1/3} + y) y' = 0$	[[_homogeneous, 'class G', _rational]]	✓
15811 i.c.	$y' = \frac{y^2 - t^2}{ty}$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
15812 i.c.	$y \sin\left(\frac{t}{y}\right) - \left(t + t \sin\left(\frac{t}{y}\right)\right) y' = 0$	[[_homogeneous, 'class A', _dAlembert]]	✓
15822	$3t + (t - 4y) y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class C'], _dAlem- bert]]	✓
15823	$y - t + (y + t) y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓

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Table 2.5 first order ode homogA  
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#	ODE	CAS classification	Solved?
15825	$y^2 + (ty + t^2)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
15826	$r' = \frac{r^2 + t^2}{rt}$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
15827	$x' = \frac{5tx}{x^2 + t^2}$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
16341	$y' = \frac{x}{y}$	[_separable]	✓
16365	$y' = \frac{x + y}{x - y}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
16369	$y' = -\frac{y}{x}$	[_separable]	✓
16378	$xy' = 2x - y$ i.c.	[_linear]	✓
16413	$xy' = y + x \cos\left(\frac{y}{x}\right)^2$	[[_homogeneous, 'class A', _dAlembert]	✓
16415	$xy' = y(\ln(y) - \ln(x))$	[[_homogeneous, 'class A', _dAlembert]	✓
16416	$x^2y' = x^2 - xy + y^2$	[[_homogeneous, 'class A', _rational, _Riccati]	✓
16417	$xy' = y + \sqrt{y^2 - x^2}$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
16418	$2x^2y' = y^2 + x^2$	[[_homogeneous, 'class A', _rational, _Riccati]	✓
16419	$4x - 3y + (2y - 3x)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
16420	$y - x + (x + y)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
16453	$xy' + y = 2x$	[_linear]	✓
16457	$3xy^2y' - 2y^3 = x^3$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
16470	$x(2x^2 + y^2) + y(x^2 + 2y^2)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlem- bert]	✓

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Table 2.5 first order ode homogA

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#	ODE	CAS classification	Solved?
16480	$\frac{2x}{y^3} + \frac{(y^2 - 3x^2)y'}{y^4} = 0$ i.c.	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]	✓
16482	$3x^2y + y^3 + (x^3 + 3xy^2)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]	✓
16496	$x^2y'^2 + 3xyy' + 2y^2 = 0$	[_separable]	✓
16538	$(xy' + y)^2 = y^2y'$	[[_homogeneous, 'class A', _dAlembert]	✓
16541	$3xy'^2 - 6yy' + x + 2y = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
16546	$x^3 - 3xy^2 + (y^3 - 3x^2y)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]	✓
16547	$5xy - 4y^2 - 6x^2 + \left(y^2 - 8xy + \frac{5x^2}{2}\right)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]	✓
16554	$\frac{1}{x^2 - xy + y^2} = \frac{y'}{2y^2 - xy}$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
16560	$1 + e^{\frac{x}{y}} + e^{\frac{x}{y}}\left(1 - \frac{x}{y}\right)y' = 0$ i.c.	[[_homogeneous, 'class A', _exact, _dAlembert]	✓
16561	$x^2 + y^2 - xyy' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
17054	$y' = \frac{t - y}{2t + 5y}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
17062	$y' = -\frac{4t}{y}$ i.c.	[_separable]	✓
17072	$2x + 4y + (2x - 2y)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
17074	$2y + 2xy^2 + (2x + 2x^2y)y' = 0$	[_separable]	✓
17075	$y' = -\frac{4x + 2y}{2x + 3y}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓

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Table 2.5 first order ode homogA  
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#	ODE	CAS classification	Solved?
17076	$y' = -\frac{4x-2y}{2x-3y}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
17082	$\frac{x}{(y^2+x^2)^{3/2}} + \frac{yy'}{(y^2+x^2)^{3/2}} = 0$	[_separable]	✓
17083	$2x - y + (2y - x)y' = 0$ i.c.	[[_homogeneous, 'class A'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
17096	$3xy + y^2 + (xy + x^2)y' = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
17099	$\frac{(3x^3 - xy^2)y'}{y^3 + 3x^2y} = 1$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
17102	$xyy' = (x + y)^2$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
17103	$y' = \frac{4y-7x}{5x-y}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
17104	$xy' - 4\sqrt{y^2 - x^2} = y$	[[_homogeneous, 'class A'], _dAlembert]	✓
17105	$y' = \frac{y^4 + 2xy^3 - 3y^2x^2 - 2x^3y}{2y^2x^2 - 2x^3y - 2x^4}$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
17106	$(y + xe^{\frac{x}{y}})y' = ye^{\frac{x}{y}}$	[[_homogeneous, 'class A'], _dAlembert]	✓
17107	$xyy' = y^2 + x^2$ i.c.	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
17119	$(3x - y)x' + 9y - 2x = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
17125	$5xy^2 + 5y + (5x^2y + 5x)y' = 0$	[_separable]	✓
17129	$x' = \frac{2xy + x^2}{3y^2 + 2xy}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
17130	$4xyy' = 8x^2 + 5y^2$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
17573	$y' = \frac{2xy}{y^2 + x^2}$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓

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Table 2.5 first order ode homogA  
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#	ODE	CAS classification	Solved?
17574	$y' = \frac{y(1 + \ln(y) - \ln(x))}{x}$	[[_homogeneous, 'class A', _dAlembert]	✓
17575	$y^2 + x^2y' = xy y'$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
17576	$(x + y)y' = y - x$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
17577	$x - y \cos\left(\frac{y}{x}\right) + x \cos\left(\frac{y}{x}\right)y' = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
17602	$\frac{2x}{y^3} + \frac{(y^2 - 3x^2)y'}{y^4} = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlem- bert]	✓
17612	$yy'^2 + y'(x - y) - x = 0$	[_quadrature]	✓
17615	$xy'^2 + 2xy' - y = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
17624	$y = \frac{k(yy' + x)}{\sqrt{1 + y'^2}}$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
17638	$4x - 2yy' + xy'^2 = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
17639	$xy'^2 + 2xy' - y = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
17642	$x^2y'^2 - 2xyy' + 2xy = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
17733	$xy' = 2y$	[_separable]	✓
17740	$y' = \frac{xy}{y^2 + x^2}$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
17741	$2xyy' = y^2 + x^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
17743	$y' = \frac{y^2}{xy - x^2}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
17755	$x^5y' + y^5 = 0$	[_separable]	✓
17780	$x^2 - 2y^2 + xy y' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
17781	$x^2y' - 3xy - 2y^2 = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓

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Table 2.5 first order ode homogA

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#	ODE	CAS classification	Solved?
17782	$x^2 y' = 3(y^2 + x^2) \arctan\left(\frac{y}{x}\right) + xy$	[[_homogeneous, 'class A', _dAlembert]	✓
17783	$x \sin\left(\frac{y}{x}\right) y' = y \sin\left(\frac{y}{x}\right) + x$	[[_homogeneous, 'class A', _dAlembert]	✓
17784	$xy' = y + 2x e^{-\frac{y}{x}}$	[[_homogeneous, 'class A', _dAlembert]	✓
17785	$x - y - (x + y) y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
17786	$xy' = 2x + 3y$	[_linear]	✓
17787	$xy' = \sqrt{y^2 + x^2}$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
17788	$x^2 y' = y^2 + 2xy$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
17789	$x^3 + y^3 - xy^2 y' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
17803	$y + y \cos(xy) + (x + x \cos(xy)) y' = 0$	[_separable]	✓
17816	$\frac{x}{(y^2 + x^2)^{3/2}} + \frac{yy'}{(y^2 + x^2)^{3/2}} = 0$	[_separable]	✓
17819	$\frac{4y^2 - 2x^2}{4xy^2 - x^3} + \frac{(8y^2 - x^2) y'}{4y^3 - x^2 y} = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlem- bert]	✓
17820	$(3x^2 - y^2) y' - 2xy = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
17834	$(x + y) y' = y - x$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
17838	$xy' + y = \sqrt{xy} y'$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
17878	$xy' = \sqrt{y^2 + x^2}$		✓
17883	$xyy' = y^2 + x^2 y'$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
17894	$y^2 - 3xy - 2x^2 = (x^2 - xy) y'$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
17900	$x^2 y^4 + x^6 - x^3 y^3 y' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓

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Table 2.5 first order ode homogA  
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#	ODE	CAS classification	Solved?
17902	$y' = 1 + \frac{y}{x} - \frac{y^2}{x^2}$	[[_homogeneous, 'class A', _rational, _Riccati]	✓
17903	$y' = \frac{2xy e^{\frac{x^2}{y^2}}}{y^2 + y^2 e^{\frac{x^2}{y^2}} + 2x^2 e^{\frac{x^2}{y^2}}}$	[[_homogeneous, 'class A', _dAlembert]	✓
17907	$\frac{y-x}{(x+y)^3} - \frac{2xy'}{(x+y)^3} = 0$	[_linear]	✓
17910	$3x^2y - y^3 - (3xy^2 - x^3)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]	✓
17916	$3xy + y^2 + (3xy + x^2)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
17917	$x^2y' = y^2 + xy + x^2$	[[_homogeneous, 'class A', _rational, _Riccati]	✓
17922	$x^2y' - y^2 = 2xy$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
18178	$x' = \cos\left(\frac{x}{t}\right)$	[[_homogeneous, 'class A', _dAlembert]	✓
18179	$(t^2 - x^2)x' = xt$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
18215	$v' + \frac{2v}{u} = 3$	[_linear]	✓
18221	$y^2 = x(y-x)y'$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
18222	$2x^2y + y^3 - x^3y' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
18225	$yy' + x = my$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
18226	$\frac{2x}{y^3} + \left(\frac{1}{y^2} - \frac{3x^2}{y^4}\right)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]	✓
18251	$y' = 1 + \frac{2y}{x-y}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
18279	$y - 2xy' - yy'^2 = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓

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Table 2.5 first order ode homogA

*Continued from previous page*

#	ODE	CAS classification	Solved?
18316	$x(x - 2y)y' + x^2 + 2y^2 = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
18317	$5xyy' - y^2 - x^2 = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
18318	$(x^2 + 3xy - y^2)y' - 3y^2 = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
18319	$(x^2 + 2xy)y' - 3x^2 + 2xy - y^2 = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
18320	$5xyy' - 4x^2 - y^2 = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
18322	$3x^2y' + 2x^2 - 3y^2 = 0$	[[_homogeneous, 'class A', _rational, _Riccati]]	✓
18407	$x^2 + y^2 - 2xyy' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
18408	$y^2 + (xy + x^2)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
18409	$x^2y - (x^3 + y^3)y' = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
18410	$(4y + 3x)y' + y - 2x = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
18413	$x^2 - 4xy - 2y^2 + (y^2 - 4xy - 2x^2)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlem- bert]]	✓
18423	$x^2y - 2xy^2 - (x^3 - 3x^2y)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
18429	$y^3 - 2x^2y + (2xy^2 - x^3)y' = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
18443	$-y + xy' = \sqrt{y^2 + x^2}$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
18451	$xy' + \frac{y^2}{x} = y$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
18454	$x^2y - (x^3 + y^3)y' = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓

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Table 2.5 first order ode homogA  
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#	ODE	CAS classification	Solved?
18457	$yy' + x = m(-y + xy')$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
18465	$yy' = ax$	[_separable]	✓
18467	$x - y + (x + y)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
18469	$(y^2 - x^2)y' + 2xy = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
18474	$y^2 + x^2y' = xyy'$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
18479	$(x + 2y)y'^3 + 3y^2(x + y) + (2x + y)y' = 0$	[_quadrature]	✓
18481	$4y^2y'^2 + 2(3x + 1)xyy' + 3x^3 = 0$	[_separable]	✓
18486	$xy'^2 - 2yy' + ax = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
18491	$y^2 + xyy' - x^2y'^2 = 0$	[_separable]	✓
18492	$y = yy'^2 + 2xy'$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
18499	$x^2y'^2 - 2xyy' + 2y^2 - x^2 = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
18501	$xy^2(y'^2 + 2) = 2y^3y' + x^3$	[_separable]	✓
18507	$3y^2y'^2 - 2xyy' - x^2 + 4y^2 = 0$	[[_homogeneous, 'class A', _dAlembert]]	✓
18508	$(y^2 + x^2)(1 + y')^2 - 2(x + y)(1 + y')(yy' + x) + (yy' + x)^2 = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
18509	$(yy' + nx)^2 = (y^2 + nx^2)(1 + y'^2)$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
18513	$\left(y'^2 - \frac{1}{a^2 - x^2}\right)\left(y' - \sqrt{\frac{y}{x}}\right) = 0$	[[_homogeneous, 'class A', _dAlembert]]	✓
18515	$xyy'^2 + y'(3x^2 - 2y^2) - 6xy = 0$	[_separable]	✓
18526	$y'\sqrt{x} = \sqrt{y}$	[_separable]	✓
18533	$xy'^2 - 2yy' + ax = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓

## 2.3.4 first order ode homogC

Table 2.6: first order ode homogC

#	ODE	CAS classification	Solved?
120	$y' = \sqrt{x + y + 1}$	[[_homogeneous, 'class C'], _dAlembert]	✓
121	$y' = (4x + y)^2$	[[_homogeneous, 'class C'], _Riccati]	✓
122	$(x + y)y' = 1$	[[_homogeneous, 'class C'], [_Abel, '2nd type', 'class C'], _dAlembert]	✓
208	$y' = \sqrt{x + y}$	[[_homogeneous, 'class C'], _dAlembert]	✓
744	$y' = \sqrt{x + y + 1}$	[[_homogeneous, 'class C'], _dAlembert]	✓
745	$y' = (4x + y)^2$	[[_homogeneous, 'class C'], _Riccati]	✓
1619	$y' = \sqrt{x + y}$	[[_homogeneous, 'class C'], _dAlembert]	✓
3468	$y' = \frac{1}{x + 2y + 1}$	[[_homogeneous, 'class C'], [_Abel, '2nd type', 'class C'], _dAlembert]	✓
3672	<i>i.c.</i> $y' = (-y + 9x)^2$	[[_homogeneous, 'class C'], _Riccati]	✓
3673	$y' = (4x + y + 2)^2$	[[_homogeneous, 'class C'], _Riccati]	✓
4246	$y' = (x + y)^2$	[[_homogeneous, 'class C'], _Riccati]	✓
4650	$y' = (x + y)^2$	[[_homogeneous, 'class C'], _Riccati]	✓
4659	$y' = (3 + x - 4y)^2$	[[_homogeneous, 'class C'], _Riccati]	✓
4660	$y' = (1 + 4x + 9y)^2$	[[_homogeneous, 'class C'], _Riccati]	✓
5882	$y' = (x + y)^2$	[[_homogeneous, 'class C'], _Riccati]	✓
7090	$y' = (x + y + 1)^2$	[[_homogeneous, 'class C'], _Riccati]	✓
8720	$y' = \sqrt{1 + 6x + y}$	[[_homogeneous, 'class C'], _dAlembert]	✓
8721	$y' = (1 + 6x + y)^{1/3}$	[[_homogeneous, 'class C'], _dAlembert]	✓

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Table 2.6 first order ode homogC  
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#	ODE	CAS classification	Solved?
8722	$y' = (1 + 6x + y)^{1/4}$	[[_homogeneous, 'class C'], _dAlembert]	✓
8723	$y' = (a + bx + y)^4$	[[_homogeneous, 'class C'], _dAlembert]	✓
8724	$y' = (\pi + x + 7y)^{7/2}$	[[_homogeneous, 'class C'], _dAlembert]	✓
8725	$y' = (a + bx + cy)^6$	[[_homogeneous, 'class C'], _dAlembert]	✓
8806	$y' = (x + y)^4$	[[_homogeneous, 'class C'], _dAlembert]	✓
9709	$y' - (x + y)^2 = 0$	[[_homogeneous, 'class C'], _Riccati]	✓
12520	$(x + y)y' - 1 = 0$	[[_homogeneous, 'class C'], [_Abel, '2nd type', 'class C'], _dAlembert]	✓
12735	$x' = (4t - x)^2$	[[_homogeneous, 'class C'], _Riccati]	✓
12773	$x' = (t + x)^2$	[[_homogeneous, 'class C'], _Riccati]	✓
14788	$y' = \frac{1}{(3x + 3y + 2)^2}$	[[_homogeneous, 'class C'], _dAlembert]	✓
14838	$y' = \sqrt{x + y}$	[[_homogeneous, 'class C'], _dAlembert]	✓
14861	$1 - (x + 2y)y' = 0$	[[_homogeneous, 'class C'], [_Abel, '2nd type', 'class C'], _dAlembert]	✓
15633	$y' = (x + y - 4)^2$	[[_homogeneous, 'class C'], _Riccati]	✓
17790	$y' = (x + y)^2$	[[_homogeneous, 'class C'], _Riccati]	✓
18240	$y' = (x + y)^2$	[[_homogeneous, 'class C'], _Riccati]	✓

## 2.3.5 first order ode homogD

Table 2.7: first order ode homogD

#	ODE	CAS classification	Solved?
23	$y' = y - x + 1$	[[_linear, 'class A']]	✓
24	$y' = x + 1 - y$	[[_linear, 'class A']]	✓
41	$y' + 2xy = 0$	[_separable]	✓
43	$y' = y \sin(x)$	[_separable]	✓
44	$(x + 1)y' = 4y$	[_separable]	✓
49	$(-x^2 + 1)y' = 2y$	[_separable]	✓
59	$y' = ye^x$	[_separable]	✓
	i.c.		
62	$y' = 4x^3y - y$	[_separable]	✓
	i.c.		
64	$\tan(x)y' = y$	[_separable]	✓
	i.c.		
65	$-y + xy' = 2x^2y$	[_separable]	✓
	i.c.		
77	$xy' + 2y = 3x$	[_linear]	✓
	i.c.		
80	$3xy' + y = 12x$	[_linear]	✓
81	$-y + xy' = x$	[_linear]	✓
	i.c.		
83	$xy' + y = 3xy$	[_separable]	✓
	i.c.		
103	$y' + p(x)y = 0$	[_separable]	✓
105	$(x + y)y' = x - y$	[[_homogeneous, 'class A'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
106	$2xyy' = x^2 + 2y^2$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
108	$y'(x - y) = x + y$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
109	$x(x + y)y' = (x - y)y$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
110	$(x + 2y)y' = y$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓

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Table 2.7 first order ode homogD  
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#	ODE	CAS classification	Solved?
111	$xy^2y' = x^3 + y^3$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
112	$x^2y' = xy + x^2e^{\frac{y}{x}}$	[[_homogeneous, 'class A', _dAlembert]	✓
113	$x^2y' = xy + y^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
114	$xyy' = x^2 + 3y^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
115	$(x^2 - y^2)y' = 2xy$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
119	$x(x + y)y' + y(3x + y) = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
135	$2x + 3y + (3x + 2y)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
136	$4x - y + (6y - x)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
137	$3x^2 + 2y^2 + (4xy + 6y^2)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlem- bert]	✓
146	$\frac{2x^{5/2} - 3y^{5/3}}{2x^{5/2}y^{2/3}} + \frac{(3y^{5/3} - 2x^{5/2})y'}{3x^{3/2}y^{5/3}} = 0$	[[_1st_order, _with_lin- ear_symmetries], _exact, _rational]	✓
166	$y' = -\frac{y(2x^3 - y^3)}{x(2y^3 - x^3)}$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
181	$xy + y^2 - x^2y' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
183	$3y + x^4y' = 2xy$	[_separable]	✓
186	$2xy + x^2y' = y^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
189	$x^2y' = xy + 3y^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
190	$6xy^3 + 2y^4 + (9y^2x^2 + 8xy^3)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class B']]	✓
192	$x^3y' = x^2y - y^3$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓

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Table 2.7 first order ode homogD

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#	ODE	CAS classification	Solved?
196	$2x^2y - x^3y' = y^3$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
211	$y' = -\frac{3x^2 + 2y^2}{4xy}$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
212	$y' = \frac{3y + x}{y - 3x}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
665	$y' = y - x + 1$	[[_linear, 'class A']]	✓
666	$y' = x + 1 - y$	[[_linear, 'class A']]	✓
677	$y' + 2xy = 0$	[_separable]	✓
679	$y' = y \sin(x)$	[_separable]	✓
680	$(x + 1)y' = 4y$	[_separable]	✓
685	$(-x^2 + 1)y' = 2y$	[_separable]	✓
694	$y' = ye^x$	[_separable]	✓
	<i>i.c.</i>		
697	$y' = 4x^3y - y$	[_separable]	✓
	<i>i.c.</i>		
699	$\tan(x)y' = y$	[_separable]	✓
	<i>i.c.</i>		
700	$-y + xy' = 2x^2y$	[_separable]	✓
	<i>i.c.</i>		
708	$xy' + 2y = 3x$	[_linear]	✓
	<i>i.c.</i>		
711	$3xy' + y = 12x$	[_linear]	✓
712	$-y + xy' = x$	[_linear]	✓
	<i>i.c.</i>		
714	$xy' + y = 3xy$	[_separable]	✓
	<i>i.c.</i>		
729	$(x + y)y' = x - y$	[[_homogeneous, 'class A'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
730	$2xyy' = y^2 + x^2$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
732	$y'(x - y) = x + y$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓

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Table 2.7 first order ode homogD  
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#	ODE	CAS classification	Solved?
733	$x(x+y)y' = (x-y)y$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
734	$(x+2y)y' = y$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
735	$xy^2y' = x^3 + y^3$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
736	$x^2y' = xy + x^2e^{\frac{y}{x}}$	[[_homogeneous, 'class A', _dAlembert]	✓
737	$x^2y' = xy + y^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
738	$xyy' = x^2 + 3y^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
739	$(x^2 - y^2)y' = 2xy$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
743	$x(x+y)y' + y(3x+y) = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
746	$(x+y)y' = 0$	[_quadrature]	✓
759	$2x + 3y + (3x + 2y)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
760	$4x - y + (6y - x)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
761	$3x^2 + 2y^2 + (4xy + 6y^2)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlem- bert]	✓
770	$\frac{2x^{5/2} - 3y^{5/3}}{2x^{5/2}y^{2/3}} + \frac{(3y^{5/3} - 2x^{5/2})y'}{3x^{3/2}y^{5/3}} = 0$	[[_1st_order, _with_lin- ear_symmetries], _exact, _rational]	✓
773	$xy + y^2 - x^2y' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
775	$3y + x^4y' = 2xy$	[_separable]	✓
778	$2xy + x^2y' = y^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
781	$x^2y' = xy + 3y^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓

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Table 2.7 first order ode homogD

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#	ODE	CAS classification	Solved?
782	$6xy^3 + 2y^4 + (9y^2x^2 + 8xy^3) y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class B']]]	✓
784	$x^3y' = x^2y - y^3$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
788	$2x^2y - x^3y' = y^3$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
803	$y' = \frac{-3x^2 - 2y^2}{4xy}$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
804	$y' = \frac{3y + x}{y - 3x}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
1107	$-y + ty' = t^2e^{-t}$	[_linear]	✓
1158	$y' = \frac{y^2 + xy + x^2}{x^2}$	[[_homogeneous, 'class A', _rational, _Riccati]]	✓
1159	$y' = \frac{x^2 + 3y^2}{2xy}$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
1160	$y' = \frac{4y - 3x}{2x - y}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
1161	$y' = -\frac{4x + 3y}{2x + y}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
1162	$y' = \frac{3y + x}{x - y}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
1163	$x^2 + 3xy + y^2 - x^2y' = 0$	[[_homogeneous, 'class A', _rational, _Riccati]]	✓
1164	$y' = \frac{x^2 - 3y^2}{2xy}$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
1165	$y' = \frac{3y^2 - x^2}{2xy}$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
1167	$t(-4 + t)y' + y = 0$ i.c.	[_separable]	✓
1174	$y' = -\frac{4t}{y}$	[_separable]	✓

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Table 2.7 first order ode homogD

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#	ODE	CAS classification	Solved?
1194	$2x + 4y + (2x - 2y)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
1196	$2y + 2xy^2 + (2x + 2x^2y)y' = 0$	[_separable]	✓
1197	$y' = \frac{-ax - by}{bx + cy}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
1198	$y' = \frac{-ax + by}{bx - cy}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
1204	$\frac{x}{(y^2 + x^2)^{3/2}} + \frac{yy'}{(y^2 + x^2)^{3/2}} = 0$	[_separable]	✓
1205	$2x - y + (2y - x)y' = 0$ i.c.	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
1210	$2xy + 3x^2y + y^3 + (y^2 + x^2)y' = 0$	[[_homogeneous, 'class D', _rational]]	✓
1217	$3xy + y^2 + (xy + x^2)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
1231	$x + y + (x + 2y)y' = 0$ i.c.	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
1232	$(1 + e^x)y' = y - ye^x$	[_separable]	✓
1243	$xy' = e^{\frac{y}{x}}x + y$	[[_homogeneous, 'class A', _dAlembert]]	✓
1245	$3t + 2y = -ty'$	[_linear]	✓
1246	$y' = \frac{x + y}{x - y}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
1247	$2xy + 3y^2 - (x^2 + 2xy)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
1519	$y' = 2y$	[_quadrature]	✓
1537	$y' + ay = 0$	[_quadrature]	✓
1538	$y' + 3x^2y = 0$	[_separable]	✓
1539	$xy' + y \ln(x) = 0$	[_separable]	✓

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Table 2.7 first order ode homogD

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#	ODE	CAS classification	Solved?
1540	$xy' + 3y = 0$	[_separable]	✓
1541	$x^2y' + y = 0$	[_separable]	✓
1542	$y' + \frac{(x+1)y}{x} = 0$	[_separable]	✓
	i.c.		
1543	$xy' + \left(1 + \frac{1}{\ln(x)}\right)y = 0$	[_separable]	✓
	i.c.		
1544	$xy' + (1 + x \cot(x))y = 0$	[_separable]	✓
	i.c.		
1545	$y' - \frac{2xy}{x^2+1} = 0$	[_separable]	✓
	i.c.		
1546	$y' + \frac{ky}{x} = 0$	[_separable]	✓
	i.c.		
1547	$y' + \tan(kx)y = 0$	[_separable]	✓
	i.c.		
1584	$(x^2+1)y' + xy = 0$	[_separable]	✓
1597	$yy' + x = 0$	[_separable]	✓
	i.c.		
1599	$(x+1)(-2+x)y' + y = 0$	[_separable]	✓
	i.c.		
1613	$y' = 2xy$	[_separable]	✓
1615	$y' = \frac{2x+3y}{x-4y}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
1626	$y' = \frac{y + xe^{-\frac{y}{x}}}{x}$	[[_homogeneous, 'class A', _dAlembert]]	✓
1628	$x^2y' = y^2 + xy - x^2$	[[_homogeneous, 'class A', _rational, _Riccati]]	✓
	i.c.		
1642	$y' = \frac{x+y}{x}$	[_linear]	✓
1643	$y' = \frac{y^2 + 2xy}{x^2}$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
1644	$xy^3y' = y^4 + x^4$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
1645	$y' = \frac{y}{x} + \sec\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A', _dAlembert]]	✓

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#	ODE	CAS classification	Solved?
1646	$x^2y' = y^2 + xy + x^2$	[[_homogeneous, 'class A', _rational, _Riccati]	✓
1647	$xyy' = x^2 + 2y^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
1648	$y' = \frac{2y^2 + x^2e^{-\frac{y^2}{x^2}}}{2xy}$	[[_homogeneous, 'class A']]	✓
1649	$y' = \frac{xy + y^2}{x^2}$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
1650	$y' = \frac{x^3 + y^3}{xy^2}$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
1651	$xyy' + x^2 + y^2 = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
1652	$y' = \frac{y^2 - 3xy - 5x^2}{x^2}$	[[_homogeneous, 'class A', _rational, _Riccati]	✓
1653	$x^2y' = 2x^2 + y^2 + 4xy$	[[_homogeneous, 'class A', _rational, _Riccati]	✓
1654	$xyy' = 3x^2 + 4y^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
1655	$y' = \frac{x + y}{x - y}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
1657	$y' = \frac{y^3 + 2xy^2 + x^2y + x^3}{x(x + y)^2}$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
1658	$y' = \frac{x + 2y}{2x + y}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
1659	$y' = \frac{y}{y - 2x}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
1660	$y' = \frac{xy^2 + 2y^3}{x^3 + x^2y + xy^2}$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
1661	$y' = \frac{x^3 + x^2y + 3y^3}{x^3 + 3xy^2}$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
1662	$x^2y' = y^2 + xy - 4x^2$	[[_homogeneous, 'class A', _rational, _Riccati]	✓

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#	ODE	CAS classification	Solved?
1663	$xyy' = x^2 - xy + y^2$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
1664	$y' = \frac{2y^2 - xy + 2x^2}{xy + 2x^2}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
1665	$y' = \frac{y^2 + xy + x^2}{xy}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
1680	$6y^2x^2 + 4x^3yy' = 0$	[_separable]	✓
1682	$14x^2y^3 + 21x^2y^2y' = 0$	[_quadrature]	✓
1684	$(x + y)^2 + (x + y)^2 y' = 0$	[_quadrature]	✓
1685	$4x + 7y + (4y + 3x)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
1687	$2x + y + (2x + 2y)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
1692	$\frac{x}{(y^2 + x^2)^{3/2}} + \frac{yy'}{(y^2 + x^2)^{3/2}} = 0$	[_separable]	✓
1702	$7x + 4y + (4x + 3y)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
1707	$x^2 + y^2 + 2xyy' = 0$	[[_homogeneous, 'class A', _exact, _rational, _Bernoulli]]	✓
1712	$-y^2 + x^2y' = 0$	[_separable]	✓
1713	$y - xy' = 0$	[_separable]	✓
1714	$3x^2y + 2x^3y' = 0$	[_separable]	✓
1715	$2y^3 + 3y^2y' = 0$	[_quadrature]	✓
1718	$27xy^2 + 8y^3 + (18x^2y + 12xy^2)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
1722	$x^2y + 4xy + 2y + (x^2 + x)y' = 0$	[_separable]	✓
1723	$-y + (x^4 - x)y' = 0$	[_separable]	✓
1731	$x^4y^4 + x^5y^3y' = 0$	[_separable]	✓

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#	ODE	CAS classification	Solved?
1734	$3xy + 2y^2 + y + (x^2 + 2xy + x + 2y)y' = 0$	[[_homogeneous, 'class D'], _rational, [_Abel, '2nd type', 'class B']]	✓
2299	$\cos(t)y + y' = 0$	[_separable]	✓
2300	$\sqrt{t} \sin(t)y + y' = 0$	[_separable]	✓
2306	$\sqrt{t^2 + 1}y + y' = 0$ i.c.	[_separable]	✓
2307	$\sqrt{t^2 + 1}y e^{-t} + y' = 0$	[_separable]	✓
2329	$3ty' = \cos(t)y$ i.c.	[_separable]	✓
2331	$2tyy' = 3y^2 - t^2$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
2333	$y' = \frac{y+t}{t-y}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
2334	$e^{\frac{t}{y}}(-t+y)y' + y(1 + e^{\frac{t}{y}}) = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓
2342	$2ty^3 + 3t^2y^2y' = 0$ i.c.	[_separable]	✓
2346	$3ty + y^2 + (t^2 + ty)y' = 0$ i.c.	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
2472	$\cos(t)y + y' = 0$	[_separable]	✓
2473	$\sqrt{t} \sin(t)y + y' = 0$	[_separable]	✓
2479	$\sqrt{t^2 + 1}y + y' = 0$ i.c.	[_separable]	✓
2481	$\sqrt{t^2 + 1}y e^{-t} + y' = 0$ i.c.	[_separable]	✓
2500	$3ty' = \cos(t)y$ i.c.	[_separable]	✓
2501	$y' = \frac{2y}{t} + \frac{y^2}{t^2}$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
2503	$2tyy' = 3y^2 - t^2$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
2505	$y' = \frac{y+t}{t-y}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓

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#	ODE	CAS classification	Solved?
2506	$e^{\frac{t}{y}}(-t+y)y' + y(1 + e^{\frac{t}{y}}) = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
2514	$2ty^3 + 3t^2y^2y' = 0$ i.c.	[_separable]	✓
2518	$3ty + y^2 + (t^2 + ty)y' = 0$ i.c.	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
2841	$(x^2 + 1)y' + xy = 0$	[_separable]	✓
2842	$xy^2 + x + (y - x^2y)y' = 0$	[_separable]	✓
2844	$xy' + y = 0$	[_separable]	✓
2845	$y' = 2xy$	[_separable]	✓
2851	$y' = \frac{x}{y}$	[_separable]	✓
2857	$xy + \sqrt{x^2 + 1}y' = 0$	[_separable]	✓
2858	$y = x^2y' + xy$	[_separable]	✓
2861	$y' = \frac{y}{x}$ i.c.	[_separable]	✓
2862	$xy' + 2y = 0$ i.c.	[_separable]	✓
2864	$y^2 + x^2y' = 0$ i.c.	[_separable]	✓
2871	$x + y = xy'$	[_linear]	✓
2872	$(x + y)y' + x = y$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
2874	$y' = \frac{2x - y}{4y + x}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
2876	$yy' + x = 2y$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
2878	$y^2 + x^2 = xyy'$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
2879	$(xy - x^2)y' - y^2 = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓

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#	ODE	CAS classification	Solved?
2881	$x + y + y'(x - y) = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
2882	$y(x^2 - xy + y^2) + xy'(y^2 + xy + x^2) = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
2883	$xy' - y - x \sin\left(\frac{y}{x}\right) = 0$	[[_homogeneous, 'class A', _dAlembert]]	✓
2884	$y' = \frac{y}{x} + \cosh\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A', _dAlembert]]	✓
2885	$y^2 + x^2 = 2xyy'$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
2886	$\left(\frac{x}{y} + \frac{y}{x}\right)y' + 1 = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
2887	$e^{\frac{y}{x}}x + y = xy'$	[[_homogeneous, 'class A', _dAlembert]]	✓
2888	$y' = \frac{x + y}{x - y}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
2889	$y' = \frac{y}{x} + \tan\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A', _dAlembert]]	✓
2890	$(3xy - 2x^2)y' = 2y^2 - xy$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
2892	$y^2(yy' - x) + x^3 = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
2893	$y' = \frac{y}{x} + \tanh\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A', _dAlembert]]	✓
2914	$x + y + (x - 2y)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
2915	$3x + y + (3y + x)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
2919	$2xy - (y^2 + x^2)y' = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
2921	$\frac{2xy - 1}{y} + \frac{(3y + x)y'}{y^2} = 0$	[[_homogeneous, 'class D', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓

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#	ODE	CAS classification	Solved?
2925	$\frac{2}{y} - \frac{y}{x^2} + \left(\frac{1}{x} - \frac{2x}{y^2}\right) y' = 0$	[_separable]	✓
2926	$\frac{xy+1}{y} + \frac{(2y-x)y'}{y^2} = 0$	[[_homogeneous, 'class D', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
2934	$\frac{x^2+3y^2}{x(3x^2+4y^2)} + \frac{(2x^2+y^2)y'}{y(3x^2+4y^2)} = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlem- bert]]	✓
2935	$\frac{x^2-y^2}{x(2x^2+y^2)} + \frac{(x^2+2y^2)y'}{y(2x^2+y^2)} = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlem- bert]]	✓
2937	$xy' + \ln(x) - y = 0$	[_linear]	✓
2943	$y(y-x^2) + x^3y' = 0$	[[_homogeneous, 'class D', _rational, _Bernoulli]]	✓
2951	$2x^2yy' + x^4e^x - 2xy^2 = 0$	[[_homogeneous, 'class D', _Bernoulli]]	✓
2953	<i>i.c.</i> $y(x^2-1) + x(x^2+1)y' = 0$	[_separable]	✓
2964	$y + (2x-3y)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
2986	$xyy' = x^2 - y^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
2989	$y^2 + x^2y' = xy$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
3005	$y^2 + (xy+x^2)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
3006	$2x+y-(x-2y)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
3014	$x^2y - (x^3+y^3)y' = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
3019	$y + (-2y+3x)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
3020	$r' = r \cot(\theta)$	[_separable]	✓

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#	ODE	CAS classification	Solved?
3021	$(4y + 3x)y' + 2x + y = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
3026	$1 + e^{\frac{x}{y}} + e^{\frac{x}{y}} \left(1 - \frac{x}{y}\right) y' = 0$	[[_homogeneous, 'class A', _exact, _dAlembert]	✓
3036	$y \cos\left(\frac{x}{y}\right) - \left(y + x \cos\left(\frac{x}{y}\right)\right) y' = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
3041	$xy - y^2 - x^2 y' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
3045	$(-2x^2 - 3xy)y' + y^2 = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
3049	$y^2 + x^2 = 2xyy'$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
3050	$3xy + (3x^2 + y^2)y' = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
3056	$y^3 + 2x^2y + (-3x^3 - 2xy^2)y' = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
3058	$y' - y = 0$	[_quadrature]	✓
3285	$4y^2 = x^2 y'^2$	[_separable]	✓
3291	$y^2 y'^2 + xyy' - 2x^2 = 0$	[_separable]	✓
3293	$y'^3 + (x + y - 2xy)y'^2 - 2y'xy(x + y) = 0$	[_quadrature]	✓
3294	$yy'^2 + (y^2 - x^3 - xy^2)y' - xy(y^2 + x^2) = 0$	[_quadrature]	✓
3334	$y^2 - 2xyy' + y'^2(x^2 - 1) = 0$	[_separable]	✓
3403	$y' = 2$	[_quadrature]	✓
3409	$y' = xy$	[_separable]	✓
3414	$y'^2 - y^2 = 0$	[_quadrature]	✓
3415	$y'^2 - 3y' + 2 = 0$	[_quadrature]	✓
3431	$y' = \frac{y}{t}$	[_separable]	✓
3432	$y' = -\frac{t}{y}$	[_separable]	✓
3438	$y' = (t^2 + 1)y$	[_separable]	✓
3439	$y' = -y$	[_quadrature]	✓

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#	ODE	CAS classification	Solved?
3447	$y' = y$ i.c.	[_quadrature]	✓
3448	$y' = 2y$ i.c.	[_quadrature]	✓
3449	$ty' = y + t^3$ i.c.	[_linear]	✓
3451	$y' = \frac{2y}{t+1}$ i.c.	[_separable]	✓
3458	$\frac{y'}{\tan(x)} - \frac{y}{x^2+1} = 0$	[_separable]	✓
3461	$2xy' + 3x + y = 0$	[_linear]	✓
3467	$(y-x)y' + 2x + 3y = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
3474	$y' - \frac{y}{x} = 1$ i.c.	[_linear]	✓
3476	$y' - \frac{y^2}{x^2} = \frac{1}{4}$ i.c.	[[_homogeneous, 'class A'], _rational, _Riccati]	✓
3477	$y' - \frac{y^2}{x^2} = \frac{1}{4}$	[[_homogeneous, 'class A'], _rational, _Riccati]	✓
3515	$y' = 2xy$	[_separable]	✓
3518	$y' = \frac{y}{x \ln(x)}$	[_separable]	✓
3519	$y - (-2+x)y' = 0$	[_separable]	✓
3541	$y' - \frac{y}{x} = 2x^2 \ln(x)$	[_linear]	✓
3544	$(3x-y)y' = 3y$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
3545	$y' = \frac{(x+y)^2}{2x^2}$	[[_homogeneous, 'class A'], _rational, _Riccati]	✓
3546	$\sin\left(\frac{y}{x}\right)(-y+xy') = x \cos\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A'], _dAlembert]	✓
3549	$x(x^2-y^2) - x(y^2+x^2)y' = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
3551	$y' = \frac{y^2+2xy-2x^2}{x^2-xy+y^2}$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓

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#	ODE	CAS classification	Solved?
3552	$2xyy' - 2y^2 - x^2e^{-\frac{y^2}{x^2}} = 0$	[[_homogeneous, 'class A']]	✓
3553	$x^2y' = y^2 + 3xy + x^2$	[[_homogeneous, 'class A'], _rational, _Riccati]	✓
3555	$2x(2x + y)y' = y(4x - y)$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
3556	$xy' = x \tan\left(\frac{y}{x}\right) + y$	[[_homogeneous, 'class A'], _dAlembert]	✓
3562	$y' = \frac{y}{2x}$	[_separable]	✓
3593	$y' = 2xy$	[_separable]	✓
3596	$y' = \frac{y}{x \ln(x)}$	[_separable]	✓
3597	$y - (x - 1)y' = 0$	[_separable]	✓
3635	$-y + xy' = x^2 \ln(x)$	[_linear]	✓
3636	$y' = \frac{y^2 + xy + x^2}{x^2}$	[[_homogeneous, 'class A'], _rational, _Riccati]	✓
3637	$(3x - y)y' = 3y$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
3638	$y' = \frac{(x + y)^2}{2x^2}$	[[_homogeneous, 'class A'], _rational, _Riccati]	✓
3639	$\sin\left(\frac{y}{x}\right)(-y + xy') = x \cos\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A'], _dAlembert]	✓
3642	$y(x^2 - y^2) - x(x^2 - y^2)y' = 0$	[_separable]	✓
3644	$y' = \frac{y^2 + 2xy - 2x^2}{x^2 - xy + y^2}$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
3645	$2xyy' - 2y^2 - x^2e^{-\frac{y^2}{x^2}} = 0$	[[_homogeneous, 'class A']]	✓
3646	$x^2y' = y^2 + 3xy + x^2$	[[_homogeneous, 'class A'], _rational, _Riccati]	✓
3648	$2x(2x + y)y' = y(4x - y)$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
3649	$xy' = x \tan\left(\frac{y}{x}\right) + y$	[[_homogeneous, 'class A'], _dAlembert]	✓

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#	ODE	CAS classification	Solved?
3651	$y' = \frac{4y - 2x}{x + y}$ i.c.	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
3652	$y' = \frac{2x - y}{4y + x}$ i.c.	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
3655	$y' = \frac{x + ay}{ax - y}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
3656	$y' = \frac{x + \frac{y}{2}}{\frac{x}{2} - y}$ i.c.	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
3657	$y' - \frac{y}{x} = \frac{4x^2 \cos(x)}{y}$	[[_homogeneous, 'class D'], _Bernoulli]	✓
4097	$y' = \frac{y - 2x}{x}$	[_linear]	✓
4098	$x^3 + y^3 - xy^2y' = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
4099	$y' + y = 0$	[_quadrature]	✓
4103	$y' = \frac{y^2 + x^2}{2x^2}$	[[_homogeneous, 'class A'], _rational, _Riccati]	✓
4104	$xy' = x + y$ i.c.	[_linear]	✓
4112	$y' = \frac{2x - y}{2x + y}$ i.c.	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
4190	$yy' = x$	[_separable]	✓
4196	$xy' + y = x$	[_linear]	✓
4197	$-y + xy' = x^3$	[_linear]	✓
4219	$xy' = y$	[_separable]	✓
4220	$(1 - x)y' = y$	[_separable]	✓
4221	$y' = \frac{4xy}{x^2 + 1}$	[_separable]	✓
4222	$y' = \frac{2y}{x^2 - 1}$	[_separable]	✓
4223	$-y^2 + x^2y' = 0$ i.c.	[_separable]	✓

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Table 2.7 first order ode homogD

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#	ODE	CAS classification	Solved?
4224	$y' + 2xy = 0$ i.c.	[_separable]	✓
4225	$\cot(x)y' = y$ i.c.	[_separable]	✓
4228	$xy' = xy + y$ i.c.	[_separable]	✓
4233	$(1 - x)y' = xy$	[_separable]	✓
4234	$(x^2 - 1)y' = (x^2 + 1)y$	[_separable]	✓
4240	$xyy' = 2x^2 - y^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
4241	$x^2 - y^2 + xyy' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
4242	$x^2y' - 2xy - 2y^2 = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
4243	$x^2y' = 3(y^2 + x^2) \arctan\left(\frac{y}{x}\right) + xy$	[[_homogeneous, 'class A', _dAlembert]	✓
4244	$x \sin\left(\frac{y}{x}\right) y' = y \sin\left(\frac{y}{x}\right) + x$	[[_homogeneous, 'class A', _dAlembert]	✓
4245	$xy' = y + 2e^{-\frac{y}{x}}$	[[_homogeneous, 'class D']]	✓
4254	$y + y \cos(xy) + (x + x \cos(xy))y' = 0$	[_separable]	✓
4257	$-\frac{\sin\left(\frac{x}{y}\right)}{y} + \frac{x \sin\left(\frac{x}{y}\right) y'}{y^2} = 0$	[_separable]	✓
4258	$1 + y + (1 - x)y' = 0$	[_separable]	✓
4261	$(3x^2 - y^2)y' - 2xy = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
4266	$xy' = x^5 + x^3y^2 + y$	[[_homogeneous, 'class D', _rational, _Riccati]	✓
4267	$(x + y)y' = y - x$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
4268	$xy' = y + x^2 + 9y^2$	[[_homogeneous, 'class D', _rational, _Riccati]	✓
4281	$(xy - x^2)y' = y^2$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
4283	$x^2 + y = xy'$	[_linear]	✓

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#	ODE	CAS classification	Solved?
4290	$y^2 - 3xy - 2x^2 = (x^2 - xy) y'$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
4295	$2xy + x^2 y' = 0$	[_separable]	✓
4300	$\frac{x}{y^2 + x^2} + \frac{y}{x^2} + \left(\frac{y}{y^2 + x^2} - \frac{1}{x}\right) y' = 0$ i.c.	[[_homogeneous, 'class A', _exact, _rational, _dAlem- bert]]	✓
4305	$y' = \frac{x(1 + y^2)}{y(x^2 + 1)}$ i.c.	[_separable]	✓
4314	$y' + \frac{x}{y} + 2 = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
4315	$-y + xy' = x \cot\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A', _dAlembert]]	✓
4316	$x \cos\left(\frac{y}{x}\right)^2 - y + xy' = 0$	[[_homogeneous, 'class A', _dAlembert]]	✓
4318	$xy + (y^2 + x^2) y' = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
4319	$(1 - e^{-\frac{y}{x}}) y' + 1 - \frac{y}{x} = 0$	[[_homogeneous, 'class A', _dAlembert]]	✓
4320	$x^2 - xy + y^2 - xyy' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
4333	$2xy + (x^2 + 2xy + y^2) y' = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
4335	$y(2x - y + 2) + 2y'(x - y) = 0$	[[_homogeneous, 'class D', _rational, [_Abel, '2nd type', 'class A']]]	✓
4346	$x^2 + y + y^2 - xy' = 0$	[[_homogeneous, 'class D', _rational, _Riccati]]	✓
4350	$y - 2x^3 \tan\left(\frac{y}{x}\right) - xy' = 0$	[[_homogeneous, 'class D']]	✓
4360	$(\sin(y)^2 + x \cot(y)) y' = 0$	[_quadrature]	✓
4398	$y' = \frac{y + 2}{x + 1}$	[_separable]	✓
4399	$xy' = y - e^{\frac{y}{x}} x$	[[_homogeneous, 'class A', _dAlembert]]	✓

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#	ODE	CAS classification	Solved?
4405	$-y + xy' = x \tan\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A', _dAlembert]	✓
4412	$xy + 2x^3y + x^2y' = 0$	[_separable]	✓
4422	$x - y \cos\left(\frac{y}{x}\right) + x \cos\left(\frac{y}{x}\right) y' = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
4423	$x^2(-y + xy') = (x + y)y$	[[_homogeneous, 'class D', _rational, _Bernoulli]	✓
4441	$x + \sin\left(\frac{y}{x}\right)^2 (y - xy') = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
4618	$y' = ax^ny$	[_separable]	✓
4621	$y' = y \cot(x)$	[_separable]	✓
4624	$y' = (2 \csc(2x) + \cot(x))y$	[_separable]	✓
4632	$y' = y \sec(x)$	[_separable]	✓
4634	$y' = y \tan(x)$	[_separable]	✓
4643	$y' = (a + \cos(\ln(x)) + \sin(\ln(x)))y$	[_separable]	✓
4708	$y' = \sqrt{XY}$	[_quadrature]	✓
4743	$xy' + x + y = 0$	[_linear]	✓
4744	$xy' + x^2 - y = 0$	[_linear]	✓
4746	$xy' = 1 + x^3 + y$	[_linear]	✓
4747	$xy' = x^m + y$	[_linear]	✓
4749	$xy' = x^2 \sin(x) + y$	[_linear]	✓
4752	$xy' = ay$	[_separable]	✓
4754	$xy' = ax + by$	[_linear]	✓
4759	$xy' + (bx + a)y = 0$	[_separable]	✓
4760	$xy' = x^3 + (-2x^2 + 1)y$	[_linear]	✓
4764	$xy' = x^2 + y(1 + y)$	[[_homogeneous, 'class D', _rational, _Riccati]	✓
4767	$xy' = x^2a + y + by^2$	[[_homogeneous, 'class D', _rational, _Riccati]	✓
4773	$xy' = (1 - xy)y$	[[_homogeneous, 'class D', _rational, _Bernoulli]	✓
4774	$xy' = (xy + 1)y$	[[_homogeneous, 'class D', _rational, _Bernoulli]	✓

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#	ODE	CAS classification	Solved?
4776	$xy' = x^3 + (2x^2 + 1)y + xy^2$	[[_homogeneous, 'class D', _rational, _Riccati]	✓
4777	$xy' = y(1 + 2xy)$	[[_homogeneous, 'class D', _rational, _Bernoulli]	✓
4786	$xy' = y + (x^2 - y^2)f(x)$	[[_homogeneous, 'class D', _Riccati]	✓
4787	$xy' = y(1 + y^2)$	[_separable]	✓
4800	$xy' + x - y + x \cos\left(\frac{y}{x}\right) = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
4801	$xy' = y - x \cos\left(\frac{y}{x}\right)^2$	[[_homogeneous, 'class A', _dAlembert]	✓
4805	$xy' - y + x \sec\left(\frac{y}{x}\right) = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
4806	$xy' = y + x \sec\left(\frac{y}{x}\right)^2$	[[_homogeneous, 'class A', _dAlembert]	✓
4808	$xy' = y + x \sin\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A', _dAlembert]	✓
4811	$xy' = y - x \tan\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A', _dAlembert]	✓
4813	$xy' = e^{\frac{y}{x}}x + y$	[[_homogeneous, 'class A', _dAlembert]	✓
4814	$xy' = x + y + e^{\frac{y}{x}}x$	[[_homogeneous, 'class A', _dAlembert]	✓
4818	$xy' = y - 2x \tanh\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A', _dAlembert]	✓
4850	$x^2y' = a + bx + cx^2 + xy$	[_linear]	✓
4854	$x^2y' = (bx + a)y$	[_separable]	✓
4857	$x^2y' + y^2 + xy + x^2 = 0$	[[_homogeneous, 'class A', _rational, _Riccati]	✓
4860	$x^2y' = (x + ay)y$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
4861	$x^2y' = (ax + by)y$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
4862	$x^2y' + x^2a + bxy + cy^2 = 0$	[[_homogeneous, 'class A', _rational, _Riccati]	✓

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#	ODE	CAS classification	Solved?
4870	$x^2y' + (x^2 + y^2 - x)y = 0$	[[_homogeneous, 'class D'], _rational, _Bernoulli]	✓
4879	$(-x^2 + 1)y' = 5 - xy$	[_linear]	✓
4881	$(x^2 + 1)y' + a - xy = 0$	[_linear]	✓
4888	$(-x^2 + 1)y' + 2xy = 0$	[_separable]	✓
4894	$(x^2 + 1)y' = (2bx + a)y$	[_separable]	✓
4905	$(a^2 + x^2)y' = b + xy$	[_linear]	✓
4913	$x(x + 1)y' = (-2x + 1)y$	[_separable]	✓
4922	$(x - a)(x - b)y' + ky = 0$	[_separable]	✓
4927	$2x^2y' = y$	[_separable]	✓
4930	$2x^2y' = 2xy + (1 - x \cot(x))(x^2 - y^2)$	[[_homogeneous, 'class D'], _Riccati]	✓
4938	$ax^2y' = x^2 + axy + b^2y^2$	[[_homogeneous, 'class A'], _rational, _Riccati]	✓
4944	$x^3y' = 3 - x^2 + x^2y$	[_linear]	✓
4946	$x^3y' = y(x^2 + y)$	[[_homogeneous, 'class D'], _rational, _Bernoulli]	✓
4947	$x^3y' = x^2(y - 1) + y^2$	[[_homogeneous, 'class D'], _rational, _Riccati]	✓
4951	$x^3y' = (2x^2 + y^2)y$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
4955	$x(x^2 + 1)y' = ax^3 + y$	[_linear]	✓
4957	$x(x^2 + 1)y' = (-x^2 + 1)y$	[_separable]	✓
4958	$x(-x^2 + 1)y' = (x^2 - x + 1)y$	[_separable]	✓
4959	$x(-x^2 + 1)y' = ax^3 + (-2x^2 + 1)y$	[_linear]	✓
4964	$x^2(1 - x)y' = (2 - x)xy - y^2$	[[_homogeneous, 'class D'], _rational, _Bernoulli]	✓
4965	$2x^3y' = y(x^2 - y^2)$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
4966	$2x^3y' = (3x^2 + y^2a)y$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
4968	$x(cx^2 + bx + a)y' + x^2 - (cx^2 + bx + a)y = y^2$	[[_homogeneous, 'class D'], _rational, _Riccati]	✓

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#	ODE	CAS classification	Solved?
4969	$x^4 y' = (x^3 + y) y$	[[_homogeneous, 'class D'], _rational, _Bernoulli]	✓
4976	$x(-2x^3 + 1) y' = 2(-x^3 + 1) y$	[_separable]	✓
4979	$x(-x^4 + 1) y' = 2x(x^2 - y^2) + (-x^4 + 1) y$	[[_homogeneous, 'class D'], _rational, _Riccati]	✓
4995	$y' \sqrt{X} + \sqrt{Y} = 0$	[_quadrature]	✓
4996	$y' \sqrt{X} = \sqrt{Y}$	[_quadrature]	✓
5002	$y' \sqrt{X} = 0$	[_quadrature]	✓
5003	$y' \sqrt{X} + \sqrt{Y} = 0$	[_quadrature]	✓
5004	$y' \sqrt{X} = \sqrt{Y}$	[_quadrature]	✓
5007	$X^{2/3} y' = Y^{2/3}$	[_quadrature]	✓
5009	$(1 - 4 \cos(x)^2) y' = \tan(x) (1 + 4 \cos(x)^2) y$	[_separable]	✓
5010	$(-\sin(x) + 1) y' + y \cos(x) = 0$	[_separable]	✓
5011	$(\cos(x) - \sin(x)) y' + y(\cos(x) + \sin(x)) = 0$	[_separable]	✓
5014	$y' x \ln(x) = ax(\ln(x) + 1) - y$	[_linear]	✓
5015	$yy' + x = 0$	[_separable]	✓
5018	$yy' + ax + by = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
5021	$yy' + 4x(x + 1) + y^2 = 0$	[[_homogeneous, 'class D'], _rational, _Bernoulli]	✓
5032	$(x + y) y' + y = 0$	[[_homogeneous, 'class A'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
5033	$y'(x - y) = y$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
5034	$(x + y) y' + x - y = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
5035	$(x + y) y' = x - y$	[[_homogeneous, 'class A'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓

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#	ODE	CAS classification	Solved?
5037	$y'(x - y) = y(1 + 2xy)$	[[_homogeneous, 'class D', _rational, [_Abel, '2nd type', 'class A']]	✓
5039	$y'(x - y) = \left(e^{-\frac{x}{y}} + 1\right) y$	[[_homogeneous, 'class A', _dAlembert]	✓
5044	$(2x + y)y' + x - 2y = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
5051	$(4x - y)y' + 2x - 5y = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
5058	$2yy' + 2x + x^2 + y^2 = 0$	[[_homogeneous, 'class D', _rational, _Bernoulli]	✓
5060	$(x - 2y)y' = y$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
5061	$(x + 2y)y' + 2x - y = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
5062	$(x - 2y)y' + 2x + y = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
5081	$(4y + x)y' + 4x - y = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
5088	$(7x + 5y)y' + 10x + 8y = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
5097	$(ax + by)y' + x = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class C'], _dAlem- bert]	✓
5098	$(ax + by)y' + y = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
5099	$(ax + by)y' + bx + ay = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
5100	$(ax + by)y' = bx + ay$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓

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#	ODE	CAS classification	Solved?
5102	$xyy' = x + y^2$	[[_homogeneous, 'class D', _rational, _Bernoulli]	✓
5103	$xyy' + x^2 + y^2 = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
5104	$xyy' + x^4 - y^2 = 0$	[[_homogeneous, 'class D', _rational, _Bernoulli]	✓
5105	$xyy' = ax^3 \cos(x) + y^2$	[[_homogeneous, 'class D', _Bernoulli]	✓
5106	$xyy' = x^2 - xy + y^2$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
5107	$xyy' + 2x^2 - 2xy - y^2 = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
5111	$xyy' + x^2 \operatorname{arccot}\left(\frac{y}{x}\right) - y^2 = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
5112	$xyy' + x^2 e^{-\frac{2y}{x}} - y^2 = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
5122	$x(x+y)y' + y^2 = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
5123	$x(x-y)y' + y^2 = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
5124	$x(x+y)y' = y^2 + x^2$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
5125	$x(x-y)y' + 2x^2 + 3xy - y^2 = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
5128	$x(2x+y)y' = x^2 + xy - y^2$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
5129	$x(4x-y)y' + 4x^2 - 6xy - y^2 = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
5134	$(x+a)(x+b)y' = xy$	[_separable]	✓
5138	$x^2 + y^2 + 2xyy' = 0$	[[_homogeneous, 'class A', _exact, _rational, _Bernoulli]	✓

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#	ODE	CAS classification	Solved?
5139	$2xyy' = y^2 + x^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
5143	$x(x - 2y)y' + y^2 = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
5144	$x(x + 2y)y' + (2x - y)y = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
5145	$x(x - 2y)y' + (2x - y)y = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class B']]	✓
5150	$x(2x + 3y)y' = y^2$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
5151	$x(2x + 3y)y' + 3(x + y)^2 = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
5154	$axy y' = y^2 + x^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
5155	$axy y' + x^2 - y^2 = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
5157	$x(x - ay)y' = y(y - ax)$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
5167	$(x^2 + 1)yy' + x(1 - y^2) = 0$	[_separable]	✓
5169	$2x^2yy' = x^2(2x + 1) - y^2$	[[_homogeneous, 'class D', _rational, _Bernoulli]	✓
5173	$x^2(x - 2y)y' = 2x^3 - 4xy^2 + y^3$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class C'], _dAlem- bert]	✓
5176	$x^2(4x - 3y)y' = (6x^2 - 3xy + 2y^2)y$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class C'], _dAlem- bert]	✓
5181	$8x^3yy' + 3x^4 - 6y^2x^2 - y^4 = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5192	$xy + (y^2 + x^2)y' = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5193	$(y^2 + x^2)y' = xy$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓

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#	ODE	CAS classification	Solved?
5194	$(x^2 - y^2) y' = 2xy$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5195	$(x^2 - y^2) y' + x(x + 2y) = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]	✓
5196	$(y^2 + x^2) y' + 2x(2x + y) = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]	✓
5201	$(3x^2 - y^2) y' = 2xy$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5210	$(x^2 + 2xy - y^2) y' + x^2 - 2xy + y^2 = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5211	$(x + y)^2 y' = x^2 - 2xy + 5y^2$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5213	$(2x^2 + 4xy - y^2) y' = x^2 - 4xy - 2y^2$	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]	✓
5214	$(3x + y)^2 y' = 4(3x + 2y) y$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5219	$(2x^2 + 3y^2) y' + x(3x + y) = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5221	$(3x^2 + 2xy + 4y^2) y' + 2x^2 + 6xy + y^2 = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]	✓
5225	$(x^2 + y^2 a) y' = xy$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5226	$(x^2 + xy + y^2 a) y' = x^2 a + xy + y^2$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5227	$(x^2 a + 2xy - y^2 a) y' + x^2 - 2axy - y^2 = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5228	$(x^2 a + 2bxy + cy^2) y' + kx^2 + 2axy + by^2 = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]	✓
5231	$x(y^2 + x^2) y' = (x^2 + x^4 + y^2) y$	[[_homogeneous, 'class D', _rational]	✓
5234	$x(2x^2 + y^2) y' = (2x^2 + 3y^2) y$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5237	$x(x^2 - xy + y^2) y' + (y^2 + xy + x^2) y = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓

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#	ODE	CAS classification	Solved?
5238	$x(x^2 - xy - y^2) y' = (x^2 + xy - y^2) y$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5239	$x(x^2 + axy + y^2) y' = (x^2 + bxy + y^2) y$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5240	$x(x^2 - 2y^2) y' = (2x^2 - y^2) y$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5241	$x(x^2 + 2y^2) y' = (2x^2 + 3y^2) y$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5242	$2x(5x^2 + y^2) y' = x^2y - y^3$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5243	$x(x^2 + axy + 2y^2) y' = (ax + 2y) y^2$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5251	$x(x^2 - 6y^2) y' = 4(x^2 + 3y^2) y$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5267	$(x^3 - y^3) y' + x^2y = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5268	$(x^3 + y^3) y' + x^2(ax + 3y) = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]	✓
5272	$(3x^2 + y^2) yy' + x(x^2 + 3y^2) = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]	✓
5274	$2y^3y' = x^3 - xy^2$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5276	$(3x^2 + 2y^2) yy' + x^3 = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5277	$(5x^2 + 2y^2) yy' + x(x^2 + 5y^2) = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]	✓
5279	$(3x^3 + 6x^2y - 3xy^2 + 20y^3) y' - y^3 + 6xy^2 + 9x^2y + 4x^3 = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]	✓
5280	$(x^3 + ay^3) y' = x^2y$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5283	$x(2x^3 + y^3) y' = (2x^3 - x^2y + y^3) y$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5284	$x(2x^3 - y^3) y' = (x^3 - 2y^3) y$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓

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#	ODE	CAS classification	Solved?
5285	$x(x^3 + 3x^2y + y^3) y' = (3x^2 + y^2) y^2$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
5286	$x(x^3 - 2y^3) y' = (2x^3 - y^3) y$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
5301	$(ax^3 + (ax + by)^3) yy' + x((ax + by)^3 + by^3) = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
5328	$x\left(x - y \tan\left(\frac{y}{x}\right)\right) y' + \left(x + y \tan\left(\frac{y}{x}\right)\right) y = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓
5343	$y'^2 = a^2y^2$	[_quadrature]	✓
5345	$y'^2 = y^2x^2$	[_separable]	✓
5359	$y'^2 - 5y' + 6 = 0$	[_quadrature]	✓
5360	$y'^2 - 7y' + 12 = 0$	[_quadrature]	✓
5386	$y'^2 - 2x^2y' + 2xy' = 0$	[_quadrature]	✓
5393	$y'^2 + (x + y) y' + xy = 0$	[_quadrature]	✓
5396	$y'^2 - 2y'(x - y) - 4xy = 0$	[_quadrature]	✓
5402	$y'^2 + (ax + by) y' + abxy = 0$	[_quadrature]	✓
5404	$y'^2 - (1 + 2xy) y' + 2xy = 0$	[_quadrature]	✓
5406	$y'^2 - (x - y) yy' - xy^3 = 0$	[_separable]	✓
5409	$y'^2 - xy(y^2 + x^2) y' + x^4y^4 = 0$	[_separable]	✓
5451	$xy'^2 - (2x + 3y) y' + 6y = 0$	[_quadrature]	✓
5454	$xy'^2 - (xy + 1) y' + y = 0$	[_quadrature]	✓
5455	$xy'^2 + y(1 - x) y' - y^2 = 0$	[_quadrature]	✓
5456	$xy'^2 + (1 - x^2y) y' - xy = 0$	[_quadrature]	✓
5472	$x^2y'^2 = y^2$	[_separable]	✓
5474	$x^2y'^2 = (x - y)^2$	[_linear]	✓
5476	$x^2y'^2 - xy' + y(1 - y) = 0$	[_separable]	✓
5485	$x^2y'^2 + 3xyy' + 2y^2 = 0$	[_separable]	✓
5487	$x^2y'^2 + 4xyy' - 5y^2 = 0$	[_separable]	✓
5489	$x^2y'^2 - 5xyy' + 6y^2 = 0$	[_separable]	✓

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#	ODE	CAS classification	Solved?
5501	$(a^2 - x^2)y'^2 - 2xyy' - y^2 = 0$	[_separable]	✓
5527	$yy'^2 + y'(x - y) - x = 0$	[_quadrature]	✓
5530	$yy'^2 + (x - y^2)y' - xy = 0$	[_quadrature]	✓
5537	$(x^2 - ay)y'^2 - 2xyy' = 0$	[_quadrature]	✓
5539	$xyy'^2 + (y^2 + x^2)y' + xy = 0$	[_separable]	✓
5540	$xyy'^2 + (x^2 - y^2)y' - xy = 0$	[_separable]	✓
5541	$xyy'^2 - (x^2 - y^2)y' - xy = 0$	[_separable]	✓
5544	$xyy'^2 + (3x^2 - 2y^2)y' - 6xy = 0$	[_separable]	✓
5552	$y^2y'^2 - (x + 1)yy' + x = 0$	[_quadrature]	✓
5564	$(x + y)^2y'^2 = y^2$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
5565	$(x + y)^2y'^2 - (x^2 - xy - 2y^2)y' - (x - y)y = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
5569	$4y^2y'^2 + 2(3x + 1)xyy' + 3x^3 = 0$	[_separable]	✓
5570	$(x^2 - 4y^2)y'^2 + 6xyy' - 4x^2 + y^2 = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
5579	$4x^2y^2y'^2 = (y^2 + x^2)^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
5594	$y'^3 - 7y' + 6 = 0$	[_quadrature]	✓
5613	$y'^3 + (\cos(x) \cot(x) - y)y'^2$ $- (1 + y \cos(x) \cot(x))y' + y = 0$	[_quadrature]	✓
5614	$y'^3 + (2x - y^2)y'^2 - 2xy^2y' = 0$	[_quadrature]	✓
5616	$y'^3 - (y^2 + xy + x^2)y'^2$ $+ xy(y^2 + xy + x^2)y' - x^3y^3 = 0$	[_quadrature]	✓
5624	$xy'^3 - (x + x^2 + y)y'^2 + (x^2 + y + xy)y' - xy = 0$	[_quadrature]	✓
5637	$(x + 2y)y'^3 + 3(x + y)y'^2 + (2x + y)y' = 0$	[_quadrature]	✓
5685	$y \ln(y') + y' - y \ln(y) - xy = 0$	[_separable]	✓
5689	$y' = \frac{xy}{x^2 - y^2}$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓

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#	ODE	CAS classification	Solved?
5694	$\frac{2x}{y^3} + \frac{(y^2 - 3x^2)y'}{y^4} = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]	✓
5695	$y + xy^2 - xy' = 0$	[[_homogeneous, 'class D', _rational, _Bernoulli]	✓
5705	$(y - x)y' + y = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
5708	$x - y \cos\left(\frac{y}{x}\right) + x \cos\left(\frac{y}{x}\right)y' = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
5709	$(7x + 5y)y' + 10x + 8y = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
5713	$x(-x^2 + 1)y' + (2x^2 - 1)y = ax^3$	[_linear]	✓
5734	$(7x + 5y)y' + 10x + 8y = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
5735	$x^2 + 2xy - y^2 + (y^2 + 2xy - x^2)y' = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5736	$y^2 + (xy + x^2)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
5750	$y'^2 - 5y' + 6 = 0$	[_quadrature]	✓
5763	$y = xy' + x\sqrt{1 + y'^2}$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
5771	$2xy + (y^2 + x^2)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]	✓
5773	$x + y - y'(x - y) = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
5774	$xy' - y - x \sin\left(\frac{y}{x}\right) = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
5775	$2x^2y + y^3 + (xy^2 - 2x^3)y' = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5777	$\frac{y \cos\left(\frac{y}{x}\right)}{x} - \left(\frac{x \sin\left(\frac{y}{x}\right)}{y} + \cos\left(\frac{y}{x}\right)\right)y' = 0$	[[_homogeneous, 'class A', _dAlembert]	✓

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#	ODE	CAS classification	Solved?
5778	$y + x \ln\left(\frac{y}{x}\right) y' - 2xy' = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
5779	$2y e^{\frac{x}{y}} + \left(y - 2x e^{\frac{x}{y}}\right) y' = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
5780	$e^{\frac{y}{x}} x - y \sin\left(\frac{y}{x}\right) + x \sin\left(\frac{y}{x}\right) y' = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
5781	$y^2 + x^2 = 2xyy'$ i.c.	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
5782	$e^{\frac{y}{x}} x + y = xy'$ i.c.	[[_homogeneous, 'class A', _dAlembert]	✓
5783	$y' - \frac{y}{x} + \csc\left(\frac{y}{x}\right) = 0$ i.c.	[[_homogeneous, 'class A', _dAlembert]	✓
5784	$xy - y^2 - x^2 y' = 0$ i.c.	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
5787	$x + y + 1 + (2x + 2y + 2) y' = 0$	[_quadrature]	✓
5854	$-y + xy' = x^2 \sin(x)$	[_linear]	✓
5855	$xy' + xy^2 - y = 0$	[[_homogeneous, 'class D', _rational, _Bernoulli]	✓
5857	$x^2(x-1)y' - y^2 - x(-2+x)y = 0$	[[_homogeneous, 'class D', _rational, _Bernoulli]	✓
5865	$y' = 1 + \frac{y}{x} - \frac{y^2}{x^2}$	[[_homogeneous, 'class A', _rational, _Riccati]	✓
5874	$(x^2 - y^2) y' = 2xy$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5880	$2y - xy \ln(x) - 2y' x \ln(x) = 0$	[_separable]	✓
5888	$xy' = x + y + e^{\frac{y}{x}} x$	[[_homogeneous, 'class A', _dAlembert]	✓
5891	$x^3 y' - y^2 - x^2 y = 0$	[[_homogeneous, 'class D', _rational, _Bernoulli]	✓
5893	$xy' - y - x \sin\left(\frac{y}{x}\right) = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
5894	$(xy - x^2) y' + y^2 - 3xy - 2x^2 = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
5896	$x^2 y' + y^2 + xy + x^2 = 0$	[[_homogeneous, 'class A', _rational, _Riccati]	✓

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#	ODE	CAS classification	Solved?
5906	$xyy' + x^2 + y^2 = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
5907	$2xyy' + 3x^2 - y^2 = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
5908	$(2xy^3 - x^4)y' + 2x^3y - y^4 = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5910	$(y^2 + x^2)y' + 2x(2x + y) = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlem- bert]	✓
5912	$2y^3y' + xy^2 - x^3 = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
6025	$y' + y \tan(x) = 0$	[_separable]	✓
6092	$y' = y$	[_quadrature]	✓
6093	$xy' = y$	[_separable]	✓
	<i>i.c.</i>		
6125	$x^2y' + y^2 - xy = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
6127	$xy + (y^2 - x^2)y' = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
6128	$y^2 - xy + (xy + x^2)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
6130	$y' = \frac{y}{x} - \tan\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A', _dAlembert]	✓
6133	$y' = \frac{2y^2}{x} + \frac{y}{x} - 2x$	[[_homogeneous, 'class D', _rational, _Riccati]	✓
6208	$x^2y' - xy = \frac{1}{x}$	[_linear]	✓
6218	$y + 2x - xy' = 0$	[_linear]	✓
6224	$(2x + y)y' - x + 2y = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
6226	$\sin(x)^2 y' + \sin(x)^2 + (x + y) \sin(2x) = 0$	[_linear]	✓
6232	$3x^2y + x^3y' = 0$	[_separable]	✓
	<i>i.c.</i>		
6233	$-y + xy' = x^2$	[_linear]	✓
	<i>i.c.</i>		
6237	$xy' = xy + y$	[_separable]	✓

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#	ODE	CAS classification	Solved?
6239	$y' = 3x^2y$	[_separable]	✓
6241	$xy' = y$	[_separable]	✓
6263	$x' = 3xt^2$	[_separable]	✓
6285	$y' = 2y - 2ty$ i.c.	[_separable]	✓
6296	$(t^2 + 1)y' = ty - y$	[_separable]	✓
6301	$y' = \frac{y}{x} + 2x + 1$	[_linear]	✓
6310	$y' - \frac{y}{x} = xe^x$ i.c.	[_linear]	✓
6322	$x^2y + x^4 \cos(x) - x^3y' = 0$	[_linear]	✓
6405	$(x^2 + 1)y' = xy + 1$	[_linear]	✓
6422	$-y + xy' = x^2$	[_linear]	✓
6425	$(x^3 + xy^2)y' = 2y^3$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
6432	$(x^3 + 1)y' = x^2y$ i.c.	[_separable]	✓
6436	$(2y - x)y' = 2x + y$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
6437	$xy + y^2 + (x^2 - xy)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
6438	$x^3 + y^3 = 3xy^2y'$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
6439	$y - 3x + (4y + 3x)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
6440	$(x^3 + 3xy^2)y' = y^3 + 3x^2y$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
6458	$x^2 - 2xy + 5y^2 = (x^2 + 2xy + y^2)y'$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
6460	$y + (x^2 - 4x)y' = 0$	[_separable]	✓
6462	$y' = \frac{y^2 + 2xy}{x^2 + 2xy}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓

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#	ODE	CAS classification	Solved?
6465	<i>i.c.</i> $x^2y' = y^2 - xyy'$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
6468	$y^2 + x^2y' = xyy'$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
6469	$2xyy' = x^2 - y^2$	[[_homogeneous, 'class A', _exact, _rational, _Bernoulli]]	✓
6476	$x(1 + y^2) - (x^2 + 1)yy' = 0$	[_separable]	✓
6543	$y' - \frac{y}{x} = x^2$	[_linear]	✓
6570	$xy' = 2y$	[_separable]	✓
6571	$yy' + x = 0$	[_separable]	✓
6573	$2x^3y' = y(3x^2 + y^2)$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
6580	$4y + xy' = 0$	[_separable]	✓
6582	$y^2 - x^2y' = 0$	[_separable]	✓
6583	$1 + y - (x + 1)y' = 0$	[_separable]	✓
6585	$x \sin\left(\frac{y}{x}\right) - y \cos\left(\frac{y}{x}\right) + x \cos\left(\frac{y}{x}\right)y' = 0$	[[_homogeneous, 'class A', _dAlembert]]	✓
6586	$y^2(x^2 + 2) + (x^3 + y^3)(y - xy') = 0$	[[_homogeneous, 'class D', _rational]]	✓
6590	$xy + (x^2 + 1)y' = 0$	[_separable]	✓
6591	$x + 2y + (2x + 3y)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
6595	$y^2 - x^2 + xyy' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
6598	$x^3 + y^3 + 3xy^2y' = 0$	[[_homogeneous, 'class A', _exact, _rational, _Bernoulli]]	✓
6600	<i>i.c.</i> $xy' + 2y = 0$	[_separable]	✓
6601	<i>i.c.</i> $xyy' + x^2 + y^2 = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
6616	$y(x - 2y) - x^2y' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓

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#	ODE	CAS classification	Solved?
6617	$xyy' + x^2 + y^2 = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
6618	$x^2 + y^2 + 2xyy' = 0$	[[_homogeneous, 'class A', _exact, _rational, _Bernoulli]	✓
6642	$y' + y = 2x + 2$	[[_linear, 'class A']]	✓
6643	$y' - y = xy$	[_separable]	✓
6667	$x^2y'^2 + xyy' - 6y^2 = 0$	[_separable]	✓
7060	$y' = y \sin(x)$	[_separable]	✓
7072	$\frac{y}{x-1} + \frac{xy'}{1+y} = 0$	[_separable]	✓
7093	$(x+y)y' + x - y = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
7094	$y - 2xy + x^2y' = 0$	[_separable]	✓
7096	$y^2 + x^2y' = xyy'$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
7097	$(y^2 + x^2)y' = 2xy$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
7098	$-y + xy' = x \tan\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A', _dAlembert]	✓
7099	$xy' = y - e^{\frac{y}{x}}x$	[[_homogeneous, 'class A', _dAlembert]	✓
7100	$-y + xy' = (x+y) \ln\left(\frac{x+y}{x}\right)$	[[_homogeneous, 'class A', _dAlembert]	✓
7101	$xy' = y \cos\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A', _dAlembert]	✓
7104	$x + y - y'(x - y) = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
7105	$x^2 + 2xy - y^2 + (y^2 + 2xy - x^2)y' = 0$ i.c.	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
7106	$-y + xy' = yy'$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓

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#	ODE	CAS classification	Solved?
7107	$y^2 + (x^2 - xy)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
7108	$y^2 + xy + x^2 = x^2y'$	[[_homogeneous, 'class A', _rational, _Riccati]]	✓
7109	$\frac{1}{x^2 - xy + y^2} = \frac{y'}{2y^2 - xy}$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
7110	$y' = \frac{2xy}{3x^2 - y^2}$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
7111	$y' = \frac{x}{y} + \frac{y}{x}$ i.c.	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
7114	$xy' = y \ln\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A', _dAlembert]]	✓
7117	$x^2y'^2 - 3xyy' + 2y^2 = 0$	[_separable]	✓
7120	$y' + \frac{x + 2y}{x} = 0$	[_linear]	✓
7121	$y' = \frac{y}{x + y}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
7122	$xy' = x + \frac{y}{2}$ i.c.	[_linear]	✓
7153	$2x + 4y + (2x - 2y)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
7185	$x^2y' + y^2 - xy = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
7186	$x + y - y'(x - y) = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
7191	$y'^2 - a^2y^2 = 0$	[_quadrature]	✓
7225	$\frac{1}{y} + \sec\left(\frac{y}{x}\right) - \frac{xy'}{y^2} = 0$	[[_homogeneous, 'class D']]]	✓
7231	$ye^{xy} + xe^{xy}y' = 0$	[_separable]	✓
7236	$x^2 + y^2 - 2xyy' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
7237	$x^2 - y^2 + 2xyy' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓

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#	ODE	CAS classification	Solved?
7238	$-y + xy' = y^2 + x^2$	[[_homogeneous, 'class D'], _rational, _Riccati]	✓
7240	$x + yy' + y - xy' = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
7259	$y' + y \cos(x) = 0$	[_separable]	✓
7266	$y' = ky$	[_quadrature]	✓
7407	$y' = x^2y$	[_separable]	✓
7408	$yy' = x$	[_separable]	✓
7415	$y' = \frac{x+y}{x-y}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
7416	$y' = \frac{y^2}{xy+x^2}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
7417	$y' = \frac{y^2 + xy + x^2}{x^2}$	[[_homogeneous, 'class A'], _rational, _Riccati]	✓
7418	$y' = \frac{y + x e^{-\frac{2y}{x}}}{x}$	[[_homogeneous, 'class A'], _dAlembert]	✓
7450	$xy' = 2y$	[_separable]	✓
7452	$y' = ky$	[_quadrature]	✓
7456	$xy' = y + x^2 + y^2$	[[_homogeneous, 'class D'], _rational, _Riccati]	✓
7457	$y' = \frac{xy}{y^2 + x^2}$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
7458	$2xyy' = y^2 + x^2$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
7460	$y' = \frac{y^2}{xy - x^2}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
7483	$x^5y' + y^5 = 0$	[_separable]	✓
7484	$y' = 4xy$	[_separable]	✓
7485	$y' + y \tan(x) = 0$	[_separable]	✓
7490	$y' - y \tan(x) = 0$	[_separable]	✓

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#	ODE	CAS classification	Solved?
7494	$x^2 y' = y$ i.c.	[_separable]	✓
7524	$xy' = 2x^2 y + y \ln(x)$	[_separable]	✓
7530	$y + y \cos(xy) + (x + x \cos(xy)) y' = 0$	[_separable]	✓
7534	$1 + y + (1 - x) y' = 0$	[_separable]	✓
7547	$x^2 - 2y^2 + xyy' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
7548	$x^2 y' - 3xy - 2y^2 = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
7549	$x^2 y' = 3(y^2 + x^2) \arctan\left(\frac{y}{x}\right) + xy$	[[_homogeneous, 'class A', _dAlembert]	✓
7550	$x \sin\left(\frac{y}{x}\right) y' = y \sin\left(\frac{y}{x}\right) + x$	[[_homogeneous, 'class A', _dAlembert]	✓
7551	$xy' = y + 2x e^{-\frac{y}{x}}$	[[_homogeneous, 'class A', _dAlembert]	✓
7552	$x - y - (x + y) y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
7553	$xy' = 2x - 6y$	[_linear]	✓
7555	$x^2 y' = y^2 + 2xy$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
7556	$x^3 + y^3 - xy^2 y' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
7565	$y' = \sin\left(\frac{y}{x}\right) - \cos\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A', _dAlembert]	✓
7566	$e^{\frac{x}{y}} - \frac{yy'}{x} = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
7567	$y' = \frac{x^2 - xy}{y^2 \cos\left(\frac{x}{y}\right)}$	[[_homogeneous, 'class A', _dAlembert]	✓
7568	$y' = \frac{y \tan\left(\frac{y}{x}\right)}{x}$	[[_homogeneous, 'class A', _dAlembert]	✓
7593	$xy' + y = x$	[_linear]	✓
7595	$x^2 y' = y$	[_separable]	✓
7597	$y' = \frac{y^2 + x^2}{x^2 - y^2}$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓

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#	ODE	CAS classification	Solved?
7598	$y' = \frac{x + 2y}{2x - y}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
7599	$2xy + x^2y' = 0$	[_separable]	✓
7601	$-y + xy' = 2x$	[_linear]	✓
7605	$y' = \frac{x + y}{x - y}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
7606	$y' = \frac{x^2 + 2y^2}{x^2 - 2y^2}$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
7608	$\frac{1}{y} - \frac{xy'}{y^2} = 0$	[_separable]	✓
7749	$y' = 2xy$	[_separable]	✓
7755	$y' + y = 0$	[_quadrature]	✓
7757	$y' - y = 0$	[_quadrature]	✓
7761	$xy' = y$	[_separable]	✓
7763	$x^2y' = y$	[_separable]	✓
7765	$y' - \frac{y}{x} = x^2$	[_linear]	✓
8111	$x^2y'^2 - y^2 = 0$	[_separable]	✓
8112	$xy'^2 - (2x + 3y)y' + 6y = 0$	[_quadrature]	✓
8113	$x^2y'^2 - 5xyy' + 6y^2 = 0$	[_separable]	✓
8114	$x^2y'^2 + xy' - y^2 - y = 0$	[_separable]	✓
8115	$xy'^2 + (1 - x^2y)y' - xy = 0$	[_quadrature]	✓
8116	$y'^2 - (x^2y + 3)y' + 3x^2y = 0$	[_quadrature]	✓
8117	$xy'^2 - (xy + 1)y' + y = 0$	[_quadrature]	✓
8118	$y'^2 - y^2x^2 = 0$	[_separable]	✓
8119	$(x + y)^2 y'^2 = y^2$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
8120	$yy'^2 + (x - y^2)y' - xy = 0$	[_quadrature]	✓
8121	$y'^2 - xy(x + y)y' + x^3y^3 = 0$	[_separable]	✓

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#	ODE	CAS classification	Solved?
8122	$(4x - y)y'^2 + 6y'(x - y) + 2x - 5y = 0$	[_quadrature]	✓
8123	$(x - y)^2 y'^2 = y^2$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
8124	$xyy'^2 + (-1 + xy^2)y' - y = 0$	[_quadrature]	✓
8125	$(y^2 + x^2)^2 y'^2 = 4y^2 x^2$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
8126	$(x + y)^2 y'^2 + (2y^2 + xy - x^2)y' + (y - x)y = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
8127	$xy(y^2 + x^2)(-1 + y'^2) = y'(x^4 + y^2 x^2 + y^4)$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
8128	$xy'^3 - (x + x^2 + y)y'^2 + (x^2 + y + xy)y' - xy = 0$	[_quadrature]	✓
8210	$6xy'^2 - (3x + 2y)y' + y = 0$	[_quadrature]	✓
8215	$y^2 y'^2 - (x + 1)yy' + x = 0$	[_quadrature]	✓
8226	$x^2 y'^2 = (x - y)^2$	[_linear]	✓
8229	$xy'^2 + y(1 - x)y' - y^2 = 0$	[_quadrature]	✓
8373	$y' = \frac{y}{x \ln(x)}$	[_separable]	✓
8377	$y' = \frac{2x - y}{4y + x}$ i.c.	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
8396	$y' = y$	[_quadrature]	✓
8397	$y' = 0$	[_quadrature]	✓
8400	$y' = \frac{2y}{x}$ i.c.	[_separable]	✓
8401	$y' = \frac{2y}{x}$	[_separable]	✓
8410	$y^2 + x^2 y' = xyy'$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
8412	$(x + y)y' = 0$	[_quadrature]	✓
8413	$xy' = 0$	[_quadrature]	✓
8414	$\frac{y'}{x + y} = 0$	[_quadrature]	✓

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#	ODE	CAS classification	Solved?
8415	$\frac{y'}{x} = 0$	[_quadrature]	✓
8416	$y' = 0$	[_quadrature]	✓
8418	$y' = \frac{5x^2 - xy + y^2}{x^2}$	[[_homogeneous, 'class A', _rational, _Riccati]	✓
8427	$yy' - y = x$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
8468	$y' = \frac{y\left(1 + \frac{a^2x}{\sqrt{a^2(x^2+1)}}\right)}{\sqrt{a^2(x^2+1)}}$	[_separable]	✓
8562	$y' = e^{-\frac{y}{x}}$	[[_homogeneous, 'class A', _dAlembert]	✓
8563	$y' = 2x^2 \sin\left(\frac{y}{x}\right)^2 + \frac{y}{x}$	[[_homogeneous, 'class D']]	✓
8661	$y' = 0$	[_quadrature]	✓
8662	$y' = a$	[_quadrature]	✓
8664	$y' = 1$	[_quadrature]	✓
8666	$y' = axy$	[_separable]	✓
8669	$y' = y$	[_quadrature]	✓
8670	$y' = by$	[_quadrature]	✓
8672	$cy' = 0$	[_quadrature]	✓
8673	$cy' = a$	[_quadrature]	✓
8677	$cy' = y$	[_quadrature]	✓
8678	$cy' = by$	[_quadrature]	✓
8684	$a \sin(x) yxy' = 0$	[_quadrature]	✓
8685	$f(x) \sin(x) yxy' \pi = 0$	[_quadrature]	✓
8688	$y' = \cos(x) + \frac{y}{x}$	[_linear]	✓
8691	$xy' = 0$	[_quadrature]	✓
8692	$5y' = 0$	[_quadrature]	✓
8693	$ey' = 0$	[_quadrature]	✓
8694	$\pi y' = 0$	[_quadrature]	✓
8695	$\sin(x) y' = 0$	[_quadrature]	✓

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#	ODE	CAS classification	Solved?
8696	$f(x)y' = 0$	[_quadrature]	✓
8699	$(x - 1)y' = 0$	[_quadrature]	✓
8700	$yy' = 0$	[_quadrature]	✓
8701	$xyy' = 0$	[_quadrature]	✓
8702	$xy \sin(x)y' = 0$	[_quadrature]	✓
8703	$\pi y \sin(x)y' = 0$	[_quadrature]	✓
8704	$x \sin(x)y' = 0$	[_quadrature]	✓
8707	$y^n = 0$	[_quadrature]	✓
8708	$xy^n = 0$	[_quadrature]	✓
8796	$y^3y''^2 + yy' = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓
8798	$yy'^3 + y^3y' = 0$	[[_2nd_order, _missing_x]]	✓
9699	$y' - (a + \cos(\ln(x)) + \sin(\ln(x)))y = 0$	[_separable]	✓
9781	$xy' - y - \frac{x}{\ln(x)} = 0$	[_linear]	✓
9782	$xy' - y - x^2 \sin(x) = 0$	[_linear]	✓
9783	$xy' - y - \frac{x \cos(\ln(\ln(x)))}{\ln(x)} = 0$	[_linear]	✓
9787	$xy' + y^2a - y + bx^2 = 0$	[[_homogeneous, 'class D', _rational, _Riccati]	✓
9791	$xy' + xy^2 - y = 0$	[[_homogeneous, 'class D', _rational, _Bernoulli]	✓
9792	$xy' + xy^2 - y - ax^3 = 0$	[[_homogeneous, 'class D', _rational, _Riccati]	✓
9793	$xy' + xy^2 - (2x^2 + 1)y - x^3 = 0$	[[_homogeneous, 'class D', _rational, _Riccati]	✓
9800	$xy' + f(x)(y^2 - x^2) - y = 0$	[[_homogeneous, 'class D', _Riccati]	✓
9806	$xy' - e^{\frac{y}{x}}x - y - x = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
9812	$xy' - y - x \sin\left(\frac{y}{x}\right) = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
9813	$xy' + x - y + x \cos\left(\frac{y}{x}\right) = 0$	[[_homogeneous, 'class A', _dAlembert]	✓

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#	ODE	CAS classification	Solved?
9814	$xy' + x \tan\left(\frac{y}{x}\right) - y = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
9824	$x^2y' - (x - 1)y = 0$	[_separable]	✓
9825	$x^2y' + y^2 + xy + x^2 = 0$	[[_homogeneous, 'class A', _rational, _Riccati]	✓
9826	$x^2y' - y^2 - xy = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
9827	$x^2y' - y^2 - xy - x^2 = 0$	[[_homogeneous, 'class A', _rational, _Riccati]	✓
9842	$(x^2 - 1)y' - xy + a = 0$	[_linear]	✓
9856	$3x^2y' - 7y^2 - 3xy - x^2 = 0$	[[_homogeneous, 'class A', _rational, _Riccati]	✓
9860	$x^3y' - y^2 - x^2y = 0$	[[_homogeneous, 'class D', _rational, _Bernoulli]	✓
9863	$x(x^2 + 1)y' + x^2y = 0$	[_separable]	✓
9864	$x(x^2 - 1)y' - (2x^2 - 1)y + ax^3 = 0$	[_linear]	✓
9866	$x^2(x - 1)y' - y^2 - x(-2 + x)y = 0$	[[_homogeneous, 'class D', _rational, _Bernoulli]	✓
9869	$(x^2a + bx + c)(-y + xy') - y^2 + x^2 = 0$	[[_homogeneous, 'class D', _rational, _Riccati]	✓
9872	$(2x^4 - x)y' - 2(x^3 - 1)y = 0$	[_separable]	✓
9882	$y'x \ln(x) + y - ax(\ln(x) + 1) = 0$	[_linear]	✓
9893	$yy' + ay + x = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
9896	$yy' + y^2 + 4x(x + 1) = 0$	[[_homogeneous, 'class D', _rational, _Bernoulli]	✓
9900	$yy' - xe^{\frac{x}{y}} = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
9912	$(2y - x)y' - y - 2x = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
9921	$xyy' + x^2 + y^2 = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
9922	$xyy' - y^2 + ax^3 \cos(x) = 0$	[[_homogeneous, 'class D', _Bernoulli]	✓

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#	ODE	CAS classification	Solved?
9928	$(xy - x^2)y' + y^2 - 3xy - 2x^2 = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
9930	$2xyy' - y^2 + x^2a = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
9935	$x(2x + 3y)y' + 3(x + y)^2 = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
9947	$2x^2yy' + y^2 - 2x^3 - x^2 = 0$	[[_homogeneous, 'class D', _rational, _Bernoulli]]	✓
9951	$(2x^2y - x^3)y' + y^3 - 4xy^2 + 2x^3 = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class C'], _dAlem- bert]]	✓
9960	$(y^2 + x^2)y' + 2x(2x + y) = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlem- bert]]	✓
9961	$(y^2 + x^2)y' - y^2 = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
9965	$(y^2 - x^2)y' + 2xy = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
9970	$x^2 + 2xy - y^2 + (y^2 + 2xy - x^2)y' = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
9973	$(4y^2 + x^2)y' - xy = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
9974	$(3x^2 + 2xy + 4y^2)y' + y^2 + 6xy + 2x^2 = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlem- bert]]	✓
9979	$(y^2a + 2bxy + cx^2)y' + by^2 + 2cxy + dx^2 = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlem- bert]]	✓
9984	$x(y^2 + xy - x^2)y' - y^3 + xy^2 + x^2y = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
9986	$2x(5x^2 + y^2)y' + y^3 - x^2y = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
9995	$(y^3 - x^3)y' - x^2y = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
9997	$2y^3y' + xy^2 = 0$	[_separable]	✓

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#	ODE	CAS classification	Solved?
9999	$(2y^3 + 5x^2y)y' + 5xy^2 + x^3 = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]	✓
10000	$(3x^3 + 6x^2y - 3xy^2 + 20y^3)y' - y^3 + 6xy^2 + 9x^2y + 4x^3 = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]	✓
10004	$(2xy^3 - x^4)y' + 2x^3y - y^4 = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
10014	$y(y^3 - 2x^3)y' + (2y^3 - x^3)x = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
10015	$y((bx + ay)^3 + bx^3)y' + x((bx + ay)^3 + ay^3) = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
10038	$xy' \cot\left(\frac{y}{x}\right) + 2x \sin\left(\frac{y}{x}\right) - y \cot\left(\frac{y}{x}\right) = 0$	[[_homogeneous, 'class A']]	✓
10052	$(-y + xy') \cos\left(\frac{y}{x}\right)^2 + x = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
10053	$\left(y \sin\left(\frac{y}{x}\right) - x \cos\left(\frac{y}{x}\right)\right) xy' - \left(x \cos\left(\frac{y}{x}\right) + y \sin\left(\frac{y}{x}\right)\right) y = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
10080	$y'^2 + (bx + ay)y' + abxy = 0$	[_quadrature]	✓
10084	$y'^2 + y(y - x)y' - xy^3 = 0$	[_separable]	✓
10122	$y' - 1 = 0$	[_quadrature]	✓
10126	$x^2y'^2 + 3xyy' + 2y^2 = 0$	[_separable]	✓
10128	$x^2y'^2 + 4xyy' - 5y^2 = 0$	[_separable]	✓
10130	$x^2y'^2 + (x^2y - 2xy + x^3)y' + (y^2 - x^2y)(1 - x) = 0$	[_linear]	✓
10136	$(-a^2 + x^2)y'^2 + 2xyy' + y^2 = 0$	[_separable]	✓
10158	$yy'^2 - (y - x)y' - x = 0$	[_quadrature]	✓
10168	$xyy'^2 + (y^2 + x^2)y' + xy = 0$	[_separable]	✓
10192	$xy^2y'^2 - 2y^3y' + 2xy^2 - x^3 = 0$	[_separable]	✓
10213	$y'^3 - (y^2 + xy + x^2)y'^2 + (xy^3 + y^2x^2 + x^3y)y' - x^3y^3 = 0$	[_quadrature]	✓
10226	$y'^3 \sin(x) - \left(y \sin(x) - \cos(x)^2\right) y'^2 - \left(y \cos(x)^2 + \sin(x)\right) y' + y \sin(x) = 0$	[_quadrature]	✓

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#	ODE	CAS classification	Solved?
10227	$2yy'^3 - yy'^2 + 2xy' - x = 0$	[_quadrature]	✓
10244	$x\left(\sqrt{1+y'^2} + y'\right) - y = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
10252	$y \ln(y') + y' - y \ln(y) - xy = 0$	[_separable]	✓
10285	$y' = \frac{y + F\left(\frac{y}{x}\right)}{x - 1}$	[[_homogeneous, 'class D']]	✓
10297	$y' = \frac{y + F\left(\frac{y}{x}\right)x^2}{x}$	[[_homogeneous, 'class D']]	✓
10362	$y' = \frac{y + x^3 a e^x + a x^4 + a x^3 - xy^2 e^x - y^2 x^2 - xy^2}{x}$	[[_homogeneous, 'class D'], _Riccati]	✓
10364	$y' = \frac{y + x^3 a \ln(x+1) + a x^4 + a x^3 - xy^2 \ln(x+1) - y^2 x^2 - xy^2}{x}$	[[_homogeneous, 'class D'], _Riccati]	✓
10366	$y' = \frac{y + x^3 \ln(x) + x^4 + x^3 + 7xy^2 \ln(x) + 7y^2 x^2 + 7xy^2}{x}$	[[_homogeneous, 'class D'], _Riccati]	✓
10368	$y' = \frac{y + x^3 b \ln\left(\frac{1}{x}\right) + x^4 b + b x^3 + x a y^2 \ln\left(\frac{1}{x}\right) + x^2 a y^2}{x}$	[[_homogeneous, 'class D'], _Riccati]	✓
10372	$y' = \frac{y + \ln((x-1)(x+1))x^3 + 7 \ln((x-1)(x+1))xy^2}{x}$	[[_homogeneous, 'class D'], _Riccati]	✓
10374	$y' = \frac{y - \ln\left(\frac{x+1}{x-1}\right)x^3 + \ln\left(\frac{x+1}{x-1}\right)xy^2}{x}$	[[_homogeneous, 'class D'], _Riccati]	✓
10375	$y' = \frac{y + e^{\frac{x+1}{x-1}}x^3 + e^{\frac{x+1}{x-1}}xy^2}{x}$	[[_homogeneous, 'class D'], _Riccati]	✓
10376	$y' = \frac{xy - y - e^{x+1}x^3 + e^{x+1}xy^2}{(x-1)x}$	[[_homogeneous, 'class D'], _Riccati]	✓
10382	$y' = \frac{y \ln(x-1) + x^4 + x^3 + y^2 x^2 + xy^2}{\ln(x-1)x}$	[[_homogeneous, 'class D'], _Riccati]	✓
10383	$y' = \frac{y \ln(x-1) + e^{x+1}x^3 + 7e^{x+1}xy^2}{\ln(x-1)x}$	[[_homogeneous, 'class D'], _Riccati]	✓
10389	$y' = \frac{-y e^x + xy - x^3 \ln(x) - x^3 - xy^2 \ln(x) - xy^2}{(-e^x + x)x}$	[[_homogeneous, 'class D'], _Riccati]	✓
10391	$y' = \frac{xy \ln(x) - y + 2x^5 b + 2x^3 a y^2}{(x \ln(x) - 1)x}$	[[_homogeneous, 'class D'], _Riccati]	✓

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#	ODE	CAS classification	Solved?
10441	$y' = \frac{xy + x^3 + xy^2 + y^3}{x^2}$	[[_homogeneous, 'class D', _rational, _Abel]	✓
10460	$y' = \frac{xy + x + y^2}{(x-1)(x+y)}$	[[_homogeneous, 'class D', _rational, [_Abel, '2nd type', 'class B']]	✓
10466	$y' = \frac{x^3y + x^3 + xy^2 + y^3}{(x-1)x^3}$	[[_homogeneous, 'class D', _rational, _Abel]	✓
10473	$y' = \frac{y \ln(x) + \cosh(x) x a y^2 + \cosh(x) x^3 b}{x \ln(x)}$	[[_homogeneous, 'class D', _Riccati]	✓
10511	$y' = \frac{y(x^3 + x^2y + y^2)}{x^2(x-1)(x+y)}$	[[_homogeneous, 'class D', _rational, [_Abel, '2nd type', 'class C']]	✓
10589	$y' = \frac{\sin(\frac{y}{x})(y + 2x^2 \sin(\frac{y}{2x}) \cos(\frac{y}{2x}))}{2 \sin(\frac{y}{2x}) x \cos(\frac{y}{2x})}$	[[_homogeneous, 'class D']]	✓
10590	$y' = \frac{\sin(\frac{y}{x})(y + 2x^3 \cos(\frac{y}{2x}) \sin(\frac{y}{2x}))}{2 \sin(\frac{y}{2x}) x \cos(\frac{y}{2x})}$	[[_homogeneous, 'class D']]	✓
10645	$y' = \frac{-y \sin(\frac{y}{x}) + y \sin(\frac{3y}{2x}) \cos(\frac{y}{2x}) + y \cos(\frac{y}{2x}) \sin(\frac{y}{2x})}{2 \cos(\frac{y}{x}) \cos(\frac{y}{2x}) \sin(\frac{y}{2x}) x}$	[[_homogeneous, 'class D']]	✓
10646	$y' = \frac{-y \sin(\frac{y}{x}) + y \sin(\frac{3y}{2x}) \cos(\frac{y}{2x}) + y \cos(\frac{y}{2x}) \sin(\frac{y}{2x})}{2 \cos(\frac{y}{x}) \cos(\frac{y}{2x}) \sin(\frac{y}{2x}) x}$	[[_homogeneous, 'class D']]	✓
10651	$y' = \frac{-y \sin(\frac{y}{x}) + y \sin(\frac{3y}{2x}) \cos(\frac{y}{2x}) + y \cos(\frac{y}{2x}) \sin(\frac{y}{2x})}{2 \cos(\frac{y}{x}) \cos(\frac{y}{2x}) \sin(\frac{y}{2x}) x} + 2 \sin(\frac{y}{x}) x^3 \cos(\frac{y}{2x}) \sin(\frac{y}{2x})$	[[_homogeneous, 'class D']]	✓
10654	$y' = \frac{-\sin(\frac{y}{x}) y x - y \sin(\frac{y}{x}) + y \sin(\frac{3y}{2x}) \cos(\frac{y}{2x}) x + y \sin(\frac{y}{2x}) \cos(\frac{y}{2x}) + y \cos(\frac{y}{2x}) \sin(\frac{y}{2x}) x}{2 \cos(\frac{y}{x}) \cos(\frac{y}{2x}) \sin(\frac{y}{2x}) x (x+1)}$	[[_homogeneous, 'class D']]	✓
10655	$y' = \frac{y \sin(\frac{3y}{2x}) \cos(\frac{y}{2x}) x + y \sin(\frac{3y}{2x}) \cos(\frac{y}{2x}) + y \cos(\frac{y}{2x}) \sin(\frac{y}{2x})}{2 \cos(\frac{y}{x}) \sin(\frac{y}{2x}) x \cos(\frac{y}{2x}) (x+1)} - \sin(\frac{y}{x}) y x - y \sin(\frac{y}{x})$	[[_homogeneous, 'class D']]	✓
10664	$y' = \frac{y(y^2 + xy + x^2 + x)}{x^2}$	[[_homogeneous, 'class D', _rational, _Abel]	✓
10673	$y' = -F(x)(-x^2 a + y^2) + \frac{y}{x}$	[[_homogeneous, 'class D', _Riccati]	✓
10674	$y' = -F(x)(-x^2 - 2xy + y^2) + \frac{y}{x}$	[[_homogeneous, 'class D', _Riccati]	✓

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#	ODE	CAS classification	Solved?
10675	$y' = -F(x)(-y^2a - bx^2) + \frac{y}{x}$	[[_homogeneous, 'class D', _Riccati]	✓
10677	$y' = -F(x)(x^2 + 2xy - y^2) + \frac{y}{x}$	[[_homogeneous, 'class D', _Riccati]	✓
10678	$y' = -F(x)(-7xy^2 - x^3) + \frac{y}{x}$	[[_homogeneous, 'class D', _Riccati]	✓
11260	$x(ay' + by'' + cy''' + ey'''' )y = 0$	[[_high_order, _miss- ing_x]]	✓
11521	$2y'y''' - 3y'^2 = 0$	[[_3rd_order, _missing_x]]	✓
11682	$y' = f\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A', _dAlembert]	✓
11751	$(x^2a + bx + e)(-y + xy') - y^2 + x^2 = 0$	[[_homogeneous, 'class D', _rational, _Riccati]	✓
11760	$(ax^n + bx^m + c)(-y + xy') + sx^k(y^2 - \lambda x^2) = 0$	[[_homogeneous, 'class D', _rational, _Riccati]	✓
12474	$\frac{1 + 2xy}{y} + \frac{(y-x)y'}{y^2} = 0$	[[_homogeneous, 'class D', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
12475	$\frac{y^2 - 2x^2}{xy^2 - x^3} + \frac{(2y^2 - x^2)y'}{y^3 - x^2y} = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlem- bert]	✓
12477	$xy' + x + y = 0$	[_linear]	✓
12483	$e^{\frac{y}{x}}x + y - xy' = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
12484	$2x^2y + 3y^3 - (x^3 + 2xy^2)y' = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
12485	$x^2y' + y^2 - xy = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
12486	$2x^2y + y^3 - x^3y' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
12487	$y^3 + x^3y' = 0$	[_separable]	✓
12488	$x + y \cos\left(\frac{y}{x}\right) - x \cos\left(\frac{y}{x}\right)y' = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
12506	$y^2(3y - 6xy') - x(y - 2xy') = 0$	[_separable]	✓
12508	$x^2y' + y^2 - xy = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓

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#	ODE	CAS classification	Solved?
12510	$x + y - y'(x - y) = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
12511	$x^2 + y^2 - 2xyy' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
12513	$-y + xy' = y^2 + x^2$	[[_homogeneous, 'class D', _rational, _Riccati]]	✓
12514	$3x^2 + 6xy + 3y^2 + (2x^2 + 3xy)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
12517	$x^3y - y^4 + (xy^3 - x^4)y' = 0$	[_separable]	✓
12518	$y^2 - x^2 + 2myx + (my^2 - mx^2 - 2xy)y' = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
12519	$xy' - y + 2x^2y - x^3 = 0$	[_linear]	✓
12521	$x + yy' + y - xy' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
12529	$(y - x)y' + y = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
12532	$x \sin\left(\frac{y}{x}\right) - y \cos\left(\frac{y}{x}\right) + x \cos\left(\frac{y}{x}\right)y' = 0$	[[_homogeneous, 'class A', _dAlembert]]	✓
12540	$y + xy^2 - xy' = 0$	[[_homogeneous, 'class D', _rational, _Bernoulli]]	✓
12545	$y^3 - 2x^2y + (2xy^2 - x^3)y' = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
12548	$1 + e^{\frac{y}{x}} + e^{\frac{x}{y}}\left(1 - \frac{x}{y}\right)y' = 0$	[[_homogeneous, 'class A', _dAlembert]]	✓
12552	$y'^2 + (x + y)y' + xy = 0$	[_quadrature]	✓
12585	$x^2y'^2 - 2(xy + 2y')y' + y^2 = 0$	[_separable]	✓
12701	$x' = \frac{2x}{t}$	[_separable]	✓
12702	$x' = -\frac{t}{x}$	[_separable]	✓
12707	$2tx' = x$	[_separable]	✓
12728	$x' = \frac{2x}{t+1}$	[_separable]	✓

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#	ODE	CAS classification	Solved?
12746	$x' = \frac{4t^2 + 3x^2}{2xt}$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
12749	$y' = \frac{y^2 + 2ty}{t^2}$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
12764	$x' = \left(a + \frac{b}{t}\right)x$ i.c.	[_separable]	✓
12768	$R' = \frac{R}{t} + te^{-t}$ i.c.	[_linear]	✓
12770	$x' = 2xt$	[_separable]	✓
12775	$x' + p(t)x = 0$	[_separable]	✓
12776	$x' = \frac{2x}{3t} + \frac{2t}{x}$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
12779	$t^2y' + 2ty - y^2 = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
12782	$x^3 + 3tx^2x' = 0$	[_separable]	✓
12786	$x^2 - t^2x' = 0$	[_separable]	✓
12922	$y' + y = x + 1$	[[_linear, 'class A']]	✓
12926	$2xyy' + x^2 + y^2 = 0$	[[_homogeneous, 'class A'], _exact, _rational, _Bernoulli]	✓
12948	$3x + 2y + (2x + y)y' = 0$	[[_homogeneous, 'class A'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
12964	$y^2 + 2xy - x^2y' = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
12966	$4xy + (x^2 + 1)y' = 0$	[_separable]	✓
12973	$x + y - xy' = 0$	[_linear]	✓
12974	$2xy + 3y^2 - (x^2 + 2xy)y' = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
12975	$v^3 + (u^3 - uv^2)v' = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
12976	$x \tan\left(\frac{y}{x}\right) + y - xy' = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓

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#	ODE	CAS classification	Solved?
12977	$(2s^2 + 2st + t^2) s' + s^2 + 2st - t^2 = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]]	✓
12983	$x^2 + 3y^2 - 2xyy' = 0$ i.c.	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
12984	$(4x - y) y' + 2x - 5y = 0$ i.c.	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
12985	$3x^2 + 9xy + 5y^2 - (6x^2 + 4xy) y' = 0$ i.c.	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
12986	$x + 2y + (2x - y) y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
12987	$3x - y - (x + y) y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
12988	$x^2 + 2y^2 + (4xy - y^2) y' = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]]	✓
12989	$2x^2 + 2xy + y^2 + (x^2 + 2xy) y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class B']]	✓
13004	$y' - \frac{y}{x} = -\frac{y^2}{x}$	[_separable]	✓
13027	$6x^2y - (x^3 + 1) y' = 0$	[_separable]	✓
13031	$3x - 5y + (x + y) y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
13032	$e^{2x}y^2 + (e^{2x}y - 2y) y' = 0$	[_separable]	✓
13034	$2x^2 + xy + y^2 + 2x^2y' = 0$	[[_homogeneous, 'class A', _rational, _Riccati]]	✓
13037	$y' = \frac{2x - 7y}{3y - 8x}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
13040	$y' = \frac{2x^2 + y^2}{2xy - x^2}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
13041	$x^2 + y^2 - 2xyy' = 0$ i.c.	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓

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#	ODE	CAS classification	Solved?
13046	$y' = \frac{2x + 7y}{2x - 2y}$ i.c.	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
13047	$y' = \frac{xy}{x^2 + 1}$ i.c.	[_separable]	✓
13050	$x^2y' + xy = \frac{y^3}{x}$ i.c.	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
13397	$x' = xt^2$	[_separable]	✓
13401	$xy' = ky$	[_separable]	✓
13402	$i' = p(t) i$	[_separable]	✓
13403	$x' = \lambda x$	[_quadrature]	✓
13423	$xy + y^2 + x^2 - x^2y' = 0$	[[_homogeneous, 'class A'], _rational, _Riccati]	✓
13534	$xyy'^2 - (y^2 + x^2) y' + xy = 0$	[_separable]	✓
13536	$x' = e^{\frac{x}{t}} + \frac{x}{t}$	[[_homogeneous, 'class A'], _dAlembert]	✓
13538	$y = xy' + \frac{1}{y}$	[_separable]	✓
13549	$y'^3 - y'e^{2x} = 0$	[_quadrature]	✓
13553	$(x - y) y - x^2y' = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
13554	$x' + 5x = 10t + 2$ i.c.	[[_linear, 'class A']]	✓
13555	$x' = \frac{x}{t} + \frac{x^2}{t^3}$ i.c.	[[_homogeneous, 'class D'], _rational, _Bernoulli]	✓
13565	$(x - y) y - x^2y' = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
13571	$(y^2 - x^2) y' + 2xy = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
13644	$5y' - xy = 0$	[_separable]	✓
13838	$y - xy' = 0$	[_separable]	✓
13843	$z - (-a^2 + t^2) z' = 0$	[_separable]	✓
13846	$r' + r \tan(t) = 0$	[_separable]	✓

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#	ODE	CAS classification	Solved?
13851	$y - x + (x + y)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
13852	$xy' + x + y = 0$	[_linear]	✓
13853	$x + y + (y - x)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
13855	$8y + 10x + (7x + 5y)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
13857	$t - s + ts' = 0$	[_linear]	✓
13858	$xy^2y' = x^3 + y^3$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
13859	$x \cos\left(\frac{y}{x}\right)(xy' + y) = y \sin\left(\frac{y}{x}\right)(-y + xy')$	[[_homogeneous, 'class A', _dAlembert]]	✓
13887	$\frac{x}{(x+y)^2} + \frac{(2x+y)y'}{(x+y)^2} = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class C', _dAlembert]]	✓
13888	$\frac{1}{x^2} + \frac{3y^2}{x^4} = \frac{2yy'}{x^3}$	[[_homogeneous, 'class A', _exact, _rational, _Bernoulli]]	✓
13889	$\frac{x^2y'}{(x-y)^2} - \frac{y^2}{(x-y)^2} = 0$	[_separable]	✓
13895	$y = yy' + y' - y'^2$	[_quadrature]	✓
13897	$y = xy' + y'$	[_separable]	✓
13900	$y' = \frac{2y}{x} - \sqrt{3}$	[_linear]	✓
13952	$\frac{x^2y'}{(x-y)^2} - \frac{y^2}{(x-y)^2} = 0$	[_separable]	✓
13955	$(x^2 + 1)y' - xy - \alpha = 0$	[_linear]	✓
13956	$x \cos\left(\frac{y}{x}\right)y' = y \cos\left(\frac{y}{x}\right) - x$	[[_homogeneous, 'class A', _dAlembert]]	✓
13987	$-y + xy' = 0$	[_separable]	✓
13992	$y' - \frac{y}{x} = 1$	[_linear]	✓
13994	$2xy + x^2y' = 0$	[_separable]	✓

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#	ODE	CAS classification	Solved?
13998	$y' + 3y = 0$	[_quadrature]	✓
14002	$2xy' - y = 0$	[_separable]	✓
14009	$y' - 2xy = 0$	[_separable]	✓
14015	$y'x \ln(x) - (\ln(x) + 1)y = 0$	[_separable]	✓
14033	$y' = xy$	[_separable]	✓
14034	$y' = -xy$	[_separable]	✓
14038	$y' = xy$	[_separable]	✓
14039	$y' = \frac{x}{y}$	[_separable]	✓
14040	$y' = \frac{y}{x}$	[_separable]	✓
14047	$y' = \frac{2x - y}{3y + x}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
14050	$y' = \frac{xy}{y^2 + x^2}$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
14054	$y' = \frac{y}{y - x}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
14066	$y' = \cos(x) + \frac{y}{x}$	[_linear]	✓
14083	$y' = 3y$	[_quadrature]	✓
14087	$y' = \frac{y}{x}$	[_separable]	✓
14088	$y' = \frac{2x}{y}$	[_separable]	✓
14092	$y - x^2y' = 0$	[_separable]	✓
14096	$y' = -\frac{y(2x + y)}{x(x + 2y)}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
14100	$y' = \frac{y}{x}$	[_separable]	✓

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#	ODE	CAS classification	Solved?
14102	$y' = \frac{y}{x} + \sin(x^2)$ i.c.	[_linear]	✓
14105	$x - yy' = 0$	[_separable]	✓
14106	$y - xy' = 0$	[_separable]	✓
14107	$x^2 - y + xy' = 0$	[_linear]	✓
14110	$y(2x - 1) + x(x + 1)y' = 0$	[_separable]	✓
14113	$y' = \frac{y}{x}$ i.c.	[_separable]	✓
14114	$y' = \frac{y}{x}$ i.c.	[_separable]	✓
14140	$y' = \frac{y}{y - x}$ i.c.	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
14141	$y' = \frac{y}{y - x}$ i.c.	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
14142	$y' = \frac{y}{y - x}$ i.c.	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
14143	$y' = \frac{y}{y - x}$ i.c.	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
14145	$y' = \frac{xy}{y^2 + x^2}$ i.c.	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
14185	$y' - iy = 0$ i.c.	[_quadrature]	✓
14277	$y' = \frac{y + 1}{t + 1}$	[_separable]	✓
14279	$y' = t^4 y$	[_separable]	✓
14285	$y' = \frac{t}{y}$	[_separable]	✓
14296	$w' = \frac{w}{t}$	[_separable]	✓
14298	$x' = -xt$ i.c.	[_separable]	✓
14299	$y' = ty$ i.c.	[_separable]	✓

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#	ODE	CAS classification	Solved?
14321	$y' = (t + 1)y$ i.c.	[_separable]	✓
14336	$\theta' = 2$	[_quadrature]	✓
14338	$v' = -\frac{v}{RC}$	[_quadrature]	✓
14418	$y' = -\frac{y}{t} + 2$	[_linear]	✓
14426	$y' = -\frac{y}{t} + 2$ i.c.	[_linear]	✓
14441	$y' = 3y$	[_quadrature]	✓
14449	$y' = ty$	[_separable]	✓
14451	$y' = \frac{ty}{t^2 + 1}$	[_separable]	✓
14457	$x' = -xt$ i.c.	[_separable]	✓
14659	$yy' = 2x$	[_separable]	✓
14706	$(-2 + x)y' = y + 3$	[_separable]	✓
14721	$y' = \frac{x}{y}$	[_separable]	✓
14723	$xyy' = y^2 + 9$	[_separable]	✓
14727	$y' = \frac{x}{y}$ i.c.	[_separable]	✓
14741	$y' = \frac{y}{x}$	[_separable]	✓
14757	$y' = \frac{y^2 - 1}{xy}$ i.c.	[_separable]	✓
14766	$y' = y \sin(x)$	[_separable]	✓
14783	$xy' = y + x^2 \cos(x)$ i.c.	[_linear]	✓
14787	$-y + xy' = x^2 e^{-x^2}$ i.c.	[_linear]	✓
14792	$x^2 y' - xy = y^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
14793	$y' = \frac{x}{y} + \frac{y}{x}$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓

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#	ODE	CAS classification	Solved?
14794	$\cos\left(\frac{y}{x}\right)\left(y' - \frac{y}{x}\right) = 1 + \sin\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A', _dAlembert]	✓
14795	$y' = \frac{x-y}{x+y}$ i.c.	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
14797	$y' - \frac{3y}{x} = \frac{y^2}{x^2}$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
14799	$y' - \frac{y}{x} = \frac{1}{y}$ i.c.	[[_homogeneous, 'class D', _rational, _Bernoulli]	✓
14800	$y' = \frac{y}{x} + \frac{x^2}{y^2}$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
14805	$(x+y)y' = y$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
14806	$(2xy + 2x^2)y' = x^2 + 2xy + 2y^2$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
14818	$2xy + y^2 + (x^2 + 2xy)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class B']]	✓
14822	$4x^3y + (x^4 - y^4)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlem- bert]	✓
14844	$x^3 + y^3 + xy^2y' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
14847	$3xy^3 - y + xy' = 0$	[[_homogeneous, 'class D', _rational, _Bernoulli]	✓
14856	$xyy' = 2y^2 + 2x^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
14858	$y' = \frac{x+2y}{2x-y}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
14859	$y' = \frac{y}{x} + \tan\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A', _dAlembert]	✓
14865	$xyy' = y^2 + xy + x^2$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓

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#	ODE	CAS classification	Solved?
14867	$xy^3y' = y^4 - x^2$	[[_homogeneous, 'class D'], _rational, _Bernoulli]	✓
15465	$2x - y - yy' = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
15466	$y' + 2y = 0$	[_quadrature]	✓
15467	$y' + xy = 0$	[_separable]	✓
15478	$y' = -\frac{x}{y}$	[_separable]	✓
15480	$y' = -\frac{2y}{x} - 3$	[_linear]	✓
15496	$y' + 2y = 0$	[_quadrature]	✓
	<i>i.c.</i>		
15509	$y' = \frac{y^2 + 2xy}{x^2}$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
15518	$y' + y \cos(x) = 0$	[_separable]	✓
15526	$2x - 3y + (2y - 3x)y' = 0$	[[_homogeneous, 'class A'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
15543	$y' = y\sqrt{t}$	[_separable]	✓
	<i>i.c.</i>		
15545	$ty' = y$	[_separable]	✓
15546	$y' = y \tan(t)$	[_separable]	✓
	<i>i.c.</i>		
15568	$y' = -\frac{t}{y}$	[_separable]	✓
	<i>i.c.</i>		
15577	$y' = \frac{y+1}{t+1}$	[_separable]	✓
15582	$y' + ky = 0$	[_quadrature]	✓
15615	$y' = \sqrt{\frac{y}{t}}$	[[_homogeneous, 'class A'], _dAlembert]	✓
	<i>i.c.</i>		
15626	$y' = y \cos(t)$	[_separable]	✓
	<i>i.c.</i>		
15629	$y' + yf(t) = 0$	[_separable]	✓
	<i>i.c.</i>		
15635	$y' = 3y$	[_quadrature]	✓

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#	ODE	CAS classification	Solved?
15636	$y' = -y$	[_quadrature]	✓
15640	$y' = yf(t)$	[_separable]	✓
	<i>i.c.</i>		
15647	$ty' + y = t$	[_linear]	✓
15663	$x' = \frac{3xt^2}{-t^3 + 1}$	[_separable]	✓
15664	$p' = t^3 + \frac{p}{t}$	[_linear]	✓
15676	$y' - \frac{y}{t} = \ln(t)$	[_linear]	✓
15701	$\frac{t}{\sqrt{t^2 + y^2}} + \frac{yy'}{\sqrt{t^2 + y^2}} = 0$	[_separable]	✓
15702	$y \cos(ty) + t \cos(ty) y' = 0$	[_separable]	✓
15704	$3ty^2 + y^3 y' = 0$	[_separable]	✓
15708	$e^{ty} + \frac{t e^{ty} y'}{y} = 0$	[_separable]	✓
15711	$y^2 + 2tyy' = 0$	[_separable]	✓
15712	$\frac{3t^2}{y} - \frac{t^3 y'}{y^2} = 0$	[_separable]	✓
15715	$2ty + (t^2 + y^2) y' = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]	✓
15718	$3t^2 + 3y^2 + 6tyy' = 0$	[[_homogeneous, 'class A'], _exact, _rational, _Bernoulli]	✓
15721	$-2ty^2 \sin(t^2) + 2y \cos(t^2) y' = 0$	[_separable]	✓
15727	$-\frac{y^2 e^{\frac{y}{t}}}{t^2} + 1 + e^{\frac{y}{t}} \left(1 + \frac{y}{t}\right) y' = 0$	[[_homogeneous, 'class A', _exact, _dAlembert]	✓
15728	$2t \sin\left(\frac{y}{t}\right) - y \cos\left(\frac{y}{t}\right) + t \cos\left(\frac{y}{t}\right) y' = 0$	[[_homogeneous, 'class A', _exact, _dAlembert]	✓
15729	$2ty^2 + 2t^2 yy' = 0$	[_separable]	✓
	<i>i.c.</i>		
15730	$1 + \frac{y}{t^2} - \frac{y'}{t} = 0$	[_linear]	✓
	<i>i.c.</i>		
15741	$t^2 y + t^3 y' = 0$	[_separable]	✓
15742	$y(2e^t + 4t) + 3(e^t + t^2) y' = 0$	[_separable]	✓

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#	ODE	CAS classification	Solved?
15744	$2ty + y^2 - t^2y' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
15747	$5ty^2 + y + (2t^3 - t)y' = 0$	[[_homogeneous, 'class D', _rational, _Bernoulli]]	✓
15751	$2t + 2y + (2t + 2y)y' = 0$	[_quadrature]	✓
15752	$\frac{9t}{5} + 2y + (2t + 2y)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
15753	$2t + \frac{19y}{10} + \left(\frac{19t}{10} + 2y\right)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
15757	$-y + ty' = ty^3 \sin(t)$	[[_homogeneous, 'class D', _Bernoulli]]	✓
15760	$y' - \frac{y}{t} = ty^2$	[[_homogeneous, 'class D', _rational, _Bernoulli]]	✓
15761	$y' - \frac{y}{t} = \frac{y^2}{t^2}$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
15762	$y' - \frac{y}{t} = \frac{y^2}{t}$	[_separable]	✓
15764	$\cos\left(\frac{t}{y+t}\right) + e^{\frac{2y}{t}}y' = 0$	[[_homogeneous, 'class A', _dAlembert]]	✓
15765	$y \ln\left(\frac{t}{y}\right) + \frac{t^2y'}{y+t} = 0$	[[_homogeneous, 'class A', _dAlembert]]	✓
15767	$\frac{2}{t} + \frac{1}{y} + \frac{ty'}{y^2} = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
15770	$2t + (y - 3t)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class C'], _dAlem- bert]]	✓
15771	$2y - 3t + ty' = 0$	[_linear]	✓
15772	$ty - y^2 + t(t - 3y)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
15773	$t^2 + ty + y^2 - ty'y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
15774	$t^3 + y^3 - ty^2y' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓

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#	ODE	CAS classification	Solved?
15775	$y' = \frac{t + 4y}{4t + y}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
15776	$t - y + ty' = 0$	[_linear]	✓
15777	$y + (y + t)y' = 0$	[[_homogeneous, 'class A'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
15778	$2t^2 - 7ty + 5y^2 + ty' = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
15780	$y^2 = (ty - 4t^2)y'$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
15782	$(t^2 - y^2)y' + y^2 + ty = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
15783	$tyy' - t^2e^{-\frac{y}{t}} - y^2 = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓
15784	$y' = \frac{1}{\frac{2ye^{-\frac{t}{y}}}{t} + \frac{t}{y}}$	[[_homogeneous, 'class A'], _dAlembert]	✓
15788	$y' = \frac{4y^2 - t^2}{2ty}$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
15789	$t + y - ty' = 0$	[_linear]	✓
15792	$y^3 - t^3 - ty^2y' = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
15793	$ty^3 - (t^4 + y^4)y' = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
15799	$y' - \frac{2y}{x} = -x^2y$	[_separable]	✓
15811	$y' = \frac{y^2 - t^2}{ty}$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
15812	$y \sin\left(\frac{t}{y}\right) - \left(t + t \sin\left(\frac{t}{y}\right)\right)y' = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓
15815	$y' - \frac{y}{t} = \frac{y^2}{t}$	[_separable]	✓

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#	ODE	CAS classification	Solved?
15822	$3t + (t - 4y)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class C', _dAlem- bert]]	✓
15823	$y - t + (y + t)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
15825	$y^2 + (t^2 + ty)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
15826	$r' = \frac{r^2 + t^2}{rt}$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
15827	$x' = \frac{5tx}{x^2 + t^2}$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
15839	$y - ty' = 2y^2 \ln(t)$	[[_homogeneous, 'class D', _Bernoulli]]	✓
15852 i.c.	$y' = -\frac{y}{t-2}$	[_separable]	✓
16341	$y' = \frac{x}{y}$	[_separable]	✓
16364	$y' = \frac{1+y}{x-1}$	[_separable]	✓
16365	$y' = \frac{x+y}{x-y}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
16369	$y' = -\frac{y}{x}$	[_separable]	✓
16370	$y' = 1$	[_quadrature]	✓
16372	$y' = y$	[_quadrature]	✓
16378 i.c.	$xy' = 2x - y$	[_linear]	✓
16381 i.c.	$\sin(x)y' - y \cos(x) = 0$	[_separable]	✓
16397 i.c.	$y' = \frac{y}{x}$	[_separable]	✓
16398	$\cos(y') = 0$	[_quadrature]	✓
16399	$e^{y'} = 1$	[_quadrature]	✓
16402	$\tan(y') = 0$	[_quadrature]	✓

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#	ODE	CAS classification	Solved?
16410	$(x + 1)y' = y - 1$	[_separable]	✓
16413	$xy' = y + x \cos\left(\frac{y}{x}\right)^2$	[[_homogeneous, 'class A', _dAlembert]	✓
16414	$x - y + xy' = 0$	[_linear]	✓
16416	$x^2y' = x^2 - xy + y^2$	[[_homogeneous, 'class A', _rational, _Riccati]	✓
16418	$2x^2y' = y^2 + x^2$	[[_homogeneous, 'class A', _rational, _Riccati]	✓
16419	$4x - 3y + (2y - 3x)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
16420	$y - x + (x + y)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
16453	$xy' + y = 2x$	[_linear]	✓
16457	$3xy^2y' - 2y^3 = x^3$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
16459	$y' + 3xy = ye^{x^2}$	[_separable]	✓
16470	$x(2x^2 + y^2) + y(x^2 + 2y^2)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlem- bert]	✓
16474	$2x + \frac{y^2 + x^2}{x^2y} = \frac{(y^2 + x^2)y'}{xy^2}$	[[_homogeneous, 'class D', _exact, _rational]	✓
16477	$\frac{xy}{\sqrt{x^2 + 1}} + 2xy - \frac{y}{x} + (\sqrt{x^2 + 1} + x^2 - \ln(x))y' = 0$	[_separable]	✓
16480	<i>i.c.</i> $\frac{2x}{y^3} + \frac{(y^2 - 3x^2)y'}{y^4} = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlem- bert]	✓
16482	$3x^2y + y^3 + (x^3 + 3xy^2)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlem- bert]	✓
16484	$x^2 + y - xy' = 0$	[_linear]	✓
16496	$x^2y'^2 + 3xyy' + 2y^2 = 0$	[_separable]	✓
16499	$y'^3 = yy'^2 - x^2y' + x^2y$	[_quadrature]	✓
16531	$y'^2 - y^2 = 0$	[_quadrature]	✓

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Table 2.7 first order ode homogD

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#	ODE	CAS classification	Solved?
16546	$x^3 - 3xy^2 + (y^3 - 3x^2y)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]	✓
16547	$5xy - 4y^2 - 6x^2 + \left(y^2 - 8xy + \frac{5x^2}{2}\right)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]	✓
16553	$xyy' - y^2 = x^4$	[[_homogeneous, 'class D', _rational, _Bernoulli]	✓
16554	$\frac{1}{x^2 - xy + y^2} = \frac{y'}{2y^2 - xy}$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
16558	$y'(3x^2 - 2x) - y(6x - 2) = 0$	[_separable]	✓
16559	$xy^2y' - y^3 = \frac{x^4}{3}$	[[_homogeneous, 'class D', _rational, _Bernoulli]	✓
16560	$1 + e^{\frac{x}{y}} + e^{\frac{x}{y}} \left(1 - \frac{x}{y}\right)y' = 0$	[[_homogeneous, 'class A', _exact, _dAlembert]	✓
	<i>i.c.</i>		
16561	$x^2 + y^2 - xyy' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
16563	$y + xy^2 - xy' = 0$	[[_homogeneous, 'class D', _rational, _Bernoulli]	✓
16564	$x^2 + y^2 + 2x + 2yy' = 0$	[[_homogeneous, 'class D', _rational, _Bernoulli]	✓
16586	$y^4 = 1$	[_quadrature]	✓
16999	$x^2y' = y - xy$	[_separable]	✓
	<i>i.c.</i>		
17022	$-y + ty' = t^3e^{-t}$	[_linear]	✓
17049	$t(-4 + t)y' + y = 0$	[_separable]	✓
	<i>i.c.</i>		
17054	$y' = \frac{t - y}{2t + 5y}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
17062	$y' = -\frac{4t}{y}$	[_separable]	✓
	<i>i.c.</i>		
17072	$2x + 4y + (2x - 2y)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
17074	$2xy^2 + 2y + (2x + 2x^2y)y' = 0$	[_separable]	✓

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Table 2.7 first order ode homogD

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#	ODE	CAS classification	Solved?
17075	$y' = -\frac{4x+2y}{2x+3y}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
17076	$y' = -\frac{4x-2y}{2x-3y}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
17082	$\frac{x}{(y^2+x^2)^{3/2}} + \frac{yy'}{(y^2+x^2)^{3/2}} = 0$	[_separable]	✓
17083	$2x - y + (2y - x)y' = 0$ i.c.	[[_homogeneous, 'class A'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
17089	$3x^2y + 2xy + y^3 + (y^2 + x^2)y' = 0$	[[_homogeneous, 'class D'], _rational]	✓
17091	$\frac{y'}{\frac{x}{y} - \sin(y)} = 0$	[_quadrature]	✓
17096	$3xy + y^2 + (xy + x^2)y' = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
17099	$\frac{(3x^3 - xy^2)y'}{y^3 + 3x^2y} = 1$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
17102	$xyy' = (x + y)^2$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
17103	$y' = \frac{4y - 7x}{5x - y}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
17105	$y' = \frac{y^4 + 2xy^3 - 3y^2x^2 - 2x^3y}{2y^2x^2 - 2x^3y - 2x^4}$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
17106	$(y + xe^{\frac{x}{y}})y' = ye^{\frac{x}{y}}$	[[_homogeneous, 'class A'], _dAlembert]	✓
17107	$xyy' = y^2 + x^2$ i.c.	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
17119	$(3x - y)x' + 9y - 2x = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
17124	$\frac{\sqrt{x}y'}{y} = 1$	[_separable]	✓
17125	$5xy^2 + 5y + (5x^2y + 5x)y' = 0$	[_separable]	✓

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Table 2.7 first order ode homogD  
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#	ODE	CAS classification	Solved?
17129	$x' = \frac{2xy + x^2}{3y^2 + 2xy}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
17130	$4xyy' = 8x^2 + 5y^2$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
17567	$y' = 2$	[_quadrature]	✓
17573	$y' = \frac{2xy}{y^2 + x^2}$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
17575	$y^2 + x^2y' = xyy'$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
17576	$(x + y)y' = y - x$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
17577	$x - y \cos\left(\frac{y}{x}\right) + x \cos\left(\frac{y}{x}\right)y' = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓
17602	$\frac{2x}{y^3} + \frac{(y^2 - 3x^2)y'}{y^4} = 0$	[[_homogeneous, 'class A'], _exact, _rational, _dAlem- bert]	✓
17612	$yy'^2 + y'(x - y) - x = 0$	[_quadrature]	✓
17614	$y'^3 - (y^2 + xy + x^2)y'^2$ $+ (x^3y + y^2x^2 + xy^3)y' - x^3y^3 = 0$	[_quadrature]	✓
17733	$xy' = 2y$	[_separable]	✓
17735	$y' = ky$	[_quadrature]	✓
17739	$xy' = y + x^2 + y^2$	[[_homogeneous, 'class D'], _rational, _Riccati]	✓
17740	$y' = \frac{xy}{y^2 + x^2}$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
17741	$2xyy' = y^2 + x^2$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
17743	$y' = \frac{y^2}{xy - x^2}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
17755	$x^5y' + y^5 = 0$	[_separable]	✓
17757	$y' = 2xy$	[_separable]	✓
17760	$y' + y \tan(x) = 0$	[_separable]	✓

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Table 2.7 first order ode homogD

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#	ODE	CAS classification	Solved?
17761	$y' - y \tan(x) = 0$	[_separable]	✓
17780	$x^2 - 2y^2 + xyy' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
17781	$x^2y' - 3xy - 2y^2 = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
17782	$x^2y' = 3(y^2 + x^2) \arctan\left(\frac{y}{x}\right) + xy$	[[_homogeneous, 'class A', _dAlembert]	✓
17783	$x \sin\left(\frac{y}{x}\right) y' = y \sin\left(\frac{y}{x}\right) + x$	[[_homogeneous, 'class A', _dAlembert]	✓
17784	$xy' = y + 2x e^{-\frac{y}{x}}$	[[_homogeneous, 'class A', _dAlembert]	✓
17785	$x - y - (x + y) y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
17786	$xy' = 2x + 3y$	[_linear]	✓
17788	$x^2y' = y^2 + 2xy$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
17789	$x^3 + y^3 - x^2y' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
17803	$y + y \cos(xy) + (x + x \cos(xy)) y' = 0$	[_separable]	✓
17806	$-\frac{\sin\left(\frac{x}{y}\right)}{y} + \frac{x \sin\left(\frac{x}{y}\right) y'}{y^2} = 0$	[_separable]	✓
17807	$1 + y + (1 - x) y' = 0$	[_separable]	✓
17816	$\frac{x}{(y^2 + x^2)^{3/2}} + \frac{yy'}{(y^2 + x^2)^{3/2}} = 0$	[_separable]	✓
17819	$\frac{4y^2 - 2x^2}{4xy^2 - x^3} + \frac{(8y^2 - x^2) y'}{4y^3 - x^2y} = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]	✓
17820	$(3x^2 - y^2) y' - 2xy = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
17833	$xy' = x^5 + x^3y^2 + y$	[[_homogeneous, 'class D', _rational, _Riccati]	✓
17834	$(x + y) y' = y - x$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
17835	$xy' = y + x^2 + 9y^2$	[[_homogeneous, 'class D', _rational, _Riccati]	✓

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Table 2.7 first order ode homogD

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#	ODE	CAS classification	Solved?
17836	$y^2 - y + xy' = 0$	[_separable]	✓
17837	$-y + xy' = 2x^2 - 3$	[_linear]	✓
17842	$2xy^2 - y + xy' = 0$	[[_homogeneous, 'class D'], _rational, _Bernoulli]	✓
17883	$xyy' = y^2 + x^2y'$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
17886	$x^2 + y = xy'$	[_linear]	✓
17894	$y^2 - 3xy - 2x^2 = (x^2 - xy)y'$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
17900	$x^2y^4 + x^6 - x^3y^3y' = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
17902	$y' = 1 + \frac{y}{x} - \frac{y^2}{x^2}$	[[_homogeneous, 'class A'], _rational, _Riccati]	✓
17903	$y' = \frac{2xy e^{\frac{x^2}{y^2}}}{y^2 + y^2 e^{\frac{x^2}{y^2}} + 2x^2 e^{\frac{x^2}{y^2}}}$	[[_homogeneous, 'class A'], _dAlembert]	✓
17907	$\frac{y-x}{(x+y)^3} - \frac{2xy'}{(x+y)^3} = 0$	[_linear]	✓
17910	$3x^2y - y^3 - (3xy^2 - x^3)y' = 0$	[[_homogeneous, 'class A'], _exact, _rational, _dAlem- bert]	✓
17916	$3xy + y^2 + (3xy + x^2)y' = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
17917	$x^2y' = y^2 + xy + x^2$	[[_homogeneous, 'class A'], _rational, _Riccati]	✓
17922	$x^2y' - y^2 = 2xy$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
18178	$x' = \cos\left(\frac{x}{t}\right)$	[[_homogeneous, 'class A'], _dAlembert]	✓
18179	$(t^2 - x^2)x' = xt$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
18183	$x' + x \tan(t) = 0$	[_separable]	✓
18190	$x' = -\lambda x$	[_quadrature]	✓
18215	$v' + \frac{2v}{u} = 3$	[_linear]	✓

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Table 2.7 first order ode homogD  
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#	ODE	CAS classification	Solved?
18221	$y^2 = x(y - x)y'$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
18222	$2x^2y + y^3 - x^3y' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
18225	$yy' + x = my$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
18226	$\frac{2x}{y^3} + \left(\frac{1}{y^2} - \frac{3x^2}{y^4}\right)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlem- bert]]	✓
18231	$p' = \frac{p + at^3 - 2pt^2}{t(-t^2 + 1)}$	[_linear]	✓
18247	$v' + \frac{2v}{u} = 3v$	[_separable]	✓
18250	$\frac{y'}{x} = y \sin(x^2 - 1) - \frac{2y}{\sqrt{x}}$	[_separable]	✓
18251	$y' = 1 + \frac{2y}{x - y}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
18300	$x(-x^2 + 1)y' + y(x^2 - 1) = x^3$	[_linear]	✓
18302	$x(-x^2 + 1)y' + (2x^2 - 1)y = ax^3$	[_linear]	✓
18316	$x(x - 2y)y' + x^2 + 2y^2 = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
18317	$5xyy' - y^2 - x^2 = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
18318	$(x^2 + 3xy - y^2)y' - 3y^2 = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
18319	$(x^2 + 2xy)y' - 3x^2 + 2xy - y^2 = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
18320	$5xyy' - 4x^2 - y^2 = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
18321	$(x^2 - 2xy)y' + x^2 - 3xy + 2y^2 = 0$	[_linear]	✓
18322	$3x^2y' + 2x^2 - 3y^2 = 0$	[[_homogeneous, 'class A', _rational, _Riccati]]	✓
18407	$x^2 + y^2 - 2xyy' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓

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Table 2.7 first order ode homogD

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#	ODE	CAS classification	Solved?
18408	$y^2 + (xy + x^2)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
18409	$x^2y - (x^3 + y^3)y' = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
18410	$(4y + 3x)y' + y - 2x = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
18413	$x^2 - 4xy - 2y^2 + (y^2 - 4xy - 2x^2)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlem- bert]]	✓
18418	$y - xy' + \ln(x) = 0$	[_linear]	✓
18421	$x^4e^x - 2mxy^2 + 2mx^2yy' = 0$	[[_homogeneous, 'class D', _Bernoulli]]	✓
18423	$x^2y - 2xy^2 - (x^3 - 3x^2y)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
18425	$x^2 + y^2 + 2x + 2yy' = 0$	[[_homogeneous, 'class D', _rational, _Bernoulli]]	✓
18429	$y^3 - 2x^2y + (2xy^2 - x^3)y' = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
18451	$xy' + \frac{y^2}{x} = y$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
18454	$x^2y - (x^3 + y^3)y' = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
18455	$x(-x^2 + 1)y' + (2x^2 - 1)y = ax^3$	[_linear]	✓
18457	$yy' + x = m(-y + xy')$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
18465	$yy' = ax$	[_separable]	✓
18467	$(x + y)y' + x - y = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
18469	$2xy + (y^2 - x^2)y' = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
18474	$y^2 + x^2y' = xy y'$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
18477	$y'^3 + 2xy'^2 - y^2y'^2 - 2xy^2y' = 0$	[_quadrature]	✓

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Table 2.7 first order ode homogD

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#	ODE	CAS classification	Solved?
18479	$y'^3(x+2y) + 3y'^2(x+y) + (2x+y)y' = 0$	[_quadrature]	✓
18481	$4y^2y'^2 + 2y'xy(3x+1) + 3x^3 = 0$	[_separable]	✓
18482	$y'^2 - 7y' + 12 = 0$	[_quadrature]	✓
18497	$xy(y - xy') = yy' + x$	[_separable]	✓
18501	$xy^2(y'^2 + 2) = 2y^3y' + x^3$	[_separable]	✓
18503	$y'^2 - 9y' + 18 = 0$	[_quadrature]	✓
18513	$\left(y'^2 - \frac{1}{a^2 - x^2}\right) \left(y' - \sqrt{\frac{y}{x}}\right) = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓
18515	$xyy'^2 + y'(3x^2 - 2y^2) - 6xy = 0$	[_separable]	✓
18517	$y'^3 - (y^2 + xy + x^2)y'^2 + (x^3y + y^2x^2 + xy^3)y' - x^3y^3 = 0$	[_quadrature]	✓

## 2.3.6 first order ode homogD2

Table 2.8: first order ode homogD2

#	ODE	CAS classification	Solved?
23	$y' = y - x + 1$	[[_linear, 'class A']]	✓
24	$y' = x + 1 - y$	[[_linear, 'class A']]	✓
41	$y' + 2xy = 0$	[_separable]	✓
43	$y' = y \sin(x)$	[_separable]	✓
44	$(x + 1)y' = 4y$	[_separable]	✓
49	$(-x^2 + 1)y' = 2y$	[_separable]	✓
59	$y' = ye^x$	[_separable]	✓
	i.c.		
62	$y' = 4x^3y - y$	[_separable]	✓
	i.c.		
64	$\tan(x)y' = y$	[_separable]	✓
	i.c.		
65	$-y + xy' = 2x^2y$	[_separable]	✓
	i.c.		
77	$xy' + 2y = 3x$	[_linear]	✓
	i.c.		
80	$3xy' + y = 12x$	[_linear]	✓
81	$-y + xy' = x$	[_linear]	✓
	i.c.		
83	$xy' + y = 3xy$	[_separable]	✓
	i.c.		
103	$y' + p(x)y = 0$	[_separable]	✓
105	$(x + y)y' = x - y$	[[_homogeneous, 'class A'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
106	$2xyy' = x^2 + 2y^2$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
108	$y'(x - y) = x + y$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
109	$x(x + y)y' = (x - y)y$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
110	$(x + 2y)y' = y$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓

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Table 2.8 first order ode homogD2

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#	ODE	CAS classification	Solved?
111	$xy^2y' = x^3 + y^3$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
112	$x^2y' = xy + x^2e^{\frac{y}{x}}$	[[_homogeneous, 'class A', _dAlembert]	✓
113	$x^2y' = xy + y^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
114	$xyy' = x^2 + 3y^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
115	$(x^2 - y^2)y' = 2xy$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
119	$x(x + y)y' + y(3x + y) = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
135	$2x + 3y + (3x + 2y)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
136	$4x - y + (6y - x)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
137	$3x^2 + 2y^2 + (4xy + 6y^2)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]	✓
146	$\frac{2x^{5/2} - 3y^{5/3}}{2x^{5/2}y^{2/3}} + \frac{(3y^{5/3} - 2x^{5/2})y'}{3x^{3/2}y^{5/3}} = 0$	[[_1st_order, _with_linear_symmetries], _exact, _rational]	✓
166	$y' = -\frac{y(2x^3 - y^3)}{x(2y^3 - x^3)}$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
181	$xy + y^2 - x^2y' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
183	$3y + x^4y' = 2xy$	[_separable]	✓
186	$2xy + x^2y' = y^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
189	$x^2y' = xy + 3y^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
190	$6xy^3 + 2y^4 + (9y^2x^2 + 8xy^3)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class B']]	✓
192	$x^3y' = x^2y - y^3$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓

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Table 2.8 first order ode homogD2

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#	ODE	CAS classification	Solved?
196	$2x^2y - x^3y' = y^3$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
211	$y' = -\frac{3x^2 + 2y^2}{4xy}$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
212	$y' = \frac{3y + x}{y - 3x}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
665	$y' = y - x + 1$	[[_linear, 'class A']]	✓
666	$y' = x + 1 - y$	[[_linear, 'class A']]	✓
677	$y' + 2xy = 0$	[_separable]	✓
679	$y' = y \sin(x)$	[_separable]	✓
680	$(x + 1)y' = 4y$	[_separable]	✓
685	$(-x^2 + 1)y' = 2y$	[_separable]	✓
694	$y' = ye^x$	[_separable]	✓
	<i>i.c.</i>		
697	$y' = 4x^3y - y$	[_separable]	✓
	<i>i.c.</i>		
699	$\tan(x)y' = y$	[_separable]	✓
	<i>i.c.</i>		
700	$-y + xy' = 2x^2y$	[_separable]	✓
	<i>i.c.</i>		
708	$xy' + 2y = 3x$	[_linear]	✓
	<i>i.c.</i>		
711	$3xy' + y = 12x$	[_linear]	✓
712	$-y + xy' = x$	[_linear]	✓
	<i>i.c.</i>		
714	$xy' + y = 3xy$	[_separable]	✓
	<i>i.c.</i>		
729	$(x + y)y' = x - y$	[[_homogeneous, 'class A'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
730	$2xyy' = y^2 + x^2$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
732	$y'(x - y) = x + y$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓

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Table 2.8 first order ode homogD2

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#	ODE	CAS classification	Solved?
733	$x(x+y)y' = (x-y)y$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
734	$(x+2y)y' = y$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
735	$xy^2y' = x^3 + y^3$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
736	$x^2y' = xy + x^2e^{\frac{y}{x}}$	[[_homogeneous, 'class A', _dAlembert]]	✓
737	$x^2y' = xy + y^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
738	$xyy' = x^2 + 3y^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
739	$(x^2 - y^2)y' = 2xy$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
743	$x(x+y)y' + y(3x+y) = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
746	$(x+y)y' = 0$	[_quadrature]	✓
759	$2x + 3y + (3x + 2y)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
760	$4x - y + (6y - x)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
761	$3x^2 + 2y^2 + (4xy + 6y^2)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlem- bert]]	✓
770	$\frac{2x^{5/2} - 3y^{5/3}}{2x^{5/2}y^{2/3}} + \frac{(3y^{5/3} - 2x^{5/2})y'}{3x^{3/2}y^{5/3}} = 0$	[[_1st_order, _with_lin- ear_symmetries], _exact, _rational]	✓
773	$xy + y^2 - x^2y' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
775	$3y + x^4y' = 2xy$	[_separable]	✓
778	$2xy + x^2y' = y^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
781	$x^2y' = xy + 3y^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓

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Table 2.8 first order ode homogD2

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#	ODE	CAS classification	Solved?
782	$6xy^3 + 2y^4 + (9y^2x^2 + 8xy^3) y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class B']]]	✓
784	$x^3y' = x^2y - y^3$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
788	$2x^2y - x^3y' = y^3$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
803	$y' = \frac{-3x^2 - 2y^2}{4xy}$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
804	$y' = \frac{3y + x}{y - 3x}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
1107	$-y + ty' = t^2e^{-t}$	[_linear]	✓
1158	$y' = \frac{y^2 + xy + x^2}{x^2}$	[[_homogeneous, 'class A', _rational, _Riccati]]	✓
1159	$y' = \frac{x^2 + 3y^2}{2xy}$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
1160	$y' = \frac{4y - 3x}{2x - y}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
1161	$y' = -\frac{4x + 3y}{2x + y}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
1162	$y' = \frac{3y + x}{x - y}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
1163	$x^2 + 3xy + y^2 - x^2y' = 0$	[[_homogeneous, 'class A', _rational, _Riccati]]	✓
1164	$y' = \frac{x^2 - 3y^2}{2xy}$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
1165	$y' = \frac{3y^2 - x^2}{2xy}$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
1167	$t(-4 + t)y' + y = 0$ i.c.	[_separable]	✓
1174	$y' = -\frac{4t}{y}$	[_separable]	✓

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Table 2.8 first order ode homogD2

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#	ODE	CAS classification	Solved?
1194	$2x + 4y + (2x - 2y)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
1196	$2xy^2 + 2y + (2x + 2x^2y)y' = 0$	[_separable]	✓
1197	$y' = \frac{-ax - by}{bx + cy}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
1198	$y' = \frac{-ax + by}{bx - cy}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
1204	$\frac{x}{(y^2 + x^2)^{3/2}} + \frac{yy'}{(y^2 + x^2)^{3/2}} = 0$	[_separable]	✓
1205	<i>i.c.</i> $2x - y + (2y - x)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
1210	$3x^2y + 2xy + y^3 + (y^2 + x^2)y' = 0$	[[_homogeneous, 'class D', _rational]]	✓
1217	$3xy + y^2 + (xy + x^2)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
1231	<i>i.c.</i> $x + y + (x + 2y)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
1232	$(1 + e^x)y' = y - ye^x$	[_separable]	✓
1243	$xy' = e^{\frac{y}{x}}x + y$	[[_homogeneous, 'class A', _dAlembert]]	✓
1245	$3t + 2y = -ty'$	[_linear]	✓
1246	$y' = \frac{x + y}{x - y}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
1247	$2xy + 3y^2 - (x^2 + 2xy)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
1519	$y' = 2y$	[_quadrature]	✓
1537	$y' + ay = 0$	[_quadrature]	✓
1538	$y' + 3x^2y = 0$	[_separable]	✓
1539	$xy' + y \ln(x) = 0$	[_separable]	✓

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Table 2.8 first order ode homogD2

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#	ODE	CAS classification	Solved?
1540	$xy' + 3y = 0$	[_separable]	✓
1541	$x^2y' + y = 0$	[_separable]	✓
1542	$y' + \frac{(x+1)y}{x} = 0$	[_separable]	✓
	i.c.		
1543	$xy' + \left(1 + \frac{1}{\ln(x)}\right)y = 0$	[_separable]	✓
	i.c.		
1544	$xy' + (1 + x \cot(x))y = 0$	[_separable]	✓
	i.c.		
1545	$y' - \frac{2xy}{x^2+1} = 0$	[_separable]	✓
	i.c.		
1546	$y' + \frac{ky}{x} = 0$	[_separable]	✓
	i.c.		
1547	$y' + \tan(kx)y = 0$	[_separable]	✓
	i.c.		
1584	$y'(x^2+1) + xy = 0$	[_separable]	✓
1597	$yy' + x = 0$	[_separable]	✓
	i.c.		
1599	$(x+1)(-2+x)y' + y = 0$	[_separable]	✓
	i.c.		
1613	$y' = 2xy$	[_separable]	✓
1615	$y' = \frac{2x+3y}{x-4y}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
1626	$y' = \frac{y + xe^{-\frac{y}{x}}}{x}$	[[_homogeneous, 'class A', _dAlembert]]	✓
1628	$x^2y' = y^2 + xy - x^2$	[[_homogeneous, 'class A', _rational, _Riccati]]	✓
	i.c.		
1642	$y' = \frac{x+y}{x}$	[_linear]	✓
1643	$y' = \frac{y^2 + 2xy}{x^2}$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
1644	$xy^3y' = y^4 + x^4$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
1645	$y' = \frac{y}{x} + \sec\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A', _dAlembert]]	✓

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Table 2.8 first order ode homogD2  
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#	ODE	CAS classification	Solved?
1646	$x^2y' = y^2 + xy + x^2$	[[_homogeneous, 'class A', _rational, _Riccati]	✓
1647	$xyy' = x^2 + 2y^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
1648	$y' = \frac{2y^2 + x^2e^{-\frac{y^2}{x^2}}}{2xy}$	[[_homogeneous, 'class A']]	✓
1649	$y' = \frac{xy + y^2}{x^2}$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
1650	$y' = \frac{x^3 + y^3}{xy^2}$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
1651	$xyy' + x^2 + y^2 = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
1652	$y' = \frac{y^2 - 3xy - 5x^2}{x^2}$	[[_homogeneous, 'class A', _rational, _Riccati]	✓
1653	$x^2y' = 2x^2 + y^2 + 4xy$	[[_homogeneous, 'class A', _rational, _Riccati]	✓
1654	$xyy' = 3x^2 + 4y^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
1655	$y' = \frac{x + y}{x - y}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
1657	$y' = \frac{y^3 + 2xy^2 + x^2y + x^3}{x(x + y)^2}$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
1658	$y' = \frac{x + 2y}{2x + y}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
1659	$y' = \frac{y}{y - 2x}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
1660	$y' = \frac{xy^2 + 2y^3}{x^3 + x^2y + xy^2}$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
1661	$y' = \frac{x^3 + x^2y + 3y^3}{x^3 + 3xy^2}$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
1662	$x^2y' = y^2 + xy - 4x^2$	[[_homogeneous, 'class A', _rational, _Riccati]	✓

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Table 2.8 first order ode homogD2

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#	ODE	CAS classification	Solved?
1663	$xyy' = x^2 - xy + y^2$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
1664	$y' = \frac{2y^2 - xy + 2x^2}{xy + 2x^2}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
1665	$y' = \frac{y^2 + xy + x^2}{xy}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
1680	$6y^2x^2 + 4x^3yy' = 0$	[_separable]	✓
1682	$14x^2y^3 + 21x^2y^2y' = 0$	[_quadrature]	✓
1684	$(x + y)^2 + (x + y)^2 y' = 0$	[_quadrature]	✓
1685	$4x + 7y + (4y + 3x)y' = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
1687	$2x + y + (2x + 2y)y' = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
1692	$\frac{x}{(y^2 + x^2)^{3/2}} + \frac{yy'}{(y^2 + x^2)^{3/2}} = 0$	[_separable]	✓
1702	$7x + 4y + (4x + 3y)y' = 0$	[[_homogeneous, 'class A'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
1707	$2xyy' + x^2 + y^2 = 0$	[[_homogeneous, 'class A'], _exact, _rational, _Bernoulli]	✓
1712	$x^2y' - y^2 = 0$	[_separable]	✓
1713	$y - xy' = 0$	[_separable]	✓
1714	$3x^2y + 2x^3y' = 0$	[_separable]	✓
1715	$2y^3 + 3y^2y' = 0$	[_quadrature]	✓
1718	$27xy^2 + 8y^3 + (18x^2y + 12xy^2)y' = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
1722	$x^2y + 4xy + 2y + (x^2 + x)y' = 0$	[_separable]	✓
1723	$-y + (x^4 - x)y' = 0$	[_separable]	✓
1731	$x^4y^4 + x^5y^3y' = 0$	[_separable]	✓

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Table 2.8 first order ode homogD2

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#	ODE	CAS classification	Solved?
1734	$3xy + 2y^2 + y + (x^2 + 2xy + x + 2y)y' = 0$	[[_homogeneous, 'class D'], _rational, [_Abel, '2nd type', 'class B']]	✓
2299	$y \cos(t) + y' = 0$	[_separable]	✓
2300	$\sqrt{t} \sin(t) y + y' = 0$	[_separable]	✓
2306	$\sqrt{t^2 + 1} y + y' = 0$ i.c.	[_separable]	✓
2307	$\sqrt{t^2 + 1} y e^{-t} + y' = 0$	[_separable]	✓
2329	$3ty' = y \cos(t)$ i.c.	[_separable]	✓
2331	$2tyy' = 3y^2 - t^2$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
2333	$y' = \frac{y+t}{t-y}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
2334	$e^{\frac{t}{y}}(-t+y)y' + y(1+e^{\frac{t}{y}}) = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓
2342	$2ty^3 + 3t^2y^2y' = 0$ i.c.	[_separable]	✓
2346	$3ty + y^2 + (t^2 + ty)y' = 0$ i.c.	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
2472	$y \cos(t) + y' = 0$	[_separable]	✓
2473	$\sqrt{t} \sin(t) y + y' = 0$	[_separable]	✓
2479	$\sqrt{t^2 + 1} y + y' = 0$ i.c.	[_separable]	✓
2481	$\sqrt{t^2 + 1} y e^{-t} + y' = 0$ i.c.	[_separable]	✓
2500	$3ty' = y \cos(t)$ i.c.	[_separable]	✓
2501	$y' = \frac{2y}{t} + \frac{y^2}{t^2}$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
2503	$2tyy' = 3y^2 - t^2$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
2505	$y' = \frac{y+t}{t-y}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓

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Table 2.8 first order ode homogD2

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#	ODE	CAS classification	Solved?
2506	$e^{\frac{t}{y}}(-t+y)y' + y(1 + e^{\frac{t}{y}}) = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
2514	$2ty^3 + 3t^2y^2y' = 0$ i.c.	[_separable]	✓
2518	$3ty + y^2 + (t^2 + ty)y' = 0$ i.c.	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
2841	$y'(x^2 + 1) + xy = 0$	[_separable]	✓
2842	$xy^2 + x + (y - x^2y)y' = 0$	[_separable]	✓
2844	$xy' + y = 0$	[_separable]	✓
2845	$y' = 2xy$	[_separable]	✓
2851	$y' = \frac{x}{y}$	[_separable]	✓
2857	$xy + \sqrt{x^2 + 1}y' = 0$	[_separable]	✓
2858	$y = x^2y' + xy$	[_separable]	✓
2861	$y' = \frac{y}{x}$ i.c.	[_separable]	✓
2862	$xy' + 2y = 0$ i.c.	[_separable]	✓
2864	$y^2 + x^2y' = 0$ i.c.	[_separable]	✓
2871	$x + y = xy'$	[_linear]	✓
2872	$(x + y)y' + x = y$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
2874	$y' = \frac{2x - y}{4y + x}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
2876	$yy' + x = 2y$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
2878	$y^2 + x^2 = xyy'$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
2879	$(xy - x^2)y' - y^2 = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓

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Table 2.8 first order ode homogD2

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#	ODE	CAS classification	Solved?
2881	$x + y + y'(x - y) = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
2882	$y(x^2 - xy + y^2) + xy'(y^2 + xy + x^2) = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
2883	$xy' - y - x \sin\left(\frac{y}{x}\right) = 0$	[[_homogeneous, 'class A', _dAlembert]]	✓
2884	$y' = \frac{y}{x} + \cosh\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A', _dAlembert]]	✓
2885	$y^2 + x^2 = 2xyy'$ i.c.	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
2886	$\left(\frac{x}{y} + \frac{y}{x}\right)y' + 1 = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
2887	$e^{\frac{y}{x}}x + y = xy'$ i.c.	[[_homogeneous, 'class A', _dAlembert]]	✓
2888	$y' = \frac{x + y}{x - y}$ i.c.	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
2889	$y' = \frac{y}{x} + \tan\left(\frac{y}{x}\right)$ i.c.	[[_homogeneous, 'class A', _dAlembert]]	✓
2890	$(3xy - 2x^2)y' = 2y^2 - xy$ i.c.	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
2892	$y^2(yy' - x) + x^3 = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
2893	$y' = \frac{y}{x} + \tanh\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A', _dAlembert]]	✓
2914	$x + y + (x - 2y)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
2915	$3x + y + (3y + x)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
2919	$2xy - (y^2 + x^2)y' = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
2921	$\frac{2xy - 1}{y} + \frac{(3y + x)y'}{y^2} = 0$	[[_homogeneous, 'class D', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓

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Table 2.8 first order ode homogD2

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#	ODE	CAS classification	Solved?
2925	$\frac{2}{y} - \frac{y}{x^2} + \left(\frac{1}{x} - \frac{2x}{y^2}\right) y' = 0$	[_separable]	✓
2926	$\frac{xy+1}{y} + \frac{(2y-x)y'}{y^2} = 0$	[[_homogeneous, 'class D', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
2934	$\frac{x^2+3y^2}{x(3x^2+4y^2)} + \frac{(2x^2+y^2)y'}{y(3x^2+4y^2)} = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlem- bert]]	✓
2935	$\frac{x^2-y^2}{x(2x^2+y^2)} + \frac{(x^2+2y^2)y'}{y(2x^2+y^2)} = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlem- bert]]	✓
2937	$xy' + \ln(x) - y = 0$	[_linear]	✓
2943	$y(y-x^2) + x^3y' = 0$	[[_homogeneous, 'class D', _rational, _Bernoulli]]	✓
2951	$2x^2yy' + x^4e^x - 2xy^2 = 0$	[[_homogeneous, 'class D', _Bernoulli]]	✓
2953	<i>i.c.</i> $y(x^2-1) + x(x^2+1)y' = 0$	[_separable]	✓
2964	$y + (2x-3y)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
2986	$xyy' = x^2 - y^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
2989	$y^2 + x^2y' = xy$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
3005	$y^2 + (xy+x^2)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
3006	$2x+y - (x-2y)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
3014	$x^2y - (x^3+y^3)y' = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
3019	$y + (-2y+3x)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
3020	$r' = r \cot(\theta)$	[_separable]	✓

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Table 2.8 first order ode homogD2

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#	ODE	CAS classification	Solved?
3021	$(4y + 3x)y' + 2x + y = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
3026	$1 + e^{\frac{x}{y}} + e^{\frac{x}{y}} \left(1 - \frac{x}{y}\right) y' = 0$	[[_homogeneous, 'class A', _exact, _dAlembert]]	✓
3036	$y \cos\left(\frac{x}{y}\right) - \left(y + x \cos\left(\frac{x}{y}\right)\right) y' = 0$	[[_homogeneous, 'class A', _dAlembert]]	✓
3041	$xy - y^2 - x^2 y' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
3045	$(-2x^2 - 3xy)y' + y^2 = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
3049	$y^2 + x^2 = 2xyy'$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
3050	$3xy + (3x^2 + y^2)y' = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
3056	$y^3 + 2x^2y + (-3x^3 - 2xy^2)y' = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
3058	$y' - y = 0$	[_quadrature]	✓
3285	$4y^2 = x^2 y'^2$	[_separable]	✓
3291	$y^2 y'^2 + xyy' - 2x^2 = 0$	[_separable]	✓
3293	$y'^3 + (x + y - 2xy)y'^2 - 2y'xy(x + y) = 0$	[_quadrature]	✓
3294	$yy'^2 + (y^2 - x^3 - xy^2)y' - xy(y^2 + x^2) = 0$	[_quadrature]	✓
3334	$y^2 - 2xyy' + y'^2(x^2 - 1) = 0$	[_separable]	✓
3403	$y' = 2$	[_quadrature]	✓
3409	$y' = xy$	[_separable]	✓
3414	$y'^2 - y^2 = 0$	[_quadrature]	✓
3415	$y'^2 - 3y' + 2 = 0$	[_quadrature]	✓
3431	$y' = \frac{y}{t}$	[_separable]	✓
3432	$y' = -\frac{t}{y}$	[_separable]	✓
3438	$y' = (t^2 + 1)y$	[_separable]	✓
3439	$y' = -y$	[_quadrature]	✓

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Table 2.8 first order ode homogD2

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#	ODE	CAS classification	Solved?
3447	$y' = y$ i.c.	[_quadrature]	✓
3448	$y' = 2y$ i.c.	[_quadrature]	✓
3449	$ty' = y + t^3$ i.c.	[_linear]	✓
3451	$y' = \frac{2y}{t+1}$ i.c.	[_separable]	✓
3458	$\frac{y'}{\tan(x)} - \frac{y}{x^2+1} = 0$	[_separable]	✓
3461	$2xy' + 3x + y = 0$	[_linear]	✓
3467	$(y-x)y' + 2x + 3y = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
3474	$y' - \frac{y}{x} = 1$ i.c.	[_linear]	✓
3476	$y' - \frac{y^2}{x^2} = \frac{1}{4}$ i.c.	[[_homogeneous, 'class A', _rational, _Riccati]]	✓
3477	$y' - \frac{y^2}{x^2} = \frac{1}{4}$	[[_homogeneous, 'class A', _rational, _Riccati]]	✓
3515	$y' = 2xy$	[_separable]	✓
3518	$y' = \frac{y}{x \ln(x)}$	[_separable]	✓
3519	$y - (-2+x)y' = 0$	[_separable]	✓
3541	$y' - \frac{y}{x} = 2x^2 \ln(x)$	[_linear]	✓
3544	$(3x-y)y' = 3y$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
3545	$y' = \frac{(x+y)^2}{2x^2}$	[[_homogeneous, 'class A', _rational, _Riccati]]	✓
3546	$\sin\left(\frac{y}{x}\right)(-y+xy') = x \cos\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A', _dAlembert]]	✓
3549	$x(x^2-y^2) - x(y^2+x^2)y' = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
3551	$y' = \frac{y^2+2xy-2x^2}{x^2-xy+y^2}$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓

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Table 2.8 first order ode homogD2

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#	ODE	CAS classification	Solved?
3552	$2xyy' - 2y^2 - x^2e^{-\frac{y^2}{x^2}} = 0$	[[_homogeneous, 'class A']]	✓
3553	$x^2y' = y^2 + 3xy + x^2$	[[_homogeneous, 'class A'], _rational, _Riccati]	✓
3555	$2x(2x + y)y' = y(4x - y)$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
3556	$xy' = x \tan\left(\frac{y}{x}\right) + y$	[[_homogeneous, 'class A'], _dAlembert]	✓
3562	$y' = \frac{y}{2x}$	[_separable]	✓
3593	$y' = 2xy$	[_separable]	✓
3596	$y' = \frac{y}{x \ln(x)}$	[_separable]	✓
3597	$y - (x - 1)y' = 0$	[_separable]	✓
3635	$-y + xy' = x^2 \ln(x)$	[_linear]	✓
3636	$y' = \frac{y^2 + xy + x^2}{x^2}$	[[_homogeneous, 'class A'], _rational, _Riccati]	✓
3637	$(3x - y)y' = 3y$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
3638	$y' = \frac{(x + y)^2}{2x^2}$	[[_homogeneous, 'class A'], _rational, _Riccati]	✓
3639	$\sin\left(\frac{y}{x}\right)(-y + xy') = x \cos\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A'], _dAlembert]	✓
3642	$y(x^2 - y^2) - x(x^2 - y^2)y' = 0$	[_separable]	✓
3644	$y' = \frac{y^2 + 2xy - 2x^2}{x^2 - xy + y^2}$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
3645	$2xyy' - 2y^2 - x^2e^{-\frac{y^2}{x^2}} = 0$	[[_homogeneous, 'class A']]	✓
3646	$x^2y' = y^2 + 3xy + x^2$	[[_homogeneous, 'class A'], _rational, _Riccati]	✓
3648	$2x(2x + y)y' = y(4x - y)$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
3649	$xy' = x \tan\left(\frac{y}{x}\right) + y$	[[_homogeneous, 'class A'], _dAlembert]	✓

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Table 2.8 first order ode homogD2

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#	ODE	CAS classification	Solved?
3651	$y' = \frac{4y - 2x}{x + y}$ i.c.	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
3652	$y' = \frac{2x - y}{4y + x}$ i.c.	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
3655	$y' = \frac{x + ay}{ax - y}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
3656	$y' = \frac{x + \frac{y}{2}}{\frac{x}{2} - y}$ i.c.	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
3657	$y' - \frac{y}{x} = \frac{4x^2 \cos(x)}{y}$	[[_homogeneous, 'class D'], _Bernoulli]	✓
4097	$y' = \frac{y - 2x}{x}$	[_linear]	✓
4098	$x^3 + y^3 - xy^2y' = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
4099	$y' + y = 0$	[_quadrature]	✓
4103	$y' = \frac{y^2 + x^2}{2x^2}$	[[_homogeneous, 'class A'], _rational, _Riccati]	✓
4104	$xy' = x + y$ i.c.	[_linear]	✓
4112	$y' = \frac{2x - y}{2x + y}$ i.c.	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
4190	$yy' = x$	[_separable]	✓
4196	$xy' + y = x$	[_linear]	✓
4197	$-y + xy' = x^3$	[_linear]	✓
4219	$xy' = y$	[_separable]	✓
4220	$(1 - x)y' = y$	[_separable]	✓
4221	$y' = \frac{4xy}{x^2 + 1}$	[_separable]	✓
4222	$y' = \frac{2y}{x^2 - 1}$	[_separable]	✓
4223	$x^2y' - y^2 = 0$ i.c.	[_separable]	✓

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Table 2.8 first order ode homogD2

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#	ODE	CAS classification	Solved?
4224	$y' + 2xy = 0$ i.c.	[_separable]	✓
4225	$\cot(x)y' = y$ i.c.	[_separable]	✓
4228	$xy' = xy + y$ i.c.	[_separable]	✓
4233	$(1 - x)y' = xy$	[_separable]	✓
4234	$(x^2 - 1)y' = (x^2 + 1)y$	[_separable]	✓
4240	$xyy' = 2x^2 - y^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
4241	$x^2 - y^2 + xyy' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
4242	$x^2y' - 2xy - 2y^2 = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
4243	$x^2y' = 3(y^2 + x^2) \arctan\left(\frac{y}{x}\right) + xy$	[[_homogeneous, 'class A', _dAlembert]	✓
4244	$x \sin\left(\frac{y}{x}\right) y' = y \sin\left(\frac{y}{x}\right) + x$	[[_homogeneous, 'class A', _dAlembert]	✓
4245	$xy' = y + 2e^{-\frac{y}{x}}$	[[_homogeneous, 'class D']]	✓
4254	$y + y \cos(xy) + (x + x \cos(xy))y' = 0$	[_separable]	✓
4257	$-\frac{\sin\left(\frac{x}{y}\right)}{y} + \frac{x \sin\left(\frac{x}{y}\right) y'}{y^2} = 0$	[_separable]	✓
4258	$1 + y + (1 - x)y' = 0$	[_separable]	✓
4261	$(3x^2 - y^2)y' - 2xy = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
4266	$xy' = x^5 + x^3y^2 + y$	[[_homogeneous, 'class D', _rational, _Riccati]	✓
4267	$(x + y)y' = y - x$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
4268	$xy' = y + x^2 + 9y^2$	[[_homogeneous, 'class D', _rational, _Riccati]	✓
4281	$(xy - x^2)y' = y^2$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
4283	$x^2 + y = xy'$	[_linear]	✓

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Table 2.8 first order ode homogD2

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#	ODE	CAS classification	Solved?
4290	$y^2 - 3xy - 2x^2 = (x^2 - xy) y'$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
4295	$2xy + x^2 y' = 0$	[_separable]	✓
4300	$\frac{x}{y^2 + x^2} + \frac{y}{x^2} + \left(\frac{y}{y^2 + x^2} - \frac{1}{x}\right) y' = 0$ i.c.	[[_homogeneous, 'class A', _exact, _rational, _dAlem- bert]]	✓
4305	$y' = \frac{x(1 + y^2)}{y(x^2 + 1)}$ i.c.	[_separable]	✓
4314	$y' + \frac{x}{y} + 2 = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
4315	$-y + xy' = x \cot\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A', _dAlembert]]	✓
4316	$x \cos\left(\frac{y}{x}\right)^2 - y + xy' = 0$	[[_homogeneous, 'class A', _dAlembert]]	✓
4318	$xy + (y^2 + x^2) y' = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
4319	$(1 - e^{-\frac{y}{x}}) y' + 1 - \frac{y}{x} = 0$	[[_homogeneous, 'class A', _dAlembert]]	✓
4320	$x^2 - xy + y^2 - xyy' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
4333	$2xy + (x^2 + 2xy + y^2) y' = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
4335	$y(2x - y + 2) + 2y'(x - y) = 0$	[[_homogeneous, 'class D', _rational, [_Abel, '2nd type', 'class A']]]	✓
4346	$x^2 + y + y^2 - xy' = 0$	[[_homogeneous, 'class D', _rational, _Riccati]]	✓
4350	$y - 2x^3 \tan\left(\frac{y}{x}\right) - xy' = 0$	[[_homogeneous, 'class D']]	✓
4360	$(\sin(y)^2 + x \cot(y)) y' = 0$	[_quadrature]	✓
4398	$y' = \frac{y + 2}{x + 1}$	[_separable]	✓
4399	$xy' = y - e^{\frac{y}{x}} x$	[[_homogeneous, 'class A', _dAlembert]]	✓

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Table 2.8 first order ode homogD2

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#	ODE	CAS classification	Solved?
4405	$-y + xy' = x \tan\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A'], _dAlembert]	✓
4412	$xy + 2x^3y + x^2y' = 0$	[_separable]	✓
4422	$x - y \cos\left(\frac{y}{x}\right) + x \cos\left(\frac{y}{x}\right) y' = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓
4423	$x^2(-y + xy') = (x + y)y$	[[_homogeneous, 'class D'], _rational, _Bernoulli]	✓
4441	$x + \sin\left(\frac{y}{x}\right)^2 (y - xy') = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓
4618	$y' = ax^ny$	[_separable]	✓
4621	$y' = y \cot(x)$	[_separable]	✓
4624	$y' = (2 \csc(2x) + \cot(x))y$	[_separable]	✓
4632	$y' = y \sec(x)$	[_separable]	✓
4634	$y' = y \tan(x)$	[_separable]	✓
4643	$y' = (a + \cos(\ln(x)) + \sin(\ln(x)))y$	[_separable]	✓
4708	$y' = \sqrt{XY}$	[_quadrature]	✓
4743	$xy' + x + y = 0$	[_linear]	✓
4744	$xy' + x^2 - y = 0$	[_linear]	✓
4746	$xy' = 1 + x^3 + y$	[_linear]	✓
4747	$xy' = x^m + y$	[_linear]	✓
4749	$xy' = x^2 \sin(x) + y$	[_linear]	✓
4752	$xy' = ay$	[_separable]	✓
4754	$xy' = ax + by$	[_linear]	✓
4759	$xy' + (bx + a)y = 0$	[_separable]	✓
4760	$xy' = x^3 + (-2x^2 + 1)y$	[_linear]	✓
4764	$xy' = x^2 + y(1 + y)$	[[_homogeneous, 'class D'], _rational, _Riccati]	✓
4767	$xy' = x^2a + y + by^2$	[[_homogeneous, 'class D'], _rational, _Riccati]	✓
4773	$xy' = (1 - xy)y$	[[_homogeneous, 'class D'], _rational, _Bernoulli]	✓
4774	$xy' = (xy + 1)y$	[[_homogeneous, 'class D'], _rational, _Bernoulli]	✓

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Table 2.8 first order ode homogD2

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#	ODE	CAS classification	Solved?
4776	$xy' = x^3 + (2x^2 + 1)y + xy^2$	[[_homogeneous, 'class D', _rational, _Riccati]	✓
4777	$xy' = y(1 + 2xy)$	[[_homogeneous, 'class D', _rational, _Bernoulli]	✓
4786	$xy' = y + (x^2 - y^2)f(x)$	[[_homogeneous, 'class D', _Riccati]	✓
4787	$xy' = y(1 + y^2)$	[_separable]	✓
4800	$xy' + x - y + x \cos\left(\frac{y}{x}\right) = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
4801	$xy' = y - x \cos\left(\frac{y}{x}\right)^2$	[[_homogeneous, 'class A', _dAlembert]	✓
4805	$xy' - y + x \sec\left(\frac{y}{x}\right) = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
4806	$xy' = y + x \sec\left(\frac{y}{x}\right)^2$	[[_homogeneous, 'class A', _dAlembert]	✓
4808	$xy' = y + x \sin\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A', _dAlembert]	✓
4811	$xy' = y - x \tan\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A', _dAlembert]	✓
4813	$xy' = e^{\frac{y}{x}}x + y$	[[_homogeneous, 'class A', _dAlembert]	✓
4814	$xy' = x + y + e^{\frac{y}{x}}x$	[[_homogeneous, 'class A', _dAlembert]	✓
4818	$xy' = y - 2x \tanh\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A', _dAlembert]	✓
4850	$x^2y' = a + bx + cx^2 + xy$	[_linear]	✓
4854	$x^2y' = (bx + a)y$	[_separable]	✓
4857	$x^2y' + y^2 + xy + x^2 = 0$	[[_homogeneous, 'class A', _rational, _Riccati]	✓
4860	$x^2y' = (x + ay)y$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
4861	$x^2y' = (ax + by)y$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
4862	$x^2y' + x^2a + bxy + cy^2 = 0$	[[_homogeneous, 'class A', _rational, _Riccati]	✓

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Table 2.8 first order ode homogD2

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#	ODE	CAS classification	Solved?
4870	$x^2y' + (x^2 + y^2 - x)y = 0$	[[_homogeneous, 'class D'], _rational, _Bernoulli]	✓
4879	$(-x^2 + 1)y' = 5 - xy$	[_linear]	✓
4881	$y'(x^2 + 1) + a - xy = 0$	[_linear]	✓
4888	$(-x^2 + 1)y' + 2xy = 0$	[_separable]	✓
4894	$y'(x^2 + 1) = (2bx + a)y$	[_separable]	✓
4905	$(a^2 + x^2)y' = b + xy$	[_linear]	✓
4913	$x(x + 1)y' = (-2x + 1)y$	[_separable]	✓
4922	$(x - a)(x - b)y' + ky = 0$	[_separable]	✓
4927	$2x^2y' = y$	[_separable]	✓
4930	$2x^2y' = 2xy + (1 - x \cot(x))(x^2 - y^2)$	[[_homogeneous, 'class D'], _Riccati]	✓
4938	$ax^2y' = x^2 + axy + b^2y^2$	[[_homogeneous, 'class A'], _rational, _Riccati]	✓
4944	$x^3y' = 3 - x^2 + x^2y$	[_linear]	✓
4946	$x^3y' = y(x^2 + y)$	[[_homogeneous, 'class D'], _rational, _Bernoulli]	✓
4947	$x^3y' = x^2(y - 1) + y^2$	[[_homogeneous, 'class D'], _rational, _Riccati]	✓
4951	$x^3y' = (2x^2 + y^2)y$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
4955	$x(x^2 + 1)y' = ax^3 + y$	[_linear]	✓
4957	$x(x^2 + 1)y' = (-x^2 + 1)y$	[_separable]	✓
4958	$x(-x^2 + 1)y' = (x^2 - x + 1)y$	[_separable]	✓
4959	$x(-x^2 + 1)y' = ax^3 + (-2x^2 + 1)y$	[_linear]	✓
4964	$x^2(1 - x)y' = (2 - x)xy - y^2$	[[_homogeneous, 'class D'], _rational, _Bernoulli]	✓
4965	$2x^3y' = y(x^2 - y^2)$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
4966	$2x^3y' = (3x^2 + y^2a)y$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
4968	$x(cx^2 + bx + a)y' + x^2 - (cx^2 + bx + a)y = y^2$	[[_homogeneous, 'class D'], _rational, _Riccati]	✓

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Table 2.8 first order ode homogD2

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#	ODE	CAS classification	Solved?
4969	$x^4 y' = (x^3 + y) y$	[[_homogeneous, 'class D'], _rational, _Bernoulli]	✓
4976	$x(-2x^3 + 1) y' = 2(-x^3 + 1) y$	[_separable]	✓
4979	$x(-x^4 + 1) y' = 2x(x^2 - y^2) + (-x^4 + 1) y$	[[_homogeneous, 'class D'], _rational, _Riccati]	✓
4995	$y' \sqrt{X} + \sqrt{Y} = 0$	[_quadrature]	✓
4996	$y' \sqrt{X} = \sqrt{Y}$	[_quadrature]	✓
5002	$y' \sqrt{X} = 0$	[_quadrature]	✓
5003	$y' \sqrt{X} + \sqrt{Y} = 0$	[_quadrature]	✓
5004	$y' \sqrt{X} = \sqrt{Y}$	[_quadrature]	✓
5007	$X^{2/3} y' = Y^{2/3}$	[_quadrature]	✓
5009	$(1 - 4 \cos(x)^2) y' = \tan(x) (1 + 4 \cos(x)^2) y$	[_separable]	✓
5010	$(-\sin(x) + 1) y' + y \cos(x) = 0$	[_separable]	✓
5011	$(\cos(x) - \sin(x)) y' + y(\cos(x) + \sin(x)) = 0$	[_separable]	✓
5014	$y' x \ln(x) = ax(\ln(x) + 1) - y$	[_linear]	✓
5015	$yy' + x = 0$	[_separable]	✓
5018	$yy' + ax + by = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
5021	$yy' + y^2 + 4x(x + 1) = 0$	[[_homogeneous, 'class D'], _rational, _Bernoulli]	✓
5032	$(x + y) y' + y = 0$	[[_homogeneous, 'class A'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
5033	$y'(x - y) = y$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
5034	$(x + y) y' + x - y = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
5035	$(x + y) y' = x - y$	[[_homogeneous, 'class A'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓

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Table 2.8 first order ode homogD2  
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#	ODE	CAS classification	Solved?
5037	$y'(x - y) = y(1 + 2xy)$	[[_homogeneous, 'class D', _rational, [_Abel, '2nd type', 'class A']]]	✓
5039	$y'(x - y) = \left(e^{-\frac{x}{y}} + 1\right) y$	[[_homogeneous, 'class A', _dAlembert]]	✓
5044	$(2x + y)y' + x - 2y = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
5051	$(4x - y)y' + 2x - 5y = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
5058	$x^2 + y^2 + 2x + 2yy' = 0$	[[_homogeneous, 'class D', _rational, _Bernoulli]]	✓
5060	$(x - 2y)y' = y$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
5061	$(x + 2y)y' + 2x - y = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
5062	$(x - 2y)y' + 2x + y = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
5081	$(4y + x)y' + 4x - y = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
5088	$8y + 10x + (7x + 5y)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
5097	$(ax + by)y' + x = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class C'], _dAlem- bert]]	✓
5098	$(ax + by)y' + y = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
5099	$(ax + by)y' + bx + ay = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
5100	$(ax + by)y' = bx + ay$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓

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Table 2.8 first order ode homogD2

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#	ODE	CAS classification	Solved?
5102	$xyy' = x + y^2$	[[_homogeneous, 'class D', _rational, _Bernoulli]	✓
5103	$xyy' + x^2 + y^2 = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
5104	$xyy' + x^4 - y^2 = 0$	[[_homogeneous, 'class D', _rational, _Bernoulli]	✓
5105	$xyy' = ax^3 \cos(x) + y^2$	[[_homogeneous, 'class D', _Bernoulli]	✓
5106	$xyy' = x^2 - xy + y^2$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
5107	$xyy' + 2x^2 - 2xy - y^2 = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
5111	$xyy' + x^2 \operatorname{arccot}\left(\frac{y}{x}\right) - y^2 = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
5112	$xyy' + x^2 e^{-\frac{2y}{x}} - y^2 = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
5122	$x(x+y)y' + y^2 = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
5123	$x(x-y)y' + y^2 = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
5124	$x(x+y)y' = y^2 + x^2$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
5125	$x(x-y)y' + 2x^2 + 3xy - y^2 = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
5128	$x(2x+y)y' = x^2 + xy - y^2$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
5129	$x(4x-y)y' + 4x^2 - 6xy - y^2 = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
5134	$(x+a)(x+b)y' = xy$	[_separable]	✓
5138	$2xyy' + x^2 + y^2 = 0$	[[_homogeneous, 'class A', _exact, _rational, _Bernoulli]	✓

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Table 2.8 first order ode homogD2

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#	ODE	CAS classification	Solved?
5139	$2xyy' = y^2 + x^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
5143	$x(x - 2y)y' + y^2 = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
5144	$x(x + 2y)y' + (2x - y)y = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
5145	$x(x - 2y)y' + (2x - y)y = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class B']]	✓
5150	$x(2x + 3y)y' = y^2$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
5151	$x(2x + 3y)y' + 3(x + y)^2 = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
5154	$axy y' = y^2 + x^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
5155	$axy y' + x^2 - y^2 = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
5157	$x(x - ay)y' = y(y - ax)$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
5167	$(x^2 + 1)yy' + x(1 - y^2) = 0$	[_separable]	✓
5169	$2x^2yy' = x^2(2x + 1) - y^2$	[[_homogeneous, 'class D', _rational, _Bernoulli]	✓
5173	$x^2(x - 2y)y' = 2x^3 - 4xy^2 + y^3$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class C', _dAlem- bert]	✓
5176	$x^2(4x - 3y)y' = (6x^2 - 3xy + 2y^2)y$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class C', _dAlem- bert]	✓
5181	$8x^3yy' + 3x^4 - 6y^2x^2 - y^4 = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5192	$xy + (y^2 + x^2)y' = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5193	$(y^2 + x^2)y' = xy$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓

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Table 2.8 first order ode homogD2

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#	ODE	CAS classification	Solved?
5194	$(x^2 - y^2) y' = 2xy$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5195	$(x^2 - y^2) y' + x(x + 2y) = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]	✓
5196	$(y^2 + x^2) y' + 2x(2x + y) = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]	✓
5201	$(3x^2 - y^2) y' = 2xy$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5210	$(x^2 + 2xy - y^2) y' + x^2 - 2xy + y^2 = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5211	$(x + y)^2 y' = x^2 - 2xy + 5y^2$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5213	$(2x^2 + 4xy - y^2) y' = x^2 - 4xy - 2y^2$	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]	✓
5214	$(3x + y)^2 y' = 4(3x + 2y) y$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5219	$(2x^2 + 3y^2) y' + x(3x + y) = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5221	$(3x^2 + 2xy + 4y^2) y' + y^2 + 6xy + 2x^2 = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]	✓
5225	$(x^2 + y^2 a) y' = xy$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5226	$(x^2 + xy + y^2 a) y' = x^2 a + xy + y^2$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5227	$(x^2 a + 2xy - y^2 a) y' + x^2 - 2axy - y^2 = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5228	$(x^2 a + 2bxy + cy^2) y' + k x^2 + 2axy + by^2 = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]	✓
5231	$x(y^2 + x^2) y' = (x^2 + x^4 + y^2) y$	[[_homogeneous, 'class D', _rational]	✓
5234	$x(2x^2 + y^2) y' = (2x^2 + 3y^2) y$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5237	$x(x^2 - xy + y^2) y' + (y^2 + xy + x^2) y = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓

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Table 2.8 first order ode homogD2

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#	ODE	CAS classification	Solved?
5238	$x(x^2 - xy - y^2) y' = (x^2 + xy - y^2) y$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5239	$x(x^2 + axy + y^2) y' = (x^2 + bxy + y^2) y$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5240	$x(x^2 - 2y^2) y' = (2x^2 - y^2) y$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5241	$x(x^2 + 2y^2) y' = (2x^2 + 3y^2) y$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5242	$2x(5x^2 + y^2) y' = x^2y - y^3$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5243	$x(x^2 + axy + 2y^2) y' = (ax + 2y) y^2$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5251	$x(x^2 - 6y^2) y' = 4(x^2 + 3y^2) y$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5267	$(x^3 - y^3) y' + x^2y = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5268	$(x^3 + y^3) y' + x^2(ax + 3y) = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]	✓
5272	$(3x^2 + y^2) yy' + x(x^2 + 3y^2) = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]	✓
5274	$2y^3y' = x^3 - xy^2$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5276	$(3x^2 + 2y^2) yy' + x^3 = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5277	$(5x^2 + 2y^2) yy' + x(x^2 + 5y^2) = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]	✓
5279	$(3x^3 + 6x^2y - 3xy^2 + 20y^3) y' + 4x^3 + 9x^2y + 6xy^2 - y^3 = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]	✓
5280	$(x^3 + ay^3) y' = x^2y$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5283	$x(2x^3 + y^3) y' = (2x^3 - x^2y + y^3) y$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5284	$x(2x^3 - y^3) y' = (x^3 - 2y^3) y$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓

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Table 2.8 first order ode homogD2

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#	ODE	CAS classification	Solved?
5285	$x(x^3 + 3x^2y + y^3)y' = (3x^2 + y^2)y^2$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
5286	$x(x^3 - 2y^3)y' = (2x^3 - y^3)y$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
5301	$(ax^3 + (ax + by)^3)yy' + x((ax + by)^3 + by^3) = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
5328	$x\left(x - y \tan\left(\frac{y}{x}\right)\right)y' + \left(x + y \tan\left(\frac{y}{x}\right)\right)y = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓
5343	$y'^2 = a^2y^2$	[_quadrature]	✓
5345	$y'^2 = y^2x^2$	[_separable]	✓
5359	$y'^2 - 5y' + 6 = 0$	[_quadrature]	✓
5360	$y'^2 - 7y' + 12 = 0$	[_quadrature]	✓
5386	$y'^2 - 2x^2y' + 2xy' = 0$	[_quadrature]	✓
5393	$y'^2 + (x + y)y' + xy = 0$	[_quadrature]	✓
5396	$y'^2 - 2y'(x - y) - 4xy = 0$	[_quadrature]	✓
5402	$y'^2 + (ax + by)y' + abxy = 0$	[_quadrature]	✓
5404	$y'^2 - (1 + 2xy)y' + 2xy = 0$	[_quadrature]	✓
5406	$y'^2 - (x - y)yy' - xy^3 = 0$	[_separable]	✓
5409	$y'^2 - xy(y^2 + x^2)y' + x^4y^4 = 0$	[_separable]	✓
5451	$xy'^2 - (2x + 3y)y' + 6y = 0$	[_quadrature]	✓
5454	$xy'^2 - (xy + 1)y' + y = 0$	[_quadrature]	✓
5455	$xy'^2 + (1 - x)yy' - y^2 = 0$	[_quadrature]	✓
5456	$xy'^2 + (1 - x^2y)y' - xy = 0$	[_quadrature]	✓
5472	$x^2y'^2 = y^2$	[_separable]	✓
5474	$x^2y'^2 = (x - y)^2$	[_linear]	✓
5476	$x^2y'^2 - xy' + y(1 - y) = 0$	[_separable]	✓
5485	$x^2y'^2 + 3xyy' + 2y^2 = 0$	[_separable]	✓
5487	$x^2y'^2 + 4xyy' - 5y^2 = 0$	[_separable]	✓
5489	$x^2y'^2 - 5xyy' + 6y^2 = 0$	[_separable]	✓

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Table 2.8 first order ode homogD2

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#	ODE	CAS classification	Solved?
5501	$(a^2 - x^2)y'^2 - 2xyy' - y^2 = 0$	[_separable]	✓
5527	$yy'^2 + y'(x - y) - x = 0$	[_quadrature]	✓
5530	$yy'^2 + (x - y^2)y' - xy = 0$	[_quadrature]	✓
5537	$(x^2 - ay)y'^2 - 2xyy' = 0$	[_quadrature]	✓
5539	$xyy'^2 + (y^2 + x^2)y' + xy = 0$	[_separable]	✓
5540	$xyy'^2 + (x^2 - y^2)y' - xy = 0$	[_separable]	✓
5541	$xyy'^2 - (x^2 - y^2)y' - xy = 0$	[_separable]	✓
5544	$xyy'^2 + y'(3x^2 - 2y^2) - 6xy = 0$	[_separable]	✓
5552	$y^2y'^2 - (x + 1)yy' + x = 0$	[_quadrature]	✓
5564	$(x + y)^2y'^2 = y^2$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
5565	$(x + y)^2y'^2 - (x^2 - xy - 2y^2)y' - (x - y)y = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
5569	$4y^2y'^2 + 2y'xy(3x + 1) + 3x^3 = 0$	[_separable]	✓
5570	$(x^2 - 4y^2)y'^2 + 6xyy' - 4x^2 + y^2 = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
5579	$4x^2y^2y'^2 = (y^2 + x^2)^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
5594	$y'^3 - 7y' + 6 = 0$	[_quadrature]	✓
5613	$y'^3 + (\cos(x) \cot(x) - y)y'^2$ $- (1 + y \cos(x) \cot(x))y' + y = 0$	[_quadrature]	✓
5614	$y'^3 + (2x - y^2)y'^2 - 2xy^2y' = 0$	[_quadrature]	✓
5616	$y'^3 - (y^2 + xy + x^2)y'^2$ $+ xy(y^2 + xy + x^2)y' - x^3y^3 = 0$	[_quadrature]	✓
5624	$xy'^3 - (x + x^2 + y)y'^2 + (x^2 + y + xy)y' - xy = 0$	[_quadrature]	✓
5637	$(x + 2y)y'^3 + 3(x + y)y'^2 + (2x + y)y' = 0$	[_quadrature]	✓
5685	$y \ln(y') + y' - y \ln(y) - xy = 0$	[_separable]	✓
5689	$y' = \frac{xy}{x^2 - y^2}$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓

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Table 2.8 first order ode homogD2

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#	ODE	CAS classification	Solved?
5694	$\frac{2x}{y^3} + \frac{(y^2 - 3x^2)y'}{y^4} = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]	✓
5695	$y + xy^2 - xy' = 0$	[[_homogeneous, 'class D', _rational, _Bernoulli]	✓
5705	$(y - x)y' + y = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
5708	$x - y \cos\left(\frac{y}{x}\right) + x \cos\left(\frac{y}{x}\right)y' = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
5709	$8y + 10x + (7x + 5y)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
5713	$x(-x^2 + 1)y' + (2x^2 - 1)y = ax^3$	[_linear]	✓
5734	$8y + 10x + (7x + 5y)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
5735	$x^2 + 2xy - y^2 + (y^2 + 2xy - x^2)y' = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5736	$y^2 + (xy + x^2)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
5750	$y'^2 - 5y' + 6 = 0$	[_quadrature]	✓
5763	$y = xy' + x\sqrt{1 + y'^2}$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
5771	$2xy + (y^2 + x^2)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]	✓
5773	$x + y - y'(x - y) = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
5774	$xy' - y - x \sin\left(\frac{y}{x}\right) = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
5775	$2x^2y + y^3 + (xy^2 - 2x^3)y' = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5777	$\frac{y \cos\left(\frac{y}{x}\right)}{x} - \left(\frac{x \sin\left(\frac{y}{x}\right)}{y} + \cos\left(\frac{y}{x}\right)\right)y' = 0$	[[_homogeneous, 'class A', _dAlembert]	✓

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Table 2.8 first order ode homogD2  
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#	ODE	CAS classification	Solved?
5778	$y + x \ln\left(\frac{y}{x}\right) y' - 2xy' = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
5779	$2y e^{\frac{x}{y}} + \left(y - 2x e^{\frac{x}{y}}\right) y' = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
5780	$e^{\frac{y}{x}} x - y \sin\left(\frac{y}{x}\right) + x \sin\left(\frac{y}{x}\right) y' = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
5781	$y^2 + x^2 = 2xyy'$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
5782	$e^{\frac{y}{x}} x + y = xy'$	[[_homogeneous, 'class A', _dAlembert]	✓
5783	$y' - \frac{y}{x} + \csc\left(\frac{y}{x}\right) = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
5784	$xy - y^2 - x^2 y' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
5787	$x + y + 1 + (2x + 2y + 2) y' = 0$	[_quadrature]	✓
5854	$-y + xy' = x^2 \sin(x)$	[_linear]	✓
5855	$xy' + xy^2 - y = 0$	[[_homogeneous, 'class D', _rational, _Bernoulli]	✓
5857	$x^2(x-1)y' - y^2 - x(-2+x)y = 0$	[[_homogeneous, 'class D', _rational, _Bernoulli]	✓
5865	$y' = 1 + \frac{y}{x} - \frac{y^2}{x^2}$	[[_homogeneous, 'class A', _rational, _Riccati]	✓
5874	$(x^2 - y^2) y' = 2xy$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5880	$2y - xy \ln(x) - 2y' x \ln(x) = 0$	[_separable]	✓
5888	$xy' = x + y + e^{\frac{y}{x}} x$	[[_homogeneous, 'class A', _dAlembert]	✓
5891	$x^3 y' - y^2 - x^2 y = 0$	[[_homogeneous, 'class D', _rational, _Bernoulli]	✓
5893	$xy' - y - x \sin\left(\frac{y}{x}\right) = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
5894	$(xy - x^2) y' + y^2 - 3xy - 2x^2 = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
5896	$x^2 y' + y^2 + xy + x^2 = 0$	[[_homogeneous, 'class A', _rational, _Riccati]	✓

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Table 2.8 first order ode homogD2

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#	ODE	CAS classification	Solved?
5906	$xyy' + x^2 + y^2 = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
5907	$2xyy' + 3x^2 - y^2 = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
5908	$(2xy^3 - x^4)y' + 2x^3y - y^4 = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5910	$(y^2 + x^2)y' + 2x(2x + y) = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlem- bert]	✓
5912	$2y^3y' + xy^2 - x^3 = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
6025	$y' + y \tan(x) = 0$	[_separable]	✓
6092	$y' = y$	[_quadrature]	✓
6093	$xy' = y$	[_separable]	✓
	<i>i.c.</i>		
6125	$x^2y' + y^2 - xy = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
6127	$xy + (y^2 - x^2)y' = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
6128	$y^2 - xy + (xy + x^2)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
6130	$y' = \frac{y}{x} - \tan\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A', _dAlembert]	✓
6133	$y' = \frac{2y^2}{x} + \frac{y}{x} - 2x$	[[_homogeneous, 'class D', _rational, _Riccati]	✓
6208	$x^2y' - xy = \frac{1}{x}$	[_linear]	✓
6218	$y + 2x - xy' = 0$	[_linear]	✓
6224	$(2x + y)y' - x + 2y = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
6226	$\sin(x)^2 y' + \sin(x)^2 + (x + y) \sin(2x) = 0$	[_linear]	✓
6232	$3x^2y + x^3y' = 0$	[_separable]	✓
	<i>i.c.</i>		
6233	$-y + xy' = x^2$	[_linear]	✓
	<i>i.c.</i>		
6237	$xy' = xy + y$	[_separable]	✓

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Table 2.8 first order ode homogD2

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#	ODE	CAS classification	Solved?
6239	$y' = 3x^2y$	[_separable]	✓
6241	$xy' = y$	[_separable]	✓
6263	$x' = 3xt^2$	[_separable]	✓
6285	$y' = 2y - 2ty$ i.c.	[_separable]	✓
6296	$(t^2 + 1)y' = ty - y$	[_separable]	✓
6301	$y' = \frac{y}{x} + 2x + 1$	[_linear]	✓
6310	$y' - \frac{y}{x} = xe^x$ i.c.	[_linear]	✓
6322	$x^2y + x^4 \cos(x) - x^3y' = 0$	[_linear]	✓
6405	$y'(x^2 + 1) = xy + 1$	[_linear]	✓
6422	$-y + xy' = x^2$	[_linear]	✓
6425	$(x^3 + xy^2)y' = 2y^3$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
6432	$(x^3 + 1)y' = x^2y$ i.c.	[_separable]	✓
6436	$(2y - x)y' = 2x + y$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
6437	$xy + y^2 + (x^2 - xy)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
6438	$x^3 + y^3 = 3xy^2y'$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
6439	$y - 3x + (4y + 3x)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
6440	$(x^3 + 3xy^2)y' = y^3 + 3x^2y$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
6458	$x^2 - 2xy + 5y^2 = (x^2 + 2xy + y^2)y'$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
6460	$y + (x^2 - 4x)y' = 0$	[_separable]	✓
6462	$y' = \frac{y^2 + 2xy}{x^2 + 2xy}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓

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Table 2.8 first order ode homogD2

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#	ODE	CAS classification	Solved?
6465	<i>i.c.</i> $x^2y' = y^2 - xyy'$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
6468	$y^2 + x^2y' = xyy'$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
6469	$2xyy' = x^2 - y^2$	[[_homogeneous, 'class A', _exact, _rational, _Bernoulli]]	✓
6476	$x(1 + y^2) - (x^2 + 1)yy' = 0$	[_separable]	✓
6543	$y' - \frac{y}{x} = x^2$	[_linear]	✓
6570	$xy' = 2y$	[_separable]	✓
6571	$yy' + x = 0$	[_separable]	✓
6573	$2x^3y' = y(3x^2 + y^2)$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
6580	$4y + xy' = 0$	[_separable]	✓
6582	$y^2 - x^2y' = 0$	[_separable]	✓
6583	$1 + y - (x + 1)y' = 0$	[_separable]	✓
6585	$x \sin\left(\frac{y}{x}\right) - y \cos\left(\frac{y}{x}\right) + x \cos\left(\frac{y}{x}\right)y' = 0$	[[_homogeneous, 'class A', _dAlembert]]	✓
6586	$y^2(x^2 + 2) + (x^3 + y^3)(y - xy') = 0$	[[_homogeneous, 'class D', _rational]]	✓
6590	$y'(x^2 + 1) + xy = 0$	[_separable]	✓
6591	$x + 2y + (2x + 3y)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
6595	$y^2 - x^2 + xyy' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
6598	$x^3 + y^3 + 3xy^2y' = 0$	[[_homogeneous, 'class A', _exact, _rational, _Bernoulli]]	✓
6600	<i>i.c.</i> $xy' + 2y = 0$	[_separable]	✓
6601	<i>i.c.</i> $xyy' + x^2 + y^2 = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
6616	$y(x - 2y) - x^2y' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓

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Table 2.8 first order ode homogD2

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#	ODE	CAS classification	Solved?
6617	$xyy' + x^2 + y^2 = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
6618	$2xyy' + x^2 + y^2 = 0$	[[_homogeneous, 'class A', _exact, _rational, _Bernoulli]	✓
6642	$y' + y = 2x + 2$	[[_linear, 'class A']]	✓
6643	$y' - y = xy$	[_separable]	✓
6667	$x^2y'^2 + xyy' - 6y^2 = 0$	[_separable]	✓
7060	$y' = y \sin(x)$	[_separable]	✓
7072	$\frac{y}{x-1} + \frac{xy'}{1+y} = 0$	[_separable]	✓
7093	$(x+y)y' + x - y = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
7094	$y - 2xy + x^2y' = 0$	[_separable]	✓
7096	$y^2 + x^2y' = xyy'$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
7097	$(y^2 + x^2)y' = 2xy$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
7098	$-y + xy' = x \tan\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A', _dAlembert]	✓
7099	$xy' = y - e^{\frac{y}{x}}x$	[[_homogeneous, 'class A', _dAlembert]	✓
7100	$-y + xy' = (x+y) \ln\left(\frac{x+y}{x}\right)$	[[_homogeneous, 'class A', _dAlembert]	✓
7101	$xy' = y \cos\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A', _dAlembert]	✓
7104	$x + y - y'(x - y) = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
7105	$x^2 + 2xy - y^2 + (y^2 + 2xy - x^2)y' = 0$ i.c.	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
7106	$-y + xy' = yy'$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓

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Table 2.8 first order ode homogD2

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#	ODE	CAS classification	Solved?
7107	$y^2 + (x^2 - xy)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
7108	$y^2 + xy + x^2 = x^2y'$	[[_homogeneous, 'class A', _rational, _Riccati]]	✓
7109	$\frac{1}{x^2 - xy + y^2} = \frac{y'}{2y^2 - xy}$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
7110	$y' = \frac{2xy}{3x^2 - y^2}$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
7111	$y' = \frac{x}{y} + \frac{y}{x}$ i.c.	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
7114	$xy' = y \ln\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A', _dAlembert]]	✓
7117	$x^2y'^2 - 3xyy' + 2y^2 = 0$	[_separable]	✓
7120	$y' + \frac{x + 2y}{x} = 0$	[_linear]	✓
7121	$y' = \frac{y}{x + y}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
7122	$xy' = x + \frac{y}{2}$ i.c.	[_linear]	✓
7153	$2x + 4y + (2x - 2y)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
7185	$x^2y' + y^2 - xy = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
7186	$x + y - y'(x - y) = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
7191	$y'^2 - a^2y^2 = 0$	[_quadrature]	✓
7225	$\frac{1}{y} + \sec\left(\frac{y}{x}\right) - \frac{xy'}{y^2} = 0$	[[_homogeneous, 'class D']]]	✓
7231	$ye^{xy} + xe^{xy}y' = 0$	[_separable]	✓
7236	$x^2 + y^2 - 2xyy' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
7237	$x^2 - y^2 + 2xyy' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓

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Table 2.8 first order ode homogD2

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#	ODE	CAS classification	Solved?
7238	$-y + xy' = y^2 + x^2$	[[_homogeneous, 'class D', _rational, _Riccati]	✓
7240	$x + yy' + y - xy' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
7259	$y' + y \cos(x) = 0$	[_separable]	✓
7266	$y' = ky$	[_quadrature]	✓
7407	$y' = x^2y$	[_separable]	✓
7408	$yy' = x$	[_separable]	✓
7415	$y' = \frac{x+y}{x-y}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
7416	$y' = \frac{y^2}{xy+x^2}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
7417	$y' = \frac{y^2 + xy + x^2}{x^2}$	[[_homogeneous, 'class A', _rational, _Riccati]	✓
7418	$y' = \frac{y + x e^{-\frac{2y}{x}}}{x}$	[[_homogeneous, 'class A', _dAlembert]	✓
7450	$xy' = 2y$	[_separable]	✓
7452	$y' = ky$	[_quadrature]	✓
7456	$xy' = y + x^2 + y^2$	[[_homogeneous, 'class D', _rational, _Riccati]	✓
7457	$y' = \frac{xy}{y^2 + x^2}$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
7458	$2xyy' = y^2 + x^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
7460	$y' = \frac{y^2}{xy - x^2}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
7483	$x^5y' + y^5 = 0$	[_separable]	✓
7484	$y' = 4xy$	[_separable]	✓
7485	$y' + y \tan(x) = 0$	[_separable]	✓
7490	$y' - y \tan(x) = 0$	[_separable]	✓

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Table 2.8 first order ode homogD2

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#	ODE	CAS classification	Solved?
7494	$x^2 y' = y$ i.c.	[_separable]	✓
7524	$xy' = 2x^2 y + y \ln(x)$	[_separable]	✓
7530	$y + y \cos(xy) + (x + x \cos(xy)) y' = 0$	[_separable]	✓
7534	$1 + y + (1 - x) y' = 0$	[_separable]	✓
7547	$x^2 - 2y^2 + xyy' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
7548	$x^2 y' - 3xy - 2y^2 = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
7549	$x^2 y' = 3(y^2 + x^2) \arctan\left(\frac{y}{x}\right) + xy$	[[_homogeneous, 'class A', _dAlembert]	✓
7550	$x \sin\left(\frac{y}{x}\right) y' = y \sin\left(\frac{y}{x}\right) + x$	[[_homogeneous, 'class A', _dAlembert]	✓
7551	$xy' = y + 2x e^{-\frac{y}{x}}$	[[_homogeneous, 'class A', _dAlembert]	✓
7552	$x - y - (x + y) y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
7553	$xy' = 2x - 6y$	[_linear]	✓
7555	$x^2 y' = y^2 + 2xy$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
7556	$x^3 + y^3 - xy^2 y' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
7565	$y' = \sin\left(\frac{y}{x}\right) - \cos\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A', _dAlembert]	✓
7566	$e^{\frac{x}{y}} - \frac{yy'}{x} = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
7567	$y' = \frac{x^2 - xy}{y^2 \cos\left(\frac{x}{y}\right)}$	[[_homogeneous, 'class A', _dAlembert]	✓
7568	$y' = \frac{y \tan\left(\frac{y}{x}\right)}{x}$	[[_homogeneous, 'class A', _dAlembert]	✓
7593	$xy' + y = x$	[_linear]	✓
7595	$x^2 y' = y$	[_separable]	✓
7597	$y' = \frac{y^2 + x^2}{x^2 - y^2}$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓

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Table 2.8 first order ode homogD2  
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#	ODE	CAS classification	Solved?
7598	$y' = \frac{x + 2y}{2x - y}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
7599	$2xy + x^2y' = 0$	[_separable]	✓
7601	$-y + xy' = 2x$	[_linear]	✓
7605	$y' = \frac{x + y}{x - y}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
7606	$y' = \frac{x^2 + 2y^2}{x^2 - 2y^2}$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
7608	$\frac{1}{y} - \frac{xy'}{y^2} = 0$	[_separable]	✓
7749	$y' = 2xy$	[_separable]	✓
7755	$y' + y = 0$	[_quadrature]	✓
7757	$y' - y = 0$	[_quadrature]	✓
7761	$xy' = y$	[_separable]	✓
7763	$x^2y' = y$	[_separable]	✓
7765	$y' - \frac{y}{x} = x^2$	[_linear]	✓
8111	$x^2y'^2 - y^2 = 0$	[_separable]	✓
8112	$xy'^2 - (2x + 3y)y' + 6y = 0$	[_quadrature]	✓
8113	$x^2y'^2 - 5xyy' + 6y^2 = 0$	[_separable]	✓
8114	$x^2y'^2 + xy' - y^2 - y = 0$	[_separable]	✓
8115	$xy'^2 + (1 - x^2y)y' - xy = 0$	[_quadrature]	✓
8116	$y'^2 - (x^2y + 3)y' + 3x^2y = 0$	[_quadrature]	✓
8117	$xy'^2 - (xy + 1)y' + y = 0$	[_quadrature]	✓
8118	$y'^2 - y^2x^2 = 0$	[_separable]	✓
8119	$(x + y)^2 y'^2 = y^2$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
8120	$yy'^2 + (x - y^2)y' - xy = 0$	[_quadrature]	✓
8121	$y'^2 - y'xy(x + y) + x^3y^3 = 0$	[_separable]	✓

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Table 2.8 first order ode homogD2

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#	ODE	CAS classification	Solved?
8122	$(4x - y)y'^2 + 6y'(x - y) + 2x - 5y = 0$	[_quadrature]	✓
8123	$(x - y)^2 y'^2 = y^2$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
8124	$xyy'^2 + (-1 + xy^2)y' - y = 0$	[_quadrature]	✓
8125	$(y^2 + x^2)^2 y'^2 = 4y^2 x^2$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
8126	$(x + y)^2 y'^2 + (2y^2 + xy - x^2)y' + (y - x)y = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
8127	$xy(y^2 + x^2)(-1 + y'^2) = y'(x^4 + y^2 x^2 + y^4)$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
8128	$xy'^3 - (x + x^2 + y)y'^2 + (x^2 + y + xy)y' - xy = 0$	[_quadrature]	✓
8210	$6xy'^2 - (3x + 2y)y' + y = 0$	[_quadrature]	✓
8215	$y^2 y'^2 - (x + 1)yy' + x = 0$	[_quadrature]	✓
8226	$x^2 y'^2 = (x - y)^2$	[_linear]	✓
8229	$xy'^2 + (1 - x)yy' - y^2 = 0$	[_quadrature]	✓
8373	$y' = \frac{y}{x \ln(x)}$	[_separable]	✓
8377	$y' = \frac{2x - y}{4y + x}$ i.c.	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
8396	$y' = y$	[_quadrature]	✓
8397	$y' = 0$	[_quadrature]	✓
8400	$y' = \frac{2y}{x}$ i.c.	[_separable]	✓
8401	$y' = \frac{2y}{x}$	[_separable]	✓
8410	$y^2 + x^2 y' = xyy'$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
8412	$(x + y)y' = 0$	[_quadrature]	✓
8413	$xy' = 0$	[_quadrature]	✓
8414	$\frac{y'}{x + y} = 0$	[_quadrature]	✓

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Table 2.8 first order ode homogD2

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#	ODE	CAS classification	Solved?
8415	$\frac{y'}{x} = 0$	[_quadrature]	✓
8416	$y' = 0$	[_quadrature]	✓
8418	$y' = \frac{5x^2 - xy + y^2}{x^2}$	[[_homogeneous, 'class A', _rational, _Riccati]	✓
8427	$yy' - y = x$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
8468	$y' = \frac{y\left(1 + \frac{a^2x}{\sqrt{a^2(x^2+1)}}\right)}{\sqrt{a^2(x^2+1)}}$	[_separable]	✓
8562	$y' = e^{-\frac{y}{x}}$	[[_homogeneous, 'class A', _dAlembert]	✓
8563	$y' = 2x^2 \sin\left(\frac{y}{x}\right)^2 + \frac{y}{x}$	[[_homogeneous, 'class D']]	✓
8661	$y' = 0$	[_quadrature]	✓
8662	$y' = a$	[_quadrature]	✓
8664	$y' = 1$	[_quadrature]	✓
8666	$y' = axy$	[_separable]	✓
8669	$y' = y$	[_quadrature]	✓
8670	$y' = by$	[_quadrature]	✓
8672	$cy' = 0$	[_quadrature]	✓
8673	$cy' = a$	[_quadrature]	✓
8677	$cy' = y$	[_quadrature]	✓
8678	$cy' = by$	[_quadrature]	✓
8684	$a \sin(x) yxy' = 0$	[_quadrature]	✓
8685	$f(x) \sin(x) yxy' \pi = 0$	[_quadrature]	✓
8688	$y' = \cos(x) + \frac{y}{x}$	[_linear]	✓
8691	$xy' = 0$	[_quadrature]	✓
8692	$5y' = 0$	[_quadrature]	✓
8693	$ey' = 0$	[_quadrature]	✓
8694	$\pi y' = 0$	[_quadrature]	✓
8695	$\sin(x) y' = 0$	[_quadrature]	✓

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Table 2.8 first order ode homogD2

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#	ODE	CAS classification	Solved?
8696	$f(x)y' = 0$	[_quadrature]	✓
8699	$(x - 1)y' = 0$	[_quadrature]	✓
8700	$yy' = 0$	[_quadrature]	✓
8701	$xyy' = 0$	[_quadrature]	✓
8702	$xy \sin(x)y' = 0$	[_quadrature]	✓
8703	$\pi y \sin(x)y' = 0$	[_quadrature]	✓
8704	$x \sin(x)y' = 0$	[_quadrature]	✓
8707	$y^n = 0$	[_quadrature]	✓
8708	$xy^n = 0$	[_quadrature]	✓
8796	$y^3y''^2 + yy' = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓
8798	$yy'^3 + y^3y' = 0$	[[_2nd_order, _missing_x]]	✓
9699	$y' - (a + \cos(\ln(x)) + \sin(\ln(x)))y = 0$	[_separable]	✓
9781	$xy' - y - \frac{x}{\ln(x)} = 0$	[_linear]	✓
9782	$xy' - y - x^2 \sin(x) = 0$	[_linear]	✓
9783	$xy' - y - \frac{x \cos(\ln(\ln(x)))}{\ln(x)} = 0$	[_linear]	✓
9787	$xy' + y^2a - y + bx^2 = 0$	[[_homogeneous, 'class D'], _rational, _Riccati]	✓
9791	$xy' + xy^2 - y = 0$	[[_homogeneous, 'class D'], _rational, _Bernoulli]	✓
9792	$xy' + xy^2 - y - ax^3 = 0$	[[_homogeneous, 'class D'], _rational, _Riccati]	✓
9793	$xy' + xy^2 - (2x^2 + 1)y - x^3 = 0$	[[_homogeneous, 'class D'], _rational, _Riccati]	✓
9800	$xy' + f(x)(y^2 - x^2) - y = 0$	[[_homogeneous, 'class D'], _Riccati]	✓
9806	$xy' - e^{\frac{y}{x}}x - y - x = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓
9812	$xy' - y - x \sin\left(\frac{y}{x}\right) = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓
9813	$xy' + x - y + x \cos\left(\frac{y}{x}\right) = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓

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Table 2.8 first order ode homogD2

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#	ODE	CAS classification	Solved?
9814	$xy' + x \tan\left(\frac{y}{x}\right) - y = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
9824	$x^2y' - (x - 1)y = 0$	[_separable]	✓
9825	$x^2y' + y^2 + xy + x^2 = 0$	[[_homogeneous, 'class A', _rational, _Riccati]	✓
9826	$x^2y' - y^2 - xy = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
9827	$x^2y' - y^2 - xy - x^2 = 0$	[[_homogeneous, 'class A', _rational, _Riccati]	✓
9842	$(x^2 - 1)y' - xy + a = 0$	[_linear]	✓
9856	$3x^2y' - 7y^2 - 3xy - x^2 = 0$	[[_homogeneous, 'class A', _rational, _Riccati]	✓
9860	$x^3y' - y^2 - x^2y = 0$	[[_homogeneous, 'class D', _rational, _Bernoulli]	✓
9863	$x(x^2 + 1)y' + x^2y = 0$	[_separable]	✓
9864	$x(x^2 - 1)y' - (2x^2 - 1)y + ax^3 = 0$	[_linear]	✓
9866	$x^2(x - 1)y' - y^2 - x(-2 + x)y = 0$	[[_homogeneous, 'class D', _rational, _Bernoulli]	✓
9869	$(x^2a + bx + c)(-y + xy') - y^2 + x^2 = 0$	[[_homogeneous, 'class D', _rational, _Riccati]	✓
9872	$(2x^4 - x)y' - 2(x^3 - 1)y = 0$	[_separable]	✓
9882	$y'x \ln(x) + y - ax(\ln(x) + 1) = 0$	[_linear]	✓
9893	$yy' + ay + x = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
9896	$yy' + y^2 + 4x(x + 1) = 0$	[[_homogeneous, 'class D', _rational, _Bernoulli]	✓
9900	$yy' - xe^{\frac{x}{y}} = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
9912	$(2y - x)y' - y - 2x = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
9921	$xyy' + x^2 + y^2 = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
9922	$xyy' - y^2 + ax^3 \cos(x) = 0$	[[_homogeneous, 'class D', _Bernoulli]	✓

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Table 2.8 first order ode homogD2

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#	ODE	CAS classification	Solved?
9928	$(xy - x^2)y' + y^2 - 3xy - 2x^2 = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
9930	$2xyy' - y^2 + x^2a = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
9935	$x(2x + 3y)y' + 3(x + y)^2 = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
9947	$2x^2yy' + y^2 - 2x^3 - x^2 = 0$	[[_homogeneous, 'class D', _rational, _Bernoulli]]	✓
9951	$(2x^2y - x^3)y' + y^3 - 4xy^2 + 2x^3 = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class C'], _dAlem- bert]]	✓
9960	$(y^2 + x^2)y' + 2x(2x + y) = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlem- bert]]	✓
9961	$(y^2 + x^2)y' - y^2 = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
9965	$(y^2 - x^2)y' + 2xy = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
9970	$x^2 + 2xy - y^2 + (y^2 + 2xy - x^2)y' = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
9973	$(4y^2 + x^2)y' - xy = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
9974	$(3x^2 + 2xy + 4y^2)y' + y^2 + 6xy + 2x^2 = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlem- bert]]	✓
9979	$(y^2a + 2bxy + cx^2)y' + by^2 + 2cxy + dx^2 = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlem- bert]]	✓
9984	$x(y^2 + xy - x^2)y' - y^3 + xy^2 + x^2y = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
9986	$2x(5x^2 + y^2)y' + y^3 - x^2y = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
9995	$(y^3 - x^3)y' - x^2y = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
9997	$2y^3y' + xy^2 = 0$	[_separable]	✓

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Table 2.8 first order ode homogD2

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#	ODE	CAS classification	Solved?
9999	$(2y^3 + 5x^2y)y' + 5xy^2 + x^3 = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]	✓
10000	$(3x^3 + 6x^2y - 3xy^2 + 20y^3)y' + 4x^3 + 9x^2y + 6xy^2 - y^3 = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]	✓
10004	$(2xy^3 - x^4)y' + 2x^3y - y^4 = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
10014	$y(y^3 - 2x^3)y' + (2y^3 - x^3)x = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
10015	$y((bx + ay)^3 + bx^3)y' + x((bx + ay)^3 + ay^3) = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
10038	$xy' \cot\left(\frac{y}{x}\right) + 2x \sin\left(\frac{y}{x}\right) - y \cot\left(\frac{y}{x}\right) = 0$	[[_homogeneous, 'class A']]	✓
10052	$(-y + xy') \cos\left(\frac{y}{x}\right)^2 + x = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
10053	$\left(y \sin\left(\frac{y}{x}\right) - x \cos\left(\frac{y}{x}\right)\right) xy' - \left(x \cos\left(\frac{y}{x}\right) + y \sin\left(\frac{y}{x}\right)\right) y = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
10080	$y'^2 + (bx + ay)y' + abxy = 0$	[_quadrature]	✓
10084	$y'^2 + y(y - x)y' - xy^3 = 0$	[_separable]	✓
10122	$y' - 1 = 0$	[_quadrature]	✓
10126	$x^2y'^2 + 3xyy' + 2y^2 = 0$	[_separable]	✓
10128	$x^2y'^2 + 4xyy' - 5y^2 = 0$	[_separable]	✓
10130	$x^2y'^2 + (x^2y - 2xy + x^3)y' + (y^2 - x^2y)(1 - x) = 0$	[_linear]	✓
10136	$(-a^2 + x^2)y'^2 + 2xyy' + y^2 = 0$	[_separable]	✓
10158	$yy'^2 - (y - x)y' - x = 0$	[_quadrature]	✓
10168	$xyy'^2 + (y^2 + x^2)y' + xy = 0$	[_separable]	✓
10192	$xy^2y'^2 - 2y^3y' + 2xy^2 - x^3 = 0$	[_separable]	✓
10213	$y'^3 - (y^2 + xy + x^2)y'^2 + (xy^3 + y^2x^2 + x^3y)y' - x^3y^3 = 0$	[_quadrature]	✓
10226	$y'^3 \sin(x) - \left(y \sin(x) - \cos(x)^2\right) y'^2 - \left(y \cos(x)^2 + \sin(x)\right) y' + y \sin(x) = 0$	[_quadrature]	✓

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Table 2.8 first order ode homogD2

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#	ODE	CAS classification	Solved?
10227	$2yy'^3 - yy'^2 + 2xy' - x = 0$	[_quadrature]	✓
10244	$x\left(\sqrt{1+y'^2} + y'\right) - y = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
10252	$y \ln(y') + y' - y \ln(y) - xy = 0$	[_separable]	✓
10285	$y' = \frac{y + F\left(\frac{y}{x}\right)}{x - 1}$	[[_homogeneous, 'class D']]	✓
10297	$y' = \frac{y + F\left(\frac{y}{x}\right) x^2}{x}$	[[_homogeneous, 'class D']]	✓
10362	$y' = \frac{y + x^3 a e^x + a x^4 + a x^3 - xy^2 e^x - y^2 x^2 - xy^2}{x}$	[[_homogeneous, 'class D'], _Riccati]	✓
10364	$y' = \frac{y + x^3 a \ln(x+1) + a x^4 + a x^3 - xy^2 \ln(x+1) - y^2 x^2 - xy^2}{x}$	[[_homogeneous, 'class D'], _Riccati]	✓
10366	$y' = \frac{y + x^3 \ln(x) + x^4 + x^3 + 7xy^2 \ln(x) + 7y^2 x^2 + 7xy^2}{x}$	[[_homogeneous, 'class D'], _Riccati]	✓
10368	$y' = \frac{y + x^3 b \ln\left(\frac{1}{x}\right) + x^4 b + b x^3 + x a y^2 \ln\left(\frac{1}{x}\right) + x^2 a y^2}{x}$	[[_homogeneous, 'class D'], _Riccati]	✓
10372	$y' = \frac{y + \ln((x-1)(x+1)) x^3 + 7 \ln((x-1)(x+1)) x y^2}{x}$	[[_homogeneous, 'class D'], _Riccati]	✓
10374	$y' = \frac{y - \ln\left(\frac{x+1}{x-1}\right) x^3 + \ln\left(\frac{x+1}{x-1}\right) x y^2}{x}$	[[_homogeneous, 'class D'], _Riccati]	✓
10375	$y' = \frac{y + e^{\frac{x+1}{x-1}} x^3 + e^{\frac{x+1}{x-1}} x y^2}{x}$	[[_homogeneous, 'class D'], _Riccati]	✓
10376	$y' = \frac{xy - y - e^{x+1} x^3 + e^{x+1} x y^2}{(x-1)x}$	[[_homogeneous, 'class D'], _Riccati]	✓
10382	$y' = \frac{y \ln(x-1) + x^4 + x^3 + y^2 x^2 + xy^2}{\ln(x-1)x}$	[[_homogeneous, 'class D'], _Riccati]	✓
10383	$y' = \frac{y \ln(x-1) + e^{x+1} x^3 + 7 e^{x+1} x y^2}{\ln(x-1)x}$	[[_homogeneous, 'class D'], _Riccati]	✓
10389	$y' = \frac{-y e^x + xy - x^3 \ln(x) - x^3 - xy^2 \ln(x) - xy^2}{(-e^x + x)x}$	[[_homogeneous, 'class D'], _Riccati]	✓
10391	$y' = \frac{xy \ln(x) - y + 2x^5 b + 2x^3 a y^2}{(x \ln(x) - 1)x}$	[[_homogeneous, 'class D'], _Riccati]	✓

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Table 2.8 first order ode homogD2  
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#	ODE	CAS classification	Solved?
10441	$y' = \frac{xy + x^3 + xy^2 + y^3}{x^2}$	[[_homogeneous, 'class D', _rational, _Abel]	✓
10460	$y' = \frac{xy + x + y^2}{(x - 1)(x + y)}$	[[_homogeneous, 'class D', _rational, [_Abel, '2nd type', 'class B']]	✓
10466	$y' = \frac{x^3y + x^3 + xy^2 + y^3}{(x - 1)x^3}$	[[_homogeneous, 'class D', _rational, _Abel]	✓
10473	$y' = \frac{y \ln(x) + \cosh(x) x a y^2 + \cosh(x) x^3 b}{x \ln(x)}$	[[_homogeneous, 'class D', _Riccati]	✓
10511	$y' = \frac{y(x^3 + x^2y + y^2)}{x^2(x - 1)(x + y)}$	[[_homogeneous, 'class D', _rational, [_Abel, '2nd type', 'class C']]	✓
10589	$y' = \frac{\sin(\frac{y}{x})(y + 2x^2 \sin(\frac{y}{2x}) \cos(\frac{y}{2x}))}{2 \sin(\frac{y}{2x}) x \cos(\frac{y}{2x})}$	[[_homogeneous, 'class D']]	✓
10590	$y' = \frac{\sin(\frac{y}{x})(y + 2x^3 \cos(\frac{y}{2x}) \sin(\frac{y}{2x}))}{2 \sin(\frac{y}{2x}) x \cos(\frac{y}{2x})}$	[[_homogeneous, 'class D']]	✓
10645	$y' = \frac{-y \sin(\frac{y}{x}) + y \sin(\frac{3y}{2x}) \cos(\frac{y}{2x}) + y \cos(\frac{y}{2x}) \sin(\frac{y}{2x})}{2 \cos(\frac{y}{x}) \cos(\frac{y}{2x}) \sin(\frac{y}{2x}) x}$	[[_homogeneous, 'class D']]	✓
10646	$y' = \frac{-y \sin(\frac{y}{x}) + y \sin(\frac{3y}{2x}) \cos(\frac{y}{2x}) + y \cos(\frac{y}{2x}) \sin(\frac{y}{2x})}{2 \cos(\frac{y}{x}) \cos(\frac{y}{2x}) \sin(\frac{y}{2x}) x}$	[[_homogeneous, 'class D']]	✓
10651	$y' = \frac{-y \sin(\frac{y}{x}) + y \sin(\frac{3y}{2x}) \cos(\frac{y}{2x}) + y \cos(\frac{y}{2x}) \sin(\frac{y}{2x})}{2 \cos(\frac{y}{x}) \cos(\frac{y}{2x}) \sin(\frac{y}{2x}) x} + 2 \sin(\frac{y}{x}) x^3 \cos(\frac{y}{2x}) \sin(\frac{y}{2x})$	[[_homogeneous, 'class D']]	✓
10654	$y' = \frac{-\sin(\frac{y}{x}) y x - y \sin(\frac{y}{x}) + y \sin(\frac{3y}{2x}) \cos(\frac{y}{2x}) x + y \sin(\frac{y}{2x}) \cos(\frac{y}{2x}) + y \cos(\frac{y}{2x}) \sin(\frac{y}{2x}) x}{2 \cos(\frac{y}{x}) \cos(\frac{y}{2x}) \sin(\frac{y}{2x}) x (x + 1)}$	[[_homogeneous, 'class D']]	✓
10655	$y' = \frac{y \sin(\frac{3y}{2x}) \cos(\frac{y}{2x}) x + y \sin(\frac{3y}{2x}) \cos(\frac{y}{2x}) + y \cos(\frac{y}{2x}) \sin(\frac{y}{2x})}{2 \cos(\frac{y}{x}) \sin(\frac{y}{2x}) x \cos(\frac{y}{2x}) (x + 1)} - \sin(\frac{y}{x}) y x - y \sin(\frac{y}{x})$	[[_homogeneous, 'class D']]	✓
10664	$y' = \frac{y(y^2 + xy + x^2 + x)}{x^2}$	[[_homogeneous, 'class D', _rational, _Abel]	✓
10673	$y' = -F(x)(-x^2 a + y^2) + \frac{y}{x}$	[[_homogeneous, 'class D', _Riccati]	✓
10674	$y' = -F(x)(-x^2 - 2xy + y^2) + \frac{y}{x}$	[[_homogeneous, 'class D', _Riccati]	✓

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Table 2.8 first order ode homogD2

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#	ODE	CAS classification	Solved?
10675	$y' = -F(x)(-y^2a - bx^2) + \frac{y}{x}$	[[_homogeneous, 'class D', _Riccati]	✓
10677	$y' = -F(x)(x^2 + 2xy - y^2) + \frac{y}{x}$	[[_homogeneous, 'class D', _Riccati]	✓
10678	$y' = -F(x)(-7xy^2 - x^3) + \frac{y}{x}$	[[_homogeneous, 'class D', _Riccati]	✓
11260	$x(ay' + by'' + cy''' + ey'''' )y = 0$	[[_high_order, _miss- ing_x]]	✓
11521	$2y'y''' - 3y'^2 = 0$	[[_3rd_order, _missing_x]]	✓
11682	$y' = f\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A', _dAlembert]	✓
11751	$(x^2a + bx + e)(-y + xy') - y^2 + x^2 = 0$	[[_homogeneous, 'class D', _rational, _Riccati]	✓
11760	$(ax^n + bx^m + c)(-y + xy') + sx^k(y^2 - \lambda x^2) = 0$	[[_homogeneous, 'class D', _rational, _Riccati]	✓
12474	$\frac{1 + 2xy}{y} + \frac{(y-x)y'}{y^2} = 0$	[[_homogeneous, 'class D', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
12475	$\frac{y^2 - 2x^2}{xy^2 - x^3} + \frac{(2y^2 - x^2)y'}{y^3 - x^2y} = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlem- bert]	✓
12477	$y + x + xy' = 0$	[_linear]	✓
12483	$e^{\frac{y}{x}}x + y - xy' = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
12484	$2x^2y + 3y^3 - (x^3 + 2xy^2)y' = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
12485	$x^2y' + y^2 - xy = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
12486	$2x^2y + y^3 - x^3y' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
12487	$y^3 + x^3y' = 0$	[_separable]	✓
12488	$x + y \cos\left(\frac{y}{x}\right) - x \cos\left(\frac{y}{x}\right)y' = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
12506	$y^2(3y - 6xy') - x(y - 2xy') = 0$	[_separable]	✓
12508	$x^2y' + y^2 - xy = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓

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Table 2.8 first order ode homogD2

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#	ODE	CAS classification	Solved?
12510	$x + y - y'(x - y) = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
12511	$x^2 + y^2 - 2xyy' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
12513	$-y + xy' = y^2 + x^2$	[[_homogeneous, 'class D', _rational, _Riccati]]	✓
12514	$3x^2 + 6xy + 3y^2 + (2x^2 + 3xy) y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
12517	$x^3y - y^4 + (xy^3 - x^4) y' = 0$	[_separable]	✓
12518	$y^2 - x^2 + 2myx + (my^2 - mx^2 - 2xy) y' = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
12519	$xy' - y + 2x^2y - x^3 = 0$	[_linear]	✓
12521	$x + yy' + y - xy' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
12529	$(y - x) y' + y = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
12532	$x \sin\left(\frac{y}{x}\right) - y \cos\left(\frac{y}{x}\right) + x \cos\left(\frac{y}{x}\right) y' = 0$	[[_homogeneous, 'class A', _dAlembert]]	✓
12540	$y + xy^2 - xy' = 0$	[[_homogeneous, 'class D', _rational, _Bernoulli]]	✓
12545	$y^3 - 2x^2y + (2xy^2 - x^3) y' = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
12548	$1 + e^{\frac{y}{x}} + e^{\frac{x}{y}} \left(1 - \frac{x}{y}\right) y' = 0$	[[_homogeneous, 'class A', _dAlembert]]	✓
12552	$y'^2 + (x + y) y' + xy = 0$	[_quadrature]	✓
12585	$x^2y'^2 - 2(xy + 2y') y' + y^2 = 0$	[_separable]	✓
12701	$x' = \frac{2x}{t}$	[_separable]	✓
12702	$x' = -\frac{t}{x}$	[_separable]	✓
12707	$2tx' = x$	[_separable]	✓
12728	$x' = \frac{2x}{t+1}$	[_separable]	✓

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Table 2.8 first order ode homogD2

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#	ODE	CAS classification	Solved?
12746	$x' = \frac{4t^2 + 3x^2}{2xt}$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
12749	$y' = \frac{y^2 + 2ty}{t^2}$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
12764	$x' = \left(a + \frac{b}{t}\right)x$ i.c.	[_separable]	✓
12768	$R' = \frac{R}{t} + te^{-t}$ i.c.	[_linear]	✓
12770	$x' = 2xt$	[_separable]	✓
12775	$x' + p(t)x = 0$	[_separable]	✓
12776	$x' = \frac{2x}{3t} + \frac{2t}{x}$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
12779	$t^2y' + 2ty - y^2 = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
12782	$x^3 + 3tx^2x' = 0$	[_separable]	✓
12786	$x^2 - t^2x' = 0$	[_separable]	✓
12922	$y' + y = x + 1$	[[_linear, 'class A']]	✓
12926	$2xyy' + x^2 + y^2 = 0$	[[_homogeneous, 'class A'], _exact, _rational, _Bernoulli]	✓
12948	$3x + 2y + (2x + y)y' = 0$	[[_homogeneous, 'class A'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
12964	$y^2 + 2xy - x^2y' = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
12966	$4xy + y'(x^2 + 1) = 0$	[_separable]	✓
12973	$x + y - xy' = 0$	[_linear]	✓
12974	$2xy + 3y^2 - (x^2 + 2xy)y' = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
12975	$v^3 + (u^3 - uv^2)v' = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
12976	$x \tan\left(\frac{y}{x}\right) + y - xy' = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓

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Table 2.8 first order ode homogD2

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#	ODE	CAS classification	Solved?
12977	$(2s^2 + 2st + t^2) s' + s^2 + 2st - t^2 = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]	✓
12983	$x^2 + 3y^2 - 2xyy' = 0$ i.c.	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
12984	$2x - 5y + (4x - y) y' = 0$ i.c.	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
12985	$3x^2 + 9xy + 5y^2 - (6x^2 + 4xy) y' = 0$ i.c.	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
12986	$x + 2y + (2x - y) y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
12987	$3x - y - (x + y) y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
12988	$x^2 + 2y^2 + (4xy - y^2) y' = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]	✓
12989	$2x^2 + 2xy + y^2 + (x^2 + 2xy) y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class B']]	✓
13004	$y' - \frac{y}{x} = -\frac{y^2}{x}$	[_separable]	✓
13027	$6x^2y - (x^3 + 1) y' = 0$	[_separable]	✓
13031	$3x - 5y + (x + y) y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
13032	$e^{2x}y^2 + (e^{2x}y - 2y) y' = 0$	[_separable]	✓
13034	$2x^2 + xy + y^2 + 2x^2y' = 0$	[[_homogeneous, 'class A', _rational, _Riccati]	✓
13037	$y' = \frac{2x - 7y}{3y - 8x}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
13040	$y' = \frac{2x^2 + y^2}{2xy - x^2}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
13041	$x^2 + y^2 - 2xyy' = 0$ i.c.	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓

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Table 2.8 first order ode homogD2

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#	ODE	CAS classification	Solved?
13046	$y' = \frac{2x + 7y}{2x - 2y}$ i.c.	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
13047	$y' = \frac{xy}{x^2 + 1}$ i.c.	[_separable]	✓
13050	$x^2y' + xy = \frac{y^3}{x}$ i.c.	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
13397	$x' = xt^2$	[_separable]	✓
13401	$xy' = ky$	[_separable]	✓
13402	$i' = p(t) i$	[_separable]	✓
13403	$x' = \lambda x$	[_quadrature]	✓
13423	$xy + y^2 + x^2 - x^2y' = 0$	[[_homogeneous, 'class A'], _rational, _Riccati]	✓
13534	$xyy'^2 - (y^2 + x^2) y' + xy = 0$	[_separable]	✓
13536	$x' = e^{\frac{x}{t}} + \frac{x}{t}$	[[_homogeneous, 'class A'], _dAlembert]	✓
13538	$y = xy' + \frac{1}{y}$	[_separable]	✓
13549	$y'^3 - y'e^{2x} = 0$	[_quadrature]	✓
13553	$(x - y) y - x^2y' = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
13554	$x' + 5x = 10t + 2$ i.c.	[[_linear, 'class A']]	✓
13555	$x' = \frac{x}{t} + \frac{x^2}{t^3}$ i.c.	[[_homogeneous, 'class D'], _rational, _Bernoulli]	✓
13565	$(x - y) y - x^2y' = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
13571	$(y^2 - x^2) y' + 2xy = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
13644	$5y' - xy = 0$	[_separable]	✓
13838	$y - xy' = 0$	[_separable]	✓
13843	$z - (-a^2 + t^2) z' = 0$	[_separable]	✓
13846	$r' + r \tan(t) = 0$	[_separable]	✓

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Table 2.8 first order ode homogD2  
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#	ODE	CAS classification	Solved?
13851	$y - x + (x + y)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
13852	$y + x + xy' = 0$	[_linear]	✓
13853	$x + y + (y - x)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
13855	$8y + 10x + (7x + 5y)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
13857	$t - s + ts' = 0$	[_linear]	✓
13858	$xy^2y' = x^3 + y^3$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
13859	$x \cos\left(\frac{y}{x}\right)(xy' + y) = y \sin\left(\frac{y}{x}\right)(-y + xy')$	[[_homogeneous, 'class A', _dAlembert]]	✓
13887	$\frac{x}{(x+y)^2} + \frac{(2x+y)y'}{(x+y)^2} = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class C', _dAlembert]]	✓
13888	$\frac{1}{x^2} + \frac{3y^2}{x^4} = \frac{2yy'}{x^3}$	[[_homogeneous, 'class A', _exact, _rational, _Bernoulli]]	✓
13889	$\frac{x^2y'}{(x-y)^2} - \frac{y^2}{(x-y)^2} = 0$	[_separable]	✓
13895	$y = yy' + y' - y'^2$	[_quadrature]	✓
13897	$y = xy' + y'$	[_separable]	✓
13900	$y' = \frac{2y}{x} - \sqrt{3}$	[_linear]	✓
13952	$\frac{x^2y'}{(x-y)^2} - \frac{y^2}{(x-y)^2} = 0$	[_separable]	✓
13955	$y'(x^2 + 1) - xy - \alpha = 0$	[_linear]	✓
13956	$x \cos\left(\frac{y}{x}\right)y' = y \cos\left(\frac{y}{x}\right) - x$	[[_homogeneous, 'class A', _dAlembert]]	✓
13987	$-y + xy' = 0$	[_separable]	✓
13992	$y' - \frac{y}{x} = 1$	[_linear]	✓
13994	$2xy + x^2y' = 0$	[_separable]	✓

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Table 2.8 first order ode homogD2

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#	ODE	CAS classification	Solved?
13998	$y' + 3y = 0$	[_quadrature]	✓
14002	$2xy' - y = 0$	[_separable]	✓
14009	$y' - 2xy = 0$	[_separable]	✓
14015	$y'x \ln(x) - (\ln(x) + 1)y = 0$	[_separable]	✓
14033	$y' = xy$	[_separable]	✓
14034	$y' = -xy$	[_separable]	✓
14038	$y' = xy$	[_separable]	✓
14039	$y' = \frac{x}{y}$	[_separable]	✓
14040	$y' = \frac{y}{x}$	[_separable]	✓
14047	$y' = \frac{2x - y}{3y + x}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
14050	$y' = \frac{xy}{y^2 + x^2}$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
14054	$y' = \frac{y}{y - x}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
14066	$y' = \cos(x) + \frac{y}{x}$	[_linear]	✓
14083	$y' = 3y$	[_quadrature]	✓
14087	$y' = \frac{y}{x}$	[_separable]	✓
14088	$y' = \frac{2x}{y}$	[_separable]	✓
14092	$y - x^2y' = 0$	[_separable]	✓
14096	$y' = -\frac{y(2x + y)}{x(x + 2y)}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
14100	$y' = \frac{y}{x}$	[_separable]	✓

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Table 2.8 first order ode homogD2  
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#	ODE	CAS classification	Solved?
14102	$y' = \frac{y}{x} + \sin(x^2)$ i.c.	[_linear]	✓
14105	$x - yy' = 0$	[_separable]	✓
14106	$y - xy' = 0$	[_separable]	✓
14107	$x^2 - y + xy' = 0$	[_linear]	✓
14110	$y(2x - 1) + x(x + 1)y' = 0$	[_separable]	✓
14113	$y' = \frac{y}{x}$ i.c.	[_separable]	✓
14114	$y' = \frac{y}{x}$ i.c.	[_separable]	✓
14140	$y' = \frac{y}{y - x}$ i.c.	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
14141	$y' = \frac{y}{y - x}$ i.c.	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
14142	$y' = \frac{y}{y - x}$ i.c.	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
14143	$y' = \frac{y}{y - x}$ i.c.	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
14145	$y' = \frac{xy}{y^2 + x^2}$ i.c.	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
14185	$y' - iy = 0$ i.c.	[_quadrature]	✓
14277	$y' = \frac{y + 1}{t + 1}$	[_separable]	✓
14279	$y' = t^4 y$	[_separable]	✓
14285	$y' = \frac{t}{y}$	[_separable]	✓
14296	$w' = \frac{w}{t}$	[_separable]	✓
14298	$x' = -xt$ i.c.	[_separable]	✓
14299	$y' = ty$ i.c.	[_separable]	✓

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Table 2.8 first order ode homogD2

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#	ODE	CAS classification	Solved?
14321	$y' = (t + 1)y$ i.c.	[_separable]	✓
14336	$\theta' = 2$	[_quadrature]	✓
14338	$v' = -\frac{v}{RC}$	[_quadrature]	✓
14418	$y' = -\frac{y}{t} + 2$	[_linear]	✓
14426	$y' = -\frac{y}{t} + 2$ i.c.	[_linear]	✓
14441	$y' = 3y$	[_quadrature]	✓
14449	$y' = ty$	[_separable]	✓
14451	$y' = \frac{ty}{t^2 + 1}$	[_separable]	✓
14457	$x' = -xt$ i.c.	[_separable]	✓
14659	$yy' = 2x$	[_separable]	✓
14706	$(-2 + x)y' = y + 3$	[_separable]	✓
14721	$y' = \frac{x}{y}$	[_separable]	✓
14723	$xyy' = y^2 + 9$	[_separable]	✓
14727	$y' = \frac{x}{y}$ i.c.	[_separable]	✓
14741	$y' = \frac{y}{x}$	[_separable]	✓
14757	$y' = \frac{y^2 - 1}{xy}$ i.c.	[_separable]	✓
14766	$y' = y \sin(x)$	[_separable]	✓
14783	$xy' = y + x^2 \cos(x)$ i.c.	[_linear]	✓
14787	$-y + xy' = x^2 e^{-x^2}$ i.c.	[_linear]	✓
14792	$x^2 y' - xy = y^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
14793	$y' = \frac{y}{x} + \frac{x}{y}$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓

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Table 2.8 first order ode homogD2

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#	ODE	CAS classification	Solved?
14794	$\cos\left(\frac{y}{x}\right)\left(y' - \frac{y}{x}\right) = 1 + \sin\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A', _dAlembert]	✓
14795	$y' = \frac{x-y}{x+y}$ i.c.	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
14797	$y' - \frac{3y}{x} = \frac{y^2}{x^2}$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
14799	$y' - \frac{y}{x} = \frac{1}{y}$ i.c.	[[_homogeneous, 'class D', _rational, _Bernoulli]	✓
14800	$y' = \frac{y}{x} + \frac{x^2}{y^2}$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
14805	$(x+y)y' = y$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
14806	$(2xy + 2x^2)y' = x^2 + 2xy + 2y^2$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
14818	$2xy + y^2 + (x^2 + 2xy)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class B']]	✓
14822	$4x^3y + (x^4 - y^4)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlem- bert]	✓
14844	$x^3 + y^3 + xy^2y' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
14847	$3xy^3 - y + xy'y' = 0$	[[_homogeneous, 'class D', _rational, _Bernoulli]	✓
14856	$xyy' = 2y^2 + 2x^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
14858	$y' = \frac{x+2y}{2x-y}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
14859	$y' = \frac{y}{x} + \tan\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A', _dAlembert]	✓
14865	$xyy' = y^2 + xy + x^2$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓

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Table 2.8 first order ode homogD2  
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#	ODE	CAS classification	Solved?
14867	$xy^3y' = y^4 - x^2$	[[_homogeneous, 'class D'], _rational, _Bernoulli]	✓
15465	$2x - y - yy' = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
15466	$y' + 2y = 0$	[_quadrature]	✓
15467	$y' + xy = 0$	[_separable]	✓
15478	$y' = -\frac{x}{y}$	[_separable]	✓
15480	$y' = -\frac{2y}{x} - 3$	[_linear]	✓
15496	$y' + 2y = 0$	[_quadrature]	✓
	<i>i.c.</i>		
15509	$y' = \frac{y^2 + 2xy}{x^2}$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
15518	$y' + y \cos(x) = 0$	[_separable]	✓
15526	$2x - 3y + (2y - 3x)y' = 0$	[[_homogeneous, 'class A'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
15543	$y' = y\sqrt{t}$	[_separable]	✓
	<i>i.c.</i>		
15545	$ty' = y$	[_separable]	✓
15546	$y' = y \tan(t)$	[_separable]	✓
	<i>i.c.</i>		
15568	$y' = -\frac{t}{y}$	[_separable]	✓
	<i>i.c.</i>		
15577	$y' = \frac{y+1}{t+1}$	[_separable]	✓
15582	$y' + ky = 0$	[_quadrature]	✓
15615	$y' = \sqrt{\frac{y}{t}}$	[[_homogeneous, 'class A'], _dAlembert]	✓
	<i>i.c.</i>		
15626	$y' = y \cos(t)$	[_separable]	✓
	<i>i.c.</i>		
15629	$y' + yf(t) = 0$	[_separable]	✓
	<i>i.c.</i>		
15635	$y' = 3y$	[_quadrature]	✓

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Table 2.8 first order ode homogD2

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#	ODE	CAS classification	Solved?
15636	$y' = -y$	[_quadrature]	✓
15640	$y' = yf(t)$	[_separable]	✓
	<i>i.c.</i>		
15647	$ty' + y = t$	[_linear]	✓
15663	$x' = \frac{3xt^2}{-t^3 + 1}$	[_separable]	✓
15664	$p' = t^3 + \frac{p}{t}$	[_linear]	✓
15676	$y' - \frac{y}{t} = \ln(t)$	[_linear]	✓
15701	$\frac{t}{\sqrt{t^2 + y^2}} + \frac{yy'}{\sqrt{t^2 + y^2}} = 0$	[_separable]	✓
15702	$y \cos(ty) + t \cos(ty) y' = 0$	[_separable]	✓
15704	$3ty^2 + y^3 y' = 0$	[_separable]	✓
15708	$e^{ty} + \frac{t e^{ty} y'}{y} = 0$	[_separable]	✓
15711	$y^2 + 2tyy' = 0$	[_separable]	✓
15712	$\frac{3t^2}{y} - \frac{t^3 y'}{y^2} = 0$	[_separable]	✓
15715	$2ty + (t^2 + y^2) y' = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]	✓
15718	$3t^2 + 3y^2 + 6tyy' = 0$	[[_homogeneous, 'class A', _exact, _rational, _Bernoulli]	✓
15721	$-2ty^2 \sin(t^2) + 2y \cos(t^2) y' = 0$	[_separable]	✓
15727	$-\frac{y^2 e^{\frac{y}{t}}}{t^2} + 1 + e^{\frac{y}{t}} \left(1 + \frac{y}{t}\right) y' = 0$	[[_homogeneous, 'class A', _exact, _dAlembert]	✓
15728	$2t \sin\left(\frac{y}{t}\right) - y \cos\left(\frac{y}{t}\right) + t \cos\left(\frac{y}{t}\right) y' = 0$	[[_homogeneous, 'class A', _exact, _dAlembert]	✓
15729	$2ty^2 + 2t^2 yy' = 0$	[_separable]	✓
	<i>i.c.</i>		
15730	$1 + \frac{y}{t^2} - \frac{y'}{t} = 0$	[_linear]	✓
	<i>i.c.</i>		
15741	$t^2 y + t^3 y' = 0$	[_separable]	✓
15742	$y(2e^t + 4t) + 3(e^t + t^2) y' = 0$	[_separable]	✓

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Table 2.8 first order ode homogD2

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#	ODE	CAS classification	Solved?
15744	$2ty + y^2 - t^2y' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
15747	$5ty^2 + y + (2t^3 - t)y' = 0$	[[_homogeneous, 'class D', _rational, _Bernoulli]]	✓
15751	$2t + 2y + (2t + 2y)y' = 0$	[_quadrature]	✓
15752	$\frac{9t}{5} + 2y + (2t + 2y)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
15753	$2t + \frac{19y}{10} + \left(\frac{19t}{10} + 2y\right)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
15757	$ty' - y = ty^3 \sin(t)$	[[_homogeneous, 'class D', _Bernoulli]]	✓
15760	$y' - \frac{y}{t} = ty^2$	[[_homogeneous, 'class D', _rational, _Bernoulli]]	✓
15761	$y' - \frac{y}{t} = \frac{y^2}{t^2}$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
15762	$y' - \frac{y}{t} = \frac{y^2}{t}$	[_separable]	✓
15764	$\cos\left(\frac{t}{y+t}\right) + e^{\frac{2y}{t}}y' = 0$	[[_homogeneous, 'class A', _dAlembert]]	✓
15765	$y \ln\left(\frac{t}{y}\right) + \frac{t^2y'}{y+t} = 0$	[[_homogeneous, 'class A', _dAlembert]]	✓
15767	$\frac{2}{t} + \frac{1}{y} + \frac{ty'}{y^2} = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
15770	$2t + (y - 3t)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class C'], _dAlem- bert]]	✓
15771	$2y - 3t + ty' = 0$	[_linear]	✓
15772	$ty - y^2 + t(t - 3y)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
15773	$t^2 + ty + y^2 - ty'y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
15774	$t^3 + y^3 - ty^2y' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓

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Table 2.8 first order ode homogD2

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#	ODE	CAS classification	Solved?
15775	$y' = \frac{t + 4y}{4t + y}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
15776	$t - y + ty' = 0$	[_linear]	✓
15777	$y + (y + t)y' = 0$	[[_homogeneous, 'class A'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
15778	$2t^2 - 7ty + 5y^2 + ty' = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
15780	$y^2 = (ty - 4t^2)y'$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
15782	$(t^2 - y^2)y' + y^2 + ty = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
15783	$tyy' - t^2e^{-\frac{y}{t}} - y^2 = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓
15784	$y' = \frac{1}{\frac{2ye^{-\frac{t}{y}}}{t} + \frac{t}{y}}$	[[_homogeneous, 'class A'], _dAlembert]	✓
15788	$y' = \frac{4y^2 - t^2}{2ty}$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
15789	$t + y - ty' = 0$	[_linear]	✓
15792	$y^3 - t^3 - ty^2y' = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
15793	$ty^3 - (t^4 + y^4)y' = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
15799	$y' - \frac{2y}{x} = -x^2y$	[_separable]	✓
15811	$y' = \frac{y^2 - t^2}{ty}$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
15812	$y \sin\left(\frac{t}{y}\right) - \left(t + t \sin\left(\frac{t}{y}\right)\right)y' = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓
15815	$y' - \frac{y}{t} = \frac{y^2}{t}$	[_separable]	✓

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Table 2.8 first order ode homogD2

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#	ODE	CAS classification	Solved?
15822	$3t + (t - 4y)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class C', _dAlem- bert]]	✓
15823	$y - t + (y + t)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
15825	$y^2 + (t^2 + ty)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
15826	$r' = \frac{r^2 + t^2}{rt}$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
15827	$x' = \frac{5tx}{x^2 + t^2}$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
15839	$y - ty' = 2y^2 \ln(t)$	[[_homogeneous, 'class D', _Bernoulli]]	✓
15852 i.c.	$y' = -\frac{y}{t-2}$	[_separable]	✓
16341	$y' = \frac{x}{y}$	[_separable]	✓
16364	$y' = \frac{1+y}{x-1}$	[_separable]	✓
16365	$y' = \frac{x+y}{x-y}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
16369	$y' = -\frac{y}{x}$	[_separable]	✓
16370	$y' = 1$	[_quadrature]	✓
16372	$y' = y$	[_quadrature]	✓
16378 i.c.	$xy' = 2x - y$	[_linear]	✓
16381 i.c.	$\sin(x)y' - y \cos(x) = 0$	[_separable]	✓
16397 i.c.	$y' = \frac{y}{x}$	[_separable]	✓
16398	$\cos(y') = 0$	[_quadrature]	✓
16399	$e^{y'} = 1$	[_quadrature]	✓
16402	$\tan(y') = 0$	[_quadrature]	✓

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Table 2.8 first order ode homogD2

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#	ODE	CAS classification	Solved?
16410	$(x + 1)y' = y - 1$	[_separable]	✓
16413	$xy' = y + x \cos\left(\frac{y}{x}\right)^2$	[[_homogeneous, 'class A'], _dAlembert]	✓
16414	$x - y + xy' = 0$	[_linear]	✓
16416	$x^2y' = x^2 - xy + y^2$	[[_homogeneous, 'class A'], _rational, _Riccati]	✓
16418	$2x^2y' = y^2 + x^2$	[[_homogeneous, 'class A'], _rational, _Riccati]	✓
16419	$4x - 3y + (2y - 3x)y' = 0$	[[_homogeneous, 'class A'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
16420	$y - x + (x + y)y' = 0$	[[_homogeneous, 'class A'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
16453	$xy' + y = 2x$	[_linear]	✓
16457	$3xy^2y' - 2y^3 = x^3$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
16459	$y' + 3xy = ye^{x^2}$	[_separable]	✓
16470	$x(2x^2 + y^2) + y(x^2 + 2y^2)y' = 0$	[[_homogeneous, 'class A'], _exact, _rational, _dAlem- bert]	✓
16474	$2x + \frac{y^2 + x^2}{x^2y} = \frac{(y^2 + x^2)y'}{xy^2}$	[[_homogeneous, 'class D'], _exact, _rational]	✓
16477	$\frac{xy}{\sqrt{x^2 + 1}} + 2xy - \frac{y}{x} + (\sqrt{x^2 + 1} + x^2 - \ln(x))y' = 0$	[_separable]	✓
16480	$\frac{2x}{y^3} + \frac{(y^2 - 3x^2)y'}{y^4} = 0$ i.c.	[[_homogeneous, 'class A'], _exact, _rational, _dAlem- bert]	✓
16482	$3x^2y + y^3 + (x^3 + 3xy^2)y' = 0$	[[_homogeneous, 'class A'], _exact, _rational, _dAlem- bert]	✓
16484	$x^2 + y - xy' = 0$	[_linear]	✓
16496	$x^2y'^2 + 3xyy' + 2y^2 = 0$	[_separable]	✓
16499	$y'^3 = yy'^2 - x^2y' + x^2y$	[_quadrature]	✓
16531	$y'^2 - y^2 = 0$	[_quadrature]	✓

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Table 2.8 first order ode homogD2

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#	ODE	CAS classification	Solved?
16546	$x^3 - 3xy^2 + (y^3 - 3x^2y)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]	✓
16547	$5xy - 4y^2 - 6x^2 + \left(y^2 - 8xy + \frac{5x^2}{2}\right)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]	✓
16553	$xyy' - y^2 = x^4$	[[_homogeneous, 'class D', _rational, _Bernoulli]	✓
16554	$\frac{1}{x^2 - xy + y^2} = \frac{y'}{2y^2 - xy}$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
16558	$y'(3x^2 - 2x) - y(6x - 2) = 0$	[_separable]	✓
16559	$xy^2y' - y^3 = \frac{x^4}{3}$	[[_homogeneous, 'class D', _rational, _Bernoulli]	✓
16560	$1 + e^{\frac{x}{y}} + e^{\frac{x}{y}} \left(1 - \frac{x}{y}\right)y' = 0$	[[_homogeneous, 'class A', _exact, _dAlembert]	✓
	<i>i.c.</i>		
16561	$x^2 + y^2 - xyy' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
16563	$y + xy^2 - xy' = 0$	[[_homogeneous, 'class D', _rational, _Bernoulli]	✓
16564	$x^2 + y^2 + 2x + 2yy' = 0$	[[_homogeneous, 'class D', _rational, _Bernoulli]	✓
16586	$y'^4 = 1$	[_quadrature]	✓
16999	$x^2y' = y - xy$	[_separable]	✓
	<i>i.c.</i>		
17022	$ty' - y = t^3e^{-t}$	[_linear]	✓
17049	$t(-4 + t)y' + y = 0$	[_separable]	✓
	<i>i.c.</i>		
17054	$y' = \frac{t - y}{2t + 5y}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
17062	$y' = -\frac{4t}{y}$	[_separable]	✓
	<i>i.c.</i>		
17072	$2x + 4y + (2x - 2y)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
17074	$2xy^2 + 2y + (2x + 2x^2y)y' = 0$	[_separable]	✓

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Table 2.8 first order ode homogD2

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#	ODE	CAS classification	Solved?
17075	$y' = -\frac{4x+2y}{2x+3y}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
17076	$y' = -\frac{4x-2y}{2x-3y}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
17082	$\frac{x}{(y^2+x^2)^{3/2}} + \frac{yy'}{(y^2+x^2)^{3/2}} = 0$	[_separable]	✓
17083	$2x - y + (2y - x)y' = 0$ i.c.	[[_homogeneous, 'class A'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
17089	$3x^2y + 2xy + y^3 + (y^2 + x^2)y' = 0$	[[_homogeneous, 'class D'], _rational]	✓
17091	$\frac{y'}{\frac{x}{y} - \sin(y)} = 0$	[_quadrature]	✓
17096	$3xy + y^2 + (xy + x^2)y' = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
17099	$\frac{(3x^3 - xy^2)y'}{y^3 + 3x^2y} = 1$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
17102	$xyy' = (x + y)^2$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
17103	$y' = \frac{4y - 7x}{5x - y}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
17105	$y' = \frac{y^4 + 2xy^3 - 3y^2x^2 - 2x^3y}{2y^2x^2 - 2x^3y - 2x^4}$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
17106	$(y + xe^{\frac{x}{y}})y' = ye^{\frac{x}{y}}$	[[_homogeneous, 'class A'], _dAlembert]	✓
17107	$xyy' = y^2 + x^2$ i.c.	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
17119	$(3x - y)x' + 9y - 2x = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
17124	$\frac{\sqrt{x}y'}{y} = 1$	[_separable]	✓
17125	$5xy^2 + 5y + (5x^2y + 5x)y' = 0$	[_separable]	✓

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Table 2.8 first order ode homogD2  
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#	ODE	CAS classification	Solved?
17129	$x' = \frac{2xy + x^2}{3y^2 + 2xy}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
17130	$4xyy' = 8x^2 + 5y^2$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
17567	$y' = 2$	[_quadrature]	✓
17573	$y' = \frac{2xy}{y^2 + x^2}$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
17575	$y^2 + x^2y' = xyy'$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
17576	$(x + y)y' = y - x$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
17577	$x - y \cos\left(\frac{y}{x}\right) + x \cos\left(\frac{y}{x}\right)y' = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓
17602	$\frac{2x}{y^3} + \frac{(y^2 - 3x^2)y'}{y^4} = 0$	[[_homogeneous, 'class A'], _exact, _rational, _dAlem- bert]	✓
17612	$yy'^2 + y'(x - y) - x = 0$	[_quadrature]	✓
17614	$y'^3 - (y^2 + xy + x^2)y'^2$ $+ (xy^3 + y^2x^2 + x^3y)y' - x^3y^3 = 0$	[_quadrature]	✓
17733	$xy' = 2y$	[_separable]	✓
17735	$y' = ky$	[_quadrature]	✓
17739	$xy' = y + x^2 + y^2$	[[_homogeneous, 'class D'], _rational, _Riccati]	✓
17740	$y' = \frac{xy}{y^2 + x^2}$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
17741	$2xyy' = y^2 + x^2$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
17743	$y' = \frac{y^2}{xy - x^2}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
17755	$x^5y' + y^5 = 0$	[_separable]	✓
17757	$y' = 2xy$	[_separable]	✓
17760	$y' + y \tan(x) = 0$	[_separable]	✓

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Table 2.8 first order ode homogD2

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#	ODE	CAS classification	Solved?
17761	$y' - y \tan(x) = 0$	[_separable]	✓
17780	$x^2 - 2y^2 + xyy' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
17781	$x^2y' - 3xy - 2y^2 = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
17782	$x^2y' = 3(y^2 + x^2) \arctan\left(\frac{y}{x}\right) + xy$	[[_homogeneous, 'class A', _dAlembert]	✓
17783	$x \sin\left(\frac{y}{x}\right) y' = y \sin\left(\frac{y}{x}\right) + x$	[[_homogeneous, 'class A', _dAlembert]	✓
17784	$xy' = y + 2x e^{-\frac{y}{x}}$	[[_homogeneous, 'class A', _dAlembert]	✓
17785	$x - y - (x + y) y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
17786	$xy' = 2x + 3y$	[_linear]	✓
17788	$x^2y' = y^2 + 2xy$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
17789	$x^3 + y^3 - x^2y' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
17803	$y + y \cos(xy) + (x + x \cos(xy)) y' = 0$	[_separable]	✓
17806	$-\frac{\sin\left(\frac{x}{y}\right)}{y} + \frac{x \sin\left(\frac{x}{y}\right) y'}{y^2} = 0$	[_separable]	✓
17807	$1 + y + (1 - x) y' = 0$	[_separable]	✓
17816	$\frac{x}{(y^2 + x^2)^{3/2}} + \frac{yy'}{(y^2 + x^2)^{3/2}} = 0$	[_separable]	✓
17819	$\frac{4y^2 - 2x^2}{4xy^2 - x^3} + \frac{(8y^2 - x^2) y'}{4y^3 - x^2y} = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]	✓
17820	$(3x^2 - y^2) y' - 2xy = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
17833	$xy' = x^5 + x^3y^2 + y$	[[_homogeneous, 'class D', _rational, _Riccati]	✓
17834	$(x + y) y' = y - x$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
17835	$xy' = y + x^2 + 9y^2$	[[_homogeneous, 'class D', _rational, _Riccati]	✓

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Table 2.8 first order ode homogD2

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#	ODE	CAS classification	Solved?
17836	$y^2 - y + xy' = 0$	[_separable]	✓
17837	$-y + xy' = 2x^2 - 3$	[_linear]	✓
17842	$2xy^2 - y + xy' = 0$	[[_homogeneous, 'class D'], _rational, _Bernoulli]	✓
17883	$xyy' = y^2 + x^2y'$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
17886	$x^2 + y = xy'$	[_linear]	✓
17894	$y^2 - 3xy - 2x^2 = (x^2 - xy)y'$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
17900	$x^2y^4 + x^6 - x^3y^3y' = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
17902	$y' = 1 + \frac{y}{x} - \frac{y^2}{x^2}$	[[_homogeneous, 'class A'], _rational, _Riccati]	✓
17903	$y' = \frac{2xy e^{\frac{x^2}{y^2}}}{y^2 + y^2 e^{\frac{x^2}{y^2}} + 2x^2 e^{\frac{x^2}{y^2}}}$	[[_homogeneous, 'class A'], _dAlembert]	✓
17907	$\frac{y-x}{(x+y)^3} - \frac{2xy'}{(x+y)^3} = 0$	[_linear]	✓
17910	$3x^2y - y^3 - (3xy^2 - x^3)y' = 0$	[[_homogeneous, 'class A'], _exact, _rational, _dAlembert]	✓
17916	$3xy + y^2 + (3xy + x^2)y' = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
17917	$x^2y' = y^2 + xy + x^2$	[[_homogeneous, 'class A'], _rational, _Riccati]	✓
17922	$x^2y' - y^2 = 2xy$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
18178	$x' = \cos\left(\frac{x}{t}\right)$	[[_homogeneous, 'class A'], _dAlembert]	✓
18179	$(t^2 - x^2)x' = xt$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
18183	$x' + x \tan(t) = 0$	[_separable]	✓
18190	$x' = -\lambda x$	[_quadrature]	✓
18215	$v' + \frac{2v}{u} = 3$	[_linear]	✓

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Table 2.8 first order ode homogD2

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#	ODE	CAS classification	Solved?
18221	$y^2 = x(y - x)y'$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
18222	$2x^2y + y^3 - x^3y' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
18225	$x + yy' = my$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
18226	$\frac{2x}{y^3} + \left(\frac{1}{y^2} - \frac{3x^2}{y^4}\right)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlem- bert]]	✓
18231	$p' = \frac{p + at^3 - 2pt^2}{t(-t^2 + 1)}$	[_linear]	✓
18247	$v' + \frac{2v}{u} = 3v$	[_separable]	✓
18250	$\frac{y'}{x} = y \sin(x^2 - 1) - \frac{2y}{\sqrt{x}}$	[_separable]	✓
18251	$y' = 1 + \frac{2y}{x - y}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
18300	$x(-x^2 + 1)y' + y(x^2 - 1) = x^3$	[_linear]	✓
18302	$x(-x^2 + 1)y' + (2x^2 - 1)y = ax^3$	[_linear]	✓
18316	$x(x - 2y)y' + x^2 + 2y^2 = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
18317	$5xyy' - y^2 - x^2 = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
18318	$(x^2 + 3xy - y^2)y' - 3y^2 = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
18319	$(x^2 + 2xy)y' - 3x^2 + 2xy - y^2 = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
18320	$5xyy' - 4x^2 - y^2 = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
18321	$(x^2 - 2xy)y' + x^2 - 3xy + 2y^2 = 0$	[_linear]	✓
18322	$3x^2y' + 2x^2 - 3y^2 = 0$	[[_homogeneous, 'class A', _rational, _Riccati]]	✓
18407	$x^2 + y^2 - 2xyy' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓

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Table 2.8 first order ode homogD2

*Continued from previous page*

#	ODE	CAS classification	Solved?
18408	$y^2 + (xy + x^2)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
18409	$x^2y - (x^3 + y^3)y' = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
18410	$(4y + 3x)y' + y - 2x = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
18413	$x^2 - 4xy - 2y^2 + (y^2 - 4xy - 2x^2)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlem- bert]]	✓
18418	$y - xy' + \ln(x) = 0$	[_linear]	✓
18421	$x^4e^x - 2mxy^2 + 2mx^2yy' = 0$	[[_homogeneous, 'class D', _Bernoulli]]	✓
18423	$x^2y - 2xy^2 - (x^3 - 3x^2y)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
18425	$x^2 + y^2 + 2x + 2yy' = 0$	[[_homogeneous, 'class D', _rational, _Bernoulli]]	✓
18429	$y^3 - 2x^2y + (2xy^2 - x^3)y' = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
18451	$xy' + \frac{y^2}{x} = y$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
18454	$x^2y - (x^3 + y^3)y' = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
18455	$x(-x^2 + 1)y' + (2x^2 - 1)y = ax^3$	[_linear]	✓
18457	$x + yy' = m(-y + xy')$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
18465	$yy' = ax$	[_separable]	✓
18467	$(x + y)y' + x - y = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
18469	$(y^2 - x^2)y' + 2xy = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
18474	$y^2 + x^2y' = xyy'$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
18477	$y'^3 + 2xy'^2 - y^2y'^2 - 2xy^2y' = 0$	[_quadrature]	✓

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Table 2.8 first order ode homogD2

*Continued from previous page*

#	ODE	CAS classification	Solved?
18479	$y'^3(x+2y) + 3y'^2(x+y) + (2x+y)y' = 0$	[_quadrature]	✓
18481	$4y^2y'^2 + 2y'xy(3x+1) + 3x^3 = 0$	[_separable]	✓
18482	$y'^2 - 7y' + 12 = 0$	[_quadrature]	✓
18497	$xy(y - xy') = x + yy'$	[_separable]	✓
18501	$xy^2(y'^2 + 2) = 2y^3y' + x^3$	[_separable]	✓
18503	$y'^2 - 9y' + 18 = 0$	[_quadrature]	✓
18513	$\left(y'^2 - \frac{1}{a^2 - x^2}\right) \left(y' - \sqrt{\frac{y}{x}}\right) = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓
18515	$xyy'^2 + y'(3x^2 - 2y^2) - 6xy = 0$	[_separable]	✓
18517	$y'^3 - (y^2 + xy + x^2)y'^2 + (xy^3 + y^2x^2 + x^3y)y' - x^3y^3 = 0$	[_quadrature]	✓

### 2.3.7 first order ode homog

Table 2.9: first order ode homog

#	ODE	CAS classification	Solved?
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## 2.3.8 first order ode homog maple C

Table 2.10: first order ode homog maple C

#	ODE	CAS classification	Solved?
33	$yy' = x - 1$ i.c.	[_separable]	✓
34	$yy' = x - 1$ i.c.	[_separable]	✓
44	$(x + 1)y' = 4y$	[_separable]	✓
50	$(x + 1)^2 y' = (1 + y)^2$	[_separable]	✓
77	$xy' + 2y = 3x$ i.c.	[_linear]	✓
80	$3xy' + y = 12x$	[_linear]	✓
105	$(x + y)y' = x - y$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
106	$2xyy' = x^2 + 2y^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
107	$xy' = y + 2\sqrt{xy}$	[[_homogeneous, 'class A', _dAlembert]]	✓
108	$y'(x - y) = x + y$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
109	$x(x + y)y' = (x - y)y$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
110	$(x + 2y)y' = y$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
111	$xy^2 y' = x^3 + y^3$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
112	$x^2 y' = xy + x^2 e^{\frac{y}{x}}$	[[_homogeneous, 'class A', _dAlembert]]	✓
113	$x^2 y' = xy + y^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
114	$xyy' = x^2 + 3y^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
115	$(x^2 - y^2)y' = 2xy$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
116	$xyy' = y^2 + x\sqrt{4x^2 + y^2}$	[[_homogeneous, 'class A', _dAlembert]]	✓

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Table 2.10 first order ode homog maple C

Continued from previous page

#	ODE	CAS classification	Solved?
118	$x + yy' = \sqrt{y^2 + x^2}$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
119	$x(x + y)y' + y(3x + y) = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
135	$2x + 3y + (3x + 2y)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
136	$4x - y + (6y - x)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
137	$3x^2 + 2y^2 + (4xy + 6y^2)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]	✓
146	$\frac{2x^{5/2} - 3y^{5/3}}{2x^{5/2}y^{2/3}} + \frac{(3y^{5/3} - 2x^{5/2})y'}{3x^{3/2}y^{5/3}} = 0$	[[_1st_order, _with_linear_symmetries], _exact, _rational]	✓
163	$y' = \frac{x - y - 1}{x + y + 3}$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
164	$y' = \frac{2y - x + 7}{4x - 3y - 18}$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
166	$y' = -\frac{y(2x^3 - y^3)}{x(2y^3 - x^3)}$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
181	$xy + y^2 - x^2y' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
186	$2xy + x^2y' = y^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
189	$x^2y' = xy + 3y^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
190	$6xy^3 + 2y^4 + (9y^2x^2 + 8xy^3)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class B']]	✓
192	$x^3y' = x^2y - y^3$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
196	$2x^2y - x^3y' = y^3$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
203	$2y + (x + 1)y' = 3x + 3$	[_linear]	✓

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Table 2.10 first order ode homog maple C

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#	ODE	CAS classification	Solved?
211	$y' = -\frac{3x^2 + 2y^2}{4xy}$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
212	$y' = \frac{3y + x}{y - 3x}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
673	$yy' = x - 1$	[_separable]	✓
674	$yy' = x - 1$	[_separable]	✓
680	$(x + 1)y' = 4y$	[_separable]	✓
708	$xy' + 2y = 3x$	[_linear]	✓
711	$3xy' + y = 12x$	[_linear]	✓
729	$(x + y)y' = x - y$	[[_homogeneous, 'class A'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
730	$2xyy' = y^2 + x^2$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
731	$xy' = y + 2\sqrt{xy}$	[[_homogeneous, 'class A'], _dAlembert]	✓
732	$y'(x - y) = x + y$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
733	$x(x + y)y' = (x - y)y$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
734	$(x + 2y)y' = y$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
735	$xy^2y' = x^3 + y^3$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
736	$x^2y' = xy + x^2e^{\frac{y}{x}}$	[[_homogeneous, 'class A'], _dAlembert]	✓
737	$x^2y' = xy + y^2$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
738	$xyy' = x^2 + 3y^2$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
739	$(x^2 - y^2)y' = 2xy$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓

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Table 2.10 first order ode homog maple C  
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#	ODE	CAS classification	Solved?
740	$xyy' = y^2 + x\sqrt{4x^2 + y^2}$	[[_homogeneous, 'class A', _dAlembert]	✓
742	$x + yy' = \sqrt{y^2 + x^2}$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
743	$x(x + y)y' + y(3x + y) = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
759	$2x + 3y + (3x + 2y)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
760	$4x - y + (6y - x)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
761	$3x^2 + 2y^2 + (4xy + 6y^2)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlem- bert]	✓
770	$\frac{2x^{5/2} - 3y^{5/3}}{2x^{5/2}y^{2/3}} + \frac{(3y^{5/3} - 2x^{5/2})y'}{3x^{3/2}y^{5/3}} = 0$	[[_1st_order, __with_lin- ear_symmetries], _exact, _rational]	✓
773	$xy + y^2 - x^2y' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
778	$2xy + x^2y' = y^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
781	$x^2y' = xy + 3y^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
782	$6xy^3 + 2y^4 + (9y^2x^2 + 8xy^3)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class B']]	✓
784	$x^3y' = x^2y - y^3$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
788	$2x^2y - x^3y' = y^3$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
795	$2y + (x + 1)y' = 3x + 3$	[_linear]	✓
803	$y' = \frac{-3x^2 - 2y^2}{4xy}$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
804	$y' = \frac{3y + x}{y - 3x}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓

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Table 2.10 first order ode homog maple C

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#	ODE	CAS classification	Solved?
1138	$y' = \frac{-2x+1}{y}$ i.c.	[_separable]	✓
1143	$y' = \frac{2x}{1+2y}$ i.c.	[_separable]	✓
1158	$y' = \frac{y^2+xy+x^2}{x^2}$	[[_homogeneous, 'class A'], _rational, _Riccati]	✓
1159	$y' = \frac{x^2+3y^2}{2xy}$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
1160	$y' = \frac{4y-3x}{2x-y}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
1161	$y' = -\frac{4x+3y}{2x+y}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
1162	$y' = \frac{3y+x}{x-y}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
1163	$x^2+3xy+y^2-x^2y'=0$	[[_homogeneous, 'class A'], _rational, _Riccati]	✓
1164	$y' = \frac{x^2-3y^2}{2xy}$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
1165	$y' = \frac{3y^2-x^2}{2xy}$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
1174	$y' = -\frac{4t}{y}$	[_separable]	✓
1193	$3+2x+(2y-2)y'=0$	[_separable]	✓
1194	$2x+4y+(2x-2y)y'=0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
1196	$2xy^2+2y+(2x+2x^2y)y'=0$	[_separable]	✓
1197	$y' = \frac{-ax-by}{bx+cy}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
1198	$y' = \frac{-ax+by}{bx-cy}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓

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Table 2.10 first order ode homog maple C

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#	ODE	CAS classification	Solved?
1204	$\frac{x}{(y^2 + x^2)^{3/2}} + \frac{yy'}{(y^2 + x^2)^{3/2}} = 0$	[_separable]	✓
1205	<i>i.c.</i> $2x - y + (2y - x)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
1217	$3xy + y^2 + (xy + x^2)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
1231	<i>i.c.</i> $x + y + (x + 2y)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
1243	$xy' = e^{\frac{y}{x}}x + y$	[[_homogeneous, 'class A', _dAlembert]	✓
1245	$3t + 2y = -ty'$	[_linear]	✓
1246	$y' = \frac{x + y}{x - y}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
1247	$2xy + 3y^2 - (x^2 + 2xy)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
1540	$xy' + 3y = 0$	[_separable]	✓
1546	<i>i.c.</i> $y' + \frac{ky}{x} = 0$	[_separable]	✓
1573	<i>i.c.</i> $xy' - 2y = -1$	[_separable]	✓
1577	$\frac{y'}{(1 + y)^2} - \frac{1}{x(1 + y)} = -\frac{3}{x^2}$	[[_homogeneous, 'class C', _rational, _Riccati]	✓
1595	<i>i.c.</i> $y' = \frac{2x}{1 + 2y}$	[_separable]	✓
1597	<i>i.c.</i> $x + yy' = 0$	[_separable]	✓
1615	$y' = \frac{2x + 3y}{x - 4y}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
1626	$y' = \frac{y + xe^{-\frac{y}{x}}}{x}$	[[_homogeneous, 'class A', _dAlembert]	✓

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Table 2.10 first order ode homog maple C

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#	ODE	CAS classification	Solved?
1628	$x^2y' = y^2 + xy - x^2$ i.c.	[[_homogeneous, 'class A'], _rational, _Riccati]	✓
1643	$y' = \frac{y^2 + 2xy}{x^2}$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
1644	$xy^3y' = y^4 + x^4$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
1645	$y' = \frac{y}{x} + \sec\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A'], _dAlembert]	✓
1646	$x^2y' = y^2 + xy + x^2$	[[_homogeneous, 'class A'], _rational, _Riccati]	✓
1647	$xyy' = x^2 + 2y^2$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
1648	$y' = \frac{2y^2 + x^2e^{-\frac{y^2}{x^2}}}{2xy}$	[[_homogeneous, 'class A']]	✓
1649	$y' = \frac{xy + y^2}{x^2}$ i.c.	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
1650	$y' = \frac{x^3 + y^3}{xy^2}$ i.c.	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
1651	$xyy' + x^2 + y^2 = 0$ i.c.	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
1652	$y' = \frac{y^2 - 3xy - 5x^2}{x^2}$ i.c.	[[_homogeneous, 'class A'], _rational, _Riccati]	✓
1653	$x^2y' = 2x^2 + y^2 + 4xy$ i.c.	[[_homogeneous, 'class A'], _rational, _Riccati]	✓
1654	$xyy' = 3x^2 + 4y^2$ i.c.	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
1655	$y' = \frac{x + y}{x - y}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
1657	$y' = \frac{y^3 + 2xy^2 + x^2y + x^3}{x(x + y)^2}$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
1658	$y' = \frac{x + 2y}{2x + y}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓

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Table 2.10 first order ode homog maple C

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#	ODE	CAS classification	Solved?
1659	$y' = \frac{y}{y - 2x}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
1660	$y' = \frac{xy^2 + 2y^3}{x^3 + x^2y + xy^2}$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
1661	$y' = \frac{x^3 + x^2y + 3y^3}{x^3 + 3xy^2}$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
1662	<i>i.c.</i> $x^2y' = y^2 + xy - 4x^2$	[[_homogeneous, 'class A'], _rational, _Riccati]	✓
1663	$xyy' = x^2 - xy + y^2$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
1664	$y' = \frac{2y^2 - xy + 2x^2}{xy + 2x^2}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
1665	$y' = \frac{y^2 + xy + x^2}{xy}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
1666	$y' = \frac{-6x + y - 3}{2x - y - 1}$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
1667	$y' = \frac{2x + y + 1}{x + 2y - 4}$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
1668	$y' = \frac{-x + 3y - 14}{x + y - 2}$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
1680	$6y^2x^2 + 4x^3yy' = 0$	[_separable]	✓
1685	$4x + 7y + (4y + 3x)y' = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
1687	$2x + y + (2x + 2y)y' = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
1692	$\frac{x}{(y^2 + x^2)^{3/2}} + \frac{yy'}{(y^2 + x^2)^{3/2}} = 0$	[_separable]	✓

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Table 2.10 first order ode homog maple C

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#	ODE	CAS classification	Solved?
1702	$7x + 4y + (4x + 3y)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
1707	$x^2 + y^2 + 2xyy' = 0$	[[_homogeneous, 'class A'], _exact, _rational, _Bernoulli]	✓
1712	$x^2y' - y^2 = 0$	[_separable]	✓
1714	$3x^2y + 2x^3y' = 0$	[_separable]	✓
1718	$27xy^2 + 8y^3 + (18x^2y + 12xy^2)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
1731	$x^4y^4 + x^5y^3y' = 0$	[_separable]	✓
2330	<i>i.c.</i> $ty' = y + \sqrt{t^2 + y^2}$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
2331	$2tyy' = 3y^2 - t^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
2332	$(t - \sqrt{ty})y' = y$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
2333	$y' = \frac{y+t}{t-y}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
2334	$e^{\frac{t}{v}}(-t+y)y' + y(1 + e^{\frac{t}{v}}) = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
2335	$y' = \frac{t+y+1}{t-y+3}$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
2336	$1 + t - 2y + (4t - 3y - 6)y' = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
2342	<i>i.c.</i> $2ty^3 + 3t^2y^2y' = 0$	[_separable]	✓
2346	<i>i.c.</i> $3ty + y^2 + (t^2 + ty)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
2501	$y' = \frac{2y}{t} + \frac{y^2}{t^2}$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
2502	<i>i.c.</i> $ty' = y + \sqrt{t^2 + y^2}$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓

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Table 2.10 first order ode homog maple C  
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#	ODE	CAS classification	Solved?
2503	$2tyy' = 3y^2 - t^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
2504	$(t - \sqrt{ty})y' = y$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
2505	$y' = \frac{y+t}{t-y}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
2506	$e^{\frac{t}{y}}(-t+y)y' + y(1 + e^{\frac{t}{y}}) = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
2507	$y' = \frac{t+y+1}{t-y+3}$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
2508	$1+t-2y+(4t-3y-6)y' = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
2514	$2ty^3 + 3t^2y^2y' = 0$	[_separable]	✓
2518	$3ty + y^2 + (t^2 + ty)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
2844	$xy' + y = 0$	[_separable]	✓
2848	$(x+1)y' - 1 + y = 0$	[_separable]	✓
2851	$y' = \frac{x}{y}$	[_separable]	✓
2862	$xy' + 2y = 0$	[_separable]	✓
2864	$y^2 + x^2y' = 0$	[_separable]	✓
2872	$(x+y)y' + x = y$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
2873	$-y + xy' = \sqrt{xy}$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
2874	$y' = \frac{2x-y}{4y+x}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
2876	$x + yy' = 2y$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓

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Table 2.10 first order ode homog maple C

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#	ODE	CAS classification	Solved?
2877	$xy' - y + \sqrt{y^2 - x^2} = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
2878	$y^2 + x^2 = xyy'$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
2879	$(xy - x^2)y' - y^2 = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
2880	$xy' + y = 2\sqrt{xy}$	[[_homogeneous, 'class A', _dAlembert]	✓
2881	$x + y + y'(x - y) = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
2882	$y(x^2 - xy + y^2) + xy'(y^2 + xy + x^2) = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
2883	$xy' - y - x \sin\left(\frac{y}{x}\right) = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
2884	$y' = \frac{y}{x} + \cosh\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A', _dAlembert]	✓
2885	$y^2 + x^2 = 2xyy'$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
2886	$\left(\frac{y}{x} + \frac{x}{y}\right)y' + 1 = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
2887	$e^{\frac{y}{x}}x + y = xy'$	[[_homogeneous, 'class A', _dAlembert]	✓
2888	$y' = \frac{x + y}{x - y}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
2889	$y' = \frac{y}{x} + \tan\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A', _dAlembert]	✓
2890	$(3xy - 2x^2)y' = 2y^2 - xy$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
2891	$y' = \frac{y}{x - k\sqrt{y^2 + x^2}}$	[[_homogeneous, 'class A', _dAlembert]	✓
2892	$y^2(yy' - x) + x^3 = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
2893	$y' = \frac{y}{x} + \tanh\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A', _dAlembert]	✓

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Table 2.10 first order ode homog maple C  
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#	ODE	CAS classification	Solved?
2894	$x + y - (x - y + 2)y' = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
2895	$x + (x - 2y + 2)y' = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class C'], _dAlem- bert]	✓
2896	$2x - y + 1 + (x + y)y' = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
2897	$x - y + 2 + (y - 1 + x)y' = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
2899	$y' = \frac{y - 1 + x}{x - y - 1}$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
2903	$x + 2y + 2 = (2x + y - 1)y'$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
2904	<i>i.c.</i> $3x - y + 1 + (x - 3y - 5)y' = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
2909	<i>i.c.</i> $3x - y + 2 + (x + 2y + 1)y' = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
2913	<i>i.c.</i> $2x + y + (4x - 2y + 1)y' = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
2914	$x + y + (x - 2y)y' = 0$	[[_homogeneous, 'class A'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
2915	$3x + y + (3y + x)y' = 0$	[[_homogeneous, 'class A'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
2916	$a_1x + b_1y + c_1 + (b_1x + b_2y + c_2)y' = 0$	[[_homogeneous, 'class C'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
2919	$2xy - (y^2 + x^2)y' = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓

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#	ODE	CAS classification	Solved?
2934	$\frac{x^2 + 3y^2}{x(3x^2 + 4y^2)} + \frac{(2x^2 + y^2)y'}{y(3x^2 + 4y^2)} = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]	✓
2935	$\frac{x^2 - y^2}{x(2x^2 + y^2)} + \frac{(x^2 + 2y^2)y'}{y(2x^2 + y^2)} = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]	✓
2964	$y + (2x - 3y)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
2968	$xy' = 5y + x + 1$	[_linear]	✓
2986	$xyy' = x^2 - y^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
2989	$y^2 + x^2y' = xy$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
3004	$(1 - x)y' - 1 - y = 0$	[_separable]	✓
3005	$y^2 + (xy + x^2)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
3006	$2x + y - (x - 2y)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
3008	$x - 2y + 1 + (y - 2)y' = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
3014	$x^2y - (x^3 + y^3)y' = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
3019	$y + (-2y + 3x)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
3021	$(4y + 3x)y' + 2x + y = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
3025	$x + y + (2x + 3y - 1)y' = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
3026	$1 + e^{\frac{x}{y}} + e^{\frac{x}{y}} \left(1 - \frac{x}{y}\right) y' = 0$	[[_homogeneous, 'class A', _exact, _dAlembert]	✓
3032	$y\sqrt{y^2 + x^2} + xy = x^2y'$	[[_homogeneous, 'class A', _dAlembert]	✓

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Table 2.10 first order ode homog maple C  
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#	ODE	CAS classification	Solved?
3036	$y \cos\left(\frac{x}{y}\right) - \left(y + x \cos\left(\frac{x}{y}\right)\right) y' = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
3038	$x + (2x + 3y + 2) y' = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class C'], _dAlem- bert]	✓
3041	$xy - y^2 - x^2 y' = 0$ i.c.	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
3045	$(-2x^2 - 3xy) y' + y^2 = 0$ i.c.	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
3049	$y^2 + x^2 = 2xyy'$ i.c.	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
3050	$3xy + (3x^2 + y^2) y' = 0$ i.c.	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
3056	$y^3 + 2x^2 y + (-3x^3 - 2xy^2) y' = 0$ i.c.	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
3285	$4y^2 = x^2 y'^2$	[_separable]	✓
3291	$y^2 y'^2 + xyy' - 2x^2 = 0$	[_separable]	✓
3432	$y' = -\frac{t}{y}$	[_separable]	✓
3451	$y' = \frac{2y}{t+1}$ i.c.	[_separable]	✓
3461	$2xy' + 3x + y = 0$	[_linear]	✓
3467	$(y - x) y' + 2x + 3y = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
3476	$y' - \frac{y^2}{x^2} = \frac{1}{4}$ i.c.	[[_homogeneous, 'class A', _rational, _Riccati]	✓
3477	$y' - \frac{y^2}{x^2} = \frac{1}{4}$	[[_homogeneous, 'class A', _rational, _Riccati]	✓
3479	$(5x + y - 7) y' = 3x + 3y + 3$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
3544	$(3x - y) y' = 3y$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓

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Table 2.10 first order ode homog maple C  
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#	ODE	CAS classification	Solved?
3545	$y' = \frac{(x+y)^2}{2x^2}$	[[_homogeneous, 'class A', _rational, _Riccati]	✓
3546	$\sin\left(\frac{y}{x}\right)(-y + xy') = x \cos\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A', _dAlembert]	✓
3549	$x(x^2 - y^2) - x(y^2 + x^2) y' = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
3550	$xy' + y \ln(x) = y \ln(y)$	[[_homogeneous, 'class A', _dAlembert]	✓
3551	$y' = \frac{y^2 + 2xy - 2x^2}{x^2 - xy + y^2}$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
3552	$2xyy' - 2y^2 - x^2 e^{-\frac{y^2}{x^2}} = 0$	[[_homogeneous, 'class A']]	✓
3553	$x^2 y' = y^2 + 3xy + x^2$	[[_homogeneous, 'class A', _rational, _Riccati]	✓
3554	$yy' = \sqrt{y^2 + x^2} - x$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
3555	$2x(2x + y) y' = y(4x - y)$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
3556	$xy' = x \tan\left(\frac{y}{x}\right) + y$	[[_homogeneous, 'class A', _dAlembert]	✓
3557	$y' = \frac{x\sqrt{y^2 + x^2} + y^2}{xy}$	[[_homogeneous, 'class A', _dAlembert]	✓
3562	$y' = \frac{y}{2x}$	[_separable]	✓
3627	$x' + \frac{2x}{4-t} = 5$	[_linear]	✓
	<i>i.c.</i>		
3636	$y' = \frac{y^2 + xy + x^2}{x^2}$	[[_homogeneous, 'class A', _rational, _Riccati]	✓
3637	$(3x - y) y' = 3y$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
3638	$y' = \frac{(x+y)^2}{2x^2}$	[[_homogeneous, 'class A', _rational, _Riccati]	✓
3639	$\sin\left(\frac{y}{x}\right)(-y + xy') = x \cos\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A', _dAlembert]	✓
3643	$xy' + y \ln(x) = y \ln(y)$	[[_homogeneous, 'class A', _dAlembert]	✓

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Table 2.10 first order ode homog maple C

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#	ODE	CAS classification	Solved?
3644	$y' = \frac{y^2 + 2xy - 2x^2}{x^2 - xy + y^2}$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
3645	$2xyy' - 2y^2 - x^2e^{-\frac{y^2}{x^2}} = 0$	[[_homogeneous, 'class A']]	✓
3646	$x^2y' = y^2 + 3xy + x^2$	[[_homogeneous, 'class A', _rational, _Riccati]	✓
3647	$yy' = \sqrt{y^2 + x^2} - x$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
3648	$2x(2x + y)y' = y(4x - y)$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
3649	$xy' = x \tan\left(\frac{y}{x}\right) + y$	[[_homogeneous, 'class A', _dAlembert]	✓
3650	$y' = \frac{x\sqrt{y^2 + x^2} + y^2}{xy}$	[[_homogeneous, 'class A', _dAlembert]	✓
3651	$y' = \frac{4y - 2x}{x + y}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
3652	$y' = \frac{2x - y}{4y + x}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
3653	$y' = \frac{y - \sqrt{y^2 + x^2}}{x}$	[[_homogeneous, 'class A', _dAlembert]	✓
3655	$y' = \frac{x + ay}{ax - y}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
3656	$y' = \frac{x + \frac{y}{2}}{\frac{x}{2} - y}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
3677	$y' = \frac{x + 2y - 1}{2x - y + 3}$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
3682	$\frac{y'}{y} - \frac{2 \ln(y)}{x} = \frac{1 - 2 \ln(x)}{x}$	[[_homogeneous, 'class A', _dAlembert]	✓
4081	$5x + 2y + 1 + (2x + y + 1)y' = 0$	[[_homogeneous, 'class C', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓

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Table 2.10 first order ode homog maple C

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#	ODE	CAS classification	Solved?
4083	$x - 2y - 3 + (2x + y - 1)y' = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
4084	<i>i.c.</i> $6x + 4y + 1 + (4x + 2y + 2)y' = 0$	[[_homogeneous, 'class C'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
4085	<i>i.c.</i> $3x - y - 6 + (x + y + 2)y' = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
4090	$x^2y' = x(y - 1) + (y - 1)^2$	[[_homogeneous, 'class C'], _rational, _Riccati]	✓
4093	$3y - 2x + (3x - 2)y' = 0$	[_linear]	✓
4098	$x^3 + y^3 - xy^2y' = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
4103	$y' = \frac{y^2 + x^2}{2x^2}$	[[_homogeneous, 'class A'], _rational, _Riccati]	✓
4112	<i>i.c.</i> $y' = \frac{2x - y}{2x + y}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
4113	<i>i.c.</i> $y' = \frac{3x - y + 1}{3y - x + 5}$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
4114	<i>i.c.</i> $3y - 7x + 7 + (7y - 3x + 3)y' = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
4190	$yy' = x$	[_separable]	✓
4196	$xy' + y = x$	[_linear]	✓
4220	$(1 - x)y' = y$	[_separable]	✓
4223	<i>i.c.</i> $x^2y' - y^2 = 0$	[_separable]	✓
4239	$(y - 1 + x)y' = x + 1 - y$	[[_homogeneous, 'class C'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
4240	$xyy' = 2x^2 - y^2$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
4241	$x^2 - y^2 + xyy' = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓

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Table 2.10 first order ode homog maple C  
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#	ODE	CAS classification	Solved?
4242	$x^2y' - 2xy - 2y^2 = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
4243	$x^2y' = 3(y^2 + x^2) \arctan\left(\frac{y}{x}\right) + xy$	[[_homogeneous, 'class A', _dAlembert]	✓
4244	$x \sin\left(\frac{y}{x}\right) y' = y \sin\left(\frac{y}{x}\right) + x$	[[_homogeneous, 'class A', _dAlembert]	✓
4248	$y' = \frac{x + y + 4}{x - y - 6}$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
4254	$y + y \cos(xy) + (x + x \cos(xy)) y' = 0$	[_separable]	✓
4261	$(3x^2 - y^2) y' - 2xy = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
4267	$(x + y) y' = y - x$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
4276	$2x + 3y + 1 + (2y - 3x + 5) y' = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
4277	$xy' = \sqrt{y^2 + x^2}$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
4281	$(xy - x^2) y' = y^2$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
4290	$y^2 - 3xy - 2x^2 = (x^2 - xy) y'$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
4295	$2xy + x^2y' = 0$	[_separable]	✓
4300	<i>i.c.</i> $\frac{x}{y^2 + x^2} + \frac{y}{x^2} + \left(\frac{y}{y^2 + x^2} - \frac{1}{x}\right) y' = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlem- bert]	✓
4314	$y' + \frac{x}{y} + 2 = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
4315	$-y + xy' = x \cot\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A', _dAlembert]	✓
4316	$x \cos\left(\frac{y}{x}\right)^2 - y + xy' = 0$	[[_homogeneous, 'class A', _dAlembert]	✓

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Table 2.10 first order ode homog maple C

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#	ODE	CAS classification	Solved?
4317	$xy' = y(1 + \ln(y) - \ln(x))$	[[_homogeneous, 'class A', _dAlembert]	✓
4318	$xy + (y^2 + x^2)y' = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
4319	$(1 - e^{-\frac{y}{x}})y' + 1 - \frac{y}{x} = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
4320	$x^2 - xy + y^2 - xyy' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
4322	$y' = \frac{2x + y - 1}{x - y - 2}$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
4323	$y + 2 = (2x + y - 4)y'$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
4333	$2xy + (x^2 + 2xy + y^2)y' = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
4399	$xy' = y - e^{\frac{y}{x}}x$	[[_homogeneous, 'class A', _dAlembert]	✓
4401	$2\sqrt{xy} - y - xy' = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
4405	$-y + xy' = x \tan\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A', _dAlembert]	✓
4410	$y' = \frac{2(y+2)^2}{(y-1+x)^2}$	[[_homogeneous, 'class C', _rational]	✓
4420	$(y' + 1) \ln\left(\frac{x+y}{x+3}\right) = \frac{x+y}{x+3}$	[[_homogeneous, 'class C', _exact, _dAlembert]	✓
4422	$x - y \cos\left(\frac{y}{x}\right) + x \cos\left(\frac{y}{x}\right)y' = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
4441	$x + \sin\left(\frac{y}{x}\right)^2 (y - xy') = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
4743	$xy' + x + y = 0$	[_linear]	✓
4752	$xy' = ay$	[_separable]	✓
4753	$xy' = 1 + x + ay$	[_linear]	✓
4754	$xy' = ax + by$	[_linear]	✓

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Table 2.10 first order ode homog maple C  
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#	ODE	CAS classification	Solved?
4798	$xy' = y + a\sqrt{y^2 + b^2x^2}$	[[_homogeneous, 'class A', _dAlembert]	✓
4800	$xy' + x - y + x \cos\left(\frac{y}{x}\right) = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
4801	$xy' = y - x \cos\left(\frac{y}{x}\right)^2$	[[_homogeneous, 'class A', _dAlembert]	✓
4805	$xy' - y + x \sec\left(\frac{y}{x}\right) = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
4806	$xy' = y + x \sec\left(\frac{y}{x}\right)^2$	[[_homogeneous, 'class A', _dAlembert]	✓
4808	$xy' = y + x \sin\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A', _dAlembert]	✓
4811	$xy' = y - x \tan\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A', _dAlembert]	✓
4813	$xy' = e^{\frac{y}{x}}x + y$	[[_homogeneous, 'class A', _dAlembert]	✓
4814	$xy' = x + y + e^{\frac{y}{x}}x$	[[_homogeneous, 'class A', _dAlembert]	✓
4816	$xy' = (1 + \ln(x) - \ln(y))y$	[[_homogeneous, 'class A', _dAlembert]	✓
4818	$xy' = y - 2x \tanh\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A', _dAlembert]	✓
4832	$(x + a)y' = b + cy$	[_separable]	✓
4833	$(x + a)y' = bx + cy$	[_linear]	✓
4842	$(-2x + 1)y' = 16 + 32x - 6y$	[_linear]	✓
4857	$x^2y' + y^2 + xy + x^2 = 0$	[[_homogeneous, 'class A', _rational, _Riccati]	✓
4858	$x^2y' = (1 + 2x - y)^2$	[[_homogeneous, 'class C', _rational, _Riccati]	✓
4860	$x^2y' = (x + ay)y$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
4861	$x^2y' = (ax + by)y$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
4862	$x^2y' + x^2a + bxy + cy^2 = 0$	[[_homogeneous, 'class A', _rational, _Riccati]	✓
4920	$(x + a)^2y' = 2(x + a)(b + y)$	[_separable]	✓

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Table 2.10 first order ode homog maple C  
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#	ODE	CAS classification	Solved?
4921	$(x - a)^2 y' + k(x + y - a)^2 + y^2 = 0$	[[_homogeneous, 'class C', _rational, _Riccati]	✓
4938	$a x^2 y' = x^2 + axy + b^2 y^2$	[[_homogeneous, 'class A', _rational, _Riccati]	✓
4951	$x^3 y' = (2x^2 + y^2) y$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
4965	$2x^3 y' = y(x^2 - y^2)$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
4966	$2x^3 y' = (3x^2 + y^2 a) y$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
5015	$x + yy' = 0$	[_separable]	✓
5018	$yy' + ax + by = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
5030	$(1 + y) y' = x + y$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
5032	$(x + y) y' + y = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
5033	$y'(x - y) = y$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
5034	$(x + y) y' + x - y = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
5035	$(x + y) y' = x - y$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
5039	$y'(x - y) = \left(e^{-\frac{x}{y}} + 1\right) y$	[[_homogeneous, 'class A', _dAlembert]	✓
5040	$(x + y + 1) y' + 1 + 4x + 3y = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
5042	$(3 - x - y) y' = 1 + x - 3y$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
5043	$(3 - x + y) y' = 11 - 4x + 3y$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓

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Table 2.10 first order ode homog maple C

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#	ODE	CAS classification	Solved?
5044	$(2x + y)y' + x - 2y = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
5047	$(4 + 2x - y)y' + 5 + x - 2y = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
5048	$(5 - 2x - y)y' + 4 - x - 2y = 0$	[[_homogeneous, 'class C', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
5049	$(1 - 3x + y)y' = 2x - 2y$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
5050	$(2 - 3x + y)y' + 5 - 2x - 3y = 0$	[[_homogeneous, 'class C', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
5051	$2x - 5y + (4x - y)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
5052	$(6 - 4x - y)y' = 2x - y$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
5053	$(1 + 5x - y)y' + 5 + x - 5y = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
5060	$(x - 2y)y' = y$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
5061	$(x + 2y)y' + 2x - y = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
5062	$(x - 2y)y' + 2x + y = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
5063	$(1 + x - 2y)y' = 1 + 2x - y$	[[_homogeneous, 'class C', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
5065	$(x + 2y + 1)y' + 7 + x - 4y = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
5067	$(3 + 2x - 2y)y' = 1 + 6x - 2y$	[[_homogeneous, 'class C', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓

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Table 2.10 first order ode homog maple C  
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#	ODE	CAS classification	Solved?
5070	$(19 + 9x + 2y)y' + 18 - 2x - 6y = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
5076	$(x - 3y)y' + 4 + 3x - y = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
5081	$(4y + x)y' + 4x - y = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
5084	$(5 + 3x - 4y)y' = 2 + 7x - 3y$	[[_homogeneous, 'class C', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
5085	$4(1 - x - y)y' + 2 - x = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class C'], _dAlem- bert]]	✓
5086	$(11 - 11x - 4y)y' = 62 - 8x - 25y$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
5087	$(6 + 3x + 5y)y' = 2 + x + 7y$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
5088	$8y + 10x + (7x + 5y)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
5090	$(5 - x + 6y)y' = 3 - x + 4y$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
5092	$3y - 7x + 7 + (7y - 3x + 3)y' = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
5093	$(1 + x + 9y)y' + 1 + x + 5y = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
5094	$(8 + 5x - 12y)y' = 3 + 2x - 5y$	[[_homogeneous, 'class C', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
5095	$(140 + 7x - 16y)y' + 25 + 8x + y = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓

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Table 2.10 first order ode homog maple C  
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#	ODE	CAS classification	Solved?
5096	$(3 + 9x + 21y)y' = 45 + 7x - 5y$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
5097	$(ax + by)y' + x = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class C', _dAlem- bert]]	✓
5098	$(ax + by)y' + y = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
5099	$(ax + by)y' + bx + ay = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
5100	$(ax + by)y' = bx + ay$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
5103	$xyy' + x^2 + y^2 = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
5106	$xyy' = x^2 - xy + y^2$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
5107	$xyy' + 2x^2 - 2xy - y^2 = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
5111	$xyy' + x^2 \operatorname{arccot}\left(\frac{y}{x}\right) - y^2 = 0$	[[_homogeneous, 'class A', _dAlembert]]	✓
5112	$xyy' + x^2 e^{-\frac{2y}{x}} - y^2 = 0$	[[_homogeneous, 'class A', _dAlembert]]	✓
5122	$x(x + y)y' + y^2 = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
5123	$x(x - y)y' + y^2 = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
5124	$x(x + y)y' = y^2 + x^2$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
5125	$x(x - y)y' + 2x^2 + 3xy - y^2 = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓

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Table 2.10 first order ode homog maple C

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#	ODE	CAS classification	Solved?
5126	$x(x+y)y' - y(x+y) + x\sqrt{x^2 - y^2} = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
5128	$x(2x+y)y' = x^2 + xy - y^2$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
5129	$x(4x-y)y' + 4x^2 - 6xy - y^2 = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
5138	$2xyy' + x^2 + y^2 = 0$	[[_homogeneous, 'class A', _exact, _rational, _Bernoulli]	✓
5139	$2xyy' = y^2 + x^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
5143	$x(x-2y)y' + y^2 = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
5144	$x(x+2y)y' + (2x-y)y = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
5145	$x(x-2y)y' + (2x-y)y = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class B']]	✓
5150	$x(2x+3y)y' = y^2$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
5151	$x(2x+3y)y' + 3(x+y)^2 = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
5154	$axy y' = y^2 + x^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
5155	$axy y' + x^2 - y^2 = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
5157	$x(x-ay)y' = y(y-ax)$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
5173	$x^2(x-2y)y' = 2x^3 - 4xy^2 + y^3$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class C', _dAlem- bert]	✓

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Table 2.10 first order ode homog maple C

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#	ODE	CAS classification	Solved?
5176	$x^2(4x - 3y)y' = (6x^2 - 3xy + 2y^2)y$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class C', _dAlem- bert]	✓
5181	$8x^3yy' + 3x^4 - 6y^2x^2 - y^4 = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5192	$xy + (y^2 + x^2)y' = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5193	$(y^2 + x^2)y' = xy$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5194	$(x^2 - y^2)y' = 2xy$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5195	$(x^2 - y^2)y' + x(x + 2y) = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlem- bert]	✓
5196	$(y^2 + x^2)y' + 2x(2x + y) = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlem- bert]	✓
5201	$(3x^2 - y^2)y' = 2xy$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5210	$(x^2 + 2xy - y^2)y' + x^2 - 2xy + y^2 = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5211	$(x + y)^2y' = x^2 - 2xy + 5y^2$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5212	$(a + b + x + y)^2y' = 2(a + y)^2$	[[_homogeneous, 'class C', _rational]	✓
5213	$(2x^2 + 4xy - y^2)y' = x^2 - 4xy - 2y^2$	[[_homogeneous, 'class A', _exact, _rational, _dAlem- bert]	✓
5214	$(3x + y)^2y' = 4(3x + 2y)y$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5215	$(1 - 3x - y)^2y' = (1 - 2y)(3 - 6x - 4y)$	[[_homogeneous, 'class C', _rational]	✓
5219	$(2x^2 + 3y^2)y' + x(3x + y) = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5221	$(3x^2 + 2xy + 4y^2)y' + 2x^2 + 6xy + y^2 = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlem- bert]	✓
5222	$(1 - 3x + 2y)^2y' = (4 + 2x - 3y)^2$	[[_homogeneous, 'class C', _rational]	✓

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Table 2.10 first order ode homog maple C

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#	ODE	CAS classification	Solved?
5225	$(x^2 + y^2a) y' = xy$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5226	$(x^2 + xy + y^2a) y' = x^2a + xy + y^2$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5227	$(x^2a + 2xy - y^2a) y' + x^2 - 2axy - y^2 = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5228	$(x^2a + 2bxy + cy^2) y' + kx^2 + 2axy + by^2 = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]	✓
5234	$x(2x^2 + y^2) y' = (2x^2 + 3y^2) y$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5237	$x(x^2 - xy + y^2) y' + (y^2 + xy + x^2) y = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5238	$x(x^2 - xy - y^2) y' = (x^2 + xy - y^2) y$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5239	$x(x^2 + axy + y^2) y' = (x^2 + bxy + y^2) y$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5240	$x(x^2 - 2y^2) y' = (2x^2 - y^2) y$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5241	$x(x^2 + 2y^2) y' = (2x^2 + 3y^2) y$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5242	$2x(5x^2 + y^2) y' = x^2y - y^3$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5243	$x(x^2 + axy + 2y^2) y' = (ax + 2y) y^2$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5251	$x(x^2 - 6y^2) y' = 4(x^2 + 3y^2) y$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5267	$(x^3 - y^3) y' + x^2y = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5268	$(x^3 + y^3) y' + x^2(ax + 3y) = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]	✓
5272	$(3x^2 + y^2) yy' + x(x^2 + 3y^2) = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]	✓
5274	$2y^3y' = x^3 - xy^2$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5276	$(3x^2 + 2y^2) yy' + x^3 = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓

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Table 2.10 first order ode homog maple C  
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#	ODE	CAS classification	Solved?
5277	$(5x^2 + 2y^2)yy' + x(x^2 + 5y^2) = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]	✓
5279	$(3x^3 + 6x^2y - 3xy^2 + 20y^3)y' + 4x^3 + 9x^2y + 6xy^2 - y^3 = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]	✓
5280	$(x^3 + ay^3)y' = x^2y$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5283	$x(2x^3 + y^3)y' = (2x^3 - x^2y + y^3)y$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5284	$x(2x^3 - y^3)y' = (x^3 - 2y^3)y$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5285	$x(x^3 + 3x^2y + y^3)y' = (3x^2 + y^2)y^2$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5286	$x(x^3 - 2y^3)y' = (2x^3 - y^3)y$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5301	$(ax^3 + (ax + by)^3)yy' + x((ax + by)^3 + by^3) = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5313	$y'\sqrt{y} = \sqrt{x}$	[_separable]	✓
5315	$y'\sqrt{xy} + x - y = \sqrt{xy}$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5316	$(x - 2\sqrt{xy})y' = y$	[[_homogeneous, 'class A', _dAlembert]	✓
5319	$(x - \sqrt{y^2 + x^2})y' = y$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5321	$x(x + \sqrt{y^2 + x^2})y' + y\sqrt{y^2 + x^2} = 0$	[[_homogeneous, 'class G', _dAlembert]	✓
5322	$xy(x + \sqrt{x^2 - y^2})y' = xy^2 - (x^2 - y^2)^{3/2}$	[[_1st_order, __with_linear_symmetries], _dAlembert]	✓
5328	$x(x - y \tan(\frac{y}{x}))y' + (x + y \tan(\frac{y}{x}))y = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
5451	$xy'^2 - (2x + 3y)y' + 6y = 0$	[_quadrature]	✓
5455	$xy'^2 + (1 - x)yy' - y^2 = 0$	[_quadrature]	✓
5472	$x^2y'^2 = y^2$	[_separable]	✓
5474	$x^2y'^2 = (x - y)^2$	[_linear]	✓

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Table 2.10 first order ode homog maple C

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#	ODE	CAS classification	Solved?
5476	$x^2y'^2 - xy' + y(1 - y) = 0$	[_separable]	✓
5485	$x^2y'^2 + 3xyy' + 2y^2 = 0$	[_separable]	✓
5487	$x^2y'^2 + 4xyy' - 5y^2 = 0$	[_separable]	✓
5489	$x^2y'^2 - 5xyy' + 6y^2 = 0$	[_separable]	✓
5501	$(a^2 - x^2)y'^2 - 2xyy' - y^2 = 0$	[_separable]	✓
5527	$yy'^2 + y'(x - y) - x = 0$	[_quadrature]	✓
5530	$yy'^2 + (x - y^2)y' - xy = 0$	[_quadrature]	✓
5539	$xyy'^2 + (y^2 + x^2)y' + xy = 0$	[_separable]	✓
5540	$xyy'^2 + (x^2 - y^2)y' - xy = 0$	[_separable]	✓
5541	$xyy'^2 - (x^2 - y^2)y' - xy = 0$	[_separable]	✓
5544	$xyy'^2 + y'(3x^2 - 2y^2) - 6xy = 0$	[_separable]	✓
5552	$y^2y'^2 - (x + 1)yy' + x = 0$	[_quadrature]	✓
5564	$(x + y)^2y'^2 = y^2$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
5565	$(x + y)^2y'^2 - (x^2 - xy - 2y^2)y' - (x - y)y = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
5569	$4y^2y'^2 + 2y'xy(3x + 1) + 3x^3 = 0$	[_separable]	✓
5570	$(x^2 - 4y^2)y'^2 + 6xyy' - 4x^2 + y^2 = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
5579	$4x^2y^2y'^2 = (y^2 + x^2)^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
5637	$y'^3(x + 2y) + 3y'^2(x + y) + (2x + y)y' = 0$	[_quadrature]	✓
5689	$y' = \frac{xy}{x^2 - y^2}$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
5690	$y' = \frac{x + y - 3}{x - y - 1}$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
5694	$\frac{2x}{y^3} + \frac{(y^2 - 3x^2)y'}{y^4} = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]]	✓

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Table 2.10 first order ode homog maple C  
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#	ODE	CAS classification	Solved?
5705	$(y - x)y' + y = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
5706	$(2\sqrt{xy} - x)y' + y = 0$	[[_homogeneous, 'class A', _dAlembert]]	✓
5708	$x - y \cos\left(\frac{y}{x}\right) + x \cos\left(\frac{y}{x}\right)y' = 0$	[[_homogeneous, 'class A', _dAlembert]]	✓
5709	$8y + 10x + (7x + 5y)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
5710	$2x - y + 1 + (2y - 1)y' = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
5711	$3y - 7x + 7 + (7y - 3x + 3)y' = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
5734	$8y + 10x + (7x + 5y)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
5735	$x^2 + 2xy - y^2 + (y^2 + 2xy - x^2)y' = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
5736	$y^2 + (xy + x^2)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
5771	$2xy + (y^2 + x^2)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]]	✓
5772	$(x + \sqrt{y^2 - xy})y' - y = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
5773	$x + y - y'(x - y) = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
5774	$xy' - y - x \sin\left(\frac{y}{x}\right) = 0$	[[_homogeneous, 'class A', _dAlembert]]	✓
5775	$2x^2y + y^3 + (xy^2 - 2x^3)y' = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
5776	$y^2 + (x\sqrt{y^2 - x^2} - xy)y' = 0$	[[_homogeneous, 'class G', _dAlembert]]	✓

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#	ODE	CAS classification	Solved?
5777	$\frac{y \cos\left(\frac{y}{x}\right)}{x} - \left(\frac{x \sin\left(\frac{y}{x}\right)}{y} + \cos\left(\frac{y}{x}\right)\right) y' = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
5778	$y + x \ln\left(\frac{y}{x}\right) y' - 2xy' = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
5779	$2y e^{\frac{x}{y}} + (y - 2x e^{\frac{x}{y}}) y' = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
5780	$e^{\frac{y}{x}} x - y \sin\left(\frac{y}{x}\right) + x \sin\left(\frac{y}{x}\right) y' = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
5781	$y^2 + x^2 = 2xyy'$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
5782	$e^{\frac{y}{x}} x + y = xy'$	[[_homogeneous, 'class A', _dAlembert]	✓
5783	$y' - \frac{y}{x} + \csc\left(\frac{y}{x}\right) = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
5784	$xy - y^2 - x^2 y' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
5785	$x + 2y - 4 - (2x - 4y) y' = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
5789	$x + y - 1 - (x - y - 1) y' = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
5791	$7y - 3 + (2x + 1) y' = 0$	[_separable]	✓
5793	$x + 2y + (y - 1) y' = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
5794	$3x - 2y + 4 - (2x + 7y - 1) y' = 0$	[[_homogeneous, 'class C', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
5796	$3x + 2y + 3 - (x + 2y - 1) y' = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
5797	$y + 7 + (2x + y + 3) y' = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
5798	$x + y + 2 - (x - y - 4) y' = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓

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#	ODE	CAS classification	Solved?
5865	$y' = 1 + \frac{y}{x} - \frac{y^2}{x^2}$	[[_homogeneous, 'class A', _rational, _Riccati]	✓
5873	$(3x + 2y + 1)y' + 4x + 3y + 2 = 0$	[[_homogeneous, 'class C', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
5874	$(x^2 - y^2)y' = 2xy$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5888	$xy' = x + y + e^{\frac{y}{x}}x$	[[_homogeneous, 'class A', _dAlembert]	✓
5893	$xy' - y - x \sin\left(\frac{y}{x}\right) = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
5894	$(xy - x^2)y' + y^2 - 3xy - 2x^2 = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
5896	$x^2y' + y^2 + xy + x^2 = 0$	[[_homogeneous, 'class A', _rational, _Riccati]	✓
5906	$xyy' + x^2 + y^2 = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
5907	$2xyy' + 3x^2 - y^2 = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
5908	$(2xy^3 - x^4)y' + 2x^3y - y^4 = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5910	$(y^2 + x^2)y' + 2x(2x + y) = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlem- bert]	✓
5912	$2y^3y' + xy^2 - x^3 = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
6123	$y'(x - y) + x + y + 1 = 0$	[[_homogeneous, 'class C', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
6125	$x^2y' + y^2 - xy = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
6126	$yy' = -x + \sqrt{y^2 + x^2}$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
6127	$xy + (y^2 - x^2)y' = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
6128	$y^2 - xy + (xy + x^2)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓

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#	ODE	CAS classification	Solved?
6130	$y' = \frac{y}{x} - \tan\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A', _dAlembert]	✓
6224	$(2x + y)y' - x + 2y = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
6232	$3x^2y + x^3y' = 0$	[_separable]	✓
	<i>i.c.</i>		
6425	$(x^3 + xy^2)y' = 2y^3$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
6436	$(2y - x)y' = 2x + y$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
6437	$xy + y^2 + (x^2 - xy)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
6438	$x^3 + y^3 = 3xy^2y'$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
6439	$y - 3x + (4y + 3x)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
6440	$(x^3 + 3xy^2)y' = y^3 + 3x^2y$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
6448	$x - y - 1 + (4y + x - 1)y' = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
6449	$3y - 7x + 7 + (7y - 3x + 3)y' = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
6458	$x^2 - 2xy + 5y^2 = (x^2 + 2xy + y^2)y'$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
6462	$y' = \frac{y^2 + 2xy}{x^2 + 2xy}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
6464	$xy' + 2y = 3x - 1$	[_linear]	✓
	<i>i.c.</i>		
6465	$x^2y' = y^2 - xyy'$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
	<i>i.c.</i>		

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#	ODE	CAS classification	Solved?
6468	$y^2 + x^2y' = xyy'$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
6469	$2xyy' = x^2 - y^2$	[[_homogeneous, 'class A'], _exact, _rational, _Bernoulli]	✓
6570	$xy' = 2y$	[_separable]	✓
6571	$x + yy' = 0$	[_separable]	✓
6573	$2x^3y' = y(3x^2 + y^2)$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
6580	$4y + xy' = 0$	[_separable]	✓
6582	$y^2 - x^2y' = 0$	[_separable]	✓
6585	$x \sin\left(\frac{y}{x}\right) - y \cos\left(\frac{y}{x}\right) + x \cos\left(\frac{y}{x}\right) y' = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
6587	$y\sqrt{y^2 + x^2} - x(x + \sqrt{y^2 + x^2}) y' = 0$	[[_homogeneous, 'class G', _dAlembert]	✓
6589	$1 + 2y - (4 - x) y' = 0$	[_separable]	✓
6591	$x + 2y + (2x + 3y) y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
6593	$3y - 7x + 7 + (7y - 3x + 3) y' = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
6595	$y^2 - x^2 + xyy' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
6598	$x^3 + y^3 + 3xy^2y' = 0$	[[_homogeneous, 'class A'], _exact, _rational, _Bernoulli]	✓
6600	$xy' + 2y = 0$	[_separable]	✓
6601	$xyy' + x^2 + y^2 = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
6616	$y(x - 2y) - x^2y' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
6617	$xyy' + x^2 + y^2 = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓

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#	ODE	CAS classification	Solved?
6618	$2xyy' + x^2 + y^2 = 0$	[[_homogeneous, 'class A'], _exact, _rational, _Bernoulli]	✓
6620	$x + y + 1 - (x - y - 3)y' = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
6667	$x^2y'^2 + xyy' - 6y^2 = 0$	[_separable]	✓
6668	$xy'^2 + (y - 1 - x^2)y' - x(y - 1) = 0$	[_quadrature]	✓
6795	$xy' = 1 - x + 2y$	[_linear]	✓
7074	$\frac{1}{\sqrt{x}} + \frac{y'}{\sqrt{y}} = 0$	[_separable]	✓
7079	$y' = \frac{\sqrt{y}}{\sqrt{x}}$	[_separable]	✓
7093	$(x + y)y' + x - y = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
7096	$y^2 + x^2y' = xyy'$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
7097	$(y^2 + x^2)y' = 2xy$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
7098	$-y + xy' = x \tan\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A'], _dAlembert]	✓
7099	$xy' = y - e^{\frac{y}{x}}x$	[[_homogeneous, 'class A'], _dAlembert]	✓
7100	$-y + xy' = (x + y) \ln\left(\frac{x + y}{x}\right)$	[[_homogeneous, 'class A'], _dAlembert]	✓
7101	$xy' = y \cos\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A'], _dAlembert]	✓
7102	$y + \sqrt{xy} - xy' = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
7104	$x + y - y'(x - y) = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
7105	$x^2 + 2xy - y^2 + (y^2 + 2xy - x^2)y' = 0$ i.c.	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓

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#	ODE	CAS classification	Solved?
7106	$-y + xy' = yy'$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
7107	$y^2 + (x^2 - xy)y' = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
7108	$y^2 + xy + x^2 = x^2y'$	[[_homogeneous, 'class A'], _rational, _Riccati]	✓
7109	$\frac{1}{x^2 - xy + y^2} = \frac{y'}{2y^2 - xy}$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
7110	$y' = \frac{2xy}{3x^2 - y^2}$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
7111	$y' = \frac{y}{x} + \frac{x}{y}$ i.c.	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
7112	$xy' = y + \sqrt{y^2 - x^2}$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
7113	$(2\sqrt{xy} - x)y' + y = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓
7114	$xy' = y \ln\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A'], _dAlembert]	✓
7117	$x^2y'^2 - 3xyy' + 2y^2 = 0$	[_separable]	✓
7120	$y' + \frac{x + 2y}{x} = 0$	[_linear]	✓
7121	$y' = \frac{y}{x + y}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
7122	$xy' = x + \frac{y}{2}$ i.c.	[_linear]	✓
7123	$y' = \frac{x + y - 2}{y - 4 - x}$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
7124	$2x - 4y + 6 + (x + y - 2)y' = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
7125	$y' = \frac{2y - x + 5}{2x - y - 4}$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓

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Table 2.10 first order ode homog maple C

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#	ODE	CAS classification	Solved?
7126	$y' = -\frac{4x + 3y + 15}{2x + y + 7}$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
7127	$y' = \frac{x + 3y - 5}{x - y - 1}$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
7128	$y' = \frac{2(y + 2)^2}{(x + y + 1)^2}$	[[_homogeneous, 'class C'], _rational]	✓
7131	$(4y + x)y' = 2x + 3y - 5$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
7132	$y + 2 = (2x + y - 4)y'$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
7133	$(y' + 1) \ln\left(\frac{x + y}{x + 3}\right) = \frac{x + y}{x + 3}$	[[_homogeneous, 'class C'], _exact, _dAlembert]	✓
7134	$y' = \frac{x - 2y + 5}{y - 2x - 4}$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
7135	$y' = \frac{3x - y + 1}{2x + y + 4}$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
7152	$2x + 3 + (2y - 2)y' = 0$	[_separable]	✓
7153	$2x + 4y + (2x - 2y)y' = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
7181	$xy' - 2\sqrt{xy} = y$	[[_homogeneous, 'class A'], _dAlembert]	✓
7182	$y' = \frac{y - 1 + x}{x - y + 3}$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
7185	$x^2y' + y^2 - xy = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
7186	$x + y - y'(x - y) = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
7231	$ye^{xy} + xe^{xy}y' = 0$	[_separable]	✓

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Table 2.10 first order ode homog maple C  
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#	ODE	CAS classification	Solved?
7236	$x^2 + y^2 - 2xyy' = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
7237	$x^2 - y^2 + 2xyy' = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
7240	$x + yy' + y - xy' = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
7408	$yy' = x$	[_separable]	✓
7415	$y' = \frac{x+y}{x-y}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
7416	$y' = \frac{y^2}{xy+x^2}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
7417	$y' = \frac{y^2 + xy + x^2}{x^2}$	[[_homogeneous, 'class A'], _rational, _Riccati]	✓
7418	$y' = \frac{y + x e^{-\frac{2y}{x}}}{x}$	[[_homogeneous, 'class A'], _dAlembert]	✓
7419	$y' = \frac{x-y+2}{y-1+x}$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
7420	$y' = \frac{2x+3y+1}{-2y-1+x}$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
7422	$y' = \frac{(y-1+x)^2}{2(x+2)^2}$	[[_homogeneous, 'class C'], _rational, _Riccati]	✓
7450	$xy' = 2y$	[_separable]	✓
7457	$y' = \frac{xy}{y^2+x^2}$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
7458	$2xyy' = y^2 + x^2$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
7460	$y' = \frac{y^2}{xy-x^2}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
7483	$x^5y' + y^5 = 0$	[_separable]	✓
7493	$yy' = x + 1$	[_separable]	✓
	<i>i.c.</i>		

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Table 2.10 first order ode homog maple C  
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#	ODE	CAS classification	Solved?
7530	$y + y \cos(xy) + (x + x \cos(xy))y' = 0$	[_separable]	✓
7547	$x^2 - 2y^2 + xyy' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
7548	$x^2y' - 3xy - 2y^2 = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
7549	$x^2y' = 3(y^2 + x^2) \arctan\left(\frac{y}{x}\right) + xy$	[[_homogeneous, 'class A', _dAlembert]	✓
7550	$x \sin\left(\frac{y}{x}\right) y' = y \sin\left(\frac{y}{x}\right) + x$	[[_homogeneous, 'class A', _dAlembert]	✓
7551	$xy' = y + 2x e^{-\frac{y}{x}}$	[[_homogeneous, 'class A', _dAlembert]	✓
7552	$x - y - (x + y)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
7553	$xy' = 2x - 6y$	[_linear]	✓
7554	$xy' = \sqrt{y^2 + x^2}$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
7555	$x^2y' = y^2 + 2xy$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
7556	$x^3 + y^3 - xy^2y' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
7557	$y' = \frac{x + y + 4}{x - y - 6}$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
7559	$2x - 2y + (y - 1)y' = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
7560	$y' = \frac{y - 1 + x}{x + 4y + 2}$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
7561	$2x + 3y - 1 - 4(x + 1)y' = 0$	[_linear]	✓
7566	$e^{\frac{x}{y}} - \frac{yy'}{x} = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
7567	$y' = \frac{x^2 - xy}{y^2 \cos\left(\frac{x}{y}\right)}$	[[_homogeneous, 'class A', _dAlembert]	✓
7568	$y' = \frac{y \tan\left(\frac{y}{x}\right)}{x}$	[[_homogeneous, 'class A', _dAlembert]	✓

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Table 2.10 first order ode homog maple C  
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#	ODE	CAS classification	Solved?
7593	$xy' + y = x$	[_linear]	✓
7597	$y' = \frac{y^2 + x^2}{x^2 - y^2}$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
7598	$y' = \frac{x + 2y}{2x - y}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
7599	$2xy + x^2y' = 0$	[_separable]	✓
7605	$y' = \frac{x + y}{x - y}$ i.c.	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
7606	$y' = \frac{x^2 + 2y^2}{x^2 - 2y^2}$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
8111	$x^2y'^2 - y^2 = 0$	[_separable]	✓
8112	$xy'^2 - (2x + 3y)y' + 6y = 0$	[_quadrature]	✓
8113	$x^2y'^2 - 5xyy' + 6y^2 = 0$	[_separable]	✓
8114	$x^2y'^2 + xy' - y^2 - y = 0$	[_separable]	✓
8119	$(x + y)^2 y'^2 = y^2$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
8120	$yy'^2 + (x - y^2)y' - xy = 0$	[_quadrature]	✓
8122	$(4x - y)y'^2 + 6y'(x - y) + 2x - 5y = 0$	[_quadrature]	✓
8123	$(x - y)^2 y'^2 = y^2$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
8125	$(y^2 + x^2)^2 y'^2 = 4y^2x^2$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
8126	$(x + y)^2 y'^2 + (2y^2 + xy - x^2)y' + (y - x)y = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
8127	$xy(y^2 + x^2)(-1 + y'^2) = y'(x^4 + y^2x^2 + y^4)$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
8210	$6xy'^2 - (3x + 2y)y' + y = 0$	[_quadrature]	✓
8215	$y^2y'^2 - (x + 1)yy' + x = 0$	[_quadrature]	✓
8226	$x^2y'^2 = (x - y)^2$	[_linear]	✓

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Table 2.10 first order ode homog maple C  
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#	ODE	CAS classification	Solved?
8229	$xy'^2 + (1-x)yy' - y^2 = 0$	[_quadrature]	✓
8377	$y' = \frac{2x-y}{4y+x}$ i.c.	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
8400	$y' = \frac{2y}{x}$ i.c.	[_separable]	✓
8401	$y' = \frac{2y}{x}$	[_separable]	✓
8410	$y^2 + x^2y' = xyy'$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
8418	$y' = \frac{5x^2 - xy + y^2}{x^2}$	[[_homogeneous, 'class A'], _rational, _Riccati]	✓
8419	$2t + 3x + (x+2)x' = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
8427	$yy' - y = x$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
9803	$xy' + a\sqrt{y^2 + x^2} - y = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓
9806	$xy' - e^{\frac{y}{x}}x - y - x = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓
9812	$xy' - x \sin\left(\frac{y}{x}\right) - y = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓
9813	$xy' + x - y + x \cos\left(\frac{y}{x}\right) = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓
9814	$xy' + x \tan\left(\frac{y}{x}\right) - y = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓
9825	$x^2y' + y^2 + xy + x^2 = 0$	[[_homogeneous, 'class A'], _rational, _Riccati]	✓
9826	$x^2y' - y^2 - xy = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
9827	$x^2y' - y^2 - xy - x^2 = 0$	[[_homogeneous, 'class A'], _rational, _Riccati]	✓
9856	$3x^2y' - 7y^2 - 3xy - x^2 = 0$	[[_homogeneous, 'class A'], _rational, _Riccati]	✓

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Table 2.10 first order ode homog maple C

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#	ODE	CAS classification	Solved?
9893	$yy' + ay + x = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
9900	$yy' - x e^{\frac{x}{y}} = 0$	[[_homogeneous, 'class A', _dAlembert]]	✓
9902	$(1 + y)y' - y - x = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
9903	$(y - 1 + x)y' - y + 2x + 3 = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
9904	$(y + 2x - 2)y' - y + x + 1 = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
9905	$(y - 2x + 1)y' + y + x = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
9911	$(2y + x + 7)y' - y + 2x + 4 = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
9912	$(2y - x)y' - y - 2x = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
9916	$(4y - 3x - 5)y' - 3y + 7x + 2 = 0$	[[_homogeneous, 'class C', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
9917	$(4y + 11x - 11)y' - 25y - 8x + 62 = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
9918	$(12y - 5x - 8)y' - 5y + 2x + 3 = 0$	[[_homogeneous, 'class C', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
9920	$(ay + bx + c)y' + \alpha y + \beta x + \gamma = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
9921	$xyy' + x^2 + y^2 = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
9928	$(xy - x^2)y' + y^2 - 3xy - 2x^2 = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
9930	$2xyy' - y^2 + x^2 a = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓

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#	ODE	CAS classification	Solved?
9935	$x(2x + 3y)y' + 3(x + y)^2 = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
9936	$(2 + 3x)(y - 2x - 1)y' - y^2 + xy - 7x^2 - 9x - 3 = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class B']]]	✓
9951	$(2x^2y - x^3)y' + y^3 - 4xy^2 + 2x^3 = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class C'], _dAlem- bert]]	✓
9960	$(y^2 + x^2)y' + 2x(2x + y) = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlem- bert]]	✓
9961	$(y^2 + x^2)y' - y^2 = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
9965	$(y^2 - x^2)y' + 2xy = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
9970	$x^2 + 2xy - y^2 + (y^2 + 2xy - x^2)y' = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
9971	$(y + 3x - 1)^2 y' - (2y - 1)(4y + 6x - 3) = 0$	[[_homogeneous, 'class C', _rational]]	✓
9973	$(4y^2 + x^2)y' - xy = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
9974	$(4y^2 + 2xy + 3x^2)y' + y^2 + 6xy + 2x^2 = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlem- bert]]	✓
9975	$(1 - 3x + 2y)^2 y' - (3y - 2x - 4)^2 = 0$	[[_homogeneous, 'class C', _rational]]	✓
9979	$(y^2a + 2bxy + cx^2)y' + by^2 + 2cxy + dx^2 = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlem- bert]]	✓
9981	$(ay + bx + c)^2 y' + (\alpha y + \beta x + \gamma)^2 = 0$	[[_homogeneous, 'class C', _rational]]	✓
9984	$x(y^2 + xy - x^2)y' - y^3 + xy^2 + x^2y = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
9986	$2x(5x^2 + y^2)y' + y^3 - x^2y = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
9995	$(y^3 - x^3)y' - x^2y = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
9997	$2y^3y' + xy^2 = 0$	[_separable]	✓

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Table 2.10 first order ode homog maple C

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#	ODE	CAS classification	Solved?
9999	$(2y^3 + 5x^2y)y' + 5xy^2 + x^3 = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]	✓
10000	$(3x^3 + 6x^2y - 3xy^2 + 20y^3)y' + 4x^3 + 9x^2y + 6xy^2 - y^3 = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]	✓
10004	$(2xy^3 - x^4)y' + 2x^3y - y^4 = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
10014	$y(y^3 - 2x^3)y' + (2y^3 - x^3)x = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
10015	$y((bx + ay)^3 + bx^3)y' + x((bx + ay)^3 + ay^3) = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
10026	$(x + \sqrt{y^2 + x^2})y' - y = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
10027	$(y\sqrt{y^2 + x^2} + (y^2 - x^2)\sin(\alpha) - 2xy\cos(\alpha))y' + x\sqrt{y^2 + x^2} + 2xy\sin(\alpha) + (y^2 - x^2)\cos(\alpha) = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
10038	$xy' \cot\left(\frac{y}{x}\right) + 2x \sin\left(\frac{y}{x}\right) - y \cot\left(\frac{y}{x}\right) = 0$	[[_homogeneous, 'class A']]	✓
10052	$(-y + xy')\cos\left(\frac{y}{x}\right)^2 + x = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
10053	$(y \sin\left(\frac{y}{x}\right) - x \cos\left(\frac{y}{x}\right))xy' - (x \cos\left(\frac{y}{x}\right) + y \sin\left(\frac{y}{x}\right))y = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
10126	$x^2y'^2 + 3xyy' + 2y^2 = 0$	[_separable]	✓
10128	$x^2y'^2 + 4xyy' - 5y^2 = 0$	[_separable]	✓
10136	$(-a^2 + x^2)y'^2 + 2xyy' + y^2 = 0$	[_separable]	✓
10158	$yy'^2 - (y - x)y' - x = 0$	[_quadrature]	✓
10168	$xyy'^2 + (y^2 + x^2)y' + xy = 0$	[_separable]	✓
10192	$xy^2y'^2 - 2y^3y' + 2xy^2 - x^3 = 0$	[_separable]	✓
10482	$y' = \frac{x^3 + 3x^2a + 3a^2x + a^3 + xy^2 + y^2a + y^3}{(x + a)^3}$	[[_homogeneous, 'class C', _rational, _Abel]	✓
10487	$y' = \frac{-b^3 + 6b^2x - 12bx^2 + 8x^3 - 4by^2 + 8xy^2 + 8y^3}{(2x - b)^3}$	[[_homogeneous, 'class C', _rational, _Abel]	✓

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Table 2.10 first order ode homog maple C

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#	ODE	CAS classification	Solved?
10496	$y' = \frac{-125 + 300x - 240x^2 + 64x^3 - 80y^2 + 64xy^2 + 64y^3}{(4x - 5)^3}$	[[_homogeneous, 'class C', _rational, _Abel]]	✓
12003	$yy' - y = Ax + B$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
12170	$(Ay + Bx + a)y' + By + kx + b = 0$	[[_homogeneous, 'class C', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
12171	$(y + ax + b)y' = \alpha y + \beta x + \gamma$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
12475	$\frac{y^2 - 2x^2}{xy^2 - x^3} + \frac{(2y^2 - x^2)y'}{y^3 - x^2y} = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlem- bert]]	✓
12476	$\frac{1}{\sqrt{y^2 + x^2}} + \left( \frac{1}{y} - \frac{x}{y\sqrt{y^2 + x^2}} \right) y' = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlem- bert]]	✓
12477	$xy' + x + y = 0$	[_linear]	✓
12478	$6x - 2y + 1 + (2y - 2x - 3)y' = 0$	[[_homogeneous, 'class C', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
12483	$e^{\frac{y}{x}}x + y - xy' = 0$	[[_homogeneous, 'class A', _dAlembert]]	✓
12484	$2x^2y + 3y^3 - (x^3 + 2xy^2)y' = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
12485	$x^2y' + y^2 - xy = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
12486	$2x^2y + y^3 - x^3y' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
12487	$y^3 + x^3y' = 0$	[_separable]	✓
12488	$x + y \cos\left(\frac{y}{x}\right) - x \cos\left(\frac{y}{x}\right)y' = 0$	[[_homogeneous, 'class A', _dAlembert]]	✓
12489	$4x + 3y + 1 + (x + y + 1)y' = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
12490	$4x - y + 2 + (x + y + 3)y' = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓

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Table 2.10 first order ode homog maple C  
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#	ODE	CAS classification	Solved?
12506	$y^2(3y - 6xy') - x(y - 2xy') = 0$	[_separable]	✓
12508	$x^2y' + y^2 - xy = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
12510	$x + y - y'(x - y) = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
12511	$x^2 + y^2 - 2xyy' = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
12514	$3x^2 + 6xy + 3y^2 + (2x^2 + 3xy)y' = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
12518	$y^2 - x^2 + 2myx + (my^2 - mx^2 - 2xy)y' = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
12521	$x + yy' + y - xy' = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
12529	$(y - x)y' + y = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
12532	$x \sin\left(\frac{y}{x}\right) - y \cos\left(\frac{y}{x}\right) + x \cos\left(\frac{y}{x}\right)y' = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓
12533	$(4 + 2x - y)y' + 5 + x - 2y = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
12545	$y^3 - 2x^2y + (2xy^2 - x^3)y' = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
12548	$1 + e^{\frac{y}{x}} + e^{\frac{x}{y}}\left(1 - \frac{x}{y}\right)y' = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓
12551	$(2\sqrt{xy} - x)y' + y = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓
12701	$x' = \frac{2x}{t}$	[_separable]	✓
12702	$x' = -\frac{t}{x}$	[_separable]	✓
12707	$2tx' = x$	[_separable]	✓
12728	$x' = \frac{2x}{t+1}$	[_separable]	✓
12730	$(2u + 1)u' - t - 1 = 0$	[_separable]	✓

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Table 2.10 first order ode homog maple C  
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#	ODE	CAS classification	Solved?
12746	$x' = \frac{4t^2 + 3x^2}{2xt}$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
12749	$y' = \frac{y^2 + 2ty}{t^2}$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
12776	$x' = \frac{2x}{3t} + \frac{2t}{x}$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
12779	$t^2y' + 2ty - y^2 = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
12782	$x^3 + 3tx^2x' = 0$	[_separable]	✓
12786	$x^2 - t^2x' = 0$	[_separable]	✓
12926	$2xyy' + x^2 + y^2 = 0$	[[_homogeneous, 'class A', _exact, _rational, _Bernoulli]	✓
12948	$3x + 2y + (2x + y)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
12964	$y^2 + 2xy - x^2y' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
12974	$2xy + 3y^2 - (x^2 + 2xy)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
12975	$v^3 + (u^3 - uv^2)v' = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
12976	$x \tan\left(\frac{y}{x}\right) + y - xy' = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
12977	$(2s^2 + 2st + t^2)s' + s^2 + 2st - t^2 = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlem- bert]	✓
12978	$x^3 + y^2\sqrt{y^2 + x^2} - xy\sqrt{y^2 + x^2}y' = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
12979	$\sqrt{x+y} + \sqrt{x-y} + (\sqrt{x-y} - \sqrt{x+y})y' = 0$	[[_homogeneous, 'class C', _dAlembert]	✓
12983	$x^2 + 3y^2 - 2xyy' = 0$ i.c.	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
12984	$2x - 5y + (4x - y)y' = 0$ i.c.	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓

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Table 2.10 first order ode homog maple C  
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#	ODE	CAS classification	Solved?
12985	$3x^2 + 9xy + 5y^2 - (6x^2 + 4xy)y' = 0$ i.c.	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
12986	$x + 2y + (2x - y)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
12987	$3x - y - (x + y)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
12988	$x^2 + 2y^2 + (4xy - y^2)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlem- bert]	✓
12989	$2x^2 + 2xy + y^2 + (x^2 + 2xy)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class B']]	✓
13031	$3x - 5y + (x + y)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
13034	$2x^2 + xy + y^2 + 2x^2y' = 0$	[[_homogeneous, 'class A', _rational, _Riccati]	✓
13037	$y' = \frac{2x - 7y}{3y - 8x}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
13040	$y' = \frac{2x^2 + y^2}{2xy - x^2}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
13041	$x^2 + y^2 - 2xyy' = 0$ i.c.	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
13046	$y' = \frac{2x + 7y}{2x - 2y}$ i.c.	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
13050	$x^2y' + xy = \frac{y^3}{x}$ i.c.	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
13057	$5x + 2y + 1 + (2x + y + 1)y' = 0$	[[_homogeneous, 'class C', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
13059	$x - 2y - 3 + (2x + y - 1)y' = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓

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Table 2.10 first order ode homog maple C

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#	ODE	CAS classification	Solved?
13060	$10x - 4y + 12 - (x + 5y + 3)y' = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
13061 i.c.	$6x + 4y + 1 + (4x + 2y + 2)y' = 0$	[[_homogeneous, 'class C', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
13062 i.c.	$3x - y - 6 + (x + y + 2)y' = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
13064 i.c.	$4x + 3y + 1 + (x + y + 1)y' = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
13401	$xy' = ky$	[_separable]	✓
13423	$xy + y^2 + x^2 - x^2y' = 0$	[[_homogeneous, 'class A', _rational, _Riccati]]	✓
13424	$x' = \frac{x^2 + t\sqrt{x^2 + t^2}}{xt}$	[[_homogeneous, 'class A', _dAlembert]]	✓
13525	$12x + 6y - 9 + (5x + 2y - 3)y' = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
13533	$x(\ln(x) - \ln(y))y' - y = 0$	[[_homogeneous, 'class A', _dAlembert]]	✓
13534	$xyy'^2 - (y^2 + x^2)y' + xy = 0$	[_separable]	✓
13536	$x' = e^{\frac{x}{t}} + \frac{x}{t}$	[[_homogeneous, 'class A', _dAlembert]]	✓
13543	$y' = \frac{2y - x - 4}{2x - y + 5}$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
13553	$(x - y)y - x^2y' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
13565	$(x - y)y - x^2y' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
13566	$y' = \frac{x + y - 3}{y - x + 1}$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
13571	$(y^2 - x^2)y' + 2xy = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
13840	$1 + y - (1 - x)y' = 0$	[_separable]	✓

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#	ODE	CAS classification	Solved?
13851	$y - x + (x + y)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
13852	$xy' + x + y = 0$	[_linear]	✓
13853	$x + y + (y - x)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
13855	$8y + 10x + (7x + 5y)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
13856	$2\sqrt{st} - s + ts' = 0$	[[_homogeneous, 'class A', _dAlembert]]	✓
13858	$xy^2y' = x^3 + y^3$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
13859	$x \cos\left(\frac{y}{x}\right)(xy' + y) = y \sin\left(\frac{y}{x}\right)(-y + xy')$	[[_homogeneous, 'class A', _dAlembert]]	✓
13860	$3y - 7x + 7 - (3x - 7y - 3)y' = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
13863	$\frac{y - xy'}{\sqrt{y^2 + x^2}} = m$	[[_homogeneous, 'class A', _dAlembert]]	✓
13864	$\frac{x + yy'}{\sqrt{y^2 + x^2}} = m$	[[_homogeneous, 'class A', _exact, _dAlembert]]	✓
13866	$yy' = -x + \sqrt{y^2 + x^2}$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
13868	$y' - \frac{ay}{x} = \frac{x+1}{x}$	[_linear]	✓
13887	$\frac{x}{(x+y)^2} + \frac{(2x+y)y'}{(x+y)^2} = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class C'], _dAlembert]]	✓
13888	$\frac{1}{x^2} + \frac{3y^2}{x^4} = \frac{2yy'}{x^3}$	[[_homogeneous, 'class A', _exact, _rational, _Bernoulli]]	✓
13889	$\frac{x^2y'}{(x-y)^2} - \frac{y^2}{(x-y)^2} = 0$	[_separable]	✓
13900	$y' = \frac{2y}{x} - \sqrt{3}$	[_linear]	✓

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#	ODE	CAS classification	Solved?
13952	$\frac{x^2 y'}{(x-y)^2} - \frac{y^2}{(x-y)^2} = 0$	[_separable]	✓
13956	$x \cos\left(\frac{y}{x}\right) y' = y \cos\left(\frac{y}{x}\right) - x$	[[_homogeneous, 'class A', _dAlembert]	✓
13994	$2xy + x^2 y' = 0$	[_separable]	✓
14002	$2xy' - y = 0$	[_separable]	✓
14039	$y' = \frac{x}{y}$	[_separable]	✓
14047	$y' = \frac{2x-y}{3y+x}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
14050	$y' = \frac{xy}{y^2+x^2}$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
14054	$y' = \frac{y}{y-x}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
14088	$y' = \frac{2x}{y}$	[_separable]	✓
i.c.			
14096	$y' = -\frac{y(2x+y)}{x(x+2y)}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
14105	$x - yy' = 0$	[_separable]	✓
14140	$y' = \frac{y}{y-x}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
i.c.			
14141	$y' = \frac{y}{y-x}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
i.c.			
14142	$y' = \frac{y}{y-x}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
i.c.			
14143	$y' = \frac{y}{y-x}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
i.c.			
14145	$y' = \frac{xy}{y^2+x^2}$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
i.c.			

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#	ODE	CAS classification	Solved?
14285	$y' = \frac{t}{y}$	[_separable]	✓
14289	$y' = \frac{2y+1}{t}$	[_separable]	✓
14362	$y' = \frac{t}{y-2}$	[_separable]	✓
	<i>i.c.</i>		
14418	$y' = -\frac{y}{t} + 2$	[_linear]	✓
14424	$y' = -\frac{y}{t+1} + 2$	[_linear]	✓
	<i>i.c.</i>		
14426	$y' = -\frac{y}{t} + 2$	[_linear]	✓
	<i>i.c.</i>		
14463	$y' = \frac{(t+1)^2}{(y+1)^2}$	[_separable]	✓
	<i>i.c.</i>		
14471	$y' = \frac{2y+1}{t}$	[_separable]	✓
14659	$yy' = 2x$	[_separable]	✓
14707	$(y-2)y' = x-3$	[_separable]	✓
14721	$y' = \frac{x}{y}$	[_separable]	✓
14727	$y' = \frac{x}{y}$	[_separable]	✓
	<i>i.c.</i>		
14792	$x^2y' - xy = y^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
14793	$y' = \frac{y}{x} + \frac{x}{y}$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
14794	$\cos\left(\frac{y}{x}\right)\left(y' - \frac{y}{x}\right) = 1 + \sin\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A', _dAlembert]	✓
14795	$y' = \frac{x-y}{x+y}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
	<i>i.c.</i>		
14797	$y' - \frac{3y}{x} = \frac{y^2}{x^2}$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
14800	$y' = \frac{y}{x} + \frac{x^2}{y^2}$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓

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#	ODE	CAS classification	Solved?
14805	$(x + y)y' = y$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
14806	$(2xy + 2x^2)y' = x^2 + 2xy + 2y^2$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
14810	$-y + xy' = \sqrt{xy + x^2}$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
14818	$2xy + y^2 + (x^2 + 2xy)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class B']]	✓
14822	$4x^3y + (x^4 - y^4)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlem- bert]	✓
14840	$xyy' - y^2 = \sqrt{x^4 + y^2x^2}$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
14844	$x^3 + y^3 + xy^2y' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
14856	$xyy' = 2y^2 + 2x^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
14858	$y' = \frac{x + 2y}{2x - y}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
14859	$y' = \frac{y}{x} + \tan\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A', _dAlembert]	✓
14865	$xyy' = y^2 + xy + x^2$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
14869	$2y - 6x + (x + 1)y' = 0$	[_linear]	✓
15465	$2x - y - yy' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
15478	$y' = -\frac{x}{y}$	[_separable]	✓
15480	$y' = -\frac{2y}{x} - 3$	[_linear]	✓
15509	$y' = \frac{y^2 + 2xy}{x^2}$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓

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#	ODE	CAS classification	Solved?
15526	$2x - 3y + (2y - 3x)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
15568 i.c.	$y' = -\frac{t}{y}$	[_separable]	✓
15578	$y' = \frac{2+y}{2t+1}$	[_separable]	✓
15602	$4(x-1)^2 y' - 3(y+3)^2 = 0$	[_separable]	✓
15622 i.c.	$y' = \frac{y+3}{3x+1}$	[_separable]	✓
15625 i.c.	$y' = \frac{3y+1}{x+3}$	[_separable]	✓
15630 i.c.	$y' = -\frac{y-2}{-2+x}$	[_separable]	✓
15647	$ty' + y = t$	[_linear]	✓
15701	$\frac{t}{\sqrt{t^2+y^2}} + \frac{yy'}{\sqrt{t^2+y^2}} = 0$	[_separable]	✓
15702	$y \cos(ty) + t \cos(ty)y' = 0$	[_separable]	✓
15704	$3ty^2 + y^3y' = 0$	[_separable]	✓
15708	$e^{ty} + \frac{te^{ty}y'}{y} = 0$	[_separable]	✓
15711	$y^2 + 2tyy' = 0$	[_separable]	✓
15712	$\frac{3t^2}{y} - \frac{t^3y'}{y^2} = 0$	[_separable]	✓
15715	$2ty + (t^2 + y^2)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]]	✓
15718	$3t^2 + 3y^2 + 6tyy' = 0$	[[_homogeneous, 'class A', _exact, _rational, _Bernoulli]]	✓
15727	$-\frac{y^2 e^{\frac{y}{t}}}{t^2} + 1 + e^{\frac{y}{t}} \left(1 + \frac{y}{t}\right) y' = 0$	[[_homogeneous, 'class A', _exact, _dAlembert]]	✓
15728	$2t \sin\left(\frac{y}{t}\right) - y \cos\left(\frac{y}{t}\right) + t \cos\left(\frac{y}{t}\right) y' = 0$	[[_homogeneous, 'class A', _exact, _dAlembert]]	✓
15729 i.c.	$2ty^2 + 2t^2yy' = 0$	[_separable]	✓

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Table 2.10 first order ode homog maple C  
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#	ODE	CAS classification	Solved?
15732	<i>i.c.</i> $1 + 5t - y - (t + 2y)y' = 0$	[[_homogeneous, 'class C'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
15741	$t^2y + t^3y' = 0$	[_separable]	✓
15744	$2ty + y^2 - t^2y' = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
15752	$\frac{9t}{5} + 2y + (2t + 2y)y' = 0$	[[_homogeneous, 'class A'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
15753	$2t + \frac{19y}{10} + \left(\frac{19t}{10} + 2y\right)y' = 0$	[[_homogeneous, 'class A'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
15761	$y' - \frac{y}{t} = \frac{y^2}{t^2}$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
15764	$\cos\left(\frac{t}{y+t}\right) + e^{\frac{2y}{t}}y' = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓
15765	$y \ln\left(\frac{t}{y}\right) + \frac{t^2y'}{y+t} = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓
15767	$\frac{2}{t} + \frac{1}{y} + \frac{ty'}{y^2} = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
15770	$2t + (y - 3t)y' = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class C'], _dAlem- bert]	✓
15771	$2y - 3t + ty' = 0$	[_linear]	✓
15772	$ty - y^2 + t(t - 3y)y' = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
15773	$t^2 + ty + y^2 - tyy' = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
15774	$t^3 + y^3 - ty^2y' = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
15775	$y' = \frac{t + 4y}{4t + y}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓

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#	ODE	CAS classification	Solved?
15777	$y + (y + t) y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
15778	$2t^2 - 7ty + 5y^2 + ty y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
15780	$y^2 = (ty - 4t^2) y'$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
15781	$y - (3\sqrt{ty} + t) y' = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
15782	$(t^2 - y^2) y' + y^2 + ty = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
15783	$ty y' - t^2 e^{-\frac{y}{t}} - y^2 = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
15784	$y' = \frac{1}{\frac{2y e^{-\frac{t}{y}}}{t} + \frac{t}{y}}$	[[_homogeneous, 'class A', _dAlembert]	✓
15785	$t(\ln(t) - \ln(y)) y' = y$	[[_homogeneous, 'class A', _dAlembert]	✓
15788 i.c.	$y' = \frac{4y^2 - t^2}{2ty}$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
15790 i.c.	$ty' - y - \sqrt{t^2 + y^2} = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
15791 i.c.	$t^3 + y^2 \sqrt{t^2 + y^2} - ty \sqrt{t^2 + y^2} y' = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
15792 i.c.	$y^3 - t^3 - ty^2 y' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
15793 i.c.	$ty^3 - (t^4 + y^4) y' = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
15795	$t - 2y + 1 + (4t - 3y - 6) y' = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
15796	$5t + 2y + 1 + (2t + y + 1) y' = 0$	[[_homogeneous, 'class C', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
15811 i.c.	$y' = \frac{y^2 - t^2}{ty}$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓

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#	ODE	CAS classification	Solved?
15812	$y \sin\left(\frac{t}{y}\right) - \left(t + t \sin\left(\frac{t}{y}\right)\right) y' = 0$ i.c.	[[_homogeneous, 'class A', _dAlembert]	✓
15822	$3t + (t - 4y) y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class C'], _dAlem- bert]	✓
15823	$y - t + (y + t) y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
15825	$y^2 + (ty + t^2) y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
15826	$r' = \frac{r^2 + t^2}{rt}$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
15827	$x' = \frac{5tx}{x^2 + t^2}$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
15842	$2x - y - 2 + (2y - x) y' = 0$ i.c.	[[_homogeneous, 'class C', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
15852	$y' = -\frac{y}{t-2}$ i.c.	[_separable]	✓
16341	$y' = \frac{x}{y}$	[_separable]	✓
16346	$y' = \frac{1+y}{x-y}$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
16365	$y' = \frac{x+y}{x-y}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
16369	$y' = -\frac{y}{x}$	[_separable]	✓
16378	$xy' = 2x - y$ i.c.	[_linear]	✓
16413	$xy' = y + x \cos\left(\frac{y}{x}\right)^2$	[[_homogeneous, 'class A', _dAlembert]	✓
16415	$xy' = y(\ln(y) - \ln(x))$	[[_homogeneous, 'class A', _dAlembert]	✓
16416	$x^2 y' = x^2 - xy + y^2$	[[_homogeneous, 'class A', _rational, _Riccati]	✓

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Table 2.10 first order ode homog maple C

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#	ODE	CAS classification	Solved?
16417	$xy' = y + \sqrt{y^2 - x^2}$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
16418	$2x^2y' = y^2 + x^2$	[[_homogeneous, 'class A', _rational, _Riccati]	✓
16419	$4x - 3y + (2y - 3x)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
16420	$y - x + (x + y)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
16422	$3y - 7x + 7 - (3x - 7y - 3)y' = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
16423	$x + y - 2 + (x - y + 4)y' = 0$	[[_homogeneous, 'class C', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
16424	$x + y + (x - y - 2)y' = 0$	[[_homogeneous, 'class C', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
16425	$2x + 3y - 5 + (3x + 2y - 5)y' = 0$	[[_homogeneous, 'class C', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
16453	$xy' + y = 2x$	[_linear]	✓
16457	$3xy^2y' - 2y^3 = x^3$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
16470	$x(2x^2 + y^2) + y(x^2 + 2y^2)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlem- bert]	✓
16480	$\frac{2x}{y^3} + \frac{(y^2 - 3x^2)y'}{y^4} = 0$ i.c.	[[_homogeneous, 'class A', _exact, _rational, _dAlem- bert]	✓
16482	$3x^2y + y^3 + (x^3 + 3xy^2)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlem- bert]	✓
16496	$x^2y'^2 + 3xyy' + 2y^2 = 0$	[_separable]	✓
16546	$x^3 - 3xy^2 + (y^3 - 3x^2y)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlem- bert]	✓

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Table 2.10 first order ode homog maple C

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#	ODE	CAS classification	Solved?
16547	$5xy - 4y^2 - 6x^2 + \left(y^2 - 8xy + \frac{5x^2}{2}\right) y' = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]	✓
16554	$\frac{1}{x^2 - xy + y^2} = \frac{y'}{2y^2 - xy}$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
16556	$x - y + 3 + (3x + y + 1) y' = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
16560	$1 + e^{\frac{x}{y}} + e^{\frac{x}{y}} \left(1 - \frac{x}{y}\right) y' = 0$	[[_homogeneous, 'class A', _exact, _dAlembert]	✓
16561	$x^2 + y^2 - xyy' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
16576	$(5x - 7y + 1) y' + y - 1 + x = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
16579	$y' = \frac{2(y+2)^2}{(y-1+x)^2}$	[[_homogeneous, 'class C', _rational]	✓
16989	$y' = \frac{3-2x}{y}$	[_separable]	✓
16993	$y' = \frac{2x}{1+2y}$	[_separable]	✓
17054	$y' = \frac{t-y}{2t+5y}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
17062	$y' = -\frac{4t}{y}$	[_separable]	✓
17071	$2x + 3 + (2y - 2) y' = 0$	[_separable]	✓
17072	$2x + 4y + (2x - 2y) y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
17074	$2xy^2 + 2y + (2x^2y + 2x) y' = 0$	[_separable]	✓
17075	$y' = -\frac{4x+2y}{2x+3y}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓

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Table 2.10 first order ode homog maple C

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#	ODE	CAS classification	Solved?
17076	$y' = -\frac{4x - 2y}{2x - 3y}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
17082	$\frac{x}{(y^2 + x^2)^{3/2}} + \frac{yy'}{(y^2 + x^2)^{3/2}} = 0$	[_separable]	✓
17083	$2x - y + (2y - x)y' = 0$ i.c.	[[_homogeneous, 'class A'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
17096	$3xy + y^2 + (xy + x^2)y' = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
17097	$yy' = x + 1$	[_separable]	✓
17099	$\frac{(3x^3 - xy^2)y'}{3x^2y + y^3} = 1$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
17102	$xyy' = (x + y)^2$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
17103	$y' = \frac{4y - 7x}{5x - y}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
17104	$xy' - 4\sqrt{y^2 - x^2} = y$	[[_homogeneous, 'class A'], _dAlembert]	✓
17105	$y' = \frac{y^4 + 2xy^3 - 3y^2x^2 - 2x^3y}{2y^2x^2 - 2x^3y - 2x^4}$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
17106	$(y + xe^{\frac{x}{y}})y' = ye^{\frac{x}{y}}$	[[_homogeneous, 'class A'], _dAlembert]	✓
17107	$xyy' = y^2 + x^2$ i.c.	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
17119	$(3x - y)x' + 9y - 2x = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
17125	$5xy^2 + 5y + (5x^2y + 5x)y' = 0$	[_separable]	✓
17129	$x' = \frac{2xy + x^2}{3y^2 + 2xy}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
17130	$4xyy' = 8x^2 + 5y^2$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓

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Table 2.10 first order ode homog maple C

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#	ODE	CAS classification	Solved?
17573	$y' = \frac{2xy}{y^2 + x^2}$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
17574	$y' = \frac{y(1 + \ln(y) - \ln(x))}{x}$	[[_homogeneous, 'class A'], _dAlembert]	✓
17575	$y^2 + x^2y' = xyy'$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
17576	$(x + y)y' = y - x$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
17577	$x - y \cos\left(\frac{y}{x}\right) + x \cos\left(\frac{y}{x}\right)y' = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓
17578	$3y - 7x + 7 = (3x - 7y - 3)y'$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
17580	$y' = \frac{2(y+2)^2}{(y-1+x)^2}$	[[_homogeneous, 'class C'], _rational]	✓
17602	$\frac{2x}{y^3} + \frac{(y^2 - 3x^2)y'}{y^4} = 0$	[[_homogeneous, 'class A'], _exact, _rational, _dAlembert]	✓
17612	$yy'^2 + y'(x - y) - x = 0$	[_quadrature]	✓
17733	$xy' = 2y$	[_separable]	✓
17740	$y' = \frac{xy}{y^2 + x^2}$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
17741	$2xyy' = y^2 + x^2$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
17743	$y' = \frac{y^2}{xy - x^2}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
17755	$x^5y' + y^5 = 0$	[_separable]	✓
17780	$x^2 - 2y^2 + xyy' = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
17781	$x^2y' - 3xy - 2y^2 = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
17782	$x^2y' = 3(y^2 + x^2) \arctan\left(\frac{y}{x}\right) + xy$	[[_homogeneous, 'class A'], _dAlembert]	✓

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Table 2.10 first order ode homog maple C  
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#	ODE	CAS classification	Solved?
17783	$x \sin\left(\frac{y}{x}\right) y' = y \sin\left(\frac{y}{x}\right) + x$	[[_homogeneous, 'class A', _dAlembert]	✓
17784	$xy' = y + 2x e^{-\frac{y}{x}}$	[[_homogeneous, 'class A', _dAlembert]	✓
17785	$x - y - (x + y) y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
17786	$xy' = 2x + 3y$	[_linear]	✓
17787	$xy' = \sqrt{y^2 + x^2}$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
17788	$x^2 y' = y^2 + 2xy$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
17789	$x^3 + y^3 - xy^2 y' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
17792	$y' = \frac{x + y + 4}{x - y - 6}$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
17794	$2x - 2y + (y - 1) y' = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
17795	$y' = \frac{y - 1 + x}{x + 4y + 2}$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
17796	$2x + 3y - 1 - 4(x + 1) y' = 0$	[_linear]	✓
17803	$y + y \cos(xy) + (x + x \cos(xy)) y' = 0$	[_separable]	✓
17816	$\frac{x}{(y^2 + x^2)^{3/2}} + \frac{yy'}{(y^2 + x^2)^{3/2}} = 0$	[_separable]	✓
17819	$\frac{4y^2 - 2x^2}{4xy^2 - x^3} + \frac{(8y^2 - x^2) y'}{4y^3 - x^2 y} = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]	✓
17820	$(3x^2 - y^2) y' - 2xy = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
17834	$(x + y) y' = y - x$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
17838	$xy' + y = y' \sqrt{xy}$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓

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Table 2.10 first order ode homog maple C

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#	ODE	CAS classification	Solved?
17877	$2x + 3y + 1 + (2y - 3x + 5)y' = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
17878	$xy' = \sqrt{y^2 + x^2}$		✓
17883	$xyy' = y^2 + x^2y'$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
17894	$y^2 - 3xy - 2x^2 = (x^2 - xy)y'$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
17900	$x^2y^4 + x^6 - x^3y^3y' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
17902	$y' = 1 + \frac{y}{x} - \frac{y^2}{x^2}$	[[_homogeneous, 'class A', _rational, _Riccati]	✓
17903	$y' = \frac{2xy e^{\frac{x^2}{y^2}}}{y^2 + y^2 e^{\frac{x^2}{y^2}} + 2x^2 e^{\frac{x^2}{y^2}}}$	[[_homogeneous, 'class A', _dAlembert]	✓
17904	$y' = \frac{x + 2y + 2}{y - 2x}$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
17907	$\frac{y - x}{(x + y)^3} - \frac{2xy'}{(x + y)^3} = 0$	[_linear]	✓
17910	$3x^2y - y^3 - (3xy^2 - x^3)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlem- bert]	✓
17912	$y' = \frac{-3x - 2y - 1}{2x + 3y - 1}$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
17916	$3xy + y^2 + (3xy + x^2)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
17917	$x^2y' = y^2 + xy + x^2$	[[_homogeneous, 'class A', _rational, _Riccati]	✓
17922	$x^2y' - y^2 = 2xy$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
18179	$(t^2 - x^2)x' = xt$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
18215	$v' + \frac{2v}{u} = 3$	[_linear]	✓

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Table 2.10 first order ode homog maple C  
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#	ODE	CAS classification	Solved?
18222	$2x^2y + y^3 - x^3y' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
18223	$2ax + by + (2cy + bx + e)y' = g$	[[_homogeneous, 'class C', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
18225	$x + yy' = my$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
18226	$\frac{2x}{y^3} + \left(\frac{1}{y^2} - \frac{3x^2}{y^4}\right)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlem- bert]	✓
18251	$y' = 1 + \frac{2y}{x-y}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
18316	$x(x-2y)y' + x^2 + 2y^2 = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
18318	$(x^2 + 3xy - y^2)y' - 3y^2 = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
18319	$(x^2 + 2xy)y' - 3x^2 + 2xy - y^2 = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
18320	$5xyy' - 4x^2 - y^2 = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
18322	$3x^2y' + 2x^2 - 3y^2 = 0$	[[_homogeneous, 'class A', _rational, _Riccati]	✓
18323	$(3x + 2y - 7)y' = 2x - 3y + 6$	[[_homogeneous, 'class C', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
18324	$(6x - 5y + 4)y' = 2x - y + 1$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
18325	$(5x - 2y + 7)y' = x - 3y + 2$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
18326	$(x - 3y + 4)y' = 5x - 7y$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
18403	$(1-x)y' - 1 - y = 0$	[_separable]	✓

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Table 2.10 first order ode homog maple C  
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#	ODE	CAS classification	Solved?
18411	$3y - 7x + 7 + (7y - 3x + 3)y' = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
18412	$(y - 3x + 3)y' = 2y - x - 4$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
18413	$x^2 - 4xy - 2y^2 + (y^2 - 4xy - 2x^2)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlem- bert]]	✓
18416	$2ax + by + g + (2cy + bx + e)y' = 0$	[[_homogeneous, 'class C', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
18423	$x^2y - 2xy^2 - (x^3 - 3x^2y)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
18429	$y^3 - 2x^2y + (2xy^2 - x^3)y' = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
18432	$xy' - ay = x + 1$	[_linear]	✓
18449	$2x - y + 1 + (2y - x - 1)y' = 0$	[[_homogeneous, 'class C', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
18451	$xy' + \frac{y^2}{x} = y$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
18454	$x^2y - (x^3 + y^3)y' = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
18457	$x + yy' = m(-y + xy')$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
18465	$yy' = ax$	[_separable]	✓
18467	$(x + y)y' + x - y = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
18469	$(y^2 - x^2)y' + 2xy = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
18474	$y^2 + x^2y' = xyy'$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
18481	$4y^2y'^2 + 2y'xy(3x + 1) + 3x^3 = 0$	[_separable]	✓
18501	$xy^2(y'^2 + 2) = 2y^3y' + x^3$	[_separable]	✓

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Table 2.10 first order ode homog maple C  
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#	ODE	CAS classification	Solved?
18515	$xyy'^2 + y'(3x^2 - 2y^2) - 6xy = 0$	[_separable]	✓
18526	$y'\sqrt{x} = \sqrt{y}$	[_separable]	✓

## 2.3.9 first order ode bernoulli

Table 2.11: first order ode bernoulli

#	ODE	CAS classification	Solved?
27	$y' = 2y^2x^2$ i.c.	[_separable]	✓
29	$y' = y^{1/3}$ i.c.	[_quadrature]	✓
30	$y' = y^{1/3}$ i.c.	[_quadrature]	✓
33	$yy' = x - 1$ i.c.	[_separable]	✓
34	$yy' = x - 1$ i.c.	[_separable]	✓
42	$y' + 2xy^2 = 0$	[_separable]	✓
51	$y' = xy^3$	[_separable]	✓
52	$yy' = x(1 + y^2)$	[_separable]	✓
53	$y^3y' = (1 + y^4) \cos(x)$	[_separable]	✓
61	$2yy' = \frac{x}{\sqrt{x^2 - 16}}$ i.c.	[_separable]	✓
66	$y' = 2xy^2 + 3y^2x^2$ i.c.	[_separable]	✓
69	$y' = y^2$ i.c.	[_quadrature]	✓
71	$y' = 2\sqrt{y}$ i.c.	[_quadrature]	✓
106	$2xyy' = x^2 + 2y^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
111	$xy^2y' = x^3 + y^3$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
113	$x^2y' = xy + y^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
114	$xyy' = x^2 + 3y^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
123	$2xy + x^2y' = 5y^3$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
124	$y^2y' + 2xy^3 = 6x$	[_separable]	✓
125	$y' = y + y^3$	[_quadrature]	✓

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Table 2.11 first order ode bernoulli  
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#	ODE	CAS classification	Solved?
126	$2xy + x^2y' = 5y^4$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
127	$xy' + 6y = 3xy^{4/3}$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
128	$2xy' + y^3e^{-2x} = 2xy$	[_Bernoulli]	✓
129	$y^2(xy' + y)\sqrt{x^4 + 1} = x$	[_Bernoulli]	✓
130	$3y^2y' + y^3 = e^{-x}$	[[_1st_order, _with_linear_symmetries], _Bernoulli]	✓
131	$3xy^2y' = 3x^4 + y^3$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
160	$y' + p(x)y = q(x)y^n$	[_Bernoulli]	✓
171	$x' = x - x^2$ i.c.	[_quadrature]	✓
172	$x' = 10x - x^2$ i.c.	[_quadrature]	✓
175	$x' = 3x(5 - x)$ i.c.	[_quadrature]	✓
176	$x' = 3x(5 - x)$ i.c.	[_quadrature]	✓
177	$x' = 4x(7 - x)$ i.c.	[_quadrature]	✓
178	$x' = 7x(x - 13)$ i.c.	[_quadrature]	✓
180	$xy^2 + 3y^2 - x^2y' = 0$	[_separable]	✓
181	$xy + y^2 - x^2y' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
184	$2xy^2 + x^2y' = y^2$	[_separable]	✓
186	$2xy + x^2y' = y^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
187	$xy' + 2y = 6x^2\sqrt{y}$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
189	$x^2y' = xy + 3y^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
191	$4xy^2 + y' = 5x^4y^2$	[_separable]	✓
192	$x^3y' = x^2y - y^3$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓

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Table 2.11 first order ode bernoulli  
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#	ODE	CAS classification	Solved?
196	$2x^2y - x^3y' = y^3$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
197	$3x^5y^2 + x^3y' = 2y^2$	[_separable]	✓
200	$xy' = 6y + 12x^4y^{2/3}$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
202	$9y^2x^2 + x^{3/2}y' = y^2$	[_separable]	✓
205	$3y + x^3y^4 + 3xy' = 0$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
210	$y' = xy^3 - xy$	[_separable]	✓
211	$y' = -\frac{3x^2 + 2y^2}{4xy}$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
214	$y' = \frac{\sqrt{y} - y}{\tan(x)}$	[_separable]	✓
231	$y' + y^2 = 0$	[_quadrature]	✓
669	$y' = 2y^2x^2$	[_separable]	✓
671	$y' = y^{1/3}$	[_quadrature]	✓
672	$y' = y^{1/3}$	[_quadrature]	✓
673	$yy' = x - 1$	[_separable]	✓
674	$yy' = x - 1$	[_separable]	✓
678	$y' + 2xy^2 = 0$	[_separable]	✓
687	$y' = xy^3$	[_separable]	✓
688	$yy' = x(1 + y^2)$	[_separable]	✓
696	$2yy' = \frac{x}{\sqrt{x^2 - 16}}$	[_separable]	✓
701	$y' = 2xy^2 + 3y^2x^2$	[_separable]	✓
730	$2xyy' = y^2 + x^2$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
735	$xy^2y' = x^3 + y^3$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓

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Table 2.11 first order ode bernoulli  
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#	ODE	CAS classification	Solved?
737	$x^2y' = xy + y^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
738	$xyy' = x^2 + 3y^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
747	$2xy + x^2y' = 5y^3$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
748	$y^2y' + 2xy^3 = 6x$	[_separable]	✓
749	$y' = y + y^3$	[_quadrature]	✓
750	$2xy + x^2y' = 5y^4$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
751	$xy' + 6y = 3xy^{4/3}$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
752	$2xy' + y^3e^{-2x} = 2xy$	[_Bernoulli]	✓
753	$y^2(xy' + y)\sqrt{x^4 + 1} = x$	[_Bernoulli]	✓
754	$3y^2y' + y^3 = e^{-x}$	[[_1st_order, __with_lin- ear_symmetries], _Bernoulli]	✓
755	$3xy^2y' = 3x^4 + y^3$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
772	$xy^2 + 3y^2 - x^2y' = 0$	[_separable]	✓
773	$xy + y^2 - x^2y' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
776	$2xy^2 + x^2y' = y^2$	[_separable]	✓
778	$2xy + x^2y' = y^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
779	$xy' + 2y = 6x^2\sqrt{y}$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
781	$x^2y' = xy + 3y^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
784	$x^3y' = x^2y - y^3$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
788	$2x^2y - x^3y' = y^3$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
789	$3x^5y^2 + x^3y' = 2y^2$	[_separable]	✓
792	$xy' = 6y + 12x^4y^{2/3}$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓

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Table 2.11 first order ode bernoulli  
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#	ODE	CAS classification	Solved?
794	$9y^2x^2 + x^{3/2}y' = y^2$	[_separable]	✓
797	$3y + x^3y^4 + 3xy' = 0$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
802	$y' = xy^3 - xy$	[_separable]	✓
803	$y' = \frac{-3x^2 - 2y^2}{4xy}$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
806	$y' = \cot(x)(\sqrt{y} - y)$	[_separable]	✓
1129	$y' = \frac{x^2}{y}$	[_separable]	✓
1130	$y' = \frac{x^2}{(x^3 + 1)y}$	[_separable]	✓
1131	$\sin(x)y^2 + y' = 0$	[_separable]	✓
1137	$y' = (-2x + 1)y^2$	[_separable]	✓
1138	$y' = \frac{-2x + 1}{y}$	[_separable]	✓
1139	$x + yy'e^{-x} = 0$	[_separable]	✓
1140	$r' = \frac{r^2}{x}$	[_separable]	✓
1141	$y' = \frac{2x}{y + x^2y}$	[_separable]	✓
1142	$y' = \frac{xy^2}{\sqrt{x^2 + 1}}$	[_separable]	✓
1144	$y' = \frac{x(x^2 + 1)}{4y^3}$	[_separable]	✓
1148	$\sqrt{-x^2 + 1}y^2y' = \arcsin(x)$	[_separable]	✓
1151	$y' = 2y^2 + xy^2$	[_separable]	✓
1155	$y' = \frac{t(4 - y)y}{3}$	[_separable]	✓
1156	$y' = \frac{ty(4 - y)}{t + 1}$	[_separable]	✓

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Table 2.11 first order ode bernoulli  
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#	ODE	CAS classification	Solved?
1159	$y' = \frac{x^2 + 3y^2}{2xy}$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
1164	$y' = \frac{x^2 - 3y^2}{2xy}$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
1165	$y' = \frac{3y^2 - x^2}{2xy}$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
1174	$y' = -\frac{4t}{y}$	[_separable]	✓
1175	$y' = 2ty^2$	[_separable]	✓
1176	$y^3 + y' = 0$	[_quadrature]	✓
1177	$y' = \frac{t^2}{(t^3 + 1)y}$	[_separable]	✓
1178	$y' = t(3 - y)y$	[_separable]	✓
1179	$y' = y(3 - ty)$	[_Bernoulli]	✓
1180	$y' = -y(3 - ty)$	[_Bernoulli]	✓
1182	$y' = ay + by^2$	[_quadrature]	✓
1189	$y' = y(1 - y^2)$	[_quadrature]	✓
1190	$y' = -b\sqrt{y} + ay$	[_quadrature]	✓
1204	$\frac{x}{(y^2 + x^2)^{3/2}} + \frac{yy'}{(y^2 + x^2)^{3/2}} = 0$	[_separable]	✓
1533	$y' = -\frac{y(1 + y)}{x}$ i.c.	[_separable]	✓
1534	$y' = ay^{\frac{a-1}{a}}$	[_quadrature]	✓
1580	$xy' + y^2 + y = 0$	[_separable]	✓
1588	$y' + x(y^2 + y) = 0$ i.c.	[_separable]	✓
1592	$y' = 2xy(1 + y^2)$ i.c.	[_separable]	✓
1596	$y' = 2y - y^2$ i.c.	[_quadrature]	✓
1597	$x + yy' = 0$ i.c.	[_separable]	✓
1603	$y' = ay - by^2$ i.c.	[_quadrature]	✓

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Table 2.11 first order ode bernoulli  
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#	ODE	CAS classification	Solved?
1621	$y' = y^{2/5}$ i.c.	[_quadrature]	✓
1625	$y' - y = xy^2$	[_Bernoulli]	✓
1629	$y' + y = y^2$	[_quadrature]	✓
1630	$7xy' - 2y = -\frac{x^2}{y^6}$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
1631	$x^2y' + 2y = 2e^{\frac{1}{x}}\sqrt{y}$	[_Bernoulli]	✓
1632	$y'(x^2 + 1) + 2xy = \frac{1}{(x^2 + 1)y}$	[_rational, _Bernoulli]	✓
1633	$y' - xy = x^3y^3$	[_Bernoulli]	✓
1634	$y' - \frac{(x+1)y}{3x} = y^4$	[_rational, _Bernoulli]	✓
1635	$y' - 2y = xy^3$ i.c.	[_Bernoulli]	✓
1636	$y' - xy = xy^{3/2}$ i.c.	[_separable]	✓
1637	$xy' + y = x^4y^4$ i.c.	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
1638	$y' - 2y = 2\sqrt{y}$ i.c.	[_quadrature]	✓
1639	$y' - 4y = \frac{48x}{y^2}$ i.c.	[_rational, _Bernoulli]	✓
1640	$2xy + x^2y' = y^3$ i.c.	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
1641	$y' - y = x\sqrt{y}$ i.c.	[_Bernoulli]	✓
1643	$y' = \frac{y^2 + 2xy}{x^2}$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
1644	$xy^3y' = y^4 + x^4$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
1647	$xyy' = x^2 + 2y^2$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
1649	$y' = \frac{xy + y^2}{x^2}$ i.c.	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
1650	$y' = \frac{x^3 + y^3}{xy^2}$ i.c.	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓

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Table 2.11 first order ode bernoulli  
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#	ODE	CAS classification	Solved?
1651	$xyy' + x^2 + y^2 = 0$ i.c.	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
1654	$xyy' = 3x^2 + 4y^2$ i.c.	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
1669	$3xy^2y' = y^3 + x$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
1670	$xyy' = 3x^6 + 6y^2$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
1692	$\frac{x}{(y^2 + x^2)^{3/2}} + \frac{yy'}{(y^2 + x^2)^{3/2}} = 0$	[_separable]	✓
1699	$(y^3 - 1)e^x + 3y^2(1 + e^x)y' = 0$ i.c.	[_separable]	✓
1703	$e^x(x^4y^2 + 4x^3y^2 + 1) + (2x^4ye^x + 2y)y' = 0$	[_exact, _Bernoulli]	✓
1707	$2xyy' + x^2 + y^2 = 0$	[[_homogeneous, 'class A', _exact, _rational, _Bernoulli]	✓
1712	$x^2y' - y^2 = 0$	[_separable]	✓
1736	$3y^2x^2 + 2y + 2xy' = 0$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
2323	$t^2(1 + y^2) + 2yy' = 0$ i.c.	[_separable]	✓
2324	$y' = \frac{2t}{y + t^2y}$ i.c.	[_separable]	✓
2325	$\sqrt{t^2 + 1}y' = \frac{ty^3}{\sqrt{t^2 + 1}}$ i.c.	[_separable]	✓
2331	$2tyy' = 3y^2 - t^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
2358	$y' = \frac{(1 + \cos(4t))y}{4} - \frac{(1 - \cos(4t))y^2}{800}$ i.c.	[_Bernoulli]	✓
2494	$t^2(1 + y^2) + 2yy' = 0$ i.c.	[_separable]	✓
2495	$y' = \frac{2t}{y + t^2y}$ i.c.	[_separable]	✓
2501	$y' = \frac{2y}{t} + \frac{y^2}{t^2}$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓

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Table 2.11 first order ode bernoulli  
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#	ODE	CAS classification	Solved?
2503	$2tyy' = 3y^2 - t^2$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
2533 i.c.	$y' = \frac{(1 + \cos(4t))y}{4} - \frac{(1 - \cos(4t))y^2}{800}$	[_Bernoulli]	✓
2536 i.c.	$y' = ty^a$	[_separable]	✓
2541 i.c.	$y' = e^t y^2 - 2y$	[[_1st_order, __with_linear_symmetries], _Bernoulli]	✓
2542 i.c.	$y' = ty^3 - y$	[_Bernoulli]	✓
2809	$x' = x(-x + 1)$	[_quadrature]	✓
2810	$x' = -x(-x + 1)$	[_quadrature]	✓
2811	$x' = x^2$	[_quadrature]	✓
2842	$xy^2 + x + (y - x^2y)y' = 0$	[_separable]	✓
2846	$xy^2 + x + (x^2y - y)y' = 0$	[_separable]	✓
2851	$y' = \frac{x}{y}$	[_separable]	✓
2853	$xy' + y = y^2$	[_separable]	✓
2860	$y^2 + yy' + x^2yy' - 1 = 0$	[_separable]	✓
2864 i.c.	$y^2 + x^2y' = 0$	[_separable]	✓
2878	$y^2 + x^2 = xy y'$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
2885 i.c.	$y^2 + x^2 = 2xy y'$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
2940	$x^2y + y^2 + x^3y' = 0$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
2941	$xy^3 - 1 + x^2y^2y' = 0$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
2943	$y(y - x^2) + x^3y' = 0$	[[_homogeneous, 'class D'], _rational, _Bernoulli]	✓
2948	$e^x y' = 2xy^2 + y e^x$	[_Bernoulli]	✓
2951	$2x^2yy' + x^4e^x - 2xy^2 = 0$	[[_homogeneous, 'class D'], _Bernoulli]	✓

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Table 2.11 first order ode bernoulli  
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#	ODE	CAS classification	Solved?
2952	$y(1 - x^4y^2) + xy' = 0$ i.c.	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
2982	$3y^2y' - xy^3 = e^{\frac{x^2}{2}} \cos(x)$	[_Bernoulli]	✓
2983	$y^3y' + xy^4 = xe^{-x^2}$	[_Bernoulli]	✓
2986	$xyy' = x^2 - y^2$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
2987	$y' - xy = \sqrt{y}xe^{x^2}$	[_Bernoulli]	✓
2988	$tx' + x(1 - x^2t^4) = 0$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
2989	$y^2 + x^2y' = xy$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
2991	$y' - xy = \frac{x}{y}$	[_separable]	✓
2992	$xy' + y = y^2x^2 \cos(x)$	[_Bernoulli]	✓
2993	$r' + \left(r - \frac{1}{r}\right)\theta = 0$	[_separable]	✓
2994	$xy' + 2y = 3x^3y^{4/3}$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
2995	$3y' + \frac{2y}{x+1} = \frac{x}{y^2}$	[_rational, _Bernoulli]	✓
2998	$y' + y \cos(x) = y^3 \sin(x)$	[_Bernoulli]	✓
2999	$y' + y = y^2e^{-t}$ i.c.	[[_1st_order, __with_linear_symmetries], _Bernoulli]	✓
3015	$y - xy' = 2y' + 2y^2$	[_separable]	✓
3022	$2x^3 - y^3 - 3x + 3xy^2y' = 0$	[_rational, _Bernoulli]	✓
3028	$-6 + 3x = xyy'$	[_separable]	✓
3030	$2xy' - y + \frac{x^2}{y^2} = 0$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
3031	$xy' + y(1 + y^2) = 0$	[_separable]	✓
3039	$xy' - 5y - x\sqrt{y} = 0$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
3041	$xy - y^2 - x^2y' = 0$ i.c.	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
3044	$xy' - 2y - 2x^4y^3 = 0$ i.c.	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓

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Table 2.11 first order ode bernoulli  
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#	ODE	CAS classification	Solved?
3047	$xy' + y = x^3y^6$ i.c.	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
3048	$x' = x + x^2e^\theta$ i.c.	[[_1st_order, __with_lin- ear_symmetries], _Bernoulli]	✓
3049	$y^2 + x^2 = 2xyy'$ i.c.	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
3052	$4xy^2 + y'(x^2 + 1) = 0$ i.c.	[_separable]	✓
3057	$2y'(x^2 + 1) = (2y^2 - 1)xy$ i.c.	[_separable]	✓
3286	$xyy'^2 + (x + y)y' + 1 = 0$	[_quadrature]	✓
3291	$y^2y'^2 + xyy' - 2x^2 = 0$	[_separable]	✓
3294	$yy'^2 + (y^2 - x^3 - xy^2)y' - xy(y^2 + x^2) = 0$	[_quadrature]	✓
3410	$y' = y^2x^2$	[_separable]	✓
3426	$y' = -y^3$ i.c.	[_quadrature]	✓
3427	$y' = \frac{e^t}{y}$ i.c.	[_separable]	✓
3432	$y' = -\frac{t}{y}$	[_separable]	✓
3433	$y' = y^2 - y$	[_quadrature]	✓
3457	$y' - xy^3 = 0$	[_separable]	✓
3459	$x^2y' + xy^2 = 4y^2$	[_separable]	✓
3466	$y' = -\frac{2x^2 + y^2 + x}{xy}$	[_rational, _Bernoulli]	✓
3473	$y' = \frac{4y^2}{x^2} - y^2$	[_separable]	✓
3480	$xy' + y - \frac{y^2}{x^{3/2}} = 0$ i.c.	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
3516	$y' = \frac{y^2}{x^2 + 1}$	[_separable]	✓
3529	$y' = y^3 \sin(x)$	[_separable]	✓
3561	$y' = -y^2$	[_quadrature]	✓

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Table 2.11 first order ode bernoulli  
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#	ODE	CAS classification	Solved?
3581	$y' = \frac{\cos(x) - 2xy^2}{2x^2y}$ i.c.	[_Bernoulli]	✓
3594	$y' = \frac{y^2}{x^2 + 1}$	[_separable]	✓
3607	$y' = y^3 \sin(x)$ i.c.	[_separable]	✓
3657	$y' - \frac{y}{x} = \frac{4x^2 \cos(x)}{y}$	[[_homogeneous, 'class D'], _Bernoulli]	✓
3658	$y' + \frac{\tan(x)y}{2} = 2y^3 \sin(x)$	[_Bernoulli]	✓
3659	$y' - \frac{3y}{2x} = 6y^{1/3}x^2 \ln(x)$	[_Bernoulli]	✓
3660	$y' + \frac{2y}{x} = 6\sqrt{x^2 + 1}\sqrt{y}$	[_Bernoulli]	✓
3661	$y' + \frac{2y}{x} = 6x^4y^2$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
3662	$2x(y' + x^2y^3) + y = 0$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
3663	$(x - a)(x - b)(y' - \sqrt{y}) = 2(b - a)y$	[_rational, _Bernoulli]	✓
3664	$y' + \frac{6y}{x} = \frac{3y^{2/3} \cos(x)}{x}$	[_Bernoulli]	✓
3665	$y' + 4xy = 4x^3\sqrt{y}$	[_Bernoulli]	✓
3666	$y' - \frac{y}{2x \ln(x)} = 2xy^3$	[_Bernoulli]	✓
3667	$y' - \frac{y}{(\pi - 1)x} = \frac{3xy^\pi}{1 - \pi}$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
3668	$2y' + y \cot(x) = \frac{8 \cos(x)^3}{y}$	[_Bernoulli]	✓
3669	$(1 - \sqrt{3})y' + y \sec(x) = y^{\sqrt{3}} \sec(x)$	[_separable]	✓
3670	$y' + \frac{2xy}{x^2 + 1} = xy^2$ i.c.	[_rational, _Bernoulli]	✓
3671	$y' + y \cot(x) = y^3 \sin(x)^3$ i.c.	[_Bernoulli]	✓
4094	$x^2 + x - 1 + (2xy + y)y' = 0$	[_separable]	✓
4096	$(x + 1)y' - y^2x^2 = 0$	[_separable]	✓

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Table 2.11 first order ode bernoulli  
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#	ODE	CAS classification	Solved?
4098	$x^3 + y^3 - xy^2y' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
4190	$yy' = x$	[_separable]	✓
4213	$3y^2y' = 2x - 1$	[_separable]	✓
4214	$y' = 6xy^2$	[_separable]	✓
4223	$x^2y' - y^2 = 0$	[_separable]	✓
	i.c.		
4231	$xy' = 2y(y - 1)$	[_separable]	✓
	i.c.		
4237	$e^{2x}yy' + 2x = 0$	[_separable]	✓
	i.c.		
4240	$xyy' = 2x^2 - y^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
4241	$x^2 - y^2 + xyy' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
4242	$x^2y' - 2xy - 2y^2 = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
4305	$y' = \frac{x(1+y^2)}{y(x^2+1)}$	[_separable]	✓
	i.c.		
4311	$xy^3 + e^{x^2}y' = 0$	[_separable]	✓
4342	$2 + y^2 + 2x + 2yy' = 0$	[_rational, _Bernoulli]	✓
4361	$1 - (y - 2xy)y' = 0$	[_separable]	✓
4375	$3xy' - 3xy^4 \ln(x) - y = 0$	[_Bernoulli]	✓
4377	$y(6y^2 - x - 1) + 2xy' = 0$	[_rational, _Bernoulli]	✓
4378	$(x + 1)(y' + y^2) - y = 0$	[[_1st_order, _with_linear_symmetries], _rational, _Bernoulli]	✓
4379	$xyy' + y^2 - \sin(x) = 0$	[_Bernoulli]	✓
4380	$2x^3 - y^4 + xy^3y' = 0$	[[_homogeneous, 'class D', _rational, _Bernoulli]	✓
4381	$y' - \tan(x)y + y^2 \cos(x) = 0$	[_Bernoulli]	✓
4396	$xy^2(xy' + y) = 1$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
4400	$1 + y^2 \sin(2x) - 2y \cos(x)^2 y' = 0$	[_exact, _Bernoulli]	✓

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Table 2.11 first order ode bernoulli  
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#	ODE	CAS classification	Solved?
4411	$e^x + 3y^2 + 2xyy' = 0$	[_Bernoulli]	✓
4421	$2x^3yy' + 3y^2x^2 + 7 = 0$	[[_homogeneous, 'class G'], _exact, _rational, _Bernoulli]	✓
4423	$x^2(-y + xy') = (x + y)y$	[[_homogeneous, 'class D'], _rational, _Bernoulli]	✓
4430	$2x^{3/2} + x^2 + y^2 + 2y\sqrt{x}y' = 0$	[[_homogeneous, 'class D'], _rational, _Bernoulli]	✓
4438	$y(6y^2 - x - 1) + 2xy' = 0$	[_rational, _Bernoulli]	✓
4443	$xy^3 - 1 + x^2y^2y' = 0$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
4671	$y' = xy(y + 3)$	[_separable]	✓
4675	$y' = axy^2$	[_separable]	✓
4678	$y' = (a + by \cos(kx))y$	[_Bernoulli]	✓
4688	$y' = y(a + by^2)$	[_quadrature]	✓
4690	$y' = xy^3$	[_separable]	✓
4691	$y' + y(1 - xy^2) = 0$	[_Bernoulli]	✓
4693	$y' + 2xy(1 + axy^2) = 0$	[_Bernoulli]	✓
4694	$y' + (\tan(x) + y^2 \sec(x))y = 0$	[_Bernoulli]	✓
4695	$y' + y^3 \sec(x) \tan(x) = 0$	[_separable]	✓
4698	$y' = f(x)y + g(x)y^k$	[_Bernoulli]	✓
4704	$y' + 2y(1 - x\sqrt{y}) = 0$	[_Bernoulli]	✓
4772	$xy' + (1 - xy)y = 0$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
4773	$xy' = (1 - xy)y$	[[_homogeneous, 'class D'], _rational, _Bernoulli]	✓
4774	$xy' = (xy + 1)y$	[[_homogeneous, 'class D'], _rational, _Bernoulli]	✓
4775	$xy' = ax^3(1 - xy)y$	[_Bernoulli]	✓
4777	$xy' = y(1 + 2xy)$	[[_homogeneous, 'class D'], _rational, _Bernoulli]	✓
4782	$xy' + (a + bx^n)y = 0$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
4785	$xy' + (1 - ay \ln(x))y = 0$	[_Bernoulli]	✓

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Table 2.11 first order ode bernoulli  
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#	ODE	CAS classification	Solved?
4787	$xy' = y(1 + y^2)$	[_separable]	✓
4788	$xy' + y(1 - xy^2) = 0$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
4789	$xy' + y = a(x^2 + 1) y^3$	[_rational, _Bernoulli]	✓
4790	$xy' = ay + b(x^2 + 1) y^3$	[_rational, _Bernoulli]	✓
4791	$xy' + 2y = a x^{2k} y^k$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
4792	$xy' = 4y - 4\sqrt{y}$	[_separable]	✓
4824	$(x + 1) y' = ay + bxy^2$	[_rational, _Bernoulli]	✓
4825	$(x + 1) y' + y + (x + 1)^4 y^3 = 0$	[[_1st_order, _with_linear_symmetries], _rational, _Bernoulli]	✓
4826	$(x + 1) y' = (1 - xy^3) y$	[_rational, _Bernoulli]	✓
4834	$(x + a) y' = y(1 - ay)$	[_separable]	✓
4835	$(-x + a) y' = y + (cx + b) y^3$	[_rational, _Bernoulli]	✓
4838	$2xy' = y(1 + y^2)$	[_separable]	✓
4839	$2xy' + y(1 + y^2) = 0$	[_separable]	✓
4840	$2xy' = (1 + x - 6y^2) y$	[_rational, _Bernoulli]	✓
4845	$2(x + 1) y' + 2y + (x + 1)^4 y^3 = 0$	[[_1st_order, _with_linear_symmetries], _rational, _Bernoulli]	✓
4847	$3xy' = (2 + xy^3) y$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
4848	$3xy' = (1 + 3xy^3 \ln(x)) y$	[_Bernoulli]	✓
4860	$x^2 y' = (x + ay) y$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
4861	$x^2 y' = (ax + by) y$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
4870	$x^2 y' + (x^2 + y^2 - x) y = 0$	[[_homogeneous, 'class D', _rational, _Bernoulli]	✓
4871	$x^2 y' = 2y(x - y^2)$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
4874	$x^2 y' = (ax + by^3) y$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓

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Table 2.11 first order ode bernoulli  
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#	ODE	CAS classification	Solved?
4875	$x^2y' + xy + \sqrt{y} = 0$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
4899	$y'(x^2 + 1) + xy(1 - y) = 0$	[_separable]	✓
4900	$(-x^2 + 1)y' = xy(1 + ay)$	[_separable]	✓
4904	$(-x^2 + 4)y' + 4y = (x + 2)y^2$	[_rational, _Bernoulli]	✓
4907	$(a^2 + x^2)y' + (x - y)y = 0$	[_rational, _Bernoulli]	✓
4909	$(a^2 + x^2)y' + xy + bxy^2 = 0$	[_separable]	✓
4919	$x(x + a)y' = (b + cy)y$	[_separable]	✓
4924	$(x - a)(x - b)y' = cy^2$	[_separable]	✓
4946	$x^3y' = y(x^2 + y)$	[[_homogeneous, 'class D'], _rational, _Bernoulli]	✓
4948	$x^3y' = (x + 1)y^2$	[_separable]	✓
4951	$x^3y' = (2x^2 + y^2)y$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
4964	$x^2(1 - x)y' = (2 - x)xy - y^2$	[[_homogeneous, 'class D'], _rational, _Bernoulli]	✓
4965	$2x^3y' = (x^2 - y^2)y$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
4966	$2x^3y' = (3x^2 + y^2a)y$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
4967	$6x^3y' = 4x^2y + (1 - 3x)y^4$	[_rational, _Bernoulli]	✓
4969	$x^4y' = (x^3 + y)y$	[[_homogeneous, 'class D'], _rational, _Bernoulli]	✓
4975	$x^2(-x^2 + 1)y' = (x - 3x^3y)y$	[_rational, _Bernoulli]	✓
5008	$y' \left( a + \cos \left( \frac{x}{2} \right)^2 \right) = y \tan \left( \frac{x}{2} \right) \left( 1 + a + \cos \left( \frac{x}{2} \right)^2 - y \right)$	[_Bernoulli]	✓
5015	$x + yy' = 0$	[_separable]	✓
5016	$yy' + xe^{x^2} = 0$	[_separable]	✓
5021	$yy' + 4x(x + 1) + y^2 = 0$	[[_homogeneous, 'class D'], _rational, _Bernoulli]	✓
5022	$yy' = ax + by^2$	[_rational, _Bernoulli]	✓
5023	$yy' = b \cos(x + c) + y^2a$	[_Bernoulli]	✓

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#	ODE	CAS classification	Solved?
5025	$yy' = ax + bxy^2$	[_separable]	✓
5026	$yy' = \csc(x)^2 - y^2 \cot(x)$	[_Bernoulli]	✓
5058	$2yy' + 2x + x^2 + y^2 = 0$	[[_homogeneous, 'class D'], _rational, _Bernoulli]	✓
5059	$2yy' = xy^2 + x^3$	[_rational, _Bernoulli]	✓
5101	$xyy' + 1 + y^2 = 0$	[_separable]	✓
5102	$xyy' = x + y^2$	[[_homogeneous, 'class D'], _rational, _Bernoulli]	✓
5103	$xyy' + x^2 + y^2 = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
5104	$xyy' + x^4 - y^2 = 0$	[[_homogeneous, 'class D'], _rational, _Bernoulli]	✓
5105	$xyy' = ax^3 \cos(x) + y^2$	[[_homogeneous, 'class D'], _Bernoulli]	✓
5108	$xyy' = a + by^2$	[_separable]	✓
5109	$xyy' = ax^n + by^2$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
5110	$xyy' = (x^2 + 1)(1 - y^2)$	[_separable]	✓
5135	$2xyy' + 1 - 2x^3 - y^2 = 0$	[_rational, _Bernoulli]	✓
5136	$2xyy' + a + y^2 = 0$	[_separable]	✓
5137	$2xyy' = ax + y^2$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
5138	$2xyy' + x^2 + y^2 = 0$	[[_homogeneous, 'class A'], _exact, _rational, _Bernoulli]	✓
5139	$2xyy' = y^2 + x^2$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
5140	$2xyy' = 4x^2(2x + 1) + y^2$	[_rational, _Bernoulli]	✓
5141	$2xyy' + x^2(ax^3 + 1) = 6y^2$	[_rational, _Bernoulli]	✓
5149	$2(x + 1)yy' + 2x - 3x^2 + y^2 = 0$	[_exact, _rational, _Bernoulli]	✓
5154	$axy' = y^2 + x^2$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
5155	$axy' + x^2 - y^2 = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓

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#	ODE	CAS classification	Solved?
5167	$(x^2 + 1)yy' + x(1 - y^2) = 0$	[_separable]	✓
5168	$(-x^2 + 1)yy' + 2x^2 + xy^2 = 0$	[_rational, _Bernoulli]	✓
5169	$2x^2yy' = x^2(2x + 1) - y^2$	[[_homogeneous, 'class D'], _rational, _Bernoulli]	✓
5174	$2(x + 1)xyy' = 1 + y^2$	[_separable]	✓
5175	$3x^2yy' + 1 + 2xy^2 = 0$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
5178	$2x^3yy' + a + 3y^2x^2 = 0$	[[_homogeneous, 'class G'], _exact, _rational, _Bernoulli]	✓
5182	$xy(bx^2 + a)y' = A + By^2$	[_separable]	✓
5183	$3x^4yy' = 1 - 2x^3y^2$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
5217	$3y^2y' = 1 + x + ay^3$	[_rational, _Bernoulli]	✓
5244	$3xy^2y' = 2x - y^3$	[[_homogeneous, 'class G'], _exact, _rational, _Bernoulli]	✓
5249	$6xy^2y' + x + 2y^3 = 0$	[[_homogeneous, 'class G'], _exact, _rational, _Bernoulli]	✓
5253	$x^2y^2y' + 1 - x + x^3 = 0$	[_separable]	✓
5313	$y'\sqrt{y} = \sqrt{x}$	[_separable]	✓
5406	$y'^2 - (x - y)yy' - xy^3 = 0$	[_separable]	✓
5409	$y'^2 - xy(y^2 + x^2)y' + x^4y^4 = 0$	[_separable]	✓
5493	$x^2y'^2 + (a + bx^2y^3)y' + aby^3 = 0$	[_quadrature]	✓
5527	$yy'^2 + y'(x - y) - x = 0$	[_quadrature]	✓
5529	$yy'^2 - (xy + 1)y' + x = 0$	[_quadrature]	✓
5530	$yy'^2 + (x - y^2)y' - xy = 0$	[_quadrature]	✓
5538	$xyy'^2 + (x + y)y' + 1 = 0$	[_quadrature]	✓
5539	$xyy'^2 + (y^2 + x^2)y' + xy = 0$	[_separable]	✓
5540	$xyy'^2 + (x^2 - y^2)y' - xy = 0$	[_separable]	✓
5541	$xyy'^2 - (x^2 - y^2)y' - xy = 0$	[_separable]	✓

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Table 2.11 first order ode bernoulli

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#	ODE	CAS classification	Solved?
5544	$xyy'^2 + y'(3x^2 - 2y^2) - 6xy = 0$	[_separable]	✓
5547	$y^2y'^2 = a^2$	[_quadrature]	✓
5552	$y^2y'^2 - (x + 1)yy' + x = 0$	[_quadrature]	✓
5569	$4y^2y'^2 + 2y'xy(3x + 1) + 3x^3 = 0$	[_separable]	✓
5579	$4x^2y^2y'^2 = (y^2 + x^2)^2$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
5614	$y'^3 + (2x - y^2)y'^2 - 2xy^2y' = 0$	[_quadrature]	✓
5615	$y'^3 - (2x + y^2)y'^2 + (x^2 - y^2 + 2xy^2)y' - (x^2 - y^2)y^2 = 0$	[_quadrature]	✓
5616	$y'^3 - (y^2 + xy + x^2)y'^2 + xy(y^2 + xy + x^2)y' - x^3y^3 = 0$	[_quadrature]	✓
5617	$y'^3 - (x^2 + xy^2 + y^4)y'^2 + xy^2(x^2 + xy^2 + y^4)y' - x^3y^6 = 0$	[_quadrature]	✓
5693	$y' + xy = x^3y^3$	[_Bernoulli]	✓
5695	$y + xy^2 - xy' = 0$	[[_homogeneous, 'class D'], _rational, _Bernoulli]	✓
5701	$xy(x^2 + 1)y' - 1 - y^2 = 0$	[_separable]	✓
5717	$(-x^2 + 1)z' - xz = axz^2$	[_separable]	✓
5718	$3z^2z' - az^3 = x + 1$	[_rational, _Bernoulli]	✓
5719	$z' + 2xz = 2ax^3z^3$	[_Bernoulli]	✓
5720	$z' + z \cos(x) = z^n \sin(2x)$	[_Bernoulli]	✓
5721	$xy' + y = y^2 \ln(x)$	[_Bernoulli]	✓
5781	$y^2 + x^2 = 2xyy'$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
5784	$xy - y^2 - x^2y' = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
5841	$xy' + y = y^2 \ln(x)$	[_Bernoulli]	✓
5845	$y' + y = xy^3$	[_Bernoulli]	✓
5846	$(-x^3 + 1)y' - 2(x + 1)y = y^{5/2}$	[_rational, _Bernoulli]	✓
5855	$xy' + xy^2 - y = 0$	[[_homogeneous, 'class D'], _rational, _Bernoulli]	✓
5856	$xy' - y(2y \ln(x) - 1) = 0$	[_Bernoulli]	✓

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#	ODE	CAS classification	Solved?
5857	$x^2(x-1)y' - y^2 - x(-2+x)y = 0$	[[_homogeneous, 'class D', _rational, _Bernoulli]	✓
5859	$y' + \frac{y}{x} = \frac{y^2}{x}$ i.c.	[_separable]	✓
5860	$2 \cos(x)y' = y \sin(x) - y^3$ i.c.	[_Bernoulli]	✓
5866	$2xyy' + (x+1)y^2 = e^x$	[_Bernoulli]	✓
5876	$x^2y + y^2 + x^3y' = 0$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
5879	$xy' + y = x^2(1 + e^x)y^2$	[_Bernoulli]	✓
5883	$y' + 8x^3y^3 + 2xy = 0$	[_Bernoulli]	✓
5891	$x^3y' - y^2 - x^2y = 0$	[[_homogeneous, 'class D', _rational, _Bernoulli]	✓
5899	$(x^2 - 1)y' + xy - 3xy^2 = 0$	[_separable]	✓
5906	$xyy' + x^2 + y^2 = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
5907	$2xyy' + 3x^2 - y^2 = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
5911	$3xy^2y' + y^3 - 2x = 0$	[[_homogeneous, 'class G', _exact, _rational, _Bernoulli]	✓
6032	$y' = axy^2$	[_separable]	✓
6034	$xy(x^2 + 1)y' = 1 + y^2$	[_separable]	✓
6096	$xyy' + 1 + y^2 = 0$ i.c.	[_separable]	✓
6098	$y' = \frac{2xy^2 + x}{x^2y - y}$ i.c.	[_separable]	✓
6099	$yy' + xy^2 - 8x = 0$ i.c.	[_separable]	✓
6100	$y' + 2xy^2 = 0$ i.c.	[_separable]	✓
6119	$y' + y = xy^{2/3}$	[_Bernoulli]	✓
6120	$y' + \frac{y}{x} = 2x^{3/2}\sqrt{y}$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
6121	$3xy^2y' + 3y^3 = 1$	[_separable]	✓

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Table 2.11 first order ode bernoulli  
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#	ODE	CAS classification	Solved?
6125	$x^2y' + y^2 - xy = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
6214	$3x^3y^2y' - x^2y^3 = 1$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
6216	$y' - 2y - y^2e^{3x} = 0$	[[_1st_order, __with_lin- ear_symmetries], _Bernoulli]	✓
6228	$y' + xy = \frac{x}{y}$	[_separable]	✓
6260	$(xy^2 + 3y^2)y' - 2x = 0$	[_separable]	✓
6262	$xy' = \frac{1}{y^3}$	[_separable]	✓
6265	$y' = \frac{x}{y^2\sqrt{x+1}}$	[_separable]	✓
6266	$xv' = \frac{1-4v^2}{3v}$	[_separable]	✓
6269	$x' - x^3 = x$	[_quadrature]	✓
6270	$x + xy^2 + e^{x^2}yy' = 0$	[_separable]	✓
6271	$\frac{y'}{y} + ye^{\cos(x)} \sin(x) = 0$	[_separable]	✓
6277	$x^2 + 2yy' = 0$	[_separable]	✓
6281	$\sqrt{y} + (x+1)y' = 0$	[_separable]	✓
6283	$y' = \frac{e^{x^2}}{y^2}$	[_separable]	✓
6286	$y' = y^{1/3}$	[_quadrature]	✓
6287	$y' = y^{1/3}$	[_quadrature]	✓
6289	$y' = xy^3$	[_separable]	✓
6290	$y' = xy^3$	[_separable]	✓
6291	$y' = xy^3$	[_separable]	✓
6292	$y' = xy^3$	[_separable]	✓

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Table 2.11 first order ode bernoulli  
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#	ODE	CAS classification	Solved?
6318	$y' + 2y = \frac{x}{y^2}$	[_rational, _Bernoulli]	✓
6344	$2xy^3 - (-x^2 + 1)y' = 0$	[_separable]	✓
6345	$y^2t^3 + \frac{t^4y'}{y^6} = 0$	[_separable]	✓
6406	$y' + xy = xy^2$	[_separable]	✓
6407	$3xy' + y + x^2y^4 = 0$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
6429	$y' + \frac{y}{x} = y^3$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
6430	$xy' + 3y = y^2x^2$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
6438	$x^3 + y^3 = 3xy^2y'$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
6451	$y' + y = xy^3$	[_Bernoulli]	✓
6452	$y' + y = y^4e^x$	[[_1st_order, __with_linear_symmetries], _Bernoulli]	✓
6453	$2y' + y = y^3(x - 1)$	[_Bernoulli]	✓
6454	$y' - 2 \tan(x)y = y^2 \tan(x)^2$	[_Bernoulli]	✓
6455	$y' + \tan(x)y = y^3 \sec(x)^4$	[_Bernoulli]	✓
6459	$y' - y \cot(x) = y^2 \sec(x)^2$	[_Bernoulli]	✓
	<i>i.c.</i>		
6469	$2xyy' = x^2 - y^2$	[[_homogeneous, 'class A'], _exact, _rational, _Bernoulli]	✓
6476	$x(1 + y^2) - (x^2 + 1)yy' = 0$	[_separable]	✓
6477	$\frac{r \tan(\theta) r'}{a^2 - r^2} = 1$	[_separable]	✓
	<i>i.c.</i>		
6479	$y' + \frac{y}{x} = xy^2$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
6571	$x + yy' = 0$	[_separable]	✓
6573	$2x^3y' = y(3x^2 + y^2)$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
6582	$y^2 - x^2y' = 0$	[_separable]	✓

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Table 2.11 first order ode bernoulli  
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#	ODE	CAS classification	Solved?
6595	$y^2 - x^2 + xyy' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
6598	$x^3 + y^3 + 3xy^2y' = 0$	[[_homogeneous, 'class A', _exact, _rational, _Bernoulli]	✓
6601	$xyy' + x^2 + y^2 = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
6603	$y^2 + xy - xy' = 0$	[_rational, _Bernoulli]	✓
6616	$y(x - 2y) - x^2y' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
6617	$xyy' + x^2 + y^2 = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
6618	$2xyy' + x^2 + y^2 = 0$	[[_homogeneous, 'class A', _exact, _rational, _Bernoulli]	✓
6646	$y' + y = y^2e^x$	[[_1st_order, _with_lin- ear_symmetries], _Bernoulli]	✓
6649	$xy' + y - x^3y^6 = 0$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
6652	$yy' - xy^2 + x = 0$	[_separable]	✓
6654	$2x' - \frac{x}{y} + x^3 \cos(y) = 0$	[_Bernoulli]	✓
6658	$2y^5x - y + 2xy' = 0$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
6664	$xy^3 - y^3 - e^x x^2 + 3xy^2y' = 0$	[_Bernoulli]	✓
7058	$y' = \frac{x^2}{y}$	[_separable]	✓
7059	$y' = \frac{x^2}{(x^3 + 1)y}$	[_separable]	✓
7064	$(x^2 - 1)y' + 2xy^2 = 0$	[_separable]	✓
7065	$y' = 3y^{2/3}$	[_quadrature]	✓
7066	$xy' + y = y^2$	[_separable]	✓
7067	$2x^2yy' + y^2 = 2$	[_separable]	✓

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Table 2.11 first order ode bernoulli  
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#	ODE	CAS classification	Solved?
7068	$y' - xy^2 = 2xy$	[_separable]	✓
7071	$e^x - (1 + e^x)yy' = 0$	[_separable]	✓
	<i>i.c.</i>		
7072	$\frac{y}{x-1} + \frac{xy'}{1+y} = 0$	[_separable]	✓
7074	$\frac{1}{\sqrt{x}} + \frac{y'}{\sqrt{y}} = 0$	[_separable]	✓
7079	$y' = \frac{\sqrt{y}}{\sqrt{x}}$	[_separable]	✓
7080	$y' = \frac{\sqrt{y}}{x}$	[_separable]	✓
7095	$2xy' = y(2x^2 - y^2)$	[_rational, _Bernoulli]	✓
7111	$y' = \frac{x}{y} + \frac{y}{x}$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
	<i>i.c.</i>		
7136	$2xy' + (x^2y^4 + 1)y = 0$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
7185	$x^2y' + y^2 - xy = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
7187	$y' = \frac{y}{2x} + \frac{x^2}{2y}$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
7226	$\phi' - \frac{\phi^2}{2} - \phi \cot(\theta) = 0$	[_Bernoulli]	✓
7236	$x^2 + y^2 - 2xyy' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
7237	$x^2 - y^2 + 2xyy' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
7408	$yy' = x$	[_separable]	✓
7412	$y' = y^2$	[_quadrature]	✓
	<i>i.c.</i>		
7413	$y' = 2\sqrt{y}$	[_quadrature]	✓
	<i>i.c.</i>		
7414	$y' = 2\sqrt{y}$	[_quadrature]	✓
	<i>i.c.</i>		
7451	$yy' = e^{2x}$	[_separable]	✓
7458	$2xyy' = y^2 + x^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
7483	$x^5y' + y^5 = 0$	[_separable]	✓

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Table 2.11 first order ode bernoulli  
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#	ODE	CAS classification	Solved?
7492	$xy^2 - x^2y' = 0$	[_separable]	✓
7493	$yy' = x + 1$	[_separable]	✓
7495	$\frac{y'}{x^2 + 1} = \frac{x}{y}$	[_separable]	✓
7496	$y^2y' = x + 2$	[_separable]	✓
7497	$y' = y^2x^2$	[_separable]	✓
7517	$xy' + y = x^4y^3$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
7518	$xy^2y' + y^3 = x \cos(x)$	[_Bernoulli]	✓
7519	$xy' + y = xy^2$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
7520	$y' + xy = xy^4$	[_separable]	✓
7547	$x^2 - 2y^2 + xyy' = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
7548	$x^2y' - 3xy - 2y^2 = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
7555	$x^2y' = y^2 + 2xy$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
7556	$x^3 + y^3 - xy^2y' = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
7562	$y' = \frac{1 - xy^2}{2x^2y}$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
7563	$y' = \frac{2 + 3xy^2}{4x^2y}$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
7603	$y^2y' = x$	[_separable]	✓
8120	$yy'^2 + (x - y^2)y' - xy = 0$	[_quadrature]	✓
8121	$y'^2 - xy(x + y)y' + x^3y^3 = 0$	[_separable]	✓
8124	$xyy'^2 + (-1 + xy^2)y' - y = 0$	[_quadrature]	✓
8127	$xy(y^2 + x^2)(-1 + y'^2) = y'(x^4 + y^2x^2 + y^4)$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
8129	$xyy'^2 + (x + y)y' + 1 = 0$	[_quadrature]	✓

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Table 2.11 first order ode bernoulli  
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#	ODE	CAS classification	Solved?
8215	$y^2 y'^2 - (x+1)yy' + x = 0$	[_quadrature]	✓
8378	$y' + \frac{2y}{x} = 6x^4 y^2$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
8408	$y' + \frac{y}{3} = \frac{(-2x+1)y^4}{3}$	[_Bernoulli]	✓
8421	$p' = ap - bp^2$	[_quadrature]	✓
8422	$y^2 + \frac{2}{x} + 2xyy' = 0$	[[_homogeneous, 'class G'], _exact, _rational, _Bernoulli]	✓
8434	$f' = \frac{1}{f}$	[_quadrature]	✓
8470	$y' = 2\sqrt{y}$	[_quadrature]	✓
8474	$y' = 2y(x\sqrt{y} - 1)$	[_Bernoulli]	✓
8565	$vv' = \frac{2v^2}{r^3} + \frac{\lambda r}{3}$	[_rational, _Bernoulli]	✓
8628	$y' = y(1 - y^2)$	[_quadrature]	✓
8683	$cy' = \frac{ax + by^2}{y}$	[_rational, _Bernoulli]	✓
8847	$y' = y^{1/3}$	[_quadrature]	✓
9719	$y' - xy^2 - 3xy = 0$	[_separable]	✓
9724	$y' + f(x)y^2 + g(x)y = 0$	[_Bernoulli]	✓
9734	$y' + 2ax^3y^3 + 2xy = 0$	[_Bernoulli]	✓
9791	$xy' + xy^2 - y = 0$	[[_homogeneous, 'class D'], _rational, _Bernoulli]	✓
9798	$xy' - y^2 \ln(x) + y = 0$	[_Bernoulli]	✓
9799	$xy' - y(2y \ln(x) - 1) = 0$	[_Bernoulli]	✓
9818	$(x+1)y' + (y-x)y = 0$	[_rational, _Bernoulli]	✓
9821	$3xy' - 3xy^4 \ln(x) - y = 0$	[_Bernoulli]	✓
9826	$x^2y' - y^2 - xy = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
9845	$(x^2 - 1)y' - (y-x)y = 0$	[_rational, _Bernoulli]	✓

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Table 2.11 first order ode bernoulli  
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#	ODE	CAS classification	Solved?
9847	$(x^2 - 1)y' + axy^2 + xy = 0$	[_separable]	✓
9849	$(x^2 - 4)y' + (x + 2)y^2 - 4y = 0$	[_rational, _Bernoulli]	✓
9860	$x^3y' - y^2 - x^2y = 0$	[[_homogeneous, 'class D'], _rational, _Bernoulli]	✓
9866	$x^2(x - 1)y' - y^2 - x(-2 + x)y = 0$	[[_homogeneous, 'class D'], _rational, _Bernoulli]	✓
9886	$\cos(x)y' - y^4 - y \sin(x) = 0$	[_Bernoulli]	✓
9896	$yy' + y^2 + 4x(x + 1) = 0$	[[_homogeneous, 'class D'], _rational, _Bernoulli]	✓
9897	$yy' + y^2a - b \cos(x + c) = 0$	[_Bernoulli]	✓
9899	$yy' + xy^2 - 4x = 0$	[_separable]	✓
9909	$2yy' - xy^2 - x^3 = 0$	[_rational, _Bernoulli]	✓
9919	$ayy' + by^2 + f(x) = 0$	[_Bernoulli]	✓
9921	$xyy' + x^2 + y^2 = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
9922	$xyy' - y^2 + ax^3 \cos(x) = 0$	[[_homogeneous, 'class D'], _Bernoulli]	✓
9929	$2xyy' - y^2 + ax = 0$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
9930	$2xyy' - y^2 + x^2a = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
9931	$2xyy' + 2y^2 + 1 = 0$	[_separable]	✓
9947	$2x^2yy' + y^2 - 2x^3 - x^2 = 0$	[[_homogeneous, 'class D'], _rational, _Bernoulli]	✓
9948	$2x^2yy' - y^2 - x^2e^{x-\frac{1}{x}} = 0$	[_Bernoulli]	✓
9952	$2x^3 + yy' + 3y^2x^2 + 7 = 0$	[_rational, _Bernoulli]	✓
9956	$yy' \sin(x)^2 + y^2 \cos(x) \sin(x) - 1 = 0$	[_exact, _Bernoulli]	✓
9957	$f(x)yy' + g(x)y^2 + h(x) = 0$	[_Bernoulli]	✓
9987	$3xy^2y' + y^3 - 2x = 0$	[[_homogeneous, 'class G'], _exact, _rational, _Bernoulli]	✓
9989	$6xy^2y' + x + 2y^3 = 0$	[[_homogeneous, 'class G'], _exact, _rational, _Bernoulli]	✓
9997	$2y^3y' + xy^2 = 0$	[_separable]	✓

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Table 2.11 first order ode bernoulli

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#	ODE	CAS classification	Solved?
10003	$xy^3y' + y^4 - x \sin(x) = 0$	[_Bernoulli]	✓
10084	$y'^2 + y(y-x)y' - xy^3 = 0$	[_separable]	✓
10132	$x^2y'^2 + (ax^2y^3 + b)y' + aby^3 = 0$	[_quadrature]	✓
10158	$yy'^2 - (y-x)y' - x = 0$	[_quadrature]	✓
10168	$xyy'^2 + (y^2 + x^2)y' + xy = 0$	[_separable]	✓
10192	$xy^2y'^2 - 2y^3y' + 2xy^2 - x^3 = 0$	[_separable]	✓
10213	$y'^3 - (y^2 + xy + x^2)y'^2 + (xy^3 + y^2x^2 + x^3y)y' - x^3y^3 = 0$	[_quadrature]	✓
10370	$y' = \frac{y(-1 + \ln(x(x+1)))yx^4 - \ln(x(x+1))x^3}{x}$	[_Bernoulli]	✓
10390	$y' = \frac{y(1-x+yx^2\ln(x)+x^3y-x\ln(x)-x^2)}{(x-1)x}$	[_Bernoulli]	✓
10401	$y' = \frac{y(-\ln(\frac{1}{x}) + e^x + yx^2\ln(x) + x^3y - x\ln(x) - x^2)}{(-\ln(\frac{1}{x}) + e^x)x}$	[_Bernoulli]	✓
10406	$y' = \frac{y(-e^x + \ln(2x)x^2y - \ln(2x)x)e^{-x}}{x}$	[_Bernoulli]	✓
10434	$y' = -\frac{y(\tan(x) + \ln(2x)x - \ln(2x)x^2y)}{x \tan(x)}$	[_Bernoulli]	✓
10452	$y' = \frac{y(-1 - \ln(\frac{(x-1)(x+1)}{x}) + \ln(\frac{(x-1)(x+1)}{x})xy)}{x}$	[_Bernoulli]	✓
10453	$y' = \frac{y(-\ln(x) - x\ln(\frac{(x-1)(x+1)}{x}) + \ln(\frac{(x-1)(x+1)}{x})x^2y)}{x \ln(x)}$	[_Bernoulli]	✓
10463	$y' = \frac{y(-\ln(\frac{1}{x}) - \ln(\frac{x^2+1}{x})x + \ln(\frac{x^2+1}{x})x^2y)}{x \ln(\frac{1}{x})}$	[_Bernoulli]	✓
10469	$y' = \frac{y(-\tanh(\frac{1}{x}) - \ln(\frac{x^2+1}{x})x + \ln(\frac{x^2+1}{x})x^2y)}{x \tanh(\frac{1}{x})}$	[_Bernoulli]	✓
10470	$y' = -\frac{y(\tanh(x) + \ln(2x)x - \ln(2x)x^2y)}{x \tanh(x)}$	[_Bernoulli]	✓
10475	$y' = \frac{y(\ln(x-1) + \coth(x+1)x - \coth(x+1)x^2y)}{x \ln(x-1)}$	[_Bernoulli]	✓

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Table 2.11 first order ode bernoulli

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#	ODE	CAS classification	Solved?
10479	$y' = \frac{y \left( -\cosh\left(\frac{1}{x+1}\right)x + \cosh\left(\frac{1}{x+1}\right) - x + x^2y - x^2 + \frac{x^3y}{x^2} \right)}{x(x-1)\cosh\left(\frac{1}{x+1}\right)}$ Bernoulli]		✓
10484	$y' = \frac{y \left( -1 - \cosh\left(\frac{x+1}{x-1}\right)x + \cosh\left(\frac{x+1}{x-1}\right)x^2y - \cosh\left(\frac{x+1}{x-1}\right)x^2 + \cosh\left(\frac{x+1}{x-1}\right)x^3y \right)}{x}$ Bernoulli]		✓
10486	$y' = \frac{y \left( -1 - x e^{\frac{x+1}{x-1}} + x^2 e^{\frac{x+1}{x-1}} y - e^{\frac{x+1}{x-1}} x^2 + x^3 e^{\frac{x+1}{x-1}} y \right)}{x}$ Bernoulli]		✓
11681	$g(x)y' = f_1(x)y + f_n(x)y^n$	[_Bernoulli]	✓
12480	$(x+1)y^2 - x^3y' = 0$	[_separable]	✓
12485	$x^2y' + y^2 - xy = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
12486	$2x^2y + y^3 - x^3y' = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
12487	$y^3 + x^3y' = 0$	[_separable]	✓
12500	$(-x^2 + 1)y' - 2(x+1)y = y^{5/2}$	[_rational, _Bernoulli]	✓
12501	$yy' + xy^2 = x$	[_separable]	✓
12503	$4xy' + 3y + e^x x^4 y^5 = 0$	[_Bernoulli]	✓
12508	$x^2y' + y^2 - xy = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
12511	$x^2 + y^2 - 2xyy' = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
12512	$x - y^2 + 2xyy' = 0$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
12527	$xy' + y + x^4 y^4 e^x = 0$	[_Bernoulli]	✓
12535	$(-x^2 + 1)y' - xy = axy^2$	[_separable]	✓
12540	$y + xy^2 - xy' = 0$	[[_homogeneous, 'class D'], _rational, _Bernoulli]	✓
12549	$xy' - y^2 \ln(x) + y = 0$	[_Bernoulli]	✓
12557	$y'^3 - (2x + y^2)y'^2 + (x^2 - y^2 + 2xy^2)y' - (x^2 - y^2)y^2 = 0$	[_quadrature]	✓
12702	$x' = -\frac{t}{x}$	[_separable]	✓
12703	$x' = -x^2$	[_quadrature]	✓

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Table 2.11 first order ode bernoulli  
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#	ODE	CAS classification	Solved?
12710	$x' = x\left(1 - \frac{x}{4}\right)$	[_quadrature]	✓
12720	$x' = \sqrt{x}$	[_quadrature]	✓
	<i>i.c.</i>		
12732	$y' + y + \frac{1}{y} = 0$	[_quadrature]	✓
12733	$(t + 1)x' + x^2 = 0$	[_separable]	✓
12736	$x' = 2tx^2$	[_separable]	✓
	<i>i.c.</i>		
12738	$x' = x(x + 4)$	[_quadrature]	✓
	<i>i.c.</i>		
12743	$y' = \frac{2ty^2}{t^2 + 1}$	[_separable]	✓
	<i>i.c.</i>		
12746	$x' = \frac{4t^2 + 3x^2}{2xt}$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
12749	$y' = \frac{y^2 + 2ty}{t^2}$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
12750	$y' = -y^2e^{-t^2}$	[_separable]	✓
	<i>i.c.</i>		
12776	$x' = \frac{2x}{3t} + \frac{2t}{x}$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
12777	$x' = x(1 + xe^t)$	[[_1st_order, __with_lin- ear_symmetries], _Bernoulli]	✓
12778	$x' = -\frac{x}{t} + \frac{1}{tx^2}$	[_separable]	✓
12779	$t^2y' + 2ty - y^2 = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
12780	$x' = ax + bx^3$	[_quadrature]	✓
12781	$w' = tw + t^3w^3$	[_Bernoulli]	✓
12785	$x + 3tx^2x' = 0$	[_separable]	✓
12786	$x^2 - t^2x' = 0$	[_separable]	✓
12926	$2xyy' + x^2 + y^2 = 0$	[[_homogeneous, 'class A', _exact, _rational, _Bernoulli]	✓
12927	$xy' + y = x^3y^3$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓

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Table 2.11 first order ode bernoulli  
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#	ODE	CAS classification	Solved?
12946	$y' = \frac{y^2}{-2+x}$ i.c.	[_separable]	✓
12947	$y' = y^{1/3}$ i.c.	[_quadrature]	✓
12963	$4x + 3y^2 + 2xyy' = 0$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
12964	$y^2 + 2xy - x^2y' = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
12972	$(4+x)(1+y^2) + y(x^2+3x+2)y' = 0$	[_separable]	✓
12982	$(3x+8)(y^2+4) - 4y(x^2+5x+6)y' = 0$ i.c.	[_separable]	✓
12983	$x^2 + 3y^2 - 2xyy' = 0$ i.c.	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
13004	$y' - \frac{y}{x} = -\frac{y^2}{x}$	[_separable]	✓
13005	$xy' + y = -2x^6y^4$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
13006	$y' + \left(4y - \frac{8}{y^3}\right)x = 0$	[_separable]	✓
13007	$x' + \frac{(t+1)x}{2t} = \frac{t+1}{xt}$	[_separable]	✓
13014	$y' + \frac{y}{2x} = \frac{x}{y^3}$ i.c.	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
13038	$x^2y' + xy = xy^3$	[_separable]	✓
13041	$x^2 + y^2 - 2xyy' = 0$ i.c.	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
13042	$2y^2 + 8 + (-x^2 + 1)yy' = 0$ i.c.	[_separable]	✓
13043	$e^{2x}y^2 - 2x + e^{2x}yy' = 0$ i.c.	[_exact, _Bernoulli]	✓
13045	$4xyy' = 1 + y^2$ i.c.	[_separable]	✓
13050	$x^2y' + xy = \frac{y^3}{x}$ i.c.	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
13391	$x' = x(2-x)$	[_quadrature]	✓
13398	$x' = -x^2$	[_quadrature]	✓

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Table 2.11 first order ode bernoulli  
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#	ODE	CAS classification	Solved?
13399	$y' = y^2 e^{-t^2}$	[_separable]	✓
13405	$x' = kx - x^2$ i.c.	[_quadrature]	✓
13406	$x' = -x(k^2 + x^2)$ i.c.	[_quadrature]	✓
13421	$V'(x) + 2yy' = 0$	[_separable]	✓
13425	$x' = kx - x^2$	[_quadrature]	✓
13534	$xyy'^2 - (y^2 + x^2)y' + xy = 0$	[_separable]	✓
13535	$y'^2 = 9y^4$	[_quadrature]	✓
13538	$y = xy' + \frac{1}{y}$	[_separable]	✓
13544	$y' - \frac{y}{x+1} + y^2 = 0$	[[_1st_order, __with_linear_symmetries], _rational, _Bernoulli]	✓
13553	$(x - y)y - x^2y' = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
13555	$x' = \frac{x}{t} + \frac{x^2}{t^3}$ i.c.	[[_homogeneous, 'class D'], _rational, _Bernoulli]	✓
13561	$y' - \frac{3y}{x} + x^3y^2 = 0$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
13565	$(x - y)y - x^2y' = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
13567	$xy' - y^2 \ln(x) + y = 0$	[_Bernoulli]	✓
13572	$3xy^2y' + y^3 - 2x = 0$	[[_homogeneous, 'class G'], _exact, _rational, _Bernoulli]	✓
13629	$xy' + y = xy^2$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
13642	$yy' = 1$	[_quadrature]	✓
13850	$x - xy^2 + (y - x^2y)y' = 0$	[_separable]	✓
13858	$xy^2y' = x^3 + y^3$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
13876	$y' + xy = x^3y^3$	[_Bernoulli]	✓
13877	$(-x^2 + 1)y' - xy + axy^2 = 0$	[_separable]	✓

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Table 2.11 first order ode bernoulli  
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#	ODE	CAS classification	Solved?
13878	$3y^2y' - ay^3 - x - 1 = 0$	[_rational, _Bernoulli]	✓
13880	$xy' = (y \ln(x) - 2)y$	[_Bernoulli]	✓
13881	$y - \cos(x)y' = y^2 \cos(x)(-\sin(x) + 1)$	[_Bernoulli]	✓
13888	$\frac{1}{x^2} + \frac{3y^2}{x^4} = \frac{2yy'}{x^3}$	[[_homogeneous, 'class A'], _exact, _rational, _Bernoulli]	✓
13889	$\frac{x^2y'}{(x-y)^2} - \frac{y^2}{(x-y)^2} = 0$	[_separable]	✓
13952	$\frac{x^2y'}{(x-y)^2} - \frac{y^2}{(x-y)^2} = 0$	[_separable]	✓
13958	$xy' - y^2 \ln(x) + y = 0$	[_Bernoulli]	✓
13991	$y' + \frac{1}{2y} = 0$	[_quadrature]	✓
14012	$y' = x\sqrt{y}$	[_separable]	✓
14014	$y' = 3y^{2/3}$	[_quadrature]	✓
14039	$y' = \frac{x}{y}$	[_separable]	✓
14042	$y' = y^2 - 3y$	[_quadrature]	✓
14051	$y' = \frac{1}{xy}$	[_separable]	✓
14055	$y' = \frac{x}{y^2}$	[_separable]	✓
14056	$y' = \frac{\sqrt{y}}{x}$	[_separable]	✓
14060	$y' = -\frac{y}{x} + y^{1/4}$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
14088	$y' = \frac{2x}{y}$ i.c.	[_separable]	✓
14089	$y' = -2y + y^2$ i.c.	[_quadrature]	✓
14093	$2yy' = 1$	[_quadrature]	✓
14094	$2xyy' + y^2 = -1$	[_separable]	✓
14105	$x - yy' = 0$	[_separable]	✓
14108	$xy(1 - y) - 2y' = 0$	[_separable]	✓

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Table 2.11 first order ode bernoulli  
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#	ODE	CAS classification	Solved?
14109	$x(1 - y^3) - 3y^2y' = 0$	[_separable]	✓
14118	$y' = y^2$	[_quadrature]	✓
14119	$y' = y^2$	[_quadrature]	✓
14120	$y' = y^2$	[_quadrature]	✓
14121	$y' = y^3$	[_quadrature]	✓
14122	$y' = y^3$	[_quadrature]	✓
14123	$y' = y^3$	[_quadrature]	✓
14124	$y' = -\frac{3x^2}{2y}$	[_separable]	✓
14125	$y' = -\frac{3x^2}{2y}$	[_separable]	✓
14126	$y' = -\frac{3x^2}{2y}$	[_separable]	✓
14127	$y' = -\frac{3x^2}{2y}$	[_separable]	✓
14128	$y' = \frac{\sqrt{y}}{x}$	[_separable]	✓
14129	$y' = \frac{\sqrt{y}}{x}$	[_separable]	✓
14130	$y' = \frac{\sqrt{y}}{x}$	[_separable]	✓
14131	$y' = \frac{\sqrt{y}}{x}$	[_separable]	✓
14132	$y' = 3xy^{1/3}$	[_separable]	✓
14133	$y' = 3xy^{1/3}$	[_separable]	✓

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Table 2.11 first order ode bernoulli  
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#	ODE	CAS classification	Solved?
14134	$y' = 3xy^{1/3}$ i.c.	[_separable]	✓
14135	$y' = 3xy^{1/3}$ i.c.	[_separable]	✓
14136	$y' = 3xy^{1/3}$ i.c.	[_separable]	✓
14278	$y' = t^2y^2$	[_separable]	✓
14284	$y' = 2ty^2 + 3y^2$	[_separable]	✓
14285	$y' = \frac{t}{y}$	[_separable]	✓
14286	$y' = \frac{t}{y + t^2y}$	[_separable]	✓
14287	$y' = ty^{1/3}$	[_separable]	✓
14290	$y' = y(1 - y)$	[_quadrature]	✓
14300	$y' = -y^2$ i.c.	[_quadrature]	✓
14301	$y' = t^2y^3$ i.c.	[_separable]	✓
14302	$y' = -y^2$ i.c.	[_quadrature]	✓
14303	$y' = \frac{t}{y - t^2y}$ i.c.	[_separable]	✓
14305	$y' = ty^2 + 2y^2$ i.c.	[_separable]	✓
14306	$x' = \frac{t^2}{x + t^3x}$ i.c.	[_separable]	✓
14307	$y' = \frac{1 - y^2}{y}$ i.c.	[_quadrature]	✓
14310	$y' = 2ty^2 + 3t^2y^2$ i.c.	[_separable]	✓
14311	$y' = \frac{y^2 + 5}{y}$ i.c.	[_quadrature]	✓
14315	$y' = 4y^2$	[_quadrature]	✓
14316	$y' = 2y(1 - y)$	[_quadrature]	✓

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Table 2.11 first order ode bernoulli  
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#	ODE	CAS classification	Solved?
14318	$y' = 3y(1 - y)$ i.c.	[_quadrature]	✓
14327	$y' = y^2 + y$	[_quadrature]	✓
14328	$y' = y^2 - y$	[_quadrature]	✓
14331	$y' = ty + ty^2$	[_separable]	✓
14351	$y' = \sqrt{y}$ i.c.	[_quadrature]	✓
14358	$y' = -y^2$	[_quadrature]	✓
14359	$y' = y^3$ i.c.	[_quadrature]	✓
14363	$y' = 3y(y - 2)$ i.c.	[_quadrature]	✓
14364	$y' = 3y(y - 2)$ i.c.	[_quadrature]	✓
14365	$y' = 3y(y - 2)$ i.c.	[_quadrature]	✓
14366	$y' = 3y(y - 2)$ i.c.	[_quadrature]	✓
14395	$y' = y - y^2$	[_quadrature]	✓
14399	$y' = y^2 - y$	[_quadrature]	✓
14455	$y' = 2y - y^2$	[_quadrature]	✓
14460	$y' = t^2y^3 + y^3$ i.c.	[_separable]	✓
14464	$y' = 2ty^2 + 3t^2y^2$ i.c.	[_separable]	✓
14466	$y' = \frac{t^2}{y + t^3y}$ i.c.	[_separable]	✓
14659	$yy' = 2x$	[_separable]	✓
14705	$y^3 - 25y + y' = 0$	[_quadrature]	✓
14710	$y' = 2\sqrt{y}$ i.c.	[_quadrature]	✓
14711	$y' = 3y^2 - \sin(x)y^2$	[_separable]	✓
14721	$y' = \frac{x}{y}$	[_separable]	✓
14723	$xyy' = y^2 + 9$	[_separable]	✓

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#	ODE	CAS classification	Solved?
14727	$y' = \frac{x}{y}$ i.c.	[_separable]	✓
14729	$yy' = xy^2 + x$ i.c.	[_separable]	✓
14733	$yy' = xy^2 - 9x$	[_separable]	✓
14736	$y' = 200y - 2y^2$	[_quadrature]	✓
14739	$y' = 3y^2 - \sin(x)y^2$	[_separable]	✓
14747	$y' = 3xy^3$	[_separable]	✓
14751	$y' = 200y - 2y^2$	[_quadrature]	✓
14753	$yy' = \sin(x)$ i.c.	[_separable]	✓
14755	$xy' = y^2 - y$ i.c.	[_separable]	✓
14756	$xy' = y^2 - y$ i.c.	[_separable]	✓
14757	$y' = \frac{y^2 - 1}{xy}$ i.c.	[_separable]	✓
14767	$y' + 4y = y^3$	[_quadrature]	✓
14792	$x^2y' - xy = y^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
14793	$y' = \frac{y}{x} + \frac{x}{y}$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
14796	$y' + 3y = 3y^3$	[_quadrature]	✓
14797	$y' - \frac{3y}{x} = \frac{y^2}{x^2}$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
14798	$y' + 3y \cot(x) = 6 \cos(x)y^{2/3}$	[_Bernoulli]	✓
14799	$y' - \frac{y}{x} = \frac{1}{y}$ i.c.	[[_homogeneous, 'class D', _rational, _Bernoulli]	✓
14800	$y' = \frac{y}{x} + \frac{x^2}{y^2}$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
14802	$3y' + \frac{2y}{x} = 4\sqrt{y}$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓

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Table 2.11 first order ode bernoulli  
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#	ODE	CAS classification	Solved?
14807	$y' + \frac{y}{x} = x^2 y^3$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
14811	$y' + 3y = \frac{28e^{2x}}{y^3}$	[[_1st_order, _with_linear_symmetries], _Bernoulli]	✓
14816	$y' = \frac{1}{y} - \frac{y}{2x}$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
14817	$e^{xy^2-x^2}(y^2 - 2x) + 2e^{xy^2-x^2}xyy' = 0$	[[_homogeneous, 'class G', _exact, _rational, _Bernoulli]	✓
14819	$2xy^3 + 4x^3 + 3x^2y^2y' = 0$	[[_homogeneous, 'class G', _exact, _rational, _Bernoulli]	✓
14820	$2 - 2x + 3y^2y' = 0$	[_separable]	✓
14821	$1 + 3y^2x^2 + (2x^3y + 6y)y' = 0$	[_exact, _rational, _Bernoulli]	✓
14826	$1 + y^4 + xy^3y' = 0$	[_separable]	✓
14836	$xy' = 2y^2 - 6y$	[_separable]	✓
14837	$4y^2 - y^2x^2 + y' = 0$	[_separable]	✓
14843	$xy^2 - 6 + x^2yy' = 0$	[[_homogeneous, 'class G', _exact, _rational, _Bernoulli]	✓
14844	$x^3 + y^3 + xy^2y' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
14846	$1 + 2xy^2 + (2x^2y + 2y)y' = 0$	[_exact, _rational, _Bernoulli]	✓
14847	$3xy^3 - y + xy' = 0$	[[_homogeneous, 'class D', _rational, _Bernoulli]	✓
14852	$y' = \frac{3y}{x+1} - y^2$	[[_1st_order, _with_linear_symmetries], _rational, _Bernoulli]	✓
14856	$xyy' = 2y^2 + 2x^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
14867	$xy^3y' = y^4 - x^2$	[[_homogeneous, 'class D', _rational, _Bernoulli]	✓

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#	ODE	CAS classification	Solved?
14868	$y' = 4y - \frac{16e^{4x}}{y^2}$	[[_1st_order, __with_linear_symmetries], _Bernoulli]	✓
14871	$yy' - xy^2 = 6xe^{4x^2}$	[_Bernoulli]	✓
14874	$y^2 - y^2 \cos(x) + y' = 0$	[_separable]	✓
14877	$y' = y^3 - y^3 \cos(x)$	[_separable]	✓
15478	$y' = -\frac{x}{y}$	[_separable]	✓
15509	$y' = \frac{y^2 + 2xy}{x^2}$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
15540 i.c.	$y' = y^{1/5}$	[_quadrature]	✓
15541 i.c.	$\frac{y'}{t} = \sqrt{y}$	[_separable]	✓
15544 i.c.	$y' = 6y^{2/3}$	[_quadrature]	✓
15566 i.c.	$y' = y^2$	[_quadrature]	✓
15567 i.c.	$y' = ty^2$	[_separable]	✓
15568 i.c.	$y' = -\frac{t}{y}$	[_separable]	✓
15569 i.c.	$y' = -y^3$	[_quadrature]	✓
15570	$y' = \frac{x}{y^2}$	[_separable]	✓
15571	$\frac{1}{2\sqrt{t}} + y^2 y' = 0$	[_separable]	✓
15572	$y' = \frac{\sqrt{y}}{x^2}$	[_separable]	✓
15573	$y' = \frac{1 + y^2}{y}$	[_quadrature]	✓
15599	$y' = \frac{5^{-t}}{y^2}$	[_separable]	✓
15606	$y' = y^3 + y$	[_quadrature]	✓
15608	$y' = y^3 - y$	[_quadrature]	✓

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#	ODE	CAS classification	Solved?
15609	$y' = y^3 + y$	[_quadrature]	✓
15614	$y' = \frac{\sqrt{t}}{y}$ i.c.	[_separable]	✓
15627	$y' = y^2 \cos(t)$ i.c.	[_separable]	✓
15628	$y' = \sqrt{y} \cos(t)$ i.c.	[_separable]	✓
15637	$y' = y^2 - y$	[_quadrature]	✓
15638	$y' = 16y - 8y^2$	[_quadrature]	✓
15701	$\frac{t}{\sqrt{t^2 + y^2}} + \frac{yy'}{\sqrt{t^2 + y^2}} = 0$	[_separable]	✓
15704	$3ty^2 + y^3y' = 0$	[_separable]	✓
15710	$-1 + 3y^2y' = 0$	[_quadrature]	✓
15718	$3t^2 + 3y^2 + 6tyy' = 0$	[[_homogeneous, 'class A'], _exact, _rational, _Bernoulli]	✓
15744	$2ty + y^2 - t^2y' = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
15747	$5ty^2 + y + (2t^3 - t)y' = 0$	[[_homogeneous, 'class D'], _rational, _Bernoulli]	✓
15754	$y' - \frac{y}{2} = \frac{t}{y}$	[_rational, _Bernoulli]	✓
15755	$y' + y = ty^2$	[_Bernoulli]	✓
15756	$2ty' - y = 2ty^3 \cos(t)$	[_Bernoulli]	✓
15757	$ty' - y = ty^3 \sin(t)$	[[_homogeneous, 'class D'], _Bernoulli]	✓
15758	$y' - 2y = \frac{\cos(t)}{\sqrt{y}}$	[_Bernoulli]	✓
15759	$y' + 3y = \sqrt{y} \sin(t)$	[_Bernoulli]	✓
15760	$y' - \frac{y}{t} = ty^2$	[[_homogeneous, 'class D'], _rational, _Bernoulli]	✓
15761	$y' - \frac{y}{t} = \frac{y^2}{t^2}$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
15762	$y' - \frac{y}{t} = \frac{y^2}{t}$	[_separable]	✓

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Table 2.11 first order ode bernoulli  
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#	ODE	CAS classification	Solved?
15763	$y' - \frac{y}{t} = t^2 y^{3/2}$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
15767	$\frac{2}{t} + \frac{1}{y} + \frac{ty'}{y^2} = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
15769	$\sqrt{t^2 + 1} + yy' = 0$	[_separable]	✓
15774	$t^3 + y^3 - ty^2 y' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
15786 i.c.	$y' + 2y = t^2 \sqrt{y}$	[_Bernoulli]	✓
15787 i.c.	$y' - 2y = t^2 \sqrt{y}$	[_Bernoulli]	✓
15788 i.c.	$y' = \frac{4y^2 - t^2}{2ty}$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
15792 i.c.	$y^3 - t^3 - ty^2 y' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
15800 i.c.	$y' + y \cot(x) = y^4$	[_Bernoulli]	✓
15811 i.c.	$y' = \frac{y^2 - t^2}{ty}$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
15813	$y' = \frac{2t^5}{5y^2}$	[_separable]	✓
15815	$y' - \frac{y}{t} = \frac{y^2}{t}$	[_separable]	✓
15817	$y' = \frac{e^{5t}}{y^4}$	[_separable]	✓
15826	$r' = \frac{r^2 + t^2}{rt}$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
15836	$y' - y = ty^3$	[_Bernoulli]	✓
15837	$y' + y = \frac{e^t}{y^2}$	[[_1st_order, __with_lin- ear_symmetries], _Bernoulli]	✓
15839	$y - ty' = 2y^2 \ln(t)$	[[_homogeneous, 'class D', _Bernoulli]	✓
15850 i.c.	$y' = ty^3$	[_separable]	✓

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Table 2.11 first order ode bernoulli  
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#	ODE	CAS classification	Solved?
15851	$y' = \frac{t}{y^3}$ i.c.	[_separable]	✓
16341	$y' = \frac{x}{y}$	[_separable]	✓
16342	$y' = y + 3y^{1/3}$	[_quadrature]	✓
16373	$y' = y^2$	[_quadrature]	✓
16380	$1 + y^2 + xyy' = 0$	[_separable]	✓
16430	$4y^6 + x^3 = 6xy^5y'$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
16456	$y' + 2xy = 2xy^2$	[_separable]	✓
16457	$3xy^2y' - 2y^3 = x^3$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
16461	$2y' \ln(x) + \frac{y}{x} = \frac{\cos(x)}{y}$	[_Bernoulli]	✓
16462	$2 \sin(x) y' + y \cos(x) = y^3 \sin(x)^2$	[_Bernoulli]	✓
16464	$y' - y \cos(x) = y^2 \cos(x)$	[_separable]	✓
16485	$x + y^2 - 2xyy' = 0$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
16487	$x^4 \ln(x) - 2xy^3 + 3x^2y^2y' = 0$	[_Bernoulli]	✓
16491	$x^2 + y^2 + 1 - 2xyy' = 0$	[_rational, _Bernoulli]	✓
16545	$y' + y \cos(x) = y^n \sin(2x)$	[_Bernoulli]	✓
16549	$y - xy^2 \ln(x) + xy' = 0$	[_Bernoulli]	✓
16553	$xyy' - y^2 = x^4$	[[_homogeneous, 'class D', _rational, _Bernoulli]	✓
16559	$xy^2y' - y^3 = \frac{x^4}{3}$	[[_homogeneous, 'class D', _rational, _Bernoulli]	✓
16561	$x^2 + y^2 - xyy' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
16563	$y + xy^2 - xy' = 0$	[[_homogeneous, 'class D', _rational, _Bernoulli]	✓
16564	$x^2 + y^2 + 2x + 2yy' = 0$	[[_homogeneous, 'class D', _rational, _Bernoulli]	✓
16572	$x - y^2 + 2xyy' = 0$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓

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Table 2.11 first order ode bernoulli  
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#	ODE	CAS classification	Solved?
16573	$xy' + y = y^2 \ln(x)$ i.c.	[_Bernoulli]	✓
16976	$y' = \frac{x^4}{y}$	[_separable]	✓
16977	$y' = \frac{x^2(x^3 + 1)}{y}$	[_separable]	✓
16978	$y' + y^3 \sin(x) = 0$	[_separable]	✓
16982	$yy' = (xy^2 + x) e^{x^2}$	[_separable]	✓
16987	$y' = x(y - y^2)$	[_separable]	✓
16988	$y' = (1 - 12x)y^2$ i.c.	[_separable]	✓
16989	$y' = \frac{3 - 2x}{y}$ i.c.	[_separable]	✓
16990	$x + ye^{-x}y' = 0$ i.c.	[_separable]	✓
16991	$r' = \frac{r^2}{\theta}$ i.c.	[_separable]	✓
16992	$y' = \frac{3x}{y + x^2y}$ i.c.	[_separable]	✓
16994	$y' = 2xy^2 + 4x^3y^2$ i.c.	[_separable]	✓
16997	$y' = \frac{x(x^2 + 1)y^5}{6}$ i.c.	[_separable]	✓
17001	$2yy' = \frac{x}{\sqrt{x^2 - 4}}$ i.c.	[_separable]	✓
17003	$\sqrt{-x^2 + 1}y^2y' = \arcsin(x)$ i.c.	[_separable]	✓
17006	$y' = 2y^2 + xy^2$ i.c.	[_separable]	✓
17010	$y' = \frac{ty(4 - y)}{3}$ i.c.	[_separable]	✓
17011	$y' = \frac{ty(4 - y)}{t + 1}$ i.c.	[_separable]	✓

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Table 2.11 first order ode bernoulli  
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#	ODE	CAS classification	Solved?
17060	$y' = y^{1/3}$ i.c.	[_quadrature]	✓
17062	$y' = -\frac{4t}{y}$ i.c.	[_separable]	✓
17063	$y' = 2ty^2$ i.c.	[_separable]	✓
17064	$y' + y^3 = 0$ i.c.	[_quadrature]	✓
17065	$y' = \frac{t^2}{y(t^3 + 1)}$ i.c.	[_separable]	✓
17066	$y' = ty(3 - y)$	[_separable]	✓
17067	$y' = y(3 - ty)$	[_Bernoulli]	✓
17068	$y' = -y(3 - ty)$	[_Bernoulli]	✓
17082	$\frac{x}{(y^2 + x^2)^{3/2}} + \frac{yy'}{(y^2 + x^2)^{3/2}} = 0$	[_separable]	✓
17097	$yy' = x + 1$	[_separable]	✓
17100	$x(x - 1)y' = y(1 + y)$	[_separable]	✓
17107	$xyy' = y^2 + x^2$ i.c.	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
17109	$ty' + y = t^2y^2$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
17110	$y' = y(ty^3 - 1)$	[_Bernoulli]	✓
17111	$y' + \frac{3y}{t} = t^2y^2$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
17112	$t^2y' + 2ty - y^3 = 0$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
17113	$5(t^2 + 1)y' = 4ty(y^3 - 1)$	[_separable]	✓
17114	$3ty' + 9y = 2ty^{5/3}$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
17115	$y' = y + \sqrt{y}$	[_quadrature]	✓
17116	$y' = ry - k^2y^2$	[_quadrature]	✓
17117	$y' = ay + by^3$	[_quadrature]	✓

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Table 2.11 first order ode bernoulli  
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#	ODE	CAS classification	Solved?
17121	$y' - 4e^x y^2 = y$	[[_1st_order, __with_linear_symmetries], _Bernoulli]	✓
17123	$y' = \frac{xy^2 - \frac{\sin(2x)}{2}}{(-x^2 + 1)y}$	[_Bernoulli]	✓
17126	$2xyy' + \ln(x) = -y^2 - 1$	[_exact, _Bernoulli]	✓
17130	$4xyy' = 8x^2 + 5y^2$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
17131	$y' + y - y^{1/4} = 0$	[_quadrature]	✓
17582	$xy' - 4y = x^2\sqrt{y}$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
17587	$xy' + y = xy^2 \ln(x)$	[_Bernoulli]	✓
17588	$y' - \frac{xy}{2x^2 - 2} - \frac{x}{2y} = 0$	[_rational, _Bernoulli]	✓
17590	$x - y^2 + 2xyy' = 0$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
17610	$y - xy^2 \ln(x) + xy' = 0$	[_Bernoulli]	✓
17612	$yy'^2 + y'(x - y) - x = 0$	[_quadrature]	✓
17614	$y'^3 - (y^2 + xy + x^2)y'^2 + (xy^3 + y^2x^2 + x^3y)y' - x^3y^3 = 0$	[_quadrature]	✓
17633	$y' = \sqrt{y}$	[_quadrature]	✓
17734	$yy' = e^{2x}$	[_separable]	✓
17741	$2xyy' = y^2 + x^2$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
17755	$x^5y' + y^5 = 0$	[_separable]	✓
17780	$x^2 - 2y^2 + xy' = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
17781	$x^2y' - 3xy - 2y^2 = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
17788	$x^2y' = y^2 + 2xy$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
17789	$x^3 + y^3 - xy^2y' = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
17797	$y' = \frac{1 - xy^2}{2x^2y}$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓

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Table 2.11 first order ode bernoulli  
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#	ODE	CAS classification	Solved?
17798	$y' = \frac{2 + 3xy^2}{4x^2y}$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
17815	$1 + y^2 \sin(2x) - 2y \cos(x)^2 y' = 0$	[_exact, _Bernoulli]	✓
17816	$\frac{x}{(y^2 + x^2)^{3/2}} + \frac{yy'}{(y^2 + x^2)^{3/2}} = 0$	[_separable]	✓
17826	$x + 3y^2 + 2xyy' = 0$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
17830	$x^3 + xy^3 + 3y^2y' = 0$	[_rational, _Bernoulli]	✓
17836	$y^2 - y + xy' = 0$	[_separable]	✓
17842	$2xy^2 - y + xy' = 0$	[[_homogeneous, 'class D'], _rational, _Bernoulli]	✓
17855	$xy' + y = x^4y^3$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
17856	$xy^2y' + y^3 = x \cos(x)$	[_Bernoulli]	✓
17857	$xy' + y = xy^2$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
17882	$xy' + y = x^2y' + y^2$	[_separable]	✓
17900	$x^2y^4 + x^6 - x^3y^3y' = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
17908	$xy^2 + y + xy' = 0$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
17918	$xy' + y = y^2 \ln(x)$	[_Bernoulli]	✓
17922	$x^2y' - y^2 = 2xy$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
18174	$x' = 2\sqrt{x}$ i.c.	[_quadrature]	✓
18186	$x' + 2xt + tx^4 = 0$	[_separable]	✓
18222	$2x^2y + y^3 - x^3y' = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
18230	$y' + \frac{y}{x} = \frac{\sin(x)}{y^3}$	[_Bernoulli]	✓
18232	$(T \ln(t) - 1)T = tT'$	[_Bernoulli]	✓
18234	$y - \cos(x)y' = y^2 \cos(x)(-\sin(x) + 1)$	[_Bernoulli]	✓
18253	$1 + v^2 + (u^2 + 1)vv' = 0$	[_separable]	✓
18303	$y' + y \sin(x) = \sin(x)y^2$	[_separable]	✓

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Table 2.11 first order ode bernoulli  
Continued from previous page

#	ODE	CAS classification	Solved?
18304	$(-x^2 + 1)y' - xy = axy^2$	[_separable]	✓
18305	$y' + y \cos(x) = y^n \sin(2x)$	[_Bernoulli]	✓
18306	$3y^2y' + y^3 = x - 1$	[_rational, _Bernoulli]	✓
18307	$y' - \tan(x)y = y^4 \sec(x)$	[_Bernoulli]	✓
18317	$5xyy' - y^2 - x^2 = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
18320	$5xyy' - 4x^2 - y^2 = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
18405	$y - xy' = a(y' + y^2)$	[_separable]	✓
18407	$x^2 + y^2 - 2xyy' = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
18421	$x^4e^x - 2mxy^2 + 2mx^2yy' = 0$	[[_homogeneous, 'class D'], _Bernoulli]	✓
18422	$y(2xy + e^x) - e^xy' = 0$	[_Bernoulli]	✓
18425	$x^2 + y^2 + 2x + 2yy' = 0$	[[_homogeneous, 'class D'], _rational, _Bernoulli]	✓
18426	$x^2 + y^2 - x^2yy' = 0$	[_rational, _Bernoulli]	✓
18437	$y' + \frac{y}{x} = x^2y^6$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
18439	$y' + \frac{2y}{x} = 3x^2y^{1/3}$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
18440	$y' + \frac{xy}{-x^2 + 1} = x\sqrt{y}$	unknown	✓
18441	$3x(-x^2 + 1)y^2y' + (2x^2 - 1)y^3 = ax^3$	[_rational, _Bernoulli]	✓
18448	$3y' + \frac{2y}{x+1} = \frac{x^3}{y^2}$	[_rational, _Bernoulli]	✓
18451	$xy' + \frac{y^2}{x} = y$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
18456	$x^2 + y^2 + 1 - 2xyy' = 0$	[_rational, _Bernoulli]	✓
18458	$y' + y \cos(x) = y^n \sin(2x)$	[_Bernoulli]	✓
18460	$y' = x^3y^3 - xy$	[_Bernoulli]	✓
18465	$yy' = ax$	[_separable]	✓
18468	$yy' + by^2 = a \cos(x)$	[_Bernoulli]	✓

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Table 2.11 first order ode bernoulli

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#	ODE	CAS classification	Solved?
18477	$y'^3 + 2xy'^2 - y^2y'^2 - 2xy^2y' = 0$	[_quadrature]	✓
18481	$4y^2y'^2 + 2y'xy(3x + 1) + 3x^3 = 0$	[_separable]	✓
18497	$xy(y - xy') = x + yy'$	[_separable]	✓
18501	$xy^2(y'^2 + 2) = 2y^3y' + x^3$	[_separable]	✓
18515	$xyy'^2 + y'(3x^2 - 2y^2) - 6xy = 0$	[_separable]	✓
18517	$y'^3 - (y^2 + xy + x^2)y'^2 + (xy^3 + y^2x^2 + x^3y)y' - x^3y^3 = 0$	[_quadrature]	✓
18526	$y'\sqrt{x} = \sqrt{y}$	[_separable]	✓

## 2.3.10 first order ode exact

Table 2.12: first order ode exact

#	ODE	CAS classification	Solved?
1	<i>i.c.</i> $y' = 2x + 1$	[_quadrature]	✓
2	<i>i.c.</i> $y' = (-2 + x)^2$	[_quadrature]	✓
3	<i>i.c.</i> $y' = \sqrt{x}$	[_quadrature]	✓
4	<i>i.c.</i> $y' = \frac{1}{x^2}$	[_quadrature]	✓
5	<i>i.c.</i> $y' = \frac{1}{\sqrt{x+2}}$	[_quadrature]	✓
6	<i>i.c.</i> $y' = x\sqrt{x^2+9}$	[_quadrature]	✓
7	<i>i.c.</i> $y' = \frac{10}{x^2+1}$	[_quadrature]	✓
8	<i>i.c.</i> $y' = \cos(2x)$	[_quadrature]	✓
9	<i>i.c.</i> $y' = \frac{1}{\sqrt{-x^2+1}}$	[_quadrature]	✓
10	<i>i.c.</i> $y' = x e^{-x}$	[_quadrature]	✓
19	$y' = -y - \sin(x)$	[[_linear, 'class A']]	✓
20	$y' = x + y$	[[_linear, 'class A']]	✓
21	$y' = y - \sin(x)$	[[_linear, 'class A']]	✓
22	$y' = x - y$	[[_linear, 'class A']]	✓
23	$y' = y - x + 1$	[[_linear, 'class A']]	✓
24	$y' = x + 1 - y$	[[_linear, 'class A']]	✓
25	$y' = x^2 - y$	[[_linear, 'class A']]	✓
26	$y' = x^2 - y - 2$	[[_linear, 'class A']]	✓
27	<i>i.c.</i> $y' = 2y^2x^2$	[_separable]	✓
29	<i>i.c.</i> $y' = y^{1/3}$	[_quadrature]	✓

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Table 2.12 first order ode exact  
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#	ODE	CAS classification	Solved?
30	$y' = y^{1/3}$ i.c.	[_quadrature]	✓
33	$yy' = x - 1$ i.c.	[_separable]	✓
34	$yy' = x - 1$ i.c.	[_separable]	✓
35	$y' = \ln(1 + y^2)$ i.c.	[_quadrature]	✓
37	$y' = x + y$ i.c.	[[_linear, 'class A']]	✓
38	$y' = y - x$ i.c.	[[_linear, 'class A']]	✓
41	$y' + 2xy = 0$	[_separable]	✓
42	$y' + 2xy^2 = 0$	[_separable]	✓
43	$y' = y \sin(x)$	[_separable]	✓
44	$(x + 1)y' = 4y$	[_separable]	✓
46	$y' = 3\sqrt{xy}$	[[_homogeneous, 'class G']]	✓
47	$y' = 64^{1/3}(xy)^{1/3}$	[[_homogeneous, 'class G']]	✓
48	$y' = 2x \sec(y)$	[_separable]	✓
49	$(-x^2 + 1)y' = 2y$	[_separable]	✓
51	$y' = xy^3$	[_separable]	✓
52	$yy' = x(1 + y^2)$	[_separable]	✓
53	$y^3y' = (1 + y^4) \cos(x)$	[_separable]	✓
54	$y' = \frac{1 + \sqrt{x}}{1 + \sqrt{y}}$	[_separable]	✓
55	$y' = \frac{(x - 1)y^5}{x^2(2y^3 - y)}$	[_separable]	✓
56	$(x^2 + 1) \tan(y)y' = x$	[_separable]	✓
57	$y' = 1 + x + y + xy$	[_separable]	✓
59	$y' = ye^x$ i.c.	[_separable]	✓
60	$y' = 3x^2(1 + y^2)$ i.c.	[_separable]	✓

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Table 2.12 first order ode exact  
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#	ODE	CAS classification	Solved?
61	$2yy' = \frac{x}{\sqrt{x^2 - 16}}$ i.c.	[_separable]	✓
62	$y' = 4x^3y - y$ i.c.	[_separable]	✓
63	$y' + 1 = 2y$ i.c.	[_quadrature]	✓
64	$\tan(x)y' = y$ i.c.	[_separable]	✓
65	$-y + xy' = 2x^2y$ i.c.	[_separable]	✓
66	$y' = 2xy^2 + 3y^2x^2$ i.c.	[_separable]	✓
67	$y' = 6e^{2x-y}$ i.c.	[_separable]	✓
69	$y' = y^2$ i.c.	[_quadrature]	✓
71	$y' = 2\sqrt{y}$ i.c.	[_quadrature]	✓
72	$y' = y\sqrt{y^2 - 1}$ i.c.	[_quadrature]	✓
73	$y' + y = 2$ i.c.	[_quadrature]	✓
74	$y' - 2y = 3e^{2x}$ i.c.	[[_linear, 'class A']]	✓
75	$y' + 3y = 2xe^{-3x}$	[[_linear, 'class A']]	✓
76	$y' - 2xy = e^{x^2}$	[_linear]	✓
77	$xy' + 2y = 3x$ i.c.	[_linear]	✓
78	$xy' + 5y = 7x^2$ i.c.	[_linear]	✓
79	$2xy' + y = 10\sqrt{x}$	[_linear]	✓
80	$3xy' + y = 12x$	[_linear]	✓
81	$-y + xy' = x$ i.c.	[_linear]	✓
82	$2xy' - 3y = 9x^3$	[_linear]	✓
83	$xy' + y = 3xy$ i.c.	[_separable]	✓

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Table 2.12 first order ode exact  
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#	ODE	CAS classification	Solved?
84	$xy' + 3y = 2x^5$ i.c.	[_linear]	✓
85	$y' + y = e^x$ i.c.	[[_linear, 'class A']]	✓
86	$xy' - 3y = x^3$ i.c.	[_linear]	✓
87	$y' + 2xy = x$ i.c.	[_separable]	✓
88	$y' = (1 - y) \cos(x)$ i.c.	[_separable]	✓
89	$(x + 1)y' + y = \cos(x)$ i.c.	[_linear]	✓
90	$xy' = 2y + x^3 \cos(x)$	[_linear]	✓
91	$y' + y \cot(x) = \cos(x)$	[_linear]	✓
92	$y' = 1 + x + y + xy$ i.c.	[_separable]	✓
93	$xy' = 3y + x^4 \cos(x)$ i.c.	[_linear]	✓
94	$y' = 2xy + 3x^2 e^{x^2}$ i.c.	[_linear]	✓
95	$xy' + (2x - 3)y = 4x^4$	[_linear]	✓
96	$(x^2 + 4)y' + 3xy = x$ i.c.	[_separable]	✓
97	$y'(x^2 + 1) + 3x^3y = 6x e^{-\frac{3x^2}{2}}$ i.c.	[_linear]	✓
101	$y' = 1 + 2xy$	[_linear]	✓
102	$2xy' = y + 2x \cos(x)$ i.c.	[_linear]	✓
103	$y' + p(x)y = 0$	[_separable]	✓
104	$y' + p(x)y = q(x)$	[_linear]	✓
105	$(x + y)y' = x - y$	[[_homogeneous, 'class A'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
106	$2xyy' = x^2 + 2y^2$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓

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Table 2.12 first order ode exact  
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#	ODE	CAS classification	Solved?
108	$y'(x - y) = x + y$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
109	$x(x + y)y' = (x - y)y$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
110	$(x + 2y)y' = y$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
111	$xy^2y' = x^3 + y^3$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
113	$x^2y' = xy + y^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
114	$xyy' = x^2 + 3y^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
115	$(x^2 - y^2)y' = 2xy$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
119	$x(x + y)y' + y(3x + y) = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
122	$(x + y)y' = 1$	[[_homogeneous, 'class C', _Abel, '2nd type', 'class C', _dAlembert]]	✓
124	$y^2y' + 2xy^3 = 6x$	[_separable]	✓
125	$y' = y + y^3$	[_quadrature]	✓
129	$y^2(xy' + y)\sqrt{x^4 + 1} = x$	[_Bernoulli]	✓
130	$3y^2y' + y^3 = e^{-x}$	[[_1st_order, _with_lin- ear_symmetries], _Bernoulli]]	✓
131	$3xy^2y' = 3x^4 + y^3$	[[_homogeneous, 'class G', _rational, _Bernoulli]]	✓
132	$xe^y y' = 2e^y + 2x^3 e^{2x}$	[[_1st_order, '_with_sym- metry_[F(x),G(x)']]]	✓
133	$2x \sin(y) \cos(y) y' = 4x^2 + \sin(y)^2$	['y=_G(x,y)']	✓
134	$(e^y + x)y' = xe^{-y} - 1$	[[_1st_order, _with_lin- ear_symmetries]]	✓
135	$2x + 3y + (3x + 2y)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓

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Table 2.12 first order ode exact  
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#	ODE	CAS classification	Solved?
136	$4x - y + (6y - x)y' = 0$	[[_homogeneous, 'class A'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
137	$3x^2 + 2y^2 + (4xy + 6y^2)y' = 0$	[[_homogeneous, 'class A'], _exact, _rational, _dAlem- bert]	✓
138	$2xy^2 + 3x^2 + (2x^2y + 4y^3)y' = 0$	[_exact, _rational]	✓
139	$x^3 + \frac{y}{x} + (y^2 + \ln(x))y' = 0$	[_exact]	✓
140	$1 + ye^{xy} + (2y + xe^{xy})y' = 0$	[_exact]	✓
141	$\cos(x) + \ln(y) + \left(\frac{x}{y} + e^y\right)y' = 0$	[_exact]	✓
142	$x + \arctan(y) + \frac{(x+y)y'}{1+y^2} = 0$	[_exact]	✓
143	$3x^2y^3 + y^4 + (3x^3y^2 + y^4 + 4xy^3)y' = 0$	[_exact, _rational]	✓
144	$e^x \sin(y) + \tan(y) + (e^x \cos(y) + x \sec(y)^2)y' = 0$	[_exact]	✓
145	$\frac{2x}{y} - \frac{3y^2}{x^4} + \left(\frac{2y}{x^3} - \frac{x^2}{y^2} + \frac{1}{\sqrt{y}}\right)y' = 0$	[_exact, _rational]	✓
146	$\frac{2x^{5/2} - 3y^{5/3}}{2x^{5/2}y^{2/3}} + \frac{(3y^{5/3} - 2x^{5/2})y'}{3x^{3/2}y^{5/3}} = 0$	[[_1st_order, __with_lin- ear_symmetries], _exact, _rational]	✓
163	$y' = \frac{x - y - 1}{x + y + 3}$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
166	$y' = -\frac{y(2x^3 - y^3)}{x(2y^3 - x^3)}$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
171	<i>i.c.</i> $x' = x - x^2$	[_quadrature]	✓
172	<i>i.c.</i> $x' = 10x - x^2$	[_quadrature]	✓
173	<i>i.c.</i> $x' = 1 - x^2$	[_quadrature]	✓
174	<i>i.c.</i> $x' = 9 - 4x^2$	[_quadrature]	✓
175	<i>i.c.</i> $x' = 3x(5 - x)$	[_quadrature]	✓

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Table 2.12 first order ode exact  
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#	ODE	CAS classification	Solved?
176	$x' = 3x(5 - x)$ i.c.	[_quadrature]	✓
177	$x' = 4x(7 - x)$ i.c.	[_quadrature]	✓
178	$x' = 7x(x - 13)$ i.c.	[_quadrature]	✓
179	$x^3 + 3y - xy' = 0$	[_linear]	✓
180	$xy^2 + 3y^2 - x^2y' = 0$	[_separable]	✓
181	$xy + y^2 - x^2y' = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
182	$2xy^3 + e^x + (3y^2x^2 + \sin(y))y' = 0$	[_exact]	✓
183	$3y + x^4y' = 2xy$	[_separable]	✓
184	$2xy^2 + x^2y' = y^2$	[_separable]	✓
185	$2x^2y + x^3y' = 1$	[_linear]	✓
188	$y' = 1 + x^2 + y^2 + y^2x^2$	[_separable]	✓
189	$x^2y' = xy + 3y^2$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
190	$6xy^3 + 2y^4 + (9y^2x^2 + 8xy^3)y' = 0$	[[_homogeneous, 'class A'], _exact, _rational, [_Abel, '2nd type', 'class B']]	✓
191	$4xy^2 + y' = 5x^4y^2$	[_separable]	✓
193	$y' + 3y = 3x^2e^{-3x}$	[[_linear, 'class A']]	✓
195	$e^x + ye^{xy} + (e^y + xe^{xy})y' = 0$	[_exact]	✓
198	$xy' + 3y = \frac{3}{x^{3/2}}$	[_linear]	✓
199	$(x^2 - 1)y' + (x - 1)y = 1$	[_linear]	✓
201	$e^y + y \cos(x) + (xe^y + \sin(x))y' = 0$	[_exact]	✓
203	$2y + (x + 1)y' = 3x + 3$	[_linear]	✓
204	$9\sqrt{x}y^{4/3} - 12x^{1/5}y^{3/2} + (8x^{3/2}y^{1/3} - 15x^{6/5}\sqrt{y})y' = 0$	[[_homogeneous, 'class G'], _exact, _rational]	✓
205	$3y + x^3y^4 + 3xy' = 0$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
206	$xy' + y = 2e^{2x}$	[_linear]	✓

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#	ODE	CAS classification	Solved?
207	$(2x + 1)y' + y = (2x + 1)^{3/2}$	[_linear]	✓
209	$y' = 3(y + 7)x^2$	[_separable]	✓
210	$y' = xy^3 - xy$	[_separable]	✓
211	$y' = -\frac{3x^2 + 2y^2}{4xy}$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
212	$y' = \frac{3y + x}{y - 3x}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
213	$y' = \frac{2xy + 2x}{x^2 + 1}$	[_separable]	✓
214	$y' = \frac{\sqrt{y} - y}{\tan(x)}$	[_separable]	✓
231	$y' + y^2 = 0$	[_quadrature]	✓
651	$y' = 2x + 1$	[_quadrature]	✓
	<i>i.c.</i>		
652	$y' = (-2 + x)^2$	[_quadrature]	✓
	<i>i.c.</i>		
653	$y' = \sqrt{x}$	[_quadrature]	✓
	<i>i.c.</i>		
654	$y' = \frac{1}{x^2}$	[_quadrature]	✓
	<i>i.c.</i>		
655	$y' = \frac{1}{\sqrt{x+2}}$	[_quadrature]	✓
	<i>i.c.</i>		
656	$y' = x\sqrt{x^2 + 9}$	[_quadrature]	✓
	<i>i.c.</i>		
657	$y' = \frac{10}{x^2 + 1}$	[_quadrature]	✓
	<i>i.c.</i>		
658	$y' = \cos(2x)$	[_quadrature]	✓
	<i>i.c.</i>		
659	$y' = \frac{1}{\sqrt{-x^2 + 1}}$	[_quadrature]	✓
	<i>i.c.</i>		
660	$y' = xe^{-x}$	[_quadrature]	✓
	<i>i.c.</i>		
661	$y' = -y - \sin(x)$	[[_linear, 'class A']]	✓
662	$y' = x + y$	[[_linear, 'class A']]	✓

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#	ODE	CAS classification	Solved?
663	$y' = y - \sin(x)$	[[_linear, 'class A']]	✓
664	$y' = x - y$	[[_linear, 'class A']]	✓
665	$y' = y - x + 1$	[[_linear, 'class A']]	✓
666	$y' = x + 1 - y$	[[_linear, 'class A']]	✓
667	$y' = x^2 - y$	[[_linear, 'class A']]	✓
668	$y' = x^2 - y - 2$	[[_linear, 'class A']]	✓
669	$y' = 2y^2x^2$	[_separable]	✓
	i.c.		
670	$y' = x \ln(y)$	[_separable]	✓
671	$y' = y^{1/3}$	[_quadrature]	✓
	i.c.		
672	$y' = y^{1/3}$	[_quadrature]	✓
	i.c.		
673	$yy' = x - 1$	[_separable]	✓
	i.c.		
674	$yy' = x - 1$	[_separable]	✓
	i.c.		
675	$y' = \ln(1 + y^2)$	[_quadrature]	✓
	i.c.		
677	$y' + 2xy = 0$	[_separable]	✓
678	$y' + 2xy^2 = 0$	[_separable]	✓
679	$y' = y \sin(x)$	[_separable]	✓
680	$(x + 1)y' = 4y$	[_separable]	✓
682	$y' = 3\sqrt{xy}$	[[_homogeneous, 'class G']]	✓
683	$y' = 4(xy)^{1/3}$	[[_homogeneous, 'class G']]	✓
684	$y' = 2x \sec(y)$	[_separable]	✓
685	$(-x^2 + 1)y' = 2y$	[_separable]	✓
687	$y' = xy^3$	[_separable]	✓
688	$yy' = x(1 + y^2)$	[_separable]	✓
689	$y' = \frac{1 + \sqrt{x}}{1 + \sqrt{y}}$	[_separable]	✓
690	$y' = \frac{(x - 1)y^5}{x^2(2y^3 - y)}$	[_separable]	✓

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#	ODE	CAS classification	Solved?
691	$(x^2 + 1) \tan(y) y' = x$	[_separable]	✓
692	$y' = 1 + x + y + xy$	[_separable]	✓
694	$y' = y e^x$	[_separable]	✓
695	$y' = 3x^2(1 + y^2)$	[_separable]	✓
696	$2yy' = \frac{x}{\sqrt{x^2 - 16}}$	[_separable]	✓
697	$y' = 4x^3y - y$	[_separable]	✓
698	$y' + 1 = 2y$	[_quadrature]	✓
699	$\tan(x) y' = y$	[_separable]	✓
700	$-y + xy' = 2x^2y$	[_separable]	✓
701	$y' = 2xy^2 + 3y^2x^2$	[_separable]	✓
702	$y' = 6e^{2x-y}$	[_separable]	✓
704	$y' + y = 2$	[_quadrature]	✓
705	$y' - 2y = 3e^{2x}$	[[_linear, 'class A']]	✓
706	$y' + 3y = 2xe^{-3x}$	[[_linear, 'class A']]	✓
707	$y' - 2xy = e^{x^2}$	[_linear]	✓
708	$xy' + 2y = 3x$	[_linear]	✓
709	$2xy' + y = 10\sqrt{x}$	[_linear]	✓
710	$2xy' + y = 10\sqrt{x}$	[_linear]	✓
711	$3xy' + y = 12x$	[_linear]	✓
712	$-y + xy' = x$	[_linear]	✓
713	$2xy' - 3y = 9x^3$	[_linear]	✓

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#	ODE	CAS classification	Solved?
714	$xy' + y = 3xy$ i.c.	[_separable]	✓
715	$xy' + 3y = 2x^5$ i.c.	[_linear]	✓
716	$y' + y = e^x$ i.c.	[[_linear, 'class A']]	✓
717	$xy' - 3y = x^3$ i.c.	[_linear]	✓
718	$y' + 2xy = x$ i.c.	[_separable]	✓
719	$y' = (1 - y) \cos(x)$ i.c.	[_separable]	✓
720	$(x + 1)y' + y = \cos(x)$ i.c.	[_linear]	✓
721	$xy' = 2y + x^3 \cos(x)$	[_linear]	✓
722	$y' + y \cot(x) = \cos(x)$	[_linear]	✓
723	$y' = 1 + x + y + xy$ i.c.	[_separable]	✓
724	$xy' = 3y + x^4 \cos(x)$ i.c.	[_linear]	✓
725	$y' = 2xy + 3x^2 e^{x^2}$ i.c.	[_linear]	✓
726	$xy' + (2x - 3)y = 4x^4$	[_linear]	✓
727	$(x^2 + 4)y' + 3xy = x$ i.c.	[_separable]	✓
728	$y'(x^2 + 1) + 3x^3y = 6x e^{-\frac{3x^2}{2}}$ i.c.	[_linear]	✓
729	$(x + y)y' = x - y$	[[_homogeneous, 'class A'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
730	$2xyy' = y^2 + x^2$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
732	$y'(x - y) = x + y$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
733	$x(x + y)y' = (x - y)y$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓

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#	ODE	CAS classification	Solved?
734	$(x + 2y)y' = y$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
735	$xy^2y' = x^3 + y^3$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
737	$x^2y' = xy + y^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
738	$xyy' = x^2 + 3y^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
739	$(x^2 - y^2)y' = 2xy$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
743	$x(x + y)y' + y(3x + y) = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
748	$y^2y' + 2xy^3 = 6x$	[_separable]	✓
749	$y' = y + y^3$	[_quadrature]	✓
753	$y^2(xy' + y)\sqrt{x^4 + 1} = x$	[_Bernoulli]	✓
754	$3y^2y' + y^3 = e^{-x}$	[[_1st_order, __with_lin- ear_symmetries], _Bernoulli]	✓
755	$3xy^2y' = 3x^4 + y^3$	[[_homogeneous, 'class G', _rational, _Bernoulli]]	✓
756	$xe^yy' = 2e^y + 2x^3e^{2x}$	[[_1st_order, ' __with_sym- metry_[F(x),G(x)]']]]	✓
757	$2x \sin(y) \cos(y)y' = 4x^2 + \sin(y)^2$	['y=__G(x,y)']	✓
758	$(e^y + x)y' = xe^{-y} - 1$	[[_1st_order, __with_lin- ear_symmetries]]	✓
759	$2x + 3y + (3x + 2y)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
760	$4x - y + (6y - x)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
761	$3x^2 + 2y^2 + (4xy + 6y^2)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlem- bert]]	✓
762	$2xy^2 + 3x^2 + (2x^2y + 4y^3)y' = 0$	[_exact, _rational]	✓
763	$x^3 + \frac{y}{x} + (y^2 + \ln(x))y' = 0$	[_exact]	✓

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#	ODE	CAS classification	Solved?
764	$1 + ye^{xy} + (2y + xe^{xy})y' = 0$	[_exact]	✓
765	$\cos(x) + \ln(y) + \left(\frac{x}{y} + e^y\right)y' = 0$	[_exact]	✓
766	$x + \arctan(y) + \frac{(x+y)y'}{1+y^2} = 0$	[_exact]	✓
767	$3x^2y^3 + y^4 + (3x^3y^2 + y^4 + 4xy^3)y' = 0$	[_exact, _rational]	✓
768	$e^x \sin(y) + \tan(y) + (e^x \cos(y) + x \sec(y)^2)y' = 0$	[_exact]	✓
769	$\frac{2x}{y} - \frac{3y^2}{x^4} + \left(\frac{2y}{x^3} - \frac{x^2}{y^2} + \frac{1}{\sqrt{y}}\right)y' = 0$	[_exact, _rational]	✓
770	$\frac{2x^{5/2} - 3y^{5/3}}{2x^{5/2}y^{2/3}} + \frac{(3y^{5/3} - 2x^{5/2})y'}{3x^{3/2}y^{5/3}} = 0$	[[_1st_order, _with_linear_symmetries], _exact, _rational]	✓
771	$x^3 + 3y - xy' = 0$	[_linear]	✓
772	$xy^2 + 3y^2 - x^2y' = 0$	[_separable]	✓
773	$xy + y^2 - x^2y' = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
774	$2xy^3 + e^x + (3y^2x^2 + \sin(y))y' = 0$	[_exact]	✓
775	$3y + x^4y' = 2xy$	[_separable]	✓
776	$2xy^2 + x^2y' = y^2$	[_separable]	✓
777	$2x^2y + x^3y' = 1$	[_linear]	✓
780	$y' = 1 + x^2 + y^2 + y^2x^2$	[_separable]	✓
781	$x^2y' = xy + 3y^2$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
782	$6xy^3 + 2y^4 + (9y^2x^2 + 8xy^3)y' = 0$	[[_homogeneous, 'class A'], _exact, _rational, [_Abel, '2nd type', 'class B']]	✓
785	$y' + 3y = 3x^2e^{-3x}$	[[_linear, 'class A']]	✓
787	$e^x + ye^{xy} + (e^y + xe^{xy})y' = 0$	[_exact]	✓
790	$xy' + 3y = \frac{3}{x^{3/2}}$	[_linear]	✓
791	$(x^2 - 1)y' + (x - 1)y = 1$	[_linear]	✓
793	$e^y + y \cos(x) + (xe^y + \sin(x))y' = 0$	[_exact]	✓
795	$2y + (x + 1)y' = 3x + 3$	[_linear]	✓

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#	ODE	CAS classification	Solved?
796	$9\sqrt{x}y^{4/3} - 12x^{1/5}y^{3/2} + (8x^{3/2}y^{1/3} - 15x^{6/5}\sqrt{y})y' = 0$	[[_homogeneous, 'class G'], _exact, _rational]	✓
797	$3y + x^3y^4 + 3xy' = 0$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
798	$xy' + y = 2e^{2x}$	[_linear]	✓
799	$(2x + 1)y' + y = (2x + 1)^{3/2}$	[_linear]	✓
800	$y' = 3(y + 7)x^2$	[_separable]	✓
801	$y' = 3(y + 7)x^2$	[_separable]	✓
802	$y' = xy^3 - xy$	[_separable]	✓
803	$y' = \frac{-3x^2 - 2y^2}{4xy}$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
804	$y' = \frac{3y + x}{y - 3x}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
805	$y' = \frac{2xy + 2x}{x^2 + 1}$	[_separable]	✓
806	$y' = \cot(x)(\sqrt{y} - y)$	[_separable]	✓
1065	$y' = 1 + y^2$	[_quadrature]	✓
	<i>i.c.</i>		
1098	$y' + 3y = e^{-2t} + t$	[[_linear, 'class A']]	✓
1099	$y' - 2y = e^{2t}t^2$	[[_linear, 'class A']]	✓
1100	$y' + y = 1 + te^{-t}$	[[_linear, 'class A']]	✓
1101	$\frac{y}{t} + y' = 3\cos(2t)$	[_linear]	✓
1102	$y' - 2y = 3e^t$	[[_linear, 'class A']]	✓
1103	$2y + ty' = \sin(t)$	[_linear]	✓
1104	$2ty + y' = 2te^{-t^2}$	[_linear]	✓
1105	$4ty + (t^2 + 1)y' = \frac{1}{(t^2 + 1)^2}$	[_linear]	✓
1106	$y + 2y' = 3t$	[[_linear, 'class A']]	✓
1107	$-y + ty' = t^2e^{-t}$	[_linear]	✓
1108	$y' + y = 5\sin(2t)$	[[_linear, 'class A']]	✓
1109	$y + 2y' = 3t^2$	[[_linear, 'class A']]	✓

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#	ODE	CAS classification	Solved?
1110	$-y + y' = 2e^{2t}t$ i.c.	[[_linear, 'class A']]	✓
1111	$2y + y' = te^{-2t}$ i.c.	[[_linear, 'class A']]	✓
1112	$2y + ty' = t^2 - t + 1$ i.c.	[_linear]	✓
1113	$\frac{2y}{t} + y' = \frac{\cos(t)}{t^2}$ i.c.	[_linear]	✓
1114	$y' - 2y = e^{2t}$ i.c.	[[_linear, 'class A']]	✓
1115	$2y + ty' = \sin(t)$ i.c.	[_linear]	✓
1116	$4t^2y + t^3y' = e^{-t}$ i.c.	[_linear]	✓
1117	$(t+1)y + ty' = t$ i.c.	[_linear]	✓
1118	$-\frac{y}{2} + y' = 2\cos(t)$ i.c.	[[_linear, 'class A']]	✓
1119	$-y + 2y' = e^{\frac{t}{3}}$ i.c.	[[_linear, 'class A']]	✓
1120	$-2y + 3y' = e^{-\frac{\pi t}{2}}$ i.c.	[[_linear, 'class A']]	✓
1121	$(t+1)y + ty' = 2te^{-t}$ i.c.	[_linear]	✓
1122	$2y + ty' = \frac{\sin(t)}{t}$ i.c.	[_linear]	✓
1123	$\cos(t)y + \sin(t)y' = e^t$ i.c.	[_linear]	✓
1124	$\frac{y}{2} + y' = 2\cos(t)$ i.c.	[[_linear, 'class A']]	✓
1125	$\frac{2y}{3} + y' = 1 - \frac{t}{2}$	[[_linear, 'class A']]	✓
1126	$\frac{y}{4} + y' = 3 + 2\cos(2t)$ i.c.	[[_linear, 'class A']]	✓
1127	$-y + y' = 1 + 3\sin(t)$	[[_linear, 'class A']]	✓
1128	$-\frac{3y}{2} + y' = 2e^t + 3t$	[[_linear, 'class A']]	✓

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#	ODE	CAS classification	Solved?
1129	$y' = \frac{x^2}{y}$	[_separable]	✓
1130	$y' = \frac{x^2}{(x^3 + 1)y}$	[_separable]	✓
1131	$\sin(x)y^2 + y' = 0$	[_separable]	✓
1132	$y' = \frac{3x^2 - 1}{3 + 2y}$	[_separable]	✓
1133	$y' = \cos(x)^2 \cos(2y)^2$	[_separable]	✓
1134	$xy' = \sqrt{1 - y^2}$	[_separable]	✓
1136	$y' = \frac{x^2}{1 + y^2}$	[_separable]	✓
1137	$y' = (-2x + 1)y^2$	[_separable]	✓
i.c.			
1138	$y' = \frac{-2x + 1}{y}$	[_separable]	✓
i.c.			
1139	$x + yy'e^{-x} = 0$	[_separable]	✓
i.c.			
1140	$r' = \frac{r^2}{x}$	[_separable]	✓
i.c.			
1141	$y' = \frac{2x}{y + x^2y}$	[_separable]	✓
i.c.			
1142	$y' = \frac{xy^2}{\sqrt{x^2 + 1}}$	[_separable]	✓
i.c.			
1143	$y' = \frac{2x}{1 + 2y}$	[_separable]	✓
i.c.			
1144	$y' = \frac{x(x^2 + 1)}{4y^3}$	[_separable]	✓
i.c.			
1145	$y' = \frac{-e^x + 3x^2}{-5 + 2y}$	[_separable]	✓
i.c.			
1146	$y' = \frac{e^{-x} - e^x}{3 + 4y}$	[_separable]	✓
i.c.			
1147	$\sin(2x) + \cos(3y)y' = 0$	[_separable]	✓
i.c.			

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Table 2.12 first order ode exact  
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#	ODE	CAS classification	Solved?
1148	$\sqrt{-x^2 + 1} y^2 y' = \arcsin(x)$ i.c.	[_separable]	✓
1149	$y' = \frac{3x^2 + 1}{-6y + 3y^2}$ i.c.	[_separable]	✓
1150	$y' = \frac{3x^2}{-4 + 3y^2}$ i.c.	[_separable]	✓
1151	$y' = 2y^2 + xy^2$ i.c.	[_separable]	✓
1152	$y' = \frac{2 - e^x}{3 + 2y}$ i.c.	[_separable]	✓
1153	$y' = \frac{2 \cos(2x)}{3 + 2y}$ i.c.	[_separable]	✓
1154	$y' = 2(x + 1)(1 + y^2)$ i.c.	[_separable]	✓
1155	$y' = \frac{t(4 - y)y}{3}$	[_separable]	✓
1156	$y' = \frac{ty(4 - y)}{t + 1}$	[_separable]	✓
1157	$y' = \frac{ay + b}{d + cy}$	[_quadrature]	✓
1159	$y' = \frac{x^2 + 3y^2}{2xy}$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
1164	$y' = \frac{x^2 - 3y^2}{2xy}$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
1165	$y' = \frac{3y^2 - x^2}{2xy}$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
1166	$\ln(t)y + (t - 3)y' = 2t$	[_linear]	✓
1167	$y + (-4 + t)ty' = 0$ i.c.	[_separable]	✓
1168	$\tan(t)y + y' = \sin(t)$ i.c.	[_linear]	✓
1169	$2ty + (-t^2 + 4)y' = 3t^2$ i.c.	[_linear]	✓
1170	$2ty + (-t^2 + 4)y' = 3t^2$ i.c.	[_linear]	✓

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Table 2.12 first order ode exact  
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#	ODE	CAS classification	Solved?
1171	$y + \ln(t) y' = \cot(t)$	[_linear]	✓
1172	$y' = \frac{t^2 + 1}{3y - y^2}$	[_separable]	✓
1173	$y' = \frac{\cot(t) y}{y + 1}$	[_separable]	✓
1174	$y' = -\frac{4t}{y}$	[_separable]	✓
1175	$y' = 2ty^2$	[_separable]	✓
1176	$y^3 + y' = 0$	[_quadrature]	✓
1177	$y' = \frac{t^2}{y(t^3 + 1)}$	[_separable]	✓
1178	$y' = ty(3 - y)$	[_separable]	✓
1182	$y' = ay + by^2$	[_quadrature]	✓
1183	$y' = y(y - 2)(-1 + y)$	[_quadrature]	✓
1184	$y' = -1 + e^y$	[_quadrature]	✓
1185	$y' = -1 + e^{-y}$	[_quadrature]	✓
1186	$y' = -\frac{2 \arctan(y)}{1 + y^2}$	[_quadrature]	✓
1187	$y' = -k(-1 + y)^2$	[_quadrature]	✓
1188	$y' = y^2(y^2 - 1)$	[_quadrature]	✓
1189	$y' = y(1 - y^2)$	[_quadrature]	✓
1190	$y' = -b\sqrt{y} + ay$	[_quadrature]	✓
1191	$y' = y^2(4 - y^2)$	[_quadrature]	✓
1192	$y' = (1 - y)^2 y^2$	[_quadrature]	✓
1193	$3 + 2x + (2y - 2) y' = 0$	[_separable]	✓
1195	$2 + 3x^2 - 2xy + (3 - x^2 + 6y^2) y' = 0$	[_exact, _rational]	✓
1196	$2y + 2xy^2 + (2x + 2x^2y) y' = 0$	[_separable]	✓
1197	$y' = \frac{-ax - by}{bx + cy}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
1199	$e^x \sin(y) - 2y \sin(x) + (2 \cos(x) + e^x \cos(y)) y' = 0$	[_exact]	✓

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Table 2.12 first order ode exact  
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#	ODE	CAS classification	Solved?
1201	$2x - 2e^{xy} \sin(2x) + e^{xy} \cos(2x) y + (-3 + e^{xy} x \cos(2x)) y' = 0$	[_exact]	✓
1202	$\frac{y}{x} + 6x + (\ln(x) - 2) y' = 0$	[_linear]	✓
1204	$\frac{x}{(y^2 + x^2)^{3/2}} + \frac{yy'}{(y^2 + x^2)^{3/2}} = 0$	[_separable]	✓
1205	<i>i.c.</i> $2x - y + (2y - x) y' = 0$	[[_homogeneous, 'class A'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
1206	<i>i.c.</i> $-1 + 9x^2 + y + (x - 4y) y' = 0$	[_exact, _rational, [_1st_order, '_with_sym- metry_[F(x),G(x)'], [_Abel, '2nd type', 'class A']]	✓
1207	$x^2 y^3 + x(1 + y^2) y' = 0$	[_separable]	✓
1208	$y + (2x - e^y y) y' = 0$	[[_1st_order, '_with_sym- metry_[F(x)*G(y),0]']]	✓
1209	$(x + 2) \sin(y) + x \cos(y) y' = 0$	[_separable]	✓
1210	$2xy + 3x^2 y + y^3 + (y^2 + x^2) y' = 0$	[[_homogeneous, 'class D'], _rational]	✓
1211	$y' = -1 + e^{2x} + y$	[[_linear, 'class A']]	✓
1212	$1 + \left(-\sin(y) + \frac{x}{y}\right) y' = 0$	[[_1st_order, '_with_sym- metry_[F(x)*G(y),0]']]	✓
1213	$y + (-e^{-2y} + 2xy) y' = 0$	[[_1st_order, _with_expo- nential_symmetries]]	✓
1214	$e^x + (e^x \cot(y) + 2 \csc(y) y) y' = 0$	[[_1st_order, '_with_sym- metry_[F(x)*G(y),0]']]	✓
1215	$\frac{4x^3}{y^2} + \frac{3}{y} + \left(\frac{3x}{y^2} + 4y\right) y' = 0$	[_rational]	✓
1216	$3x + \frac{6}{y} + \left(\frac{x^2}{y} + \frac{3y}{x}\right) y' = 0$	[_rational]	✓
1217	$3xy + y^2 + (xy + x^2) y' = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
1218	$y' = \frac{x^3 - 2y}{x}$	[_linear]	✓
1219	$y' = \frac{\cos(x) + 1}{2 - \sin(y)}$	[_separable]	✓

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Table 2.12 first order ode exact  
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#	ODE	CAS classification	Solved?
1220	$y' = \frac{2x + y}{3 - x + 3y^2}$ i.c.	[_rational]	✓
1221	$y' = 3 - 6x + y - 2xy$	[_separable]	✓
1222	$y' = \frac{-1 - 2xy - y^2}{x^2 + 2xy}$	[_rational, [_Abel, '2nd type', 'class B']]	✓
1223	$xy + xy' = 1 - y$ i.c.	[_linear]	✓
1224	$y' = \frac{4x^3 + 1}{y(2 + 3y)}$	[_separable]	✓
1225	$xy' + 2y = \frac{\sin(x)}{x}$ i.c.	[_linear]	✓
1226	$y' = \frac{-1 - 2xy}{x^2 + 2y}$	[_rational, [_1st_order, '_with_symmetry_[F(x),G(x)]', [_Abel, '2nd type', 'class A']]	✓
1227	$\frac{-x^2 + x + 1}{x^2} + \frac{yy'}{-2 + y} = 0$	[_separable]	✓
1228	$x^2 + y + (e^y + x)y' = 0$	[_exact]	✓
1229	$y' + y = \frac{1}{1 + e^x}$	[_linear]	✓
1230	$y' = 1 + 2x + y^2 + 2xy^2$	[_separable]	✓
1231	$x + y + (x + 2y)y' = 0$ i.c.	[[_homogeneous, 'class A'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
1232	$(1 + e^x)y' = y - ye^x$	[_separable]	✓
1233	$y' = \frac{-e^{2y} \cos(x) + \cos(y) e^{-x}}{2e^{2y} \sin(x) - \sin(y) e^{-x}}$	[NONE]	✓
1234	$y' = e^{2x} + 3y$	[[_linear, 'class A']]	✓
1235	$2y + y' = e^{-x^2 - 2x}$	[[_linear, 'class A']]	✓
1236	$y' = \frac{3x^2 - 2y - y^3}{2x + 3xy^2}$	[_rational]	✓
1237	$y' = e^{x+y}$	[_separable]	✓
1238	$\frac{-4 + 6xy + 2y^2}{3x^2 + 4xy + 3y^2} + y' = 0$	[_rational]	✓

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Table 2.12 first order ode exact  
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#	ODE	CAS classification	Solved?
1239	$y' = \frac{x^2 - 1}{1 + y^2}$ i.c.	[_separable]	✓
1240	$(t + 1)y + ty' = e^{2t}$	[_linear]	✓
1241	$2 \cos(x) \sin(x) \sin(y) + \cos(y) \sin(x)^2 y' = 0$	[_separable]	✓
1242	$\frac{2x}{y} - \frac{y}{y^2 + x^2} + \left(-\frac{x^2}{y^2} + \frac{x}{y^2 + x^2}\right) y' = 0$	[_exact, _rational]	✓
1244	$y' = \frac{x}{x^2 + y + y^3}$	[_rational, [_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓
1245	$3t + 2y = -ty'$	[_linear]	✓
1246	$y' = \frac{x + y}{x - y}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
1247	$2xy + 3y^2 - (x^2 + 2xy) y' = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
1248	$y' = \frac{-3x^2y - y^2}{2x^3 + 3xy}$ i.c.	[[_homogeneous, 'class G'], _rational, [_Abel, '2nd type', 'class B']]	✓
1519	$y' = 2y$	[_quadrature]	✓
1520	$xy' + y = x^2$	[_linear]	✓
1521	$y' + 2xy = x$	[_separable]	✓
1522	$2y' + x(y^2 - 1) = 0$	[_separable]	✓
1523	$y' = x^2(1 + y^2)$	[_separable]	✓
1524	$y' = -x$	[_quadrature]	✓
1525	$y' = -x \sin(x)$	[_quadrature]	✓
1526	$y' = x \ln(x)$	[_quadrature]	✓
1527	$y' = -x e^x$ i.c.	[_quadrature]	✓
1528	$y' = x \sin(x^2)$ i.c.	[_quadrature]	✓
1529	$y' = \tan(x)$ i.c.	[_quadrature]	✓

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Table 2.12 first order ode exact  
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#	ODE	CAS classification	Solved?
1530	$y' = \cos(x) - \tan(x)y$ i.c.	[_linear]	✓
1531	$y' = \frac{x^2 - 2x^2y + 2}{x^3}$ i.c.	[_linear]	✓
1532	$y' = x(1 + y^2)$ i.c.	[_separable]	✓
1533	$y' = -\frac{y(1+y)}{x}$ i.c.	[_separable]	✓
1534	$y' = ay^{\frac{a-1}{a}}$	[_quadrature]	✓
1535	$y' =  y  + 1$ i.c.	[_quadrature]	✓
1537	$y' + ay = 0$	[_quadrature]	✓
1538	$y' + 3x^2y = 0$	[_separable]	✓
1539	$xy' + y \ln(x) = 0$	[_separable]	✓
1540	$xy' + 3y = 0$	[_separable]	✓
1541	$x^2y' + y = 0$	[_separable]	✓
1542	$y' + \frac{(x+1)y}{x} = 0$ i.c.	[_separable]	✓
1543	$xy' + \left(1 + \frac{1}{\ln(x)}\right)y = 0$ i.c.	[_separable]	✓
1544	$xy' + (1 + x \cot(x))y = 0$ i.c.	[_separable]	✓
1545	$y' - \frac{2xy}{x^2 + 1} = 0$ i.c.	[_separable]	✓
1546	$y' + \frac{ky}{x} = 0$ i.c.	[_separable]	✓
1547	$y' + \tan(kx)y = 0$ i.c.	[_separable]	✓
1548	$y' + 3y = 1$	[_quadrature]	✓
1549	$y' + \left(\frac{1}{x} - 1\right)y = -\frac{2}{x}$	[_linear]	✓
1550	$y' + 2xy = xe^{-x^2}$	[_linear]	✓

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Table 2.12 first order ode exact  
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#	ODE	CAS classification	Solved?
1551	$y' + \frac{2xy}{x^2 + 1} = \frac{e^{-x^2}}{x^2 + 1}$	[_linear]	✓
1552	$y' + \frac{y}{x} = \frac{7}{x^2} + 3$	[_linear]	✓
1553	$y' + \frac{4y}{x-1} = \frac{1}{(x-1)^5} + \frac{\sin(x)}{(x-1)^4}$	[_linear]	✓
1554	$xy' + (2x^2 + 1)y = x^3 e^{-x^2}$	[_linear]	✓
1555	$xy' + 2y = \frac{2}{x^2} + 1$	[_linear]	✓
1556	$y' + \tan(x)y = \cos(x)$	[_linear]	✓
1557	$2y + (x+1)y' = \frac{\sin(x)}{x+1}$	[_linear]	✓
1558	$(-2+x)(x-1)y' - (4x-3)y = (-2+x)^3$	[_linear]	✓
1559	$y' + 2\sin(x)\cos(x)y = e^{-\sin(x)^2}$	[_linear]	✓
1560	$x^2y' + 3xy = e^x$	[_linear]	✓
1561	$y' + 7y = e^{3x}$	[[_linear, 'class A']]	✓
1562	$y'(x^2 + 1) + 4xy = \frac{2}{x^2 + 1}$	[_linear]	✓
1563	$xy' + 3y = \frac{2}{x(x^2 + 1)}$	[_linear]	✓
1564	$y' + y \cot(x) = \cos(x)$	[_linear]	✓
1565	$y' + \frac{y}{x} = \frac{2}{x^2} + 1$	[_linear]	✓
1566	$(x-1)y' + 3y = \frac{1}{(x-1)^3} + \frac{\sin(x)}{(x-1)^2}$	[_linear]	✓
1567	$xy' + 2y = 8x^2$	[_linear]	✓
1568	$xy' - 2y = -x^2$	[_linear]	✓
1569	$y' + 2xy = x$	[_separable]	✓
1570	$(x-1)y' + 3y = \frac{1 + (x-1)\sec(x)^2}{(x-1)^3}$	[_linear]	✓

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Table 2.12 first order ode exact  
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#	ODE	CAS classification	Solved?
1571	$(x+2)y' + 4y = \frac{2x^2+1}{x(x+2)^3}$ i.c.	[_linear]	✓
1572	$(x^2-1)y' - 2xy = x(x^2-1)$ i.c.	[_linear]	✓
1573	$xy' - 2y = -1$ i.c.	[_separable]	✓
1574	$\sec(y)^2 y' - 3 \tan(y) = -1$	[_quadrature]	✓
1575	$e^{y^2} \left( 2yy' + \frac{2}{x} \right) = \frac{1}{x^2}$	[[_1st_order, '_with_symmetry_[F(x),G(y)]']]	✓
1576	$\frac{xy'}{y} + 2 \ln(y) = 4x^2$	[[_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]']]	✓
1577	$\frac{y'}{(1+y)^2} - \frac{1}{x(1+y)} = -\frac{3}{x^2}$	[[_homogeneous, 'class C'], _rational, _Riccati]	✓
1578	$y' = \frac{3x^2+2x+1}{-2+y}$	[_separable]	✓
1579	$\sin(x) \sin(y) + \cos(y) y' = 0$	[_separable]	✓
1580	$xy' + y^2 + y = 0$	[_separable]	✓
1581	$(3y^3 + 3y \cos(y) + 1) y' + \frac{(2x+1)y}{x^2+1} = 0$	[_separable]	✓
1583	$y' = x^2(1+y^2)$	[_separable]	✓
1584	$y'(x^2+1) + xy = 0$	[_separable]	✓
1585	$y' = (x-1)(y-1)(-2+y)$	[_separable]	✓
1586	$(y-1)^2 y' = 2x+3$	[_separable]	✓
1587	$y' = \frac{x^2+3x+2}{-2+y}$ i.c.	[_separable]	✓
1588	$y' + x(y^2+y) = 0$ i.c.	[_separable]	✓
1589	$(3y^2+4y)y' + 2x + \cos(x) = 0$ i.c.	[_separable]	✓
1590	$y' + \frac{(1+y)(y-1)(-2+y)}{x+1} = 0$ i.c.	[_separable]	✓
1591	$y' + 2x(1+y) = 0$ i.c.	[_separable]	✓

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Table 2.12 first order ode exact  
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#	ODE	CAS classification	Solved?
1592	$y' = 2xy(1 + y^2)$ i.c.	[_separable]	✓
1593	$y'(x^2 + 2) = 4x(y^2 + 2y + 1)$	[_separable]	✓
1594	$y' = -2x(y^3 - 3y + 2)$ i.c.	[_separable]	✓
1595	$y' = \frac{2x}{1 + 2y}$ i.c.	[_separable]	✓
1596	$y' = 2y - y^2$ i.c.	[_quadrature]	✓
1597	$x + yy' = 0$ i.c.	[_separable]	✓
1598	$y' + x^2(1 + y)(-2 + y)^2 = 0$	[_separable]	✓
1599	$(x + 1)(-2 + x)y' + y = 0$ i.c.	[_separable]	✓
1600	$y' = \frac{1 + y^2}{x^2 + 1}$	[_separable]	✓
1602	$y' = \frac{\cos(x)}{\sin(y)}$ i.c.	[_separable]	✓
1603	$y' = ay - by^2$ i.c.	[_quadrature]	✓
1604	$y' + y = \frac{2xe^{-x}}{1 + ye^x}$	[[_Abel, '2nd type', 'class B']]	✓
1605	$xy' - 2y = \frac{x^6}{y + x^2}$	[_rational, [_Abel, '2nd type', 'class B']]	✓
1606	$y' - y = \frac{(x + 1)e^{4x}}{(y + e^x)^2}$	[[_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)']]	✓
1607	$y' - 2y = \frac{xe^{2x}}{1 - ye^{-2x}}$	[[_Abel, '2nd type', 'class A']]	✓
1613	$y' = 2xy$	[_separable]	✓
1617	$y' = x(y^2 - 1)^{2/3}$	[_separable]	✓
1620	$y' = \frac{\tan(y)}{x - 1}$	[_separable]	✓
1621	$y' = y^{2/5}$ i.c.	[_quadrature]	✓

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Table 2.12 first order ode exact  
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#	ODE	CAS classification	Solved?
1622	<i>i.c.</i> $y' = 3x(y-1)^{1/3}$	[_separable]	✓
1623	<i>i.c.</i> $y' = 3x(y-1)^{1/3}$	[_separable]	✓
1624	<i>i.c.</i> $y' = 3x(y-1)^{1/3}$	[_separable]	✓
1636	<i>i.c.</i> $y' - xy = xy^{3/2}$	[_separable]	✓
1638	<i>i.c.</i> $y' - 2y = 2\sqrt{y}$	[_quadrature]	✓
1642	$y' = \frac{x+y}{x}$	[_linear]	✓
1643	$y' = \frac{y^2 + 2xy}{x^2}$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
1644	$xy^3y' = y^4 + x^4$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
1647	$xyy' = x^2 + 2y^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
1649	<i>i.c.</i> $y' = \frac{xy + y^2}{x^2}$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
1650	<i>i.c.</i> $y' = \frac{x^3 + y^3}{xy^2}$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
1651	<i>i.c.</i> $xyy' + x^2 + y^2 = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
1654	<i>i.c.</i> $xyy' = 3x^2 + 4y^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
1655	$y' = \frac{x+y}{x-y}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
1656	$(-y + xy')(\ln(y) - \ln(x)) = x$	[[_homogeneous, 'class A']]	✓
1657	$y' = \frac{y^3 + 2xy^2 + x^2y + x^3}{x(x+y)^2}$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
1658	$y' = \frac{x+2y}{2x+y}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓

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Table 2.12 first order ode exact  
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#	ODE	CAS classification	Solved?
1659	$y' = \frac{y}{y-2x}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
1661	$y' = \frac{x^3 + x^2y + 3y^3}{x^3 + 3xy^2}$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
1669	$3xy^2y' = y^3 + x$	[[_homogeneous, 'class G', _rational, _Bernoulli]]	✓
1670	$xyy' = 3x^6 + 6y^2$	[[_homogeneous, 'class G', _rational, _Bernoulli]]	✓
1675	$2x(y + 2\sqrt{x})y' = (y + \sqrt{x})^2$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]]	✓
1676	$(y + e^{x^2})y' = 2x(y^2 + ye^{x^2} + e^{2x^2})$	[[_1st_order, '_with_sym- metry_[F(x),G(y)]', _Abel, '2nd type', 'class A']]]	✓
1677	$y' + \frac{2y}{x} = \frac{3y^2x^2 + 6xy + 2}{x^2(2xy + 3)}$ i.c.	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]]	✓
1678	$y' + \frac{3y}{x} = \frac{3x^4y^2 + 10x^2y + 6}{x^3(2x^2y + 5)}$ i.c.	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]]	✓
1680	$6y^2x^2 + 4x^3yy' = 0$	[_separable]	✓
1682	$14x^2y^3 + 21x^2y^2y' = 0$	[_quadrature]	✓
1683	$2x - 2y^2 + (12y^2 - 4xy)y' = 0$	[_exact, _rational]	✓
1684	$(x + y)^2 + (x + y)^2y' = 0$	[_quadrature]	✓
1686	$-2\sin(x)y^2 + 3y^3 - 2x + (4y\cos(x) + 9xy^2)y' = 0$	[_exact]	✓
1688	$3x^2 + 2xy + 4y^2 + (x^2 + 8xy + 18y)y' = 0$	[_exact, _rational, [_Abel, '2nd type', 'class B']]]	✓
1690	$\frac{1}{x} + 2x + \left(\frac{1}{y} + 2y\right)y' = 0$	[_separable]	✓
1692	$\frac{x}{(y^2 + x^2)^{3/2}} + \frac{yy'}{(y^2 + x^2)^{3/2}} = 0$	[_separable]	✓
1693	$e^x(y^2x^2 + 2xy^2) + 6x + (2x^2ye^x + 2)y' = 0$	[_exact, [_Abel, '2nd type', 'class B']]]	✓
1694	$x^2e^{y+x^2}(2x^2 + 3) + 4x + (x^3e^{y+x^2} - 12y^2)y' = 0$	[_exact]	✓

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Table 2.12 first order ode exact

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#	ODE	CAS classification	Solved?
1695	$e^{xy}(x^4y + 4x^3) + 3y + (x^5e^{xy} + 3x)y' = 0$	[_exact, [_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]']]	✓
1697	$4x^3y^2 - 6x^2y - 2x - 3 + (2x^4y - 2x^3)y' = 0$ i.c.	[_exact, _rational, [_Abel, '2nd type', 'class B']]	✓
1698	$-4y \cos(x) + 4 \sin(x) \cos(x) + \sec(x)^2 + (4y - 4 \sin(x))y' = 0$ i.c.	[_exact, [_1st_order, '_with_symmetry_[F(x),G(x)]'], [_Abel, '2nd type', 'class A']]	✓
1699	$(y^3 - 1)e^x + 3y^2(1 + e^x)y' = 0$ i.c.	[_separable]	✓
1700	$\sin(x) - y \sin(x) - 2 \cos(x) + \cos(x)y' = 0$ i.c.	[_linear]	✓
1701	$(2x - 1)(y - 1) + (x + 2)(x - 3)y' = 0$ i.c.	[_separable]	✓
1702	$7x + 4y + (4x + 3y)y' = 0$	[[_homogeneous, 'class A'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
1703	$e^x(x^4y^2 + 4x^3y^2 + 1) + (2x^4ye^x + 2y)y' = 0$	[_exact, _Bernoulli]	✓
1704	$x^3y^4 + x + (x^4y^3 + y)y' = 0$	[_exact, _rational]	✓
1705	$3x^2 + 2y + (2x + 2y)y' = 0$	[_exact, _rational, [_1st_order, '_with_symmetry_[F(x),G(x)]'], [_Abel, '2nd type', 'class A']]	✓
1706	$x^3y^4 + 2x + (x^4y^3 + 3y)y' = 0$	[_exact, _rational]	✓
1707	$2xyy' + x^2 + y^2 = 0$	[[_homogeneous, 'class A'], _exact, _rational, _Bernoulli]	✓
1708	$y' + \frac{2y}{x} = -\frac{2xy}{x^2 + 2x^2y + 1}$ i.c.	[_rational, [_Abel, '2nd type', 'class B']]	✓
1709	$y' - \frac{3y}{x} = \frac{2x^4(4x^3 - 3y)}{3x^5 + 3x^3 + 2y}$ i.c.	[_rational, [_Abel, '2nd type', 'class B']]	✓
1710	$y' + 2xy = -\frac{e^{-x^2}(3x + 2ye^{x^2})}{2x + 3ye^{x^2}}$ i.c.	[[_Abel, '2nd type', 'class B']]	✓

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Table 2.12 first order ode exact  
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#	ODE	CAS classification	Solved?
1711	$y + \left(2x + \frac{1}{y}\right) y' = 0$	[[_homogeneous, 'class G'], _rational, [_Abel, '2nd type', 'class B']]	✓
1712	$x^2 y' - y^2 = 0$	[_separable]	✓
1713	$y - xy' = 0$	[_separable]	✓
1714	$3x^2 y + 2x^3 y' = 0$	[_separable]	✓
1715	$2y^3 + 3y^2 y' = 0$	[_quadrature]	✓
1716	$5xy + 2y + 5 + 2xy' = 0$	[_linear]	✓
1717	$xy + x + 2y + 1 + (x + 1) y' = 0$	[_linear]	✓
1718	$27xy^2 + 8y^3 + (18x^2 y + 12xy^2) y' = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
1719	$6xy^2 + 2y + (12x^2 y + 6x + 3) y' = 0$	[_rational, [_Abel, '2nd type', 'class B']]	✓
1720	$y^2 + \left(xy^2 + 6xy + \frac{1}{y}\right) y' = 0$	[_rational, [_1st_or- der, '_with_symme- try_[F(x)*G(y),0]']]	✓
1721	$12x^3 y + 24y^2 x^2 + (9x^4 + 32x^3 y + 4y) y' = 0$	[_rational, [_Abel, '2nd type', 'class B']]	✓
1722	$x^2 y + 4xy + 2y + (x^2 + x) y' = 0$	[_separable]	✓
1723	$-y + (x^4 - x) y' = 0$	[_separable]	✓
1724	$\cos(x) \cos(y) + (\sin(x) \cos(y) - \sin(x) \sin(y) + y) y' = 0$	[[_1st_order, '_with_sym- metry_[F(x)*G(y),0]']]	✓
1725	$2xy + y^2 + (2xy + x^2 - 2y^2 x^2 - 2xy^3) y' = 0$	[_rational]	✓
1726	$y \sin(y) + x(\sin(y) - y \cos(y)) y' = 0$	[_separable]	✓
1727	$ay + bxy + (cx + dxy) y' = 0$	[_separable]	✓
1729	$2y + 3(x^2 + x^2 y^3) y' = 0$	[_separable]	✓
1730	$a \cos(x) y - \sin(x) y^2 + (b \cos(x) y - x \sin(x) y) y' = 0$	[_linear]	✓
1731	$x^4 y^4 + x^5 y^3 y' = 0$	[_separable]	✓
1732	$y(x \cos(x) + 2 \sin(x)) + x(1 + y) y' = 0$	[_separable]	✓
1733	$x^4 y^3 + y + (x^5 y^2 - x) y' = 0$	[[_homogeneous, 'class G'], _rational]	✓

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Table 2.12 first order ode exact  
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#	ODE	CAS classification	Solved?
1734	$3xy + 2y^2 + y + (x^2 + 2xy + x + 2y)y' = 0$	[[_homogeneous, 'class D'], _rational, [_Abel, '2nd type', 'class B']]	✓
1735	$12xy + 6y^3 + (9x^2 + 10xy^2)y' = 0$	[[_homogeneous, 'class G'], _rational]	✓
1736	$3y^2x^2 + 2y + 2xy' = 0$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
1792	$y' + y^2 + k^2 = 0$	[_quadrature]	✓
1793	$y' + y^2 - 3y + 2 = 0$	[_quadrature]	✓
1794	$y' + y^2 + 5y - 6 = 0$	[_quadrature]	✓
1795	$y' + y^2 + 8y + 7 = 0$	[_quadrature]	✓
1796	$y' + y^2 + 14y + 50 = 0$	[_quadrature]	✓
1797	$6y' + 6y^2 - y - 1 = 0$	[_quadrature]	✓
1798	$36y' + 36y^2 - 12y + 1 = 0$	[_quadrature]	✓
1804	$x^2(y' + y^2) - 7xy + 7 = 0$	[[_homogeneous, 'class G'], _rational, _Riccati]	✓
2299	$\cos(t)y + y' = 0$	[_separable]	✓
2300	$\sqrt{t} \sin(t)y + y' = 0$	[_separable]	✓
2301	$\frac{2ty}{t^2 + 1} + y' = \frac{1}{t^2 + 1}$	[_linear]	✓
2302	$y' + y = te^t$	[[_linear, 'class A']]	✓
2303	$t^2y + y' = 1$	[_linear]	✓
2304	$t^2y + y' = t^2$	[_separable]	✓
2305	$\frac{ty}{t^2 + 1} + y' = 1 - \frac{t^3y}{t^4 + 1}$	[_linear]	✓
2306	$\sqrt{t^2 + 1}y + y' = 0$ i.c.	[_separable]	✓
2307	$\sqrt{t^2 + 1}ye^{-t} + y' = 0$	[_separable]	✓
2308	$-2ty + y' = t$ i.c.	[_separable]	✓
2309	$ty + y' = t + 1$ i.c.	[_linear]	✓
2310	$y' + y = \frac{1}{t^2 + 1}$ i.c.	[_linear]	✓

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Table 2.12 first order ode exact  
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#	ODE	CAS classification	Solved?
2311	$-2ty + y' = 1$ i.c.	[_linear]	✓
2312	$ty + (t^2 + 1)y' = (t^2 + 1)^{5/2}$	[_linear]	✓
2313	$4ty + (t^2 + 1)y' = t$ i.c.	[_separable]	✓
2318	$(t^2 + 1)y' = 1 + y^2$	[_separable]	✓
2319	$y' = (t + 1)(y + 1)$	[_separable]	✓
2320	$y' = 1 - t + y^2 - ty^2$	[_separable]	✓
2321	$y' = e^{3+t+y}$	[_separable]	✓
2322	$\cos(y) \sin(t) y' = \cos(t) \sin(y)$	[_separable]	✓
2323	$t^2(1 + y^2) + 2yy' = 0$ i.c.	[_separable]	✓
2324	$y' = \frac{2t}{y + t^2y}$ i.c.	[_separable]	✓
2325	$\sqrt{t^2 + 1} y' = \frac{ty^3}{\sqrt{t^2 + 1}}$ i.c.	[_separable]	✓
2326	$y' = \frac{3t^2 + 4t + 2}{-2 + 2y}$ i.c.	[_separable]	✓
2327	$\cos(y) y' = -\frac{t \sin(y)}{t^2 + 1}$ i.c.	[_separable]	✓
2328	$y' = k(a - y)(b - y)$ i.c.	[_quadrature]	✓
2329	$3ty' = \cos(t) y$ i.c.	[_separable]	✓
2331	$2tyy' = 3y^2 - t^2$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
2333	$y' = \frac{y + t}{t - y}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
2334	$e^{\frac{t}{y}}(-t + y)y' + y(1 + e^{\frac{t}{y}}) = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓
2337	$t + 2y + 3 + (2t + 4y - 1)y' = 0$	[[_homogeneous, 'class C'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓

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Table 2.12 first order ode exact  
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#	ODE	CAS classification	Solved?
2338	$2t \sin(y) + e^t y^3 + (t^2 \cos(y) + 3e^t y^2) y' = 0$	[_exact]	✓
2339	$1 + e^{ty}(ty + 1) + (1 + e^{ty}t^2) y' = 0$	[_exact]	✓
2340	$\sec(t) \tan(t) + \sec(t)^2 y + (\tan(t) + 2y) y' = 0$	[_exact, [_Abel, '2nd type', 'class A']]	✓
2341	$\frac{y^2}{2} - 2e^t y + (-e^t + y) y' = 0$	[[_1st_order, __with_linear_symmetries], [_Abel, '2nd type', 'class A']]	✓
2342	$2ty^3 + 3t^2 y^2 y' = 0$ i.c.	[_separable]	✓
2343	$2t \cos(y) + 3t^2 y + (t^3 - t^2 \sin(y) - y) y' = 0$ i.c.	[_exact]	✓
2344	$3t^2 + 4ty + (2t^2 + 2y) y' = 0$ i.c.	[_exact, __rational, [_1st_order, '_with_symmetry_[F(x),G(x)]'], [_Abel, '2nd type', 'class A']]	✓
2345	$2t - 2e^{ty} \sin(2t) + e^{ty} \cos(2t) y + (-3 + e^{ty}t \cos(2t)) y' = 0$ i.c.	[_exact]	✓
2346	$3ty + y^2 + (t^2 + ty) y' = 0$ i.c.	[[_homogeneous, 'class A'], __rational, [_Abel, '2nd type', 'class B']]	✓
2360	$y' = t(y + 1)$ i.c.	[_separable]	✓
2361	$y' = t\sqrt{1 - y^2}$ i.c.	[_separable]	✓
2472	$\cos(t) y + y' = 0$	[_separable]	✓
2473	$\sqrt{t} \sin(t) y + y' = 0$	[_separable]	✓
2474	$\frac{2ty}{t^2 + 1} + y' = \frac{1}{t^2 + 1}$	[_linear]	✓
2475	$y' + y = t e^t$	[[_linear, 'class A']]	✓
2476	$t^2 y + y' = 1$	[_linear]	✓
2477	$t^2 y + y' = t^2$	[_separable]	✓
2478	$\frac{ty}{t^2 + 1} + y' = 1 - \frac{t^3 y}{t^4 + 1}$	[_linear]	✓
2479	$\sqrt{t^2 + 1} y + y' = 0$ i.c.	[_separable]	✓

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Table 2.12 first order ode exact  
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#	ODE	CAS classification	Solved?
2480	$\sqrt{t^2 + 1} y e^{-t} + y' = 0$ i.c.	[_separable]	✓
2481	$\sqrt{t^2 + 1} y e^{-t} + y' = 0$ i.c.	[_separable]	✓
2482	$-2ty + y' = t$ i.c.	[_separable]	✓
2483	$ty + y' = t + 1$ i.c.	[_linear]	✓
2484	$y' + y = \frac{1}{t^2 + 1}$ i.c.	[_linear]	✓
2485	$-2ty + y' = 1$ i.c.	[_linear]	✓
2486	$ty + (t^2 + 1) y' = (t^2 + 1)^{5/2}$	[_linear]	✓
2487	$4ty + (t^2 + 1) y' = t$ i.c.	[_separable]	✓
2489	$(t^2 + 1) y' = 1 + y^2$	[_separable]	✓
2490	$y' = (t + 1)(y + 1)$	[_separable]	✓
2491	$y' = 1 - t + y^2 - ty^2$	[_separable]	✓
2492	$y' = e^{3+t+y}$	[_separable]	✓
2493	$\cos(y) \sin(t) y' = \cos(t) \sin(y)$	[_separable]	✓
2494	$t^2(1 + y^2) + 2yy' = 0$ i.c.	[_separable]	✓
2495	$y' = \frac{2t}{y + t^2 y}$ i.c.	[_separable]	✓
2496	$\sqrt{1 + y^2} y' = \frac{ty^3}{\sqrt{t^2 + 1}}$ i.c.	[_separable]	✓
2497	$y' = \frac{3t^2 + 4t + 2}{-2 + 2y}$ i.c.	[_separable]	✓
2498	$\cos(y) y' = -\frac{t \sin(y)}{t^2 + 1}$ i.c.	[_separable]	✓
2499	$y' = k(a - y)(b - y)$ i.c.	[_quadrature]	✓
2500	$3ty' = \cos(t) y$ i.c.	[_separable]	✓

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Table 2.12 first order ode exact  
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#	ODE	CAS classification	Solved?
2501	$y' = \frac{2y}{t} + \frac{y^2}{t^2}$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
2503	$2tyy' = 3y^2 - t^2$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
2505	$y' = \frac{y+t}{t-y}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
2506	$e^{\frac{t}{y}}(-t+y)y' + y(1+e^{\frac{t}{y}}) = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓
2509	$t + 2y + 3 + (2t + 4y - 1)y' = 0$	[[_homogeneous, 'class C'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
2510	$2t \sin(y) + e^t y^3 + (t^2 \cos(y) + 3e^t y^2)y' = 0$	[_exact]	✓
2511	$1 + e^{ty}(ty + 1) + (1 + e^{ty}t^2)y' = 0$	[_exact]	✓
2512	$\sec(t) \tan(t) + \sec(t)^2 y + (\tan(t) + 2y)y' = 0$	[_exact, [_Abel, '2nd type', 'class A']]	✓
2513	$\frac{y^2}{2} - 2e^t y + (-e^t + y)y' = 0$	[[_1st_order, __with_lin- ear_symmetries], [_Abel, '2nd type', 'class A']]	✓
2514	<i>i.c.</i> $2ty^3 + 3t^2 y^2 y' = 0$	[_separable]	✓
2516	<i>i.c.</i> $3t^2 + 4ty + (2t^2 + 2y)y' = 0$	[_exact, _rational, [_1st_order, 'with_sym- metry_[F(x),G(x)'], [_Abel, '2nd type', 'class A']]	✓
2517	<i>i.c.</i> $2t - 2e^{ty} \sin(2t) + e^{ty} \cos(2t)y$ $+ (-3 + e^{ty}t \cos(2t))y' = 0$	[_exact]	✓
2518	<i>i.c.</i> $3ty + y^2 + (t^2 + ty)y' = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
2519	<i>i.c.</i> $y' = 2t(y + 1)$	[_separable]	✓
2535	<i>i.c.</i> $y' = t(y + 1)$	[_separable]	✓
2536	<i>i.c.</i> $y' = ty^a$	[_separable]	✓

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Table 2.12 first order ode exact  
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#	ODE	CAS classification	Solved?
2537	<i>i.c.</i> $y' = t\sqrt{1-y^2}$	[_separable]	✓
2809	$x' = x(-x+1)$	[_quadrature]	✓
2810	$x' = -x(-x+1)$	[_quadrature]	✓
2811	$x' = x^2$	[_quadrature]	✓
2841	$y'(x^2+1) + xy = 0$	[_separable]	✓
2842	$xy^2 + x + (y - x^2y)y' = 0$	[_separable]	✓
2843	$1 + y^2 + y'(x^2+1) = 0$	[_separable]	✓
2844	$xy' + y = 0$	[_separable]	✓
2845	$y' = 2xy$	[_separable]	✓
2846	$xy^2 + x + (x^2y - y)y' = 0$	[_separable]	✓
2847	$\sqrt{-x^2+1} + \sqrt{1-y^2}y' = 0$	[_separable]	✓
2848	$(x+1)y' - 1 + y = 0$	[_separable]	✓
2849	$y' \tan(x) - y = 1$	[_separable]	✓
2850	$y + 3 + \cot(x)y' = 0$	[_separable]	✓
2851	$y' = \frac{x}{y}$	[_separable]	✓
2852	$x' = 1 - \sin(2t)$	[_quadrature]	✓
2853	$xy' + y = y^2$	[_separable]	✓
2856	$xy' + y = xy(y' - 1)$	[_separable]	✓
2857	$xy + \sqrt{x^2+1}y' = 0$	[_separable]	✓
2858	$y = xy + x^2y'$	[_separable]	✓
2859	$\tan(x)\sin(x)^2 + \cos(x)^2\cot(y)y' = 0$	[_separable]	✓
2860	$y^2 + yy' + x^2yy' - 1 = 0$	[_separable]	✓
2861	<i>i.c.</i> $y' = \frac{y}{x}$	[_separable]	✓
2862	<i>i.c.</i> $xy' + 2y = 0$	[_separable]	✓
2863	<i>i.c.</i> $\sin(x)\cos(y) + \cos(x)\sin(y)y' = 0$	[_separable]	✓
2864	<i>i.c.</i> $x^2y' + y^2 = 0$	[_separable]	✓

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Table 2.12 first order ode exact  
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#	ODE	CAS classification	Solved?
2865	$y' = e^y$ i.c.	[_quadrature]	✓
2866	$e^y(y' + 1) = 1$ i.c.	[_quadrature]	✓
2867	$1 + y^2 = \frac{y'}{x^3(x-1)}$ i.c.	[_separable]	✓
2871	$x + y = xy'$	[_linear]	✓
2872	$(x + y)y' + x = y$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
2874	$y' = \frac{2x - y}{4y + x}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
2878	$y^2 + x^2 = xy y'$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
2879	$(xy - x^2)y' - y^2 = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
2880	$xy' + y = 2\sqrt{xy}$	[[_homogeneous, 'class A', _dAlembert]	✓
2881	$x + y + y'(x - y) = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
2885	$y^2 + x^2 = 2xy y'$ i.c.	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
2886	$\left(\frac{x}{y} + \frac{y}{x}\right)y' + 1 = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
2888	$y' = \frac{x + y}{x - y}$ i.c.	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
2890	$(3xy - 2x^2)y' = 2y^2 - xy$ i.c.	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
2898	$x - y + (y - x + 1)y' = 0$	[[_homogeneous, 'class C', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
2914	$x + y + (x - 2y)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓

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Table 2.12 first order ode exact  
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#	ODE	CAS classification	Solved?
2915	$3x + y + (3y + x)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
2916	$a_1x + b_1y + c_1 + (b_1x + b_2y + c_2)y' = 0$	[[_homogeneous, 'class C', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
2917	$x(6xy + 5) + (2x^3 + 3y)y' = 0$	[_exact, _rational, [_1st_order, '_with_sym- metry_[F(x),G(x)'], [_Abel, '2nd type', 'class A']]]	✓
2918	$3x^2y + xy^2 + e^x + (x^3 + x^2y + \sin(y))y' = 0$	[_exact]	✓
2919	$2xy - (y^2 + x^2)y' = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
2920	$y \cos(x) - 2 \sin(y) = (2x \cos(y) - \sin(x))y'$	[_exact]	✓
2921	$\frac{2xy - 1}{y} + \frac{(3y + x)y'}{y^2} = 0$	[[_homogeneous, 'class D', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
2922	$y e^x - 2x + e^x y' = 0$	[[_linear, 'class A']]]	✓
2923	$3y \sin(x) - \cos(y) + (x \sin(y) - 3 \cos(x))y' = 0$	[_exact]	✓
2925	$\frac{2}{y} - \frac{y}{x^2} + \left(\frac{1}{x} - \frac{2x}{y^2}\right)y' = 0$	[_separable]	✓
2926	$\frac{xy + 1}{y} + \frac{(2y - x)y'}{y^2} = 0$	[[_homogeneous, 'class D', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
2927	$\frac{y(2 + x^3y)}{x^3} = \frac{(1 - 2x^3y)y'}{x^2}$	[[_homogeneous, 'class G', _exact, _rational, [_Abel, '2nd type', 'class B']]]	✓
2928	$y^2 \csc(x)^2 + 6xy - 2 = (2y \cot(x) - 3x^2)y'$	[_exact, [_Abel, '2nd type', 'class B']]]	✓
2929	$\frac{2y}{x^3} + \frac{2x}{y^2} = \left(\frac{1}{x^2} + \frac{2x^2}{y^3}\right)y'$	[[_homogeneous, 'class G', _exact, _rational]]	✓
2930	$\cos(y) - (x \sin(y) - y^2)y' = 0$	[_exact, [_1st_or- der, '_with_symme- try_[F(x)*G(y),0]']]]	✓
2931	$2y \sin(xy) + (2x \sin(xy) + y^3)y' = 0$	[_exact]	✓

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Table 2.12 first order ode exact

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#	ODE	CAS classification	Solved?
2932	$\frac{x \cos\left(\frac{x}{y}\right)}{y} + \sin\left(\frac{x}{y}\right) + \cos(x) - \frac{x^2 \cos\left(\frac{x}{y}\right) y'}{y^2} = 0$	[_exact]	✓
2933	$y e^{xy} + 2xy + (x e^{xy} + x^2) y' = 0$	[_exact]	✓
2934	$\frac{x^2 + 3y^2}{x(3x^2 + 4y^2)} + \frac{(2x^2 + y^2) y'}{y(3x^2 + 4y^2)} = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]	✓
2935	$\frac{x^2 - y^2}{x(2x^2 + y^2)} + \frac{(x^2 + 2y^2) y'}{y(2x^2 + y^2)} = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]	✓
2936	$\frac{2x^2}{y^2 + x^2} + \ln(y^2 + x^2) + \frac{2xy y'}{y^2 + x^2} = 0$	[_exact]	✓
2937	$xy' + \ln(x) - y = 0$	[_linear]	✓
2938	$xy + (y + x^2) y' = 0$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class A']]	✓
2939	$(x - 2xy) y' + 2y = 0$	[_separable]	✓
2941	$xy^3 - 1 + x^2 y^2 y' = 0$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
2942	$(x^3 y^3 - 1) y' + x^2 y^4 = 0$	[[_homogeneous, 'class G', _rational]	✓
2943	$y(y - x^2) + x^3 y' = 0$	[[_homogeneous, 'class D', _rational, _Bernoulli]	✓
2944	$y + xy^2 + (x - x^2 y) y' = 0$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]	✓
2946	$2xy + (y - x^2) y' = 0$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class A']]	✓
2947	$y = x(x^2 y - 1) y'$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]	✓
2948	$e^x y' = 2xy^2 + y e^x$	[_Bernoulli]	✓
2949	$(x^2 + y^2 + x) y' = y$	[_rational]	✓
2950	$(2x + 3x^2 y) y' + y + 2xy^2 = 0$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]	✓

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#	ODE	CAS classification	Solved?
2951	$2x^2yy' + x^4e^x - 2xy^2 = 0$	[[_homogeneous, 'class D', _Bernoulli]	✓
2952	$y(1 - x^4y^2) + xy' = 0$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
2953	$y(x^2 - 1) + x(x^2 + 1)y' = 0$	[_separable]	✓
2954	$y^2x^2 - y + (2x^3y + x)y' = 0$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]	✓
2955	$(x^2 + y^2 - 2y)y' = 2x$	[_rational, [_1st_or- der, '_with_symme- try_[F(x)*G(y),0]']]	✓
2958	$xy' + 2y = x^2$	[_linear]	✓
2959	$y' - xy = e^{\frac{x^2}{2}} \cos(x)$	[_linear]	✓
2960	$y' + 2xy = 2xe^{-x^2}$	[_linear]	✓
2961	$y' = y + 3e^x x^2$	[[_linear, 'class A']]	✓
2962	$x' + x = e^{-y}$	[[_linear, 'class A']]	✓
2963	$yx' + (1 + y)x = e^y$	[_linear]	✓
2964	$y + (2x - 3y)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
2965	$xy' - 2x^4 - 2y = 0$	[_linear]	✓
2966	$1 = (e^y + x)y'$	[[_1st_order, _with_expo- nential_symmetries]]	✓
2967	$y^2x' + (y^2 + 2y)x = 1$	[_linear]	✓
2968	$xy' = 5y + x + 1$	[_linear]	✓
2969	$x^2y' + y - 2xy - 2x^2 = 0$	[_linear]	✓
2970	$(x + 1)y' + 2y = \frac{e^x}{x + 1}$	[_linear]	✓
2971	$\cos(y)^2 + (x - \tan(y))y' = 0$	[[_1st_order, '_with_sym- metry_[F(x)*G(y),0]']]	✓
2972	$2y = (y^4 + x)y'$	[[_homogeneous, 'class G', _rational]	✓
2973	$\cos(\theta)r' = 2 + 2r \sin(\theta)$	[_linear]	✓
2974	$\sin(\theta)r' + 1 + r \tan(\theta) = \cos(\theta)$	[_linear]	✓

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Table 2.12 first order ode exact  
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#	ODE	CAS classification	Solved?
2975	$yx' = 2ye^{3y} + x(3y + 2)$	[_linear]	✓
2976 i.c.	$y^2 + 1 + (2xy - y^2) y' = 0$	[_exact, _rational, [_1st_order, ‘_with_symmetry_[F(x)*G(y),0]’]]	✓
2977	$y' + y \cot(x) - \sec(x) = 0$	[_linear]	✓
2978 i.c.	$y + y^3 + 4(-1 + xy^2) y' = 0$	[_rational, [_1st_order, ‘_with_symmetry_[F(x)*G(y),0]’]]	✓
2979 i.c.	$2y - xy - 3 + xy' = 0$	[_linear]	✓
2980 i.c.	$y + 2(x - 2y^2) y' = 0$	[[_homogeneous, ‘class G’], _rational]	✓
2981 i.c.	$(x^2 - 1) y' + (x^2 - 1)^2 + 4y = 0$	[_linear]	✓
2982	$3y^2 y' - xy^3 = e^{\frac{x^2}{2}} \cos(x)$	[_Bernoulli]	✓
2983	$y^3 y' + xy^4 = x e^{-x^2}$	[_Bernoulli]	✓
2984	$\cosh(y) y' + \sinh(y) - e^{-x} = 0$	[‘y=_G(x,y)’]	✓
2985	$\sin(\theta) \theta' + \cos(\theta) - t e^{-t} = 0$	[‘y=_G(x,y)’]	✓
2986	$xyy' = x^2 - y^2$	[[_homogeneous, ‘class A’], _rational, _Bernoulli]	✓
2988	$tx' + x(1 - x^2 t^4) = 0$	[[_homogeneous, ‘class G’], _rational, _Bernoulli]	✓
2989	$x^2 y' + y^2 = xy$	[[_homogeneous, ‘class A’], _rational, _Bernoulli]	✓
2990	$\csc(y) \cot(y) y' = \csc(y) + e^x$	[‘y=_G(x,y)’]	✓
2991	$y' - xy = \frac{x}{y}$	[_separable]	✓
2992	$xy' + y = y^2 x^2 \cos(x)$	[_Bernoulli]	✓
2993	$r' + \left(r - \frac{1}{r}\right) \theta = 0$	[_separable]	✓
2995	$3y' + \frac{2y}{x+1} = \frac{x}{y^2}$	[_rational, _Bernoulli]	✓
2996	$\cos(y) y' + (\sin(y) - 1) \cos(x) = 0$	[_separable]	✓
2997	$(x \tan(y)^2 + x) y' = 2x^2 + \tan(y)$	[‘y=_G(x,y)’]	✓
3004	$(1 - x) y' - 1 - y = 0$	[_separable]	✓

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Table 2.12 first order ode exact  
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#	ODE	CAS classification	Solved?
3006	$2x + y - (x - 2y)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
3007	$x \ln(x)y' + y - x = 0$	[_linear]	✓
3009	$2xy - 2xy^3 + x^3 + (x^2 + y^2 - 3y^2x^2)y' = 0$	[_exact, _rational]	✓
3010	$2e^x - t^2 + te^xx' = 0$	[[_1st_order, __with_lin- ear_symmetries]]	✓
3011	$2y + 6 = xy y'$	[_separable]	✓
3013	$y \sin(x) - 2 \cos(y) + \tan(x)$ $- (\cos(x) - 2x \sin(y) + \sin(y))y' = 0$	[_exact]	✓
3014	$x^2y - (x^3 + y^3)y' = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
3015	$y - xy' = 2y' + 2y^2$	[_separable]	✓
3016	$\tan(y) = (3x + 4)y'$	[_separable]	✓
3018	$2xy + y^4 + (xy^3 - 2x^2)y' = 0$	[[_homogeneous, 'class G', _rational]]	✓
3019	$y + (-2y + 3x)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
3020	$r' = r \cot(\theta)$	[_separable]	✓
3022	$2x^3 - y^3 - 3x + 3xy^2y' = 0$	[_rational, _Bernoulli]	✓
3024	$y' = \cos(y) \cos(x)^2$	[_separable]	✓
3026	$1 + e^{\frac{x}{y}} + e^{\frac{x}{y}} \left(1 - \frac{x}{y}\right) y' = 0$	[[_homogeneous, 'class A', _exact, _dAlembert]]	✓
3027	$y' + x + y \cot(x) = 0$	[_linear]	✓
3028	$-6 + 3x = xy y'$	[_separable]	✓
3029	$x - 2xy + e^y + (y - x^2 + xe^y)y' = 0$	[_exact]	✓
3030	$2xy' - y + \frac{x^2}{y^2} = 0$	[[_homogeneous, 'class G', _rational, _Bernoulli]]	✓
3031	$xy' + y(1 + y^2) = 0$	[_separable]	✓
3033	$3e^x \tan(y) = (1 - e^x) \sec(y)^2 y'$	[_separable]	✓
3034	$\sec(y)^2 y' = \tan(y) + 2xe^x$	['y=_G(x,y)']	✓

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Table 2.12 first order ode exact  
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#	ODE	CAS classification	Solved?
3035	$2x \tan(y) + 3y^2 + x^2 + (x^2 \sec(y)^2 + 6xy - y^2) y' = 0$	[_exact]	✓
3036	$y \cos\left(\frac{x}{y}\right) - \left(y + x \cos\left(\frac{x}{y}\right)\right) y' = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓
3041	$xy - y^2 - x^2 y' = 0$ i.c.	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
3042	$x e^{-y^2} + y y' = 0$ i.c.	[_separable]	✓
3043	$\frac{2y^3 - 2x^2 y^3 - x + x y^2 \ln(y)}{x y^2} + \frac{(2y^3 \ln(x) - x^2 y^3 + 2x + x y^2) y'}{y^3} = 0$ i.c.	[_exact]	✓
3046	$x y' = x^4 + 4y$ i.c.	[_linear]	✓
3047	$x y' + y = x^3 y^6$ i.c.	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
3049	$y^2 + x^2 = 2x y y'$ i.c.	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
3050	$3xy + (3x^2 + y^2) y' = 0$ i.c.	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
3051	$2y + y' = 3e^{2x}$ i.c.	[[_linear, 'class A']]	✓
3052	$4xy^2 + y'(x^2 + 1) = 0$ i.c.	[_separable]	✓
3055	$2xy - 2y + 1 + x(x - 1) y' = 0$ i.c.	[_linear]	✓
3057	$2y'(x^2 + 1) = (2y^2 - 1) xy$ i.c.	[_separable]	✓
3058	$y' - y = 0$	[_quadrature]	✓
3169	$y' + P(x)y = Q(x)$	[_linear]	✓
3285	$4y^2 = x^2 y'^2$	[_separable]	✓
3286	$x y y'^2 + (x + y) y' + 1 = 0$	[_quadrature]	✓
3291	$y^2 y'^2 + x y y' - 2x^2 = 0$	[_separable]	✓
3293	$y'^3 + (x + y - 2xy) y'^2 - 2y' xy(x + y) = 0$	[_quadrature]	✓
3294	$y y'^2 + (y^2 - x^3 - x y^2) y' - xy(y^2 + x^2) = 0$	[_quadrature]	✓

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#	ODE	CAS classification	Solved?
3334	$y^2 - 2xyy' + y'^2(x^2 - 1) = 0$	[_separable]	✓
3403	$y' = 2$	[_quadrature]	✓
3404	$y' = 2e^{3x}$	[_quadrature]	✓
3405	$y' = \frac{2}{\sqrt{-x^2 + 1}}$	[_quadrature]	✓
3406	$y' = e^{x^2}$	[_quadrature]	✓
3407	$y' = xe^{x^2}$	[_quadrature]	✓
3408	$y' = \arcsin(x)$	[_quadrature]	✓
3409	$y' = xy$	[_separable]	✓
3410	$y' = y^2x^2$	[_separable]	✓
3411	$y' = -xe^y$	[_separable]	✓
3412	$y' \sin(y) = x^2$	[_separable]	✓
3413	$xy' = \sqrt{1 - y^2}$	[_separable]	✓
3414	$y'^2 - y^2 = 0$	[_quadrature]	✓
3415	$y'^2 - 3y' + 2 = 0$	[_quadrature]	✓
3416	$y'(x^2 + 1) = 1$	[_quadrature]	✓
3417	$y' \sin(x) = 1$	[_quadrature]	✓
3418	$y' = t^2 + 3$	[_quadrature]	✓
3419	$y' = te^{2t}$	[_quadrature]	✓
3420	$y' = \sin(3t)$	[_quadrature]	✓
3421	$y' = \sin(t)^2$	[_quadrature]	✓
3422	$y' = \frac{t}{t^2 + 4}$	[_quadrature]	✓
3423	$y' = \ln(t)$	[_quadrature]	✓
3424	$y' = \frac{t}{\sqrt{t} + 1}$	[_quadrature]	✓
3425	$y' = 2y - 4$	[_quadrature]	✓
	<i>i.c.</i>		
3426	$y' = -y^3$	[_quadrature]	✓
	<i>i.c.</i>		

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#	ODE	CAS classification	Solved?
3427	$y' = \frac{e^t}{y}$ i.c.	[_separable]	✓
3428	$y' = t e^{2t}$ i.c.	[_quadrature]	✓
3429	$y' = \sin(t)^2$ i.c.	[_quadrature]	✓
3430	$y' = 8 e^{4t} + t$ i.c.	[_quadrature]	✓
3431	$y' = \frac{y}{t}$	[_separable]	✓
3432	$y' = -\frac{t}{y}$	[_separable]	✓
3433	$y' = y^2 - y$	[_quadrature]	✓
3434	$y' = -1 + y$	[_quadrature]	✓
3435	$y' = 1 - y$	[_quadrature]	✓
3436	$y' = y^3 - y^2$	[_quadrature]	✓
3437	$y' = 1 - y^2$	[_quadrature]	✓
3438	$y' = (t^2 + 1) y$	[_separable]	✓
3439	$y' = -y$	[_quadrature]	✓
3440	$y' = 2y + e^{-3t}$	[[_linear, 'class A']]	✓
3441	$y' = 2y + e^{2t}$	[[_linear, 'class A']]	✓
3442	$y' = t - y$	[[_linear, 'class A']]	✓
3443	$ty' + 2y = \sin(t)$	[_linear]	✓
3444	$y' = \tan(t) y + \sec(t)$	[_linear]	✓
3445	$y' = \frac{2ty}{t^2 + 1} + t + 1$	[_linear]	✓
3446	$y' = \tan(t) y + \sec(t)^3$	[_linear]	✓
3447	$y' = y$ i.c.	[_quadrature]	✓
3448	$y' = 2y$ i.c.	[_quadrature]	✓
3449	$ty' = y + t^3$ i.c.	[_linear]	✓
3450	$y' = -\tan(t) y + \sec(t)$ i.c.	[_linear]	✓

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#	ODE	CAS classification	Solved?
3451	$y' = \frac{2y}{t+1}$ i.c.	[_separable]	✓
3452	$ty' = -y + t^3$ i.c.	[_linear]	✓
3453	$y' + 4 \tan(2t)y = \tan(2t)$ i.c.	[_separable]	✓
3454	$t \ln(t) y' = t \ln(t) - y$ i.c.	[_linear]	✓
3455	$y' = \frac{2y}{-t^2+1} + 3$ i.c.	[_linear]	✓
3456	$y' = -\cot(t)y + 6 \cos(t)^2$ i.c.	[_linear]	✓
3457	$y' - xy^3 = 0$	[_separable]	✓
3458	$\frac{y'}{\tan(x)} - \frac{y}{x^2+1} = 0$	[_separable]	✓
3459	$x^2y' + xy^2 = 4y^2$	[_separable]	✓
3460	$y(2y^2x^2 + 1)y' + x(y^4 + 1) = 0$	[_exact, _rational, [_1st_order, '_with_sym- metry_[F(x)*G(y),0]']]	✓
3461	$2xy' + 3x + y = 0$	[_linear]	✓
3462	$(\cos(x)^2 + y \sin(2x))y' + y^2 = 0$	[[_1st_order, '_with_sym- metry_[F(x)*G(y),0]'], [_Abel, '2nd type', 'class B']]	✓
3463	$(-x^2 + 1)y' + 4xy = (-x^2 + 1)^{3/2}$	[_linear]	✓
3464	$y' - y \cot(x) + \frac{1}{\sin(x)} = 0$	[_linear]	✓
3465	$(x + y^3)y' = y$	[[_homogeneous, 'class G'], _rational]	✓
3466	$y' = -\frac{2x^2 + y^2 + x}{xy}$	[_rational, _Bernoulli]	✓
3468	$y' = \frac{1}{x + 2y + 1}$	[[_homogeneous, 'class C'], [_Abel, '2nd type', 'class C'], _dAlembert]	✓
3470	$y' = \tan(x) \cos(y) (\cos(y) + \sin(y))$	[_separable]	✓

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#	ODE	CAS classification	Solved?
3471	$x(1 - 2x^2y)y' + y = 3y^2x^2$ i.c.	[[_homogeneous, 'class G'], _exact, _rational, [_Abel, '2nd type', 'class B']]	✓
3472	$y' + \frac{xy}{a^2 + x^2} = x$	[_linear]	✓
3473	$y' = \frac{4y^2}{x^2} - y^2$	[_separable]	✓
3474	$y' - \frac{y}{x} = 1$ i.c.	[_linear]	✓
3475	$y' - \tan(x)y = 1$ i.c.	[_linear]	✓
3478	$y' \sin(x) + 2y \cos(x) = 1$ i.c.	[_linear]	✓
3480	$xy' + y - \frac{y^2}{x^{3/2}} = 0$ i.c.	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
3481	$(2 \sin(y) - x)y' = \tan(y)$ i.c.	[[_1st_order, '_with_sym- metry_[F(x)*G(y),0]']]	✓
3482	$(2 \sin(y) - x)y' = \tan(y)$ i.c.	[[_1st_order, '_with_sym- metry_[F(x)*G(y),0]']]	✓
3515	$y' = 2xy$	[_separable]	✓
3516	$y' = \frac{y^2}{x^2 + 1}$	[_separable]	✓
3517	$e^{x+y}y' - 1 = 0$	[_separable]	✓
3518	$y' = \frac{y}{x \ln(x)}$	[_separable]	✓
3519	$y - (-2 + x)y' = 0$	[_separable]	✓
3520	$y' = \frac{2x(y-1)}{x^2 + 3}$	[_separable]	✓
3521	$y - xy' = 3 - 2x^2y'$	[_separable]	✓
3522	$y' = \frac{\cos(x-y)}{\sin(x)\sin(y)} - 1$	[_separable]	✓
3523	$y' = \frac{x(y^2 - 1)}{2(-2 + x)(x - 1)}$	[_separable]	✓
3524	$y' = \frac{x^2y - 32}{-x^2 + 16} + 32$	[_linear]	✓
3525	$(x - a)(x - b)y' - y + c = 0$	[_separable]	✓

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Table 2.12 first order ode exact  
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#	ODE	CAS classification	Solved?
3526	$y'(x^2 + 1) + y^2 = -1$ i.c.	[_separable]	✓
3527	$(-x^2 + 1)y' + xy = ax$ i.c.	[_separable]	✓
3528	$y' = 1 - \frac{\sin(x+y)}{\sin(y)\cos(x)}$ i.c.	[_separable]	✓
3529	$y' = y^3 \sin(x)$	[_separable]	✓
3530	$y' - y = e^{2x}$	[[_linear, 'class A']]	✓
3531	$x^2y' - 4xy = x^7 \sin(x)$	[_linear]	✓
3532	$y' + 2xy = 2x^3$	[_linear]	✓
3533	$y' + \frac{2xy}{x^2 + 1} = 4x$	[_linear]	✓
3534	$y' + \frac{2xy}{x^2 + 1} = \frac{4}{(x^2 + 1)^2}$	[_linear]	✓
3535	$2 \cos(x)^2 y' + y \sin(2x) = 4 \cos(x)^4$	[_linear]	✓
3536	$y' + \frac{y}{x \ln(x)} = 9x^2$	[_linear]	✓
3537	$y' - \tan(x)y = 8 \sin(x)^3$	[_linear]	✓
3538	$tx' + 2x = 4e^t$	[_linear]	✓
3539	$y' = \sin(x)(y \sec(x) - 2)$	[_linear]	✓
3540	$1 - y \sin(x) - \cos(x)y' = 0$	[_linear]	✓
3541	$y' - \frac{y}{x} = 2x^2 \ln(x)$	[_linear]	✓
3542	$y' + \alpha y = e^{\beta x}$	[[_linear, 'class A']]	✓
3543	$y' + \frac{m}{x} = \ln(x)$	[_quadrature]	✓
3544	$(3x - y)y' = 3y$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
3546	$\sin\left(\frac{y}{x}\right)(-y + xy') = x \cos\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A'], _dAlembert]	✓
3550	$xy' + y \ln(x) = y \ln(y)$	[[_homogeneous, 'class A'], _dAlembert]	✓
3555	$2x(2x + y)y' = y(4x - y)$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓

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Table 2.12 first order ode exact  
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#	ODE	CAS classification	Solved?
3561	$y' = -y^2$	[_quadrature]	✓
3562	$y' = \frac{y}{2x}$	[_separable]	✓
3577	$y' = \frac{e^x - \sin(y)}{x \cos(y)}$	['y=_G(x,y)']	✓
3578	$y' = \frac{1 - y^2}{2xy + 2}$	[_rational, [_1st_order, '_with_symmetry_[F(x)*G(y),0]'], [_Abel, '2nd type', 'class B']]	✓
3579	$y' = \frac{(1 - y e^{xy}) e^{-xy}}{x}$	[[_1st_order, '_with_symmetry_[F(x),G(y)]']]	✓
	<i>i.c.</i>		
3580	$y' = \frac{x^2(1 - y^2) + y e^{\frac{y}{x}}}{x(e^{\frac{y}{x}} + 2x^2y)}$	['y=_G(x,y)']	✓
3581	$y' = \frac{\cos(x) - 2xy^2}{2x^2y}$	[_Bernoulli]	✓
	<i>i.c.</i>		
3582	$y' = \sin(x)$	[_quadrature]	✓
3583	$y' = \frac{1}{x^{2/3}}$	[_quadrature]	✓
3586	$y' = x^2 \ln(x)$	[_quadrature]	✓
	<i>i.c.</i>		
3593	$y' = 2xy$	[_separable]	✓
3594	$y' = \frac{y^2}{x^2 + 1}$	[_separable]	✓
3595	$e^{x+y}y' - 1 = 0$	[_separable]	✓
3596	$y' = \frac{y}{x \ln(x)}$	[_separable]	✓
3597	$y - (x - 1)y' = 0$	[_separable]	✓
3598	$y' = \frac{2x(y - 1)}{x^2 + 3}$	[_separable]	✓
3599	$y - xy' = 3 - 2x^2y'$	[_separable]	✓
3600	$y' = \frac{\cos(x - y)}{\sin(x) \sin(y)} - 1$	[_separable]	✓
3601	$y' = \frac{x(y^2 - 1)}{2(-2 + x)(x - 1)}$	[_separable]	✓
3602	$y' = \frac{x^2y - 32}{-x^2 + 16} + 2$	[_separable]	✓

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#	ODE	CAS classification	Solved?
3603	$(x - a)(x - b)y' - y + c = 0$	[_separable]	✓
3604	$y'(x^2 + 1) + y^2 = -1$ i.c.	[_separable]	✓
3605	$(-x^2 + 1)y' + xy = ax$ i.c.	[_separable]	✓
3606	$y' = 1 - \frac{\sin(x + y)}{\sin(y) \cos(x)}$ i.c.	[_separable]	✓
3607	$y' = y^3 \sin(x)$ i.c.	[_separable]	✓
3608	$y' = \frac{2\sqrt{y-1}}{3}$ i.c.	[_quadrature]	✓
3609	$mv' = mg - kv^2$ i.c.	[_quadrature]	✓
3620	$y' = \sin(x)(y \sec(x) - 2)$	[_linear]	✓
3626	$y' \sin(x) - y \cos(x) = \sin(2x)$ i.c.	[_linear]	✓
3627	$x' + \frac{2x}{4-t} = 5$ i.c.	[_linear]	✓
3628	$y - e^x + y' = 0$ i.c.	[[_linear, 'class A']]	✓
3632	$y' + \frac{y}{x} = \cos(x)$	[_linear]	✓
3633	$y' + y = e^{-2x}$	[[_linear, 'class A']]	✓
3634	$y' + y \cot(x) = 2 \cos(x)$	[_linear]	✓
3635	$-y + xy' = x^2 \ln(x)$	[_linear]	✓
3637	$(3x - y)y' = 3y$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
3639	$\sin\left(\frac{y}{x}\right)(-y + xy') = x \cos\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A'], _dAlembert]	✓
3642	$y(x^2 - y^2) - x(x^2 - y^2)y' = 0$	[_separable]	✓
3643	$xy' + y \ln(x) = y \ln(y)$	[[_homogeneous, 'class A'], _dAlembert]	✓
3648	$2x(2x + y)y' = y(4x - y)$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓

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#	ODE	CAS classification	Solved?
3652	$y' = \frac{2x - y}{4y + x}$ i.c.	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
3655	$y' = \frac{x + ay}{ax - y}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
3656	$y' = \frac{x + \frac{y}{2}}{\frac{x}{2} - y}$ i.c.	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
3657	$y' - \frac{y}{x} = \frac{4x^2 \cos(x)}{y}$	[[_homogeneous, 'class D'], _Bernoulli]	✓
3661	$y' + \frac{2y}{x} = 6x^4 y^2$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
3667	$y' - \frac{y}{(\pi - 1)x} = \frac{3xy^\pi}{1 - \pi}$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
3668	$2y' + y \cot(x) = \frac{8 \cos(x)^3}{y}$	[_Bernoulli]	✓
3669	$(1 - \sqrt{3})y' + y \sec(x) = y^{\sqrt{3}} \sec(x)$	[_separable]	✓
3675	$y' = \frac{y(\ln(xy) - 1)}{x}$	[[_homogeneous, 'class G']]	✓
3679	$y' + \frac{2y}{x} - y^2 = -\frac{2}{x^2}$	[[_homogeneous, 'class G'], _rational, _Riccati]	✓
3680	$y' + \frac{7y}{x} - 3y^2 = \frac{3}{x^2}$	[[_homogeneous, 'class G'], _rational, _Riccati]	✓
3682	$\frac{y'}{y} - \frac{2 \ln(y)}{x} = \frac{1 - 2 \ln(x)}{x}$ i.c.	[[_homogeneous, 'class A'], _dAlembert]	✓
3683	$\sec(y)^2 y' + \frac{\tan(y)}{2\sqrt{x+1}} = \frac{1}{2\sqrt{x+1}}$	[_separable]	✓
3685	$\cos(xy) - xy \sin(xy) - x^2 \sin(xy) y' = 0$	[[_homogeneous, 'class G'], _exact]	✓
3686	$y + 3x^2 + xy' = 0$	[_linear]	✓
3687	$2x e^y + (3y^2 + x^2 e^y) y' = 0$	[_exact, [_1st_order, '_with_symmetry_[F(x)*G(y),0']]]	✓
3688	$2xy + y'(x^2 + 1) = 0$	[_separable]	✓

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Table 2.12 first order ode exact  
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#	ODE	CAS classification	Solved?
3689	$y^2 - 2x + 2xyy' = 0$	[[_homogeneous, 'class G'], _exact, _rational, _Bernoulli]	✓
3690	$4e^{2x} + 2xy - y^2 + (x - y)^2 y' = 0$	[_exact, [_1st_order, '_with_symmetry_[F(x),G(x)]']]	✓
3691	$\frac{1}{x} - \frac{y}{y^2 + x^2} + \frac{xy'}{y^2 + x^2} = 0$	[[_homogeneous, 'class A'], _exact, _rational, _Riccati]	✓
3692	$y \cos(xy) - \sin(x) + x \cos(xy) y' = 0$	[_exact, [_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]']]	✓
3693	$2y^2 e^{2x} + 3x^2 + 2y e^{2x} y' = 0$	[_exact, _Bernoulli]	✓
3694	$y^2 + \cos(x) + (2xy + \sin(y)) y' = 0$	[_exact]	✓
3695	$\sin(y) + y \cos(x) + (x \cos(y) + \sin(x)) y' = 0$	[_exact]	✓
4077	$5xy + 4y^2 + 1 + (x^2 + 2xy) y' = 0$	[_rational, [_Abel, '2nd type', 'class B']]	✓
4078	$2x \tan(y) + (x - x^2 \tan(y)) y' = 0$	[[_1st_order, _with_exponential_symmetries]]	✓
4080	$4xy^2 + 6y + (5x^2 y + 8x) y' = 0$	[[_homogeneous, 'class G'], _rational, [_Abel, '2nd type', 'class B']]	✓
4081	$5x + 2y + 1 + (2x + y + 1) y' = 0$	[[_homogeneous, 'class C'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
4084	<i>i.c.</i> $6x + 4y + 1 + (4x + 2y + 2) y' = 0$	[[_homogeneous, 'class C'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
4091	$y' = e^{-x}$	[_quadrature]	✓
4092	$y' = 1 - x^5 + \sqrt{x}$	[_quadrature]	✓
4093	$3y - 2x + (3x - 2) y' = 0$	[_linear]	✓
4094	$x^2 + x - 1 + (2xy + y) y' = 0$	[_separable]	✓
4095	$e^{2y} + (x + 1) y' = 0$	[_separable]	✓
4097	$y' = \frac{y - 2x}{x}$	[_linear]	✓
4098	$x^3 + y^3 - xy^2 y' = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
4099	$y' + y = 0$	[_quadrature]	✓

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#	ODE	CAS classification	Solved?
4100	$y' + y = x^2 + 2$	[[_linear, 'class A']]	✓
4101	$y' - \tan(x)y = x$ i.c.	[_linear]	✓
4102	$y' = e^{x-2y}$ i.c.	[_separable]	✓
4104	$xy' = x + y$ i.c.	[_linear]	✓
4106	$y' = e^x \sin(x)$ i.c.	[_quadrature]	✓
4107	$y' - 3y = e^{3x} + e^{-3x}$ i.c.	[[_linear, 'class A']]	✓
4108	$y' = x + \frac{1}{x}$ i.c.	[_quadrature]	✓
4109	$xy' + 2y = (2 + 3x)e^{3x}$ i.c.	[_linear]	✓
4110	$2 \sin(3x) \sin(2y)y' - 3 \cos(3x) \cos(2y) = 0$ i.c.	[_separable]	✓
4115	$x + (2 - x + 2y)y' = xy(y' - 1)$	[_quadrature]	✓
4116	$\cos(x)y' + y \sin(x) = 1$ i.c.	[_linear]	✓
4117	$(x + y^2)y' + y - x^2 = 0$ i.c.	[_exact, _rational]	✓
4190	$yy' = x$	[_separable]	✓
4191	$y' - y = x^3$	[[_linear, 'class A']]	✓
4192	$y' + y \cot(x) = x$	[_linear]	✓
4193	$y' + y \cot(x) = \tan(x)$	[_linear]	✓
4194	$y' + \tan(x)y = \cot(x)$	[_linear]	✓
4195	$y' + y \ln(x) = x^{-x}$	[_linear]	✓
4196	$xy' + y = x$	[_linear]	✓
4197	$-y + xy' = x^3$	[_linear]	✓
4198	$xy' + ny = x^n$	[_linear]	✓
4199	$xy' - ny = x^n$	[_linear]	✓
4200	$(x^3 + x)y' + y = x$	[_linear]	✓
4201	$\cot(x)y' + y = x$	[_linear]	✓

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#	ODE	CAS classification	Solved?
4202	$\cot(x)y' + y = \tan(x)$	[_linear]	✓
4203	$y' \tan(x) + y = \cot(x)$	[_linear]	✓
4204	$y' \tan(x) = y - \cos(x)$	[_linear]	✓
4205	$y' + y \cos(x) = \sin(2x)$	[_linear]	✓
4206	$\cos(x)y' + y = \sin(2x)$	[_linear]	✓
4207	$y' + y \sin(x) = \sin(2x)$	[_linear]	✓
4208	$y' \sin(x) + y = \sin(2x)$	[_linear]	✓
4209	$\sqrt{x^2 + 1}y' + y = 2x$	[_linear]	✓
4210	$\sqrt{x^2 + 1}y' - y = 2\sqrt{x^2 + 1}$	[_linear]	✓
4211	$\sqrt{(x+a)(x+b)}(2y' - 3) + y = 0$	[_linear]	✓
4212	$\sqrt{(x+a)(x+b)}y' + y = \sqrt{x+a} - \sqrt{x+b}$	[_linear]	✓
4213	$3y^2y' = 2x - 1$	[_separable]	✓
4214	$y' = 6xy^2$	[_separable]	✓
4215	$y' = e^y \sin(x)$	[_separable]	✓
4216	$y' = e^{x-y}$	[_separable]	✓
4217	$y' = x \sec(y)$	[_separable]	✓
4218	$y' = 3 \cos(y)^2$	[_quadrature]	✓
4219	$xy' = y$	[_separable]	✓
4220	$(1-x)y' = y$	[_separable]	✓
4221	$y' = \frac{4xy}{x^2 + 1}$	[_separable]	✓
4222	$y' = \frac{2y}{x^2 - 1}$	[_separable]	✓
4223	$x^2y' - y^2 = 0$	[_separable]	✓
4224	$y' + 2xy = 0$	[_separable]	✓
4225	$\cot(x)y' = y$	[_separable]	✓
4226	$y' = xe^{-2y}$	[_separable]	✓

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#	ODE	CAS classification	Solved?
4227	$y' - 2xy = 2x$ i.c.	[_separable]	✓
4228	$xy' = xy + y$ i.c.	[_separable]	✓
4229	$(x^3 + 1)y' = 3x^2 \tan(x)$ i.c.	[_quadrature]	✓
4230	$x \cos(y)y' = 1 + \sin(y)$ i.c.	[_separable]	✓
4231	$xy' = 2y(y - 1)$ i.c.	[_separable]	✓
4232	$2xy' = 1 - y^2$ i.c.	[_separable]	✓
4233	$(1 - x)y' = xy$	[_separable]	✓
4234	$(x^2 - 1)y' = (x^2 + 1)y$	[_separable]	✓
4235	$y' = e^x(1 + y^2)$	[_separable]	✓
4236	$e^y y' + 2x = 2x e^y$	[_separable]	✓
4237	$y e^{2x} y' + 2x = 0$ i.c.	[_separable]	✓
4238	$xyy' = \sqrt{y^2 - 9}$ i.c.	[_separable]	✓
4239	$(y - 1 + x)y' = x + 1 - y$	[[_homogeneous, 'class C', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
4240	$xyy' = 2x^2 - y^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
4241	$x^2 - y^2 + xyy' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
4242	$x^2 y' - 2xy - 2y^2 = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
4244	$x \sin\left(\frac{y}{x}\right) y' = y \sin\left(\frac{y}{x}\right) + x$	[[_homogeneous, 'class A', _dAlembert]]	✓
4250	$\left(x + \frac{2}{y}\right) y' + y = 0$	[[_homogeneous, 'class G', _exact, _rational, [_Abel, '2nd type', 'class B']]]	✓
4251	$\sin(x) \tan(y) + 1 + \cos(x) \sec(y)^2 y' = 0$	['y=_G(x,y)']	✓
4252	$y - x^3 + (x + y^3) y' = 0$	[_exact, _rational]	✓

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#	ODE	CAS classification	Solved?
4254	$y + y \cos(xy) + (x + x \cos(xy))y' = 0$	[_separable]	✓
4255	$\cos(x) \cos(y)^2 + 2 \sin(x) \sin(y) \cos(y) y' = 0$	[_separable]	✓
4256	$(\sin(x) \sin(y) - x e^y) y' = e^y + \cos(x) \cos(y)$	[_exact]	✓
4257	$-\frac{\sin\left(\frac{x}{y}\right)}{y} + \frac{x \sin\left(\frac{x}{y}\right) y'}{y^2} = 0$	[_separable]	✓
4258	$1 + y + (1 - x)y' = 0$	[_separable]	✓
4259	$2xy^3 + y \cos(x) + (3y^2x^2 + \sin(x))y' = 0$	[_exact, [_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)']]]	✓
4260	$1 = \frac{y}{1 - y^2x^2} + \frac{xy'}{1 - y^2x^2}$	[_exact, _rational, _Riccati]	✓
4261	$(3x^2 - y^2)y' - 2xy = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
4262	$xy - 1 + (x^2 - xy)y' = 0$	[_rational, [_1st_order, '_with_symmetry_[F(x),G(x)']], [_Abel, '2nd type', 'class B']]	✓
4263	$(x + 3x^3y^4)y' + y = 0$	[[_homogeneous, 'class G'], _rational]	✓
4264	$(x - 1 - y^2)y' - y = 0$	[[_1st_order, _with_linear_symmetries], _rational]	✓
4265	$y - (x + xy^3)y' = 0$	[_separable]	✓
4266	$xy' = x^5 + x^3y^2 + y$	[[_homogeneous, 'class D'], _rational, _Riccati]	✓
4267	$(x + y)y' = y - x$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
4269	$xy' - 3y = x^4$	[_linear]	✓
4270	$y' + y = \frac{1}{1 + e^{2x}}$	[_linear]	✓
4271	$2xy + y'(x^2 + 1) = \cot(x)$	[_linear]	✓
4272	$y' + y = 2x e^{-x} + x^2$	[[_linear, 'class A']]	✓
4273	$y' + y \cot(x) = 2x \csc(x)$	[_linear]	✓
4274	$2y - x^3 = xy'$	[_linear]	✓

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#	ODE	CAS classification	Solved?
4275	$(1 - xy) y' = y^2$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]]	✓
4279	$x^2 y^3 + y = (x^3 y^2 - x) y'$	[[_homogeneous, 'class G', _rational]]	✓
4280	$xy' + y = x \cos(x)$	[_linear]	✓
4281	$(xy - x^2) y' = y^2$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
4282	$(e^x - 3y^2 x^2) y' + y e^x = 2xy^3$	[_exact, [_1st_or- der, 'with_symme- try_[F(x),G(x)*y+H(x)']]]	✓
4283	$y + x^2 = xy'$	[_linear]	✓
4284	$xy' + y = x^2 \cos(x)$	[_linear]	✓
4286	$\cos(x + y) - x \sin(x + y) = x \sin(x + y) y'$	[[_1st_order, _with_lin- ear_symmetries], _exact]	✓
4287	$y^2 e^{xy} + \cos(x) + (e^{xy} + xy e^{xy}) y' = 0$	[_exact]	✓
4288	$y' \ln(x - y) = 1 + \ln(x - y)$	[[_homogeneous, 'class C', _exact, _dAlembert]]	✓
4289	$y' + 2xy = e^{-x^2}$	[_linear]	✓
4290	$y^2 - 3xy - 2x^2 = (x^2 - xy) y'$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
4291	$2xy + y'(x^2 + 1) = 4x^3$	[_linear]	✓
4292	$e^x \sin(y) - y \sin(xy)$ $+ (e^x \cos(y) - x \sin(xy)) y' = 0$	[_exact]	✓
4293	$(y - x^2 + x e^y) y' = 2xy - e^y - x$	[_exact]	✓
4294	$e^x(x + 1) = (x e^x - e^y y) y'$	['y=_G(x,y)']	✓
4295	$2xy + x^2 y' = 0$	[_separable]	✓
4297	$\ln(x) y' + \frac{x + y}{x} = 0$	[_linear]	✓
4298	$\cos(y) - x \sin(y) y' = \sec(x)^2$ <i>i.c.</i>	[_exact]	✓

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#	ODE	CAS classification	Solved?
4299	$y \sin\left(\frac{x}{y}\right) + x \cos\left(\frac{x}{y}\right) - 1 + \left(x \sin\left(\frac{x}{y}\right) - \frac{x^2 \cos\left(\frac{x}{y}\right)}{y}\right) y' = 0$	[_exact]	✓
4300	$\frac{x}{y^2 + x^2} + \frac{y}{x^2} + \left(\frac{y}{y^2 + x^2} - \frac{1}{x}\right) y' = 0$ i.c.	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]	✓
4301	$x^2(1 + y^2) y' + y^2(x^2 + 1) = 0$	[_separable]	✓
4305	$y' = \frac{x(1 + y^2)}{y(x^2 + 1)}$ i.c.	[_separable]	✓
4306	$y^2 y' = 2 + 3y^6$ i.c.	[_quadrature]	✓
4308	$y' = \frac{x^3 e^{x^2}}{y \ln(y)}$	[_separable]	✓
4312	$x \cos(y)^2 + \tan(y) y' = 0$	[_separable]	✓
4317	$xy' = y(1 + \ln(y) - \ln(x))$	[[_homogeneous, 'class A', _dAlembert]	✓
4318	$xy + (y^2 + x^2) y' = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
4323	$y + 2 = (2x + y - 4) y'$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
4326	$3x^2 + 6xy^2 + (6x^2y + 4y^3) y' = 0$	[_exact, _rational]	✓
4327	$2x^2 - xy^2 - 2y + 3 - (x^2y + 2x) y' = 0$	[_exact, _rational, [_Abel, '2nd type', 'class B']]	✓
4328	$xy^2 + x - 2y + 3 + (x^2y - 2x - 2y) y' = 0$	[_exact, _rational, [_Abel, '2nd type', 'class B']]	✓
4329	$3y(x^2 - 1) + (x^3 + 8y - 3x) y' = 0$	[_exact, _rational, [_1st_order, '_with_symmetry_[F(x)*G(y),0]', [_Abel, '2nd type', 'class A']]	✓
4330	$x^2 + \ln(y) + \frac{xy'}{y} = 0$	[_exact, [_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)']]	✓
4331	$2x(3x + y - ye^{-x^2}) + (x^2 + 3y^2 + e^{-x^2}) y' = 0$	[_exact]	✓

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#	ODE	CAS classification	Solved?
4332	$3 + y + 2y^2 \sin(x)^2 + (x + 2xy - y \sin(2x)) y' = 0$	[_exact, [_Abel, '2nd type', 'class B']]	✓
4334	$x^2 - \sin(y)^2 + x \sin(2y) y' = 0$	['y=_G(x,y)']	✓
4335	$y(2x - y + 2) + 2y'(x - y) = 0$	[[_homogeneous, 'class D'], _rational, [_Abel, '2nd type', 'class A']]	✓
4336	$4xy + 3y^2 - x + x(x + 2y) y' = 0$	[_rational, [_Abel, '2nd type', 'class B']]	✓
4337	$y + x(y^2 + \ln(x)) y' = 0$	[[_1st_order, '_with_symmetry_[F(x),G(y)']]	✓
4338	$x^2 + 2x + y + (3x^2y - x) y' = 0$	[_rational, [_1st_order, '_with_symmetry_[F(x),G(x)'], [_Abel, '2nd type', 'class B']]	✓
4339	$y^2 + (xy + y^2 - 1) y' = 0$	[[_1st_order, '_with_linear_symmetries], _rational]	✓
4340	$3y^2 + 3x^2 + x(x^2 + 3y^2 + 6y) y' = 0$	[_rational]	✓
4341	$2y(x + y + 2) + (y^2 - x^2 - 4x - 1) y' = 0$	[[_1st_order, '_with_linear_symmetries], _rational]	✓
4342	$2 + y^2 + 2x + 2yy' = 0$	[_rational, _Bernoulli]	✓
4343	$2xy^2 - y + (y^2 + x + y) y' = 0$	[_rational]	✓
4344	$y(x + y) + (x + 2y - 1) y' = 0$	[_rational, [_Abel, '2nd type', 'class A']]	✓
4345	$2x(x^2 - \sin(y) + 1) + (x^2 + 1) \cos(y) y' = 0$	['y=_G(x,y)']	✓
4346	$x^2 + y + y^2 - xy' = 0$	[[_homogeneous, 'class D'], _rational, _Riccati]	✓
4348	$y\sqrt{1+y^2} + (x\sqrt{1+y^2} - y) y' = 0$	[[_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓
4349	$y^2 - (xy + x^3) y' = 0$	[[_homogeneous, 'class G'], _rational, [_Abel, '2nd type', 'class B']]	✓
4351	$2y^2x^2 + y + (x^3y - x) y' = 0$	[[_homogeneous, 'class G'], _rational, [_Abel, '2nd type', 'class B']]	✓
4352	$y^2 + (xy + \tan(xy)) y' = 0$	[[_homogeneous, 'class G']]	✓
4353	$2x^2y^4 - y + (4x^3y^3 - x) y' = 0$	[[_homogeneous, 'class G'], _rational]	✓

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Table 2.12 first order ode exact

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#	ODE	CAS classification	Solved?
4361	$1 - (y - 2xy) y' = 0$	[_separable]	✓
4362	$1 - (1 + 2x \tan(y)) y' = 0$	[[_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓
4363	$\left(y^3 + \frac{x}{y}\right) y' = 1$	[[_homogeneous, 'class G'], _rational]	✓
4364	$1 + (x - y^2) y' = 0$	[[_1st_order, _with_exponential_symmetries]]	✓
4365	$y^2 + (xy + y^2 - 1) y' = 0$	[[_1st_order, _with_linear_symmetries], _rational]	✓
4366	$y = (e^y + 2xy - 2x) y'$	[[_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓
4368	$y + (y^2 e^y - x) y' = 0$	[[_1st_order, _with_linear_symmetries]]	✓
4373	$1 + y + (x - y(1 + y)^2) y' = 0$	[_exact, _rational, [_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓
4376	$y' = \frac{4x^3 y^2}{x^4 y + 2}$	[[_homogeneous, 'class G'], _rational, [_Abel, '2nd type', 'class B']]	✓
4396	$xy^2(xy' + y) = 1$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
4398	$y' = \frac{y + 2}{x + 1}$	[_separable]	✓
4400	$1 + y^2 \sin(2x) - 2y \cos(x)^2 y' = 0$	[_exact, _Bernoulli]	✓
4401	$2\sqrt{xy} - y - xy' = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓
4403	$2x^3 y^2 - y + (2x^2 y^3 - x) y' = 0$	[_rational]	✓
4404	$y - 1 - xy + xy' = 0$	[_linear]	✓
4406	$y' + \frac{y}{x} = e^{xy}$	[[_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]']]	✓
4408	$2y - x(\ln(x^2 y) - 1) y' = 0$	[[_homogeneous, 'class G']]	✓
4411	$e^x + 3y^2 + 2xyy' = 0$	[_Bernoulli]	✓
4412	$xy + 2x^3 y + x^2 y' = 0$	[_separable]	✓
4415	$y + 3x^4 y^2 + (x + 2x^2 y^3) y' = 0$	[_rational]	✓

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Table 2.12 first order ode exact  
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#	ODE	CAS classification	Solved?
4417	$2y(xe^{x^2} + y \sin(x) \cos(x)) + (2e^{x^2} + 3y \sin(x)^2) y' = 0$	[[_Abel, '2nd type', 'class B']]	✓
4418	$\cos(y) + \sin(y)(x - \sin(y) \cos(y)) y' = 0$	[[_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓
4419	$y^3 + (3x^2 - 2xy^2) y' = 0$	[[_homogeneous, 'class G', _rational]	✓
4421	$2x^3yy' + 3y^2x^2 + 7 = 0$	[[_homogeneous, 'class G', _exact, _rational, _Bernoulli]	✓
4422	$x - y \cos\left(\frac{y}{x}\right) + x \cos\left(\frac{y}{x}\right) y' = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
4424	$y^4 + xy + (xy^3 - x^2) y' = 0$	[[_homogeneous, 'class G', _rational]	✓
4425	$x^2 + 3 \ln(y) - \frac{xy'}{y} = 0$	[[_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]']]	✓
4427	$y + (xy - x - y^3) y' = 0$	[_rational, [_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓
4428	$y + 2y^3y' = (x + 4y \ln(y)) y'$	[[_1st_order, _with_linear_symmetries]]	✓
4429	$y \ln(x) \ln(y) + y' = 0$	[_separable]	✓
4430	$2x^{3/2} + x^2 + y^2 + 2y\sqrt{x}y' = 0$	[[_homogeneous, 'class D', _rational, _Bernoulli]	✓
4431	$2x + y \cos(xy) + x \cos(xy) y' = 0$	[_exact, [_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]']]	✓
4437	$y \sin(x) + \cos(x)^2 - \cos(x) y' = 0$	[_linear]	✓
4440	$(\cos(x) + 1) y' + \sin(x)(\sin(x) + \sin(x) \cos(x) - y) = 0$	[_linear]	✓
4441	$x + \sin\left(\frac{y}{x}\right)^2 (y - xy') = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
4442	$2xy^4e^y + 2xy^3 + y + (x^2y^4e^y - y^2x^2 - 3x) y' = 0$	['x=_G(y,y)']	✓
4443	$xy^3 - 1 + x^2y^2y' = 0$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
4608	$y' = af(x)$	[_quadrature]	✓

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#	ODE	CAS classification	Solved?
4609	$y' = x + \sin(x) + y$	[[_linear, 'class A']]	✓
4610	$y' = x^2 + 3 \cosh(x) + 2y$	[[_linear, 'class A']]	✓
4611	$y' = a + bx + cy$	[[_linear, 'class A']]	✓
4612	$y' = a \cos(bx + c) + ky$	[[_linear, 'class A']]	✓
4613	$y' = a \sin(bx + c) + ky$	[[_linear, 'class A']]	✓
4614	$y' = a + b e^{kx} + cy$	[[_linear, 'class A']]	✓
4615	$y' = x(x^2 - y)$	[_linear]	✓
4616	$y' = x(e^{-x^2} + ay)$	[_linear]	✓
4617	$y' = x^2(ax^3 + by)$	[_linear]	✓
4618	$y' = a x^n y$	[_separable]	✓
4619	$y' = \sin(x) \cos(x) + y \cos(x)$	[_linear]	✓
4620	$y' = e^{\sin(x)} + y \cos(x)$	[_linear]	✓
4621	$y' = y \cot(x)$	[_separable]	✓
4622	$y' = 1 - y \cot(x)$	[_linear]	✓
4623	$y' = x \csc(x) - y \cot(x)$	[_linear]	✓
4624	$y' = (2 \csc(2x) + \cot(x)) y$	[_separable]	✓
4625	$y' = \sec(x) - y \cot(x)$	[_linear]	✓
4626	$y' = e^x \sin(x) + y \cot(x)$	[_linear]	✓
4627	$y' + \csc(x) + 2y \cot(x) = 0$	[_linear]	✓
4629	$y' = 2 \cot(x)^2 \cos(2x) - 2y \csc(2x)$	[_linear]	✓
4630	$y' = 4 \csc(x) x (\sin(x)^3 + y)$	[_linear]	✓
4631	$y' = 4 \csc(x) x (1 - \tan(x)^2 + y)$	[_linear]	✓
4632	$y' = y \sec(x)$	[_separable]	✓
4633	$y' + \tan(x) = (1 - y) \sec(x)$	[_linear]	✓
4634	$y' = \tan(x) y$	[_separable]	✓
4635	$y' = \cos(x) + \tan(x) y$	[_linear]	✓
4636	$y' = \cos(x) - \tan(x) y$	[_linear]	✓
4637	$y' = \sec(x) - \tan(x) y$	[_linear]	✓

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Table 2.12 first order ode exact  
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#	ODE	CAS classification	Solved?
4638	$y' = \sin(2x) + \tan(x)y$	[_linear]	✓
4639	$y' = \sin(2x) - \tan(x)y$	[_linear]	✓
4640	$y' = \sin(x) + 2 \tan(x)y$	[_linear]	✓
4642	$y' = \csc(x) + 3 \tan(x)y$	[_linear]	✓
4643	$y' = (a + \cos(\ln(x)) + \sin(\ln(x)))y$	[_separable]	✓
4644	$y' = 6e^{2x} - y \tanh(x)$	[_linear]	✓
4645	$y' = f(x)f'(x) + f'(x)y$	[_linear]	✓
4646	$y' = f(x) + g(x)y$	[_linear]	✓
4662	$y' = a + by^2$	[_quadrature]	✓
4667	$y' = a_0 + a_1y + a_2y^2$	[_quadrature]	✓
4671	$y' = xy(y + 3)$	[_separable]	✓
4675	$y' = axy^2$	[_separable]	✓
4676	$y' = x^n(a + by^2)$	[_separable]	✓
4679	$y' = \sin(x)(2 \sec(x)^2 - y)$	[_linear]	✓
4681	$y' = y \sec(x) + (\sin(x) - 1)^2$	[_linear]	✓
4682	$y' + \tan(x)(1 - y^2) = 0$	[_separable]	✓
4684	$y' = (a + by + cy^2)f(x)$	[_separable]	✓
4688	$y' = y(a + by^2)$	[_quadrature]	✓
4689	$y' = a_0 + a_1y + a_2y^2 + a_3y^3$	[_quadrature]	✓
4690	$y' = xy^3$	[_separable]	✓
4692	$y' = (a + bxy)y^2$	[[_homogeneous, 'class G'], _Abel]	✓
4695	$y' + y^3 \sec(x) \tan(x) = 0$	[_separable]	✓
4701	$y' = a + by + \sqrt{A_0 + B_0}y$	[_quadrature]	✓
4705	$y' = \sqrt{a + by^2}$	[_quadrature]	✓
4706	$y' = y\sqrt{a + by}$	[_quadrature]	✓
4708	$y' = \sqrt{XY}$	[_quadrature]	✓
4709	$y' = \cos(y) \cos(x)^2$	[_separable]	✓

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#	ODE	CAS classification	Solved?
4710	$y' = \sec(x)^2 \cot(y) \cos(y)$	[_separable]	✓
4713	$y' = a + b \cos(y)$	[_quadrature]	✓
4715	$y' + \tan(x) \sec(x) \cos(y)^2 = 0$	[_separable]	✓
4716	$y' = \cot(x) \cot(y)$	[_separable]	✓
4717	$y' + \cot(x) \cot(y) = 0$	[_separable]	✓
4718	$y' = \sin(x) (\csc(y) - \cot(y))$	[_separable]	✓
4719	$y' = \tan(x) \cot(y)$	[_separable]	✓
4720	$y' + \tan(x) \cot(y) = 0$	[_separable]	✓
4723	$y' = \cos(x) \sec(y)^2$	[_separable]	✓
4724	$y' = \sec(x)^2 \sec(y)^3$	[_separable]	✓
4725	$y' = a + b \sin(y)$	[_quadrature]	✓
4729	$y' = \sqrt{a + b \cos(y)}$	[_quadrature]	✓
4731	$y' = e^{x+y}$	[_separable]	✓
4732	$y' = e^x (a + b e^{-y})$	[_separable]	✓
4733	$y \ln(x) \ln(y) + y' = 0$	[_separable]	✓
4735	$y' = a f(y)$	[_quadrature]	✓
4737	$y' = f(x) g(y)$	[_separable]	✓
4738	$y' = \sec(x)^2 + y \sec(x) \csc(x)$	[_linear]	✓
4742	$xy' = \sqrt{a^2 - x^2}$	[_quadrature]	✓
4743	$xy' + x + y = 0$	[_linear]	✓
4744	$xy' + x^2 - y = 0$	[_linear]	✓
4745	$xy' = x^3 - y$	[_linear]	✓
4746	$xy' = 1 + x^3 + y$	[_linear]	✓
4747	$xy' = x^m + y$	[_linear]	✓
4748	$xy' = x \sin(x) - y$	[_linear]	✓
4749	$xy' = x^2 \sin(x) + y$	[_linear]	✓
4750	$xy' = x^n \ln(x) - y$	[_linear]	✓
4751	$xy' = \sin(x) - 2y$	[_linear]	✓

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#	ODE	CAS classification	Solved?
4752	$xy' = ay$	[_separable]	✓
4753	$xy' = 1 + x + ay$	[_linear]	✓
4754	$xy' = ax + by$	[_linear]	✓
4755	$xy' = x^2a + by$	[_linear]	✓
4756	$xy' = a + bx^n + cy$	[_linear]	✓
4757	$xy' + 2 + (3 - x)y = 0$	[_linear]	✓
4758	$xy' + x + (ax + 2)y = 0$	[_linear]	✓
4759	$xy' + (bx + a)y = 0$	[_separable]	✓
4760	$xy' = x^3 + (-2x^2 + 1)y$	[_linear]	✓
4761	$xy' = ax - (-bx^2 + 1)y$	[_linear]	✓
4762	$xy' + x + (-x^2a + 2)y = 0$	[_linear]	✓
4764	$xy' = x^2 + y(1 + y)$	[[_homogeneous, 'class D'], _rational, _Riccati]	✓
4766	$xy' = a + by^2$	[_separable]	✓
4772	$xy' + (1 - xy)y = 0$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
4773	$xy' = (1 - xy)y$	[[_homogeneous, 'class D'], _rational, _Bernoulli]	✓
4774	$xy' = (xy + 1)y$	[[_homogeneous, 'class D'], _rational, _Bernoulli]	✓
4777	$xy' = y(1 + 2xy)$	[[_homogeneous, 'class D'], _rational, _Bernoulli]	✓
4785	$xy' + (1 - ay \ln(x))y = 0$	[_Bernoulli]	✓
4786	$xy' = y + (x^2 - y^2)f(x)$	[[_homogeneous, 'class D'], _Riccati]	✓
4787	$xy' = y(1 + y^2)$	[_separable]	✓
4788	$xy' + (1 - xy^2)y = 0$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
4789	$xy' + y = a(x^2 + 1)y^3$	[_rational, _Bernoulli]	✓
4792	$xy' = 4y - 4\sqrt{y}$	[_separable]	✓
4793	$xy' + 2y = \sqrt{1 + y^2}$	[_separable]	✓
4799	$xy' + (\sin(y) - 3x^2 \cos(y)) \cos(y) = 0$	['y=_G(x,y)']	✓

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Table 2.12 first order ode exact  
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#	ODE	CAS classification	Solved?
4804	$xy' + y + 2x \sec(xy) = 0$	[[_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]']]	✓
4809	$xy' + \tan(y) = 0$	[_separable]	✓
4815	$xy' = y \ln(y)$	[_separable]	✓
4816	$xy' = (1 + \ln(x) - \ln(y))y$	[[_homogeneous, 'class A'], _dAlembert]	✓
4817	$xy' + (1 - \ln(x) - \ln(y))y = 0$	[[_homogeneous, 'class G']]	✓
4821	$(x + 1)y' = x^3(3x + 4) + y$	[_linear]	✓
4822	$(x + 1)y' = (x + 1)^4 + 2y$	[_linear]	✓
4823	$(x + 1)y' = e^x(x + 1)^{n+1} + ny$	[_linear]	✓
4828	$(x + a)y' = bx$	[_quadrature]	✓
4829	$(x + a)y' = bx + y$	[_linear]	✓
4830	$(x + a)y' + bx^2 + y = 0$	[_linear]	✓
4831	$(x + a)y' = 2(x + a)^5 + 3y$	[_linear]	✓
4832	$(x + a)y' = b + cy$	[_separable]	✓
4833	$(x + a)y' = bx + cy$	[_linear]	✓
4834	$(x + a)y' = y(1 - ay)$	[_separable]	✓
4836	$2xy' = 2x^3 - y$	[_linear]	✓
4838	$2xy' = y(1 + y^2)$	[_separable]	✓
4839	$2xy' + y(1 + y^2) = 0$	[_separable]	✓
4841	$2xy' + 4y + a + \sqrt{a^2 - 4b - 4cy} = 0$	[_separable]	✓
4842	$(-2x + 1)y' = 16 + 32x - 6y$	[_linear]	✓
4843	$(2x + 1)y' = 4e^{-y} - 2$	[_separable]	✓
4844	$2(1 - x)y' = 4x\sqrt{1 - x} + y$	[_linear]	✓
4848	$3xy' = (1 + 3xy^3 \ln(x))y$	[_Bernoulli]	✓
4849	$x^2y' = -y + a$	[_separable]	✓
4850	$x^2y' = a + bx + cx^2 + xy$	[_linear]	✓
4851	$x^2y' = a + bx + cx^2 - xy$	[_linear]	✓
4852	$x^2y' + (-2x + 1)y = x^2$	[_linear]	✓

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#	ODE	CAS classification	Solved?
4853	$x^2y' = a + bxy$	[_linear]	✓
4854	$x^2y' = (bx + a)y$	[_separable]	✓
4855	$x^2y' + x(x + 2)y = x(1 - e^{-2x}) - 2$	[_linear]	✓
4856	$x^2y' + 2x(1 - x)y = e^x(2e^x - 1)$	[_linear]	✓
4860	$x^2y' = (x + ay)y$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
4864	$x^2y' + 2 + xy(4 + xy) = 0$	[[_homogeneous, 'class G', _rational, _Riccati]	✓
4866	$x^2y' = a + bx^2y^2$	[[_homogeneous, 'class G', _rational, [_Riccati, _special]]	✓
4868	$x^2y' = a + bxy + cx^2y^2$	[[_homogeneous, 'class G', _rational, _Riccati]	✓
4877	$(-x^2 + 1)y' = 1 - x^2 + y$	[_linear]	✓
4878	$(-x^2 + 1)y' + 1 = xy$	[_linear]	✓
4879	$(-x^2 + 1)y' = 5 - xy$	[_linear]	✓
4880	$y'(x^2 + 1) + a + xy = 0$	[_linear]	✓
4881	$y'(x^2 + 1) + a - xy = 0$	[_linear]	✓
4882	$(-x^2 + 1)y' + a - xy = 0$	[_linear]	✓
4883	$(-x^2 + 1)y' - x + xy = 0$	[_separable]	✓
4884	$(-x^2 + 1)y' - x^2 + xy = 0$	[_linear]	✓
4885	$(-x^2 + 1)y' + x^2 + xy = 0$	[_linear]	✓
4886	$y'(x^2 + 1) = x(x^2 + 1) - xy$	[_linear]	✓
4887	$y'(x^2 + 1) = x(3x^2 - y)$	[_linear]	✓
4888	$(-x^2 + 1)y' + 2xy = 0$	[_separable]	✓
4889	$y'(x^2 + 1) = 2x(x - y)$	[_linear]	✓
4890	$y'(x^2 + 1) = 2x(x^2 + 1)^2 + 2xy$	[_linear]	✓
4891	$(-x^2 + 1)y' + \cos(x) = 2xy$	[_linear]	✓
4892	$y'(x^2 + 1) = \tan(x) - 2xy$	[_linear]	✓
4893	$(-x^2 + 1)y' = a + 4xy$	[_linear]	✓

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Table 2.12 first order ode exact  
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#	ODE	CAS classification	Solved?
4894	$y'(x^2 + 1) = (2bx + a)y$	[_separable]	✓
4895	$y'(x^2 + 1) = 1 + y^2$	[_separable]	✓
4896	$(-x^2 + 1)y' = 1 - y^2$	[_separable]	✓
4899	$y'(x^2 + 1) + xy(1 - y) = 0$	[_separable]	✓
4900	$(-x^2 + 1)y' = xy(1 + ay)$	[_separable]	✓
4903	$y'(x^2 + 1) = 1 + x^2 - y \operatorname{arccot}(x)$	[_linear]	✓
4905	$(a^2 + x^2)y' = b + xy$	[_linear]	✓
4906	$(a^2 + x^2)y' = (b + y)(x + \sqrt{a^2 + x^2})$	[_separable]	✓
4909	$(a^2 + x^2)y' + xy + bxy^2 = 0$	[_separable]	✓
4910	$x(1 - x)y' = a + (x + 1)y$	[_linear]	✓
4911	$x(1 - x)y' = 2xy + 2$	[_linear]	✓
4912	$x(1 - x)y' = 2xy - 2$	[_linear]	✓
4913	$x(x + 1)y' = (-2x + 1)y$	[_separable]	✓
4914	$x(1 - x)y' + (2x + 1)y = a$	[_linear]	✓
4915	$x(1 - x)y' = a + 2(2 - x)y$	[_linear]	✓
4916	$x(1 - x)y' + 2 - 3xy + y = 0$	[_linear]	✓
4917	$x(x + 1)y' = (x + 1)(x^2 - 1) + (x^2 + x - 1)y$	[_linear]	✓
4918	$(-2 + x)(x - 3)y' + x^2 - 8y + 3xy = 0$	[_linear]	✓
4920	$(x + a)^2 y' = 2(x + a)(b + y)$	[_separable]	✓
4922	$(x - a)(x - b)y' + ky = 0$	[_separable]	✓
4923	$(x - a)(x - b)y' = (x - a)(x - b) + (2x - a - b)y$	[_linear]	✓
4927	$2x^2 y' = y$	[_separable]	✓
4928	$2x^2 y' + x \cot(x) - 1 + 2x^2 y \cot(x) = 0$	[_linear]	✓
4929	$2x^2 y' + 1 + 2xy - y^2 x^2 = 0$	[[_homogeneous, 'class G'], _rational, _Riccati]	✓
4931	$2(-x^2 + 1)y' = \sqrt{-x^2 + 1} + (x + 1)y$	[_linear]	✓
4932	$x(-2x + 1)y' + 1 + (1 - 4x)y = 0$	[_linear]	✓

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Table 2.12 first order ode exact  
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#	ODE	CAS classification	Solved?
4933	$x(-2x + 1)y' = 4x - (1 + 4x)y + y^2$	[_rational, [_1st_order, '_with_symmetry_[F(x),G(x)]'], _Riccati]	✓
4934	$2x(1 - x)y' + x + (-2x + 1)y = 0$	[_linear]	✓
4936	$2(x^2 + x + 1)y' = 1 + 8x^2 - (2x + 1)y$	[_linear]	✓
4937	$4y'(x^2 + 1) - 4xy - x^2 = 0$	[_linear]	✓
4940	$(bx^2 + a)y' = cxy \ln(y)$	[_separable]	✓
4941	$x(ax + 1)y' + a - y = 0$	[_separable]	✓
4943	$x^3y' = a + bx^2y$	[_linear]	✓
4944	$x^3y' = 3 - x^2 + x^2y$	[_linear]	✓
4946	$x^3y' = y(y + x^2)$	[[_homogeneous, 'class D'], _rational, _Bernoulli]	✓
4953	$x(x^2 + 1)y' = x^2a + y$	[_linear]	✓
4954	$x(-x^2 + 1)y' = x^2a + y$	[_linear]	✓
4955	$x(x^2 + 1)y' = ax^3 + y$	[_linear]	✓
4956	$x(x^2 + 1)y' = a - x^2y$	[_linear]	✓
4957	$x(x^2 + 1)y' = (-x^2 + 1)y$	[_separable]	✓
4958	$x(-x^2 + 1)y' = (x^2 - x + 1)y$	[_separable]	✓
4959	$x(-x^2 + 1)y' = ax^3 + (-2x^2 + 1)y$	[_linear]	✓
4960	$x(-x^2 + 1)y' = x^3(-x^2 + 1) + (-2x^2 + 1)y$	[_linear]	✓
4961	$x(x^2 + 1)y' = 2 - 4x^2y$	[_linear]	✓
4962	$x(x^2 + 1)y' = x - (5x^2 + 3)y$	[_linear]	✓
4966	$2x^3y' = (3x^2 + y^2a)y$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
4973	$x(-x^3 + 1)y' = 2x - (-4x^3 + 1)y$	[_linear]	✓
4976	$x(-2x^3 + 1)y' = 2(-x^3 + 1)y$	[_separable]	✓
4978	$x^5y' = 1 - 3x^4y$	[_linear]	✓
4981	$x^n y' = a + bx^{n-1}y$	[_linear]	✓
4987	$\sqrt{x^2 + 1}y' = 2x - y$	[_linear]	✓
4990	$y'\sqrt{a^2 + x^2} + x + y = \sqrt{a^2 + x^2}$	[_linear]	✓

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Table 2.12 first order ode exact  
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#	ODE	CAS classification	Solved?
4995	$y'\sqrt{X} + \sqrt{Y} = 0$	[_quadrature]	✓
4996	$y'\sqrt{X} = \sqrt{Y}$	[_quadrature]	✓
5003	$y'\sqrt{X} + \sqrt{Y} = 0$	[_quadrature]	✓
5004	$y'\sqrt{X} = \sqrt{Y}$	[_quadrature]	✓
5007	$X^{2/3}y' = Y^{2/3}$	[_quadrature]	✓
5009	$(1 - 4 \cos(x)^2) y' = \tan(x) (1 + 4 \cos(x)^2) y$	[_separable]	✓
5010	$(-\sin(x) + 1) y' + y \cos(x) = 0$	[_separable]	✓
5011	$(\cos(x) - \sin(x)) y' + y(\cos(x) + \sin(x)) = 0$	[_separable]	✓
5012	$(a_0 + a_1 \sin(x)^2) y' + a_2 x (a_3 + a_1 \sin(x)^2) + a_1 y \sin(2x) = 0$	[_linear]	✓
5013	$(-e^x + x) y' + x e^x + (1 - e^x) y = 0$	[_linear]	✓
5014	$y' x \ln(x) = ax(\ln(x) + 1) - y$	[_linear]	✓
5015	$yy' + x = 0$	[_separable]	✓
5016	$yy' + x e^{x^2} = 0$	[_separable]	✓
5019	$yy' + x e^{-x}(1 + y) = 0$	[_separable]	✓
5021	$yy' + 4x(x + 1) + y^2 = 0$	[[_homogeneous, 'class D'], _rational, _Bernoulli]	✓
5022	$yy' = ax + by^2$	[_rational, _Bernoulli]	✓
5023	$yy' = b \cos(x + c) + y^2 a$	[_Bernoulli]	✓
5024	$yy' = a_0 + a_1 y + a_2 y^2$	[_quadrature]	✓
5025	$yy' = ax + bxy^2$	[_separable]	✓
5026	$yy' = \csc(x)^2 - y^2 \cot(x)$	[_Bernoulli]	✓
5027	$yy' = \sqrt{y^2 + a^2}$	[_quadrature]	✓
5028	$yy' = \sqrt{y^2 - a^2}$	[_quadrature]	✓
5031	$(1 + y) y' = x^2(1 - y)$	[_separable]	✓
5032	$(x + y) y' + y = 0$	[[_homogeneous, 'class A'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓

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Table 2.12 first order ode exact  
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#	ODE	CAS classification	Solved?
5033	$y'(x - y) = y$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
5034	$(x + y)y' + x - y = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
5035	$(x + y)y' = x - y$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
5036	$1 - y' = x + y$	[[_linear, 'class A']]]	✓
5037	$y'(x - y) = y(1 + 2xy)$	[[_homogeneous, 'class D', _rational, [_Abel, '2nd type', 'class A']]]	✓
5038	$(x + y)y' + \tan(y) = 0$	[[_1st_order, '_with_sym- metry_[F(x)*G(y),0']]]	✓
5041	$(x + y + 2)y' = 1 - x - y$	[[_homogeneous, 'class C', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
5044	$(2x + y)y' + x - 2y = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
5046	$(3 + 2x - y)y' + 2 = 0$	[[_homogeneous, 'class C', _Abel, '2nd type', 'class C', _dAlembert]]	✓
5048	$(5 - 2x - y)y' + 4 - x - 2y = 0$	[[_homogeneous, 'class C', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
5050	$(2 - 3x + y)y' + 5 - 2x - 3y = 0$	[[_homogeneous, 'class C', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
5055	$(x^2 - y)y' + x = 0$	[_rational, [_1st_or- der, '_with_symme- try_[F(x)*G(y),0'], [_Abel, '2nd type', 'class C']]]	✓
5056	$(x^2 - y)y' = 4xy$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class A']]]	✓
5057	$(y - \cot(x) \csc(x))y' + \csc(x)(1 + y \cos(x))y = 0$	[[_Abel, '2nd type', 'class A']]]	✓
5058	$2yy' + 2x + x^2 + y^2 = 0$	[[_homogeneous, 'class D', _rational, _Bernoulli]]	✓

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Table 2.12 first order ode exact  
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#	ODE	CAS classification	Solved?
5059	$2yy' = xy^2 + x^3$	[_rational, _Bernoulli]	✓
5060	$(x - 2y)y' = y$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
5061	$(x + 2y)y' + 2x - y = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
5062	$(x - 2y)y' + 2x + y = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
5063	$(1 + x - 2y)y' = 1 + 2x - y$	[[_homogeneous, 'class C', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
5066	$2(x + y)y' + x^2 + 2y = 0$	[_exact, _rational, [_1st_order, '_with_sym- metry_[F(x),G(x)'], [_Abel, '2nd type', 'class A']]]	✓
5067	$(3 + 2x - 2y)y' = 1 + 6x - 2y$	[[_homogeneous, 'class C', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
5071	$(x^3 + 2y)y' = 3x(2 - xy)$	[_exact, _rational, [_1st_order, '_with_sym- metry_[F(x),G(x)'], [_Abel, '2nd type', 'class A']]]	✓
5073	$(xe^{-x} - 2y)y' = 2xe^{-2x} - (e^{-x} + xe^{-x} - 2y)y$	[[_Abel, '2nd type', 'class B']]]	✓
5074	$3yy' + 5 \cot(x) \cot(y) \cos(y)^2 = 0$	[_separable]	✓
5075	$3(2 - y)y' + xy = 0$	[_separable]	✓
5081	$(4y + x)y' + 4x - y = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
5083	$(5 + 2x - 4y)y' = 3 + x - 2y$	[[_homogeneous, 'class C', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
5084	$(5 + 3x - 4y)y' = 2 + 7x - 3y$	[[_homogeneous, 'class C', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓

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#	ODE	CAS classification	Solved?
5094	$(8 + 5x - 12y)y' = 3 + 2x - 5y$	[[_homogeneous, 'class C', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
5098	$(ax + by)y' + y = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
5099	$(ax + by)y' + bx + ay = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
5100	$(ax + by)y' = bx + ay$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
5101	$1 + y^2 + xyy' = 0$	[_separable]	✓
5102	$xyy' = x + y^2$	[[_homogeneous, 'class D', _rational, _Bernoulli]]	✓
5103	$xyy' + x^2 + y^2 = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
5104	$xyy' + x^4 - y^2 = 0$	[[_homogeneous, 'class D', _rational, _Bernoulli]]	✓
5105	$xyy' = ax^3 \cos(x) + y^2$	[[_homogeneous, 'class D', _Bernoulli]]	✓
5108	$xyy' = a + by^2$	[_separable]	✓
5109	$xyy' = ax^n + by^2$	[[_homogeneous, 'class G', _rational, _Bernoulli]]	✓
5110	$xyy' = (x^2 + 1)(1 - y^2)$	[_separable]	✓
5113	$(xy + 1)y' + y^2 = 0$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]]	✓
5114	$x(1 + y)y' - (1 - x)y = 0$	[_separable]	✓
5115	$x(1 - y)y' + (x + 1)y = 0$	[_separable]	✓
5116	$x(1 - y)y' + (1 - x)y = 0$	[_separable]	✓
5117	$x(y + 2)y' + ax = 0$	[_quadrature]	✓
5118	$(2 + 3x - xy)y' + y = 0$	[_rational, [_1st_or- der, '_with_symme- try_[F(x)*G(y),0']], [_Abel, '2nd type', 'class B']]]	✓
5121	$x(a + y)y' = y(Bx + A)$	[_separable]	✓

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Table 2.12 first order ode exact  
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#	ODE	CAS classification	Solved?
5123	$x(x - y)y' + y^2 = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
5125	$x(x - y)y' + 2x^2 + 3xy - y^2 = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
5134	$(x + a)(x + b)y' = xy$	[_separable]	✓
5135	$2xyy' + 1 - 2x^3 - y^2 = 0$	[_rational, _Bernoulli]	✓
5136	$2xyy' + a + y^2 = 0$	[_separable]	✓
5137	$2xyy' = ax + y^2$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
5138	$2xyy' + x^2 + y^2 = 0$	[[_homogeneous, 'class A', _exact, _rational, _Bernoulli]	✓
5139	$2xyy' = y^2 + x^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
5140	$2xyy' = 4x^2(2x + 1) + y^2$	[_rational, _Bernoulli]	✓
5141	$2xyy' + x^2(ax^3 + 1) = 6y^2$	[_rational, _Bernoulli]	✓
5142	$(3 - x + 2xy)y' + 3x^2 - y + y^2 = 0$	[_exact, _rational, [_Abel, '2nd type', 'class B']]]	✓
5143	$x(x - 2y)y' + y^2 = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
5145	$x(x - 2y)y' + (2x - y)y = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class B']]]	✓
5146	$x(1 + x - 2y)y' + (1 - 2x + y)y = 0$	[_rational, [_Abel, '2nd type', 'class B']]]	✓
5147	$x(1 - x - 2y)y' + (1 + 2x + y)y = 0$	[_rational, [_Abel, '2nd type', 'class B']]]	✓
5148	$2x(2x^2 + y)y' + (12x^2 + y)y = 0$	[[_homogeneous, 'class G', _exact, _rational, [_Abel, '2nd type', 'class B']]]	✓
5149	$2(x + 1)yy' + 2x - 3x^2 + y^2 = 0$	[_exact, _rational, _Bernoulli]	✓
5151	$x(2x + 3y)y' + 3(x + y)^2 = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓

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Table 2.12 first order ode exact

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#	ODE	CAS classification	Solved?
5152	$(3 + 6xy + x^2)y' + 2x + 2xy + 3y^2 = 0$	[_exact, _rational, [_Abel, '2nd type', 'class B']]	✓
5153	$3x(x + 2y)y' + x^3 + 3y(2x + y) = 0$	[_exact, _rational, [_Abel, '2nd type', 'class B']]	✓
5154	$axy' = y^2 + x^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
5155	$axy' + x^2 - y^2 = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
5156	$x(a + by)y' = cy$	[_separable]	✓
5157	$x(x - ay)y' = y(y - ax)$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
5159	$(1 - x^2y)y' + 1 - xy^2 = 0$	[_exact, _rational, [_Abel, '2nd type', 'class B']]	✓
5161	$x(1 - xy)y' + (xy + 1)y = 0$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]	✓
5162	$x(xy + 2)y' = 3 + 2x^3 - 2y - xy^2$	[_exact, _rational, [_Abel, '2nd type', 'class B']]	✓
5163	$x(2 - xy)y' + 2y - xy^2(xy + 1) = 0$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class C']]	✓
5164	$x(3 - xy)y' = y(xy - 1)$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]	✓
5165	$x^2(1 - y)y' + (1 - x)y = 0$	[_separable]	✓
5166	$x^2(1 - y)y' + (x + 1)y^2 = 0$	[_separable]	✓
5167	$(x^2 + 1)yy' + x(1 - y^2) = 0$	[_separable]	✓
5168	$(-x^2 + 1)yy' + 2x^2 + xy^2 = 0$	[_rational, _Bernoulli]	✓
5169	$2x^2yy' = x^2(2x + 1) - y^2$	[[_homogeneous, 'class D', _rational, _Bernoulli]	✓
5170	$x(1 - 2xy)y' + y(1 + 2xy) = 0$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]	✓
5171	$x(1 + 2xy)y' + (2 + 3xy)y = 0$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]	✓

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#	ODE	CAS classification	Solved?
5172	$x(1 + 2xy)y' + (1 + 2xy - y^2x^2)y = 0$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class C']]	✓
5174	$2(x + 1)xyy' = 1 + y^2$	[_separable]	✓
5175	$3x^2yy' + 1 + 2xy^2 = 0$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
5177	$(1 - x^3y)y' = y^2x^2$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]	✓
5178	$2x^3yy' + a + 3y^2x^2 = 0$	[[_homogeneous, 'class G', _exact, _rational, _Bernoulli]	✓
5179	$x(3 - 2x^2y)y' = 4x - 3y + 3y^2x^2$	[_exact, _rational, [_Abel, '2nd type', 'class B']]	✓
5182	$xy(bx^2 + a)y' = A + By^2$	[_separable]	✓
5183	$3x^4yy' = 1 - 2x^3y^2$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
5188	$y^2y' + x(2 - y) = 0$	[_separable]	✓
5189	$y^2y' = x(1 + y^2)$	[_separable]	✓
5190	$(x + y^2)y' + y = bx + a$	[_exact, _rational]	✓
5191	$(x - y^2)y' = x^2 - y$	[_exact, _rational]	✓
5192	$(y^2 + x^2)y' + xy = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5193	$(y^2 + x^2)y' = xy$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5194	$(x^2 - y^2)y' = 2xy$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5195	$(x^2 - y^2)y' + x(x + 2y) = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlem- bert]	✓
5196	$(y^2 + x^2)y' + 2x(2x + y) = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlem- bert]	✓
5198	$(a^2 + x^2 + y^2)y' + 2xy = 0$	[_exact, _rational, [_1st_order, 'with_sym- metry_[F(x)*G(y),0']]	✓
5199	$(a^2 + x^2 + y^2)y' + b^2 + x^2 + 2xy = 0$	[_exact, _rational]	✓

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Table 2.12 first order ode exact  
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#	ODE	CAS classification	Solved?
5200	$(x^2 + y^2 + x) y' = y$	[_rational]	✓
5201	$(3x^2 - y^2) y' = 2xy$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5202	$(x^4 + y^2) y' = 4x^3y$	[[_homogeneous, 'class G', _rational]	✓
5203	$y(1 + y) y' = x(x + 1)$	[_separable]	✓
5205	$(x^2 + 2y + y^2) y' + 2x = 0$	[_rational, [_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓
5206	$(x^3 + 2y - y^2) y' + 3x^2y = 0$	[_exact, _rational, [_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓
5207	$(1 + y + xy + y^2) y' + 1 + y = 0$	[[_1st_order, _with_linear_symmetries], _rational]	✓
5213	$(2x^2 + 4xy - y^2) y' = x^2 - 4xy - 2y^2$	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]	✓
5217	$3y^2y' = 1 + x + ay^3$	[_rational, _Bernoulli]	✓
5218	$(x^2 - 3y^2) y' + 1 + 2xy = 0$	[_exact, _rational]	✓
5220	$3(x^2 - y^2) y' + 3e^x + 6xy(x + 1) - 2y^3 = 0$	['y=_G(x,y)']	✓
5221	$(3x^2 + 2xy + 4y^2) y' + 2x^2 + 6xy + y^2 = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]	✓
5223	$(1 - 3x^2y + 6y^2) y' + x^2 - 3xy^2 = 0$	[_exact, _rational]	✓
5224	$(x - 6y)^2 y' + a + 2xy - 6y^2 = 0$	[_exact, _rational, [_1st_order, '_with_symmetry_[F(x),G(x)']]	✓
5225	$(x^2 + y^2a) y' = xy$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5228	$(x^2a + 2bxy + cy^2) y' + kx^2 + 2axy + by^2 = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]	✓
5229	$x(1 - y^2) y' = (x^2 + 1) y$	[_separable]	✓
5232	$x(1 - x^2 + y^2) y' + (1 + x^2 - y^2) y = 0$	[_rational, [_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)']]	✓

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Table 2.12 first order ode exact  
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#	ODE	CAS classification	Solved?
5233	$x(a - x^2 - y^2)y' + (a + x^2 + y^2)y = 0$	[_rational, [_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)']]]	✓
5236	$x(a + y)^2 y' = by^2$	[_separable]	✓
5238	$x(x^2 - xy - y^2)y' = (x^2 + xy - y^2)y$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5239	$x(x^2 + axy + y^2)y' = (x^2 + bxy + y^2)y$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5240	$x(x^2 - 2y^2)y' = (2x^2 - y^2)y$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5244	$3xy^2y' = 2x - y^3$	[[_homogeneous, 'class G', _exact, _rational, _Bernoulli]	✓
5245	$(1 - 4x + 3xy^2)y' = (2 - y^2)y$	[_rational, [_1st_order, '_with_symmetry_[F(x)*G(y),0]']]]	✓
5246	$x(x - 3y^2)y' + (2x - y^2)y = 0$	[[_homogeneous, 'class G', _exact, _rational]	✓
5247	$3x(x + y^2)y' + x^3 - 3xy - 2y^3 = 0$	[_rational]	✓
5249	$6xy^2y' + x + 2y^3 = 0$	[[_homogeneous, 'class G', _exact, _rational, _Bernoulli]	✓
5250	$x(x + 6y^2)y' + xy - 3y^3 = 0$	[[_homogeneous, 'class G', _rational]	✓
5251	$x(x^2 - 6y^2)y' = 4(x^2 + 3y^2)y$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5252	$x(3x - 7y^2)y' + (5x - 3y^2)y = 0$	[[_homogeneous, 'class G', _rational]	✓
5253	$x^2y^2y' + 1 - x + x^3 = 0$	[_separable]	✓
5254	$(1 - y^2x^2)y' = xy^3$	[[_homogeneous, 'class G', _rational]	✓
5255	$(1 - y^2x^2)y' = (xy + 1)y^2$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]]	✓
5256	$x(1 + xy^2)y' + y = 0$	[[_homogeneous, 'class G', _rational]	✓
5257	$x(1 + xy^2)y' = (2 - 3xy^2)y$	[[_homogeneous, 'class G', _rational]	✓

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Table 2.12 first order ode exact  
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#	ODE	CAS classification	Solved?
5259	$(x^2 + 1)(1 + y^2)y' + 2xy(1 - y^2) = 0$	[_separable]	✓
5260	$(x^2 + 1)(1 + y^2)y' + 2xy(1 - y^2)^2 = 0$	[_separable]	✓
5261	$(1 - x^3 + 6y^2x^2)y' = (6 + 3xy - 4y^3)x$	[_exact, _rational]	✓
5262	$x(3 + 5x - 12xy^2 + 4x^2y)y' + (3 + 10x - 8xy^2 + 6x^2y)y = 0$	[_exact, _rational]	✓
5263	$x^3(1 + y^2)y' + 3x^2y = 0$	[_separable]	✓
5264	$x(1 - xy)^2y' + (1 + y^2x^2)y = 0$	[[_homogeneous, 'class G'], _rational]	✓
5265	$(1 - x^4y^2)y' = x^3y^3$	[[_homogeneous, 'class G'], _rational]	✓
5266	$(3x - y^3)y' = x^2 - 3y$	[_exact, _rational]	✓
5267	$(x^3 - y^3)y' + x^2y = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
5268	$(x^3 + y^3)y' + x^2(ax + 3y) = 0$	[[_homogeneous, 'class A'], _exact, _rational, _dAlembert]	✓
5269	$(x - x^2y - y^3)y' = x^3 - y + xy^2$	[_exact, _rational]	✓
5270	$(a^2x + y(x^2 - y^2))y' + x(x^2 - y^2) = a^2y$	[_rational]	✓
5271	$(a + x^2 + y^2)yy' = x(a - x^2 - y^2)$	[_exact, _rational]	✓
5272	$(3x^2 + y^2)yy' + x(x^2 + 3y^2) = 0$	[[_homogeneous, 'class A'], _exact, _rational, _dAlembert]	✓
5275	$y(1 + 2y^2)y' = x(2x^2 + 1)$	[_separable]	✓
5277	$(5x^2 + 2y^2)yy' + x(x^2 + 5y^2) = 0$	[[_homogeneous, 'class A'], _exact, _rational, _dAlembert]	✓
5279	$(3x^3 + 6x^2y - 3xy^2 + 20y^3)y' + 4x^3 + 9x^2y + 6xy^2 - y^3 = 0$	[[_homogeneous, 'class A'], _exact, _rational, _dAlembert]	✓
5280	$(x^3 + ay^3)y' = x^2y$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
5282	$x(x - y^3)y' = (3x + y^3)y$	[[_homogeneous, 'class G'], _rational]	✓
5284	$x(2x^3 - y^3)y' = (x^3 - 2y^3)y$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓

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Table 2.12 first order ode exact  
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#	ODE	CAS classification	Solved?
5286	$x(x^3 - 2y^3) y' = (2x^3 - y^3) y$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5287	$x(x^4 - 2y^3) y' + (2x^4 + y^3) y = 0$	[[_homogeneous, 'class G', _rational]	✓
5288	$x(x + y + 2y^3) y' = (x - y) y$	[_rational]	✓
5289	$(5x - y - 7xy^3) y' + 5y - y^4 = 0$	[_rational, [_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓
5290	$x(1 - 2xy^3) y' + (1 - 2x^3y) y = 0$	[_rational]	✓
5292	$(2 - 10x^2y^3 + 3y^2) y' = x(1 + 5y^4)$	[_exact, _rational, [_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓
5293	$x(a + bxy^3) y' + (a + cx^3y) y = 0$	[_rational]	✓
5294	$x(1 - 2x^2y^3) y' + (1 - 2x^3y^2) y = 0$	[_rational]	✓
5295	$x(1 - xy)(1 - y^2x^2) y' + (xy + 1)(1 + y^2x^2) y = 0$	[[_homogeneous, 'class G', _rational]	✓
5296	$(x^2 - y^4) y' = xy$	[[_homogeneous, 'class G', _rational]	✓
5297	$(x^3 - y^4) y' = 3x^2y$	[[_homogeneous, 'class G', _rational]	✓
5299	$2(x - y^4) y' = y$	[[_homogeneous, 'class G', _rational]	✓
5300	$(4x - xy^3 - 2y^4) y' = (2 + y^3) y$	[_rational, [_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓
5303	$2x(x^3 + y^4) y' = (x^3 + 2y^4) y$	[[_homogeneous, 'class G', _rational]	✓
5304	$x(1 - x^2y^4) y' + y = 0$	[[_homogeneous, 'class G', _rational]	✓
5305	$(x^2 - y^5) y' = 2xy$	[[_homogeneous, 'class G', _rational]	✓
5306	$x(x^3 + y^5) y' = (x^3 - y^5) y$	[[_homogeneous, 'class G', _rational]	✓
5307	$x^3(1 + 5x^3y^7) y' + (3x^5y^5 - 1) y^3 = 0$	[_rational]	✓
5311	$y' \sqrt{b^2 + y^2} = \sqrt{a^2 + x^2}$	[_separable]	✓
5312	$y' \sqrt{b^2 - y^2} = \sqrt{a^2 - x^2}$	[_separable]	✓

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Table 2.12 first order ode exact  
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#	ODE	CAS classification	Solved?
5313	$y' \sqrt{y} = \sqrt{x}$	[_separable]	✓
5324	$y' \cos(y) (\cos(y) - \sin(A) \sin(x)) + \cos(x) (\cos(x) - \sin(A) \sin(y)) = 0$	unknown	✓
5325	$(a \cos(bx + ay) - b \sin(ax + by)) y' + b \cos(bx + ay) - a \sin(ax + by) = 0$	[_exact]	✓
5326	$(x + \cos(x) \sec(y)) y' + \tan(y) - y \sin(x) \sec(y) = 0$	[NONE]	✓
5327	$(1 + (x + y) \tan(y)) y' + 1 = 0$	[[_1st_order, __with_linear_symmetries]]	✓
5328	$x \left(x - y \tan\left(\frac{y}{x}\right)\right) y' + \left(x + y \tan\left(\frac{y}{x}\right)\right) y = 0$	[[_homogeneous, 'class A', _dAlembert]]	✓
5329	$(e^x + x e^y) y' + y e^x + e^y = 0$	[_exact]	✓
5330	$(1 - 2x - \ln(y)) y' + 2y = 0$	[[_1st_order, __with_linear_symmetries]]	✓
5331	$(\sinh(x) + x \cosh(y)) y' + y \cosh(x) + \sinh(y) = 0$	[_exact]	✓
5332	$y'(1 + \sinh(x) \sinh(y) + \cosh(x) (\cosh(y) - 1)) = 0$	[_separable]	✓
5343	$y'^2 = a^2 y^2$	[_quadrature]	✓
5345	$y'^2 = y^2 x^2$	[_separable]	✓
5359	$y'^2 - 5y' + 6 = 0$	[_quadrature]	✓
5360	$y'^2 - 7y' + 12 = 0$	[_quadrature]	✓
5374	$y'^2 + 2xy' - 3x^2 = 0$	[_quadrature]	✓
5386	$y'^2 - 2x^2 y' + 2xy' = 0$	[_quadrature]	✓
5391	$y'^2 + yy' = x(x + y)$	[_quadrature]	✓
5393	$y'^2 + (x + y) y' + xy = 0$	[_quadrature]	✓
5396	$y'^2 - 2y'(x - y) - 4xy = 0$	[_quadrature]	✓
5402	$y'^2 + (ax + by) y' + abxy = 0$	[_quadrature]	✓
5404	$y'^2 - (1 + 2xy) y' + 2xy = 0$	[_quadrature]	✓
5406	$y'^2 - (x - y) yy' - xy^3 = 0$	[_separable]	✓
5409	$y'^2 - xy(y^2 + x^2) y' + x^4 y^4 = 0$	[_separable]	✓
5410	$y'^2 + 2xy^3 y' + y^4 = 0$	[[_homogeneous, 'class G']]	✓
5435	$xy'^2 - y'(x^2 + 1) + x = 0$	[_quadrature]	✓

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Table 2.12 first order ode exact  
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#	ODE	CAS classification	Solved?
5451	$xy'^2 - (2x + 3y)y' + 6y = 0$	[_quadrature]	✓
5454	$xy'^2 - (xy + 1)y' + y = 0$	[_quadrature]	✓
5455	$xy'^2 + (1 - x)yy' - y^2 = 0$	[_quadrature]	✓
5456	$xy'^2 + (1 - x^2y)y' - xy = 0$	[_quadrature]	✓
5471	$x^2y'^2 = a^2$	[_quadrature]	✓
5472	$x^2y'^2 = y^2$	[_separable]	✓
5474	$x^2y'^2 = (x - y)^2$	[_linear]	✓
5476	$x^2y'^2 - xy' + y(1 - y) = 0$	[_separable]	✓
5485	$x^2y'^2 + 3xyy' + 2y^2 = 0$	[_separable]	✓
5487	$x^2y'^2 + 4xyy' - 5y^2 = 0$	[_separable]	✓
5489	$x^2y'^2 - 5xyy' + 6y^2 = 0$	[_separable]	✓
5493	$x^2y'^2 + (a + bx^2y^3)y' + aby^3 = 0$	[_quadrature]	✓
5501	$(a^2 - x^2)y'^2 - 2xyy' - y^2 = 0$	[_separable]	✓
5507	$x^3y'^2 + xy' - y = 0$	[[_homogeneous, 'class G', _rational]	✓
5512	$x^4y'^2 + 2x^3yy' - 4 = 0$	[[_homogeneous, 'class G', _rational]	✓
5521	$yy'^2 = e^{2x}$	[[_1st_order, __with_lin- ear_symmetries]]	✓
5527	$yy'^2 + y'(x - y) - x = 0$	[_quadrature]	✓
5529	$yy'^2 - (xy + 1)y' + x = 0$	[_quadrature]	✓
5530	$yy'^2 + (x - y^2)y' - xy = 0$	[_quadrature]	✓
5537	$(x^2 - ay)y'^2 - 2xyy' = 0$	[_quadrature]	✓
5538	$xyy'^2 + (x + y)y' + 1 = 0$	[_quadrature]	✓
5539	$xyy'^2 + (y^2 + x^2)y' + xy = 0$	[_separable]	✓
5540	$xyy'^2 + (x^2 - y^2)y' - xy = 0$	[_separable]	✓
5541	$xyy'^2 - (x^2 - y^2)y' - xy = 0$	[_separable]	✓
5544	$xyy'^2 + (3x^2 - 2y^2)y' - 6xy = 0$	[_separable]	✓

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Table 2.12 first order ode exact  
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#	ODE	CAS classification	Solved?
5547	$y^2 y' = a^2$	[_quadrature]	✓
5552	$y^2 y' - (x + 1) y y' + x = 0$	[_quadrature]	✓
5564	$(x + y)^2 y' = y^2$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
5565	$(x + y)^2 y' - (x^2 - xy - 2y^2) y' - (x - y) y = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
5569	$4y^2 y' + 2(3x + 1) x y y' + 3x^3 = 0$	[_separable]	✓
5570	$(x^2 - 4y^2) y' + 6x y y' - 4x^2 + y^2 = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
5579	$4x^2 y^2 y' = (y^2 + x^2)^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
5594	$y'^3 - 7y' + 6 = 0$	[_quadrature]	✓
5613	$y'^3 + (\cos(x) \cot(x) - y) y'^2$ $- (1 + y \cos(x) \cot(x)) y' + y = 0$	[_quadrature]	✓
5614	$y'^3 + (2x - y^2) y'^2 - 2x y^2 y' = 0$	[_quadrature]	✓
5615	$y'^3 - (2x + y^2) y'^2 + (x^2 - y^2 + 2x y^2) y'$ $- (x^2 - y^2) y^2 = 0$	[_quadrature]	✓
5616	$y'^3 - (y^2 + xy + x^2) y'^2$ $+ xy(y^2 + xy + x^2) y' - x^3 y^3 = 0$	[_quadrature]	✓
5617	$y'^3 - (x^2 + xy^2 + y^4) y'^2$ $+ xy^2(x^2 + xy^2 + y^4) y' - x^3 y^6 = 0$	[_quadrature]	✓
5624	$x y'^3 - (x + x^2 + y) y'^2 + (x^2 + y + xy) y' - xy = 0$	[_quadrature]	✓
5630	$(a^2 - x^2) y'^3 + bx(a^2 - x^2) y'^2 - y' - bx = 0$	[_quadrature]	✓
5637	$(x + 2y) y'^3 + 3(x + y) y'^2 + (2x + y) y' = 0$	[_quadrature]	✓
5689	$y' = \frac{xy}{x^2 - y^2}$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
5692	$y' - \frac{2y}{x + 1} = (x + 1)^2$	[_linear]	✓
5694	$\frac{2x}{y^3} + \frac{(y^2 - 3x^2) y'}{y^4} = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]]	✓

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Table 2.12 first order ode exact

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#	ODE	CAS classification	Solved?
5695	$y + xy^2 - xy' = 0$	[[_homogeneous, 'class D'], _rational, _Bernoulli]	✓
5699	$x(1 - y)y' + (x + 1)y = 0$	[_separable]	✓
5700	$y^2 + xy^2 + (x^2 - x^2y)y' = 0$	[_separable]	✓
5701	$xy(x^2 + 1)y' - 1 - y^2 = 0$	[_separable]	✓
5703	$\sin(x)\cos(y) - \cos(x)\sin(y)y' = 0$	[_separable]	✓
5704	$\sec(x)^2 \tan(y) + \sec(y)^2 \tan(x)y' = 0$	[_separable]	✓
5705	$(y - x)y' + y = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
5708	$x - y \cos\left(\frac{y}{x}\right) + x \cos\left(\frac{y}{x}\right)y' = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓
5712	$y' + \frac{xy}{x^2 + 1} = \frac{1}{2x(x^2 + 1)}$	[_linear]	✓
5713	$x(-x^2 + 1)y' + (2x^2 - 1)y = ax^3$	[_linear]	✓
5714	$y' + \frac{y}{(-x^2 + 1)^{3/2}} = \frac{x + \sqrt{-x^2 + 1}}{(-x^2 + 1)^2}$	[_linear]	✓
5715	$y' + y \cos(x) = \frac{\sin(2x)}{2}$	[_linear]	✓
5716	$y'(x^2 + 1) + y = \arctan(x)$	[_linear]	✓
5717	$(-x^2 + 1)z' - xz = axz^2$	[_separable]	✓
5718	$3z^2z' - az^3 = x + 1$	[_rational, _Bernoulli]	✓
5721	$xy' + y = y^2 \ln(x)$	[_Bernoulli]	✓
5722	$x^3 + 3xy^2 + (y^3 + 3x^2y)y' = 0$	[[_homogeneous, 'class A'], _exact, _rational, _dAlem- bert]	✓
5723	$1 + \frac{y^2}{x^2} - \frac{2yy'}{x} = 0$	[[_homogeneous, 'class A'], _exact, _rational, _Bernoulli]	✓
5724	$\frac{3x}{y^3} + \left(\frac{1}{y^2} - \frac{3x^2}{y^4}\right)y' = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
5725	$x + yy' + \frac{xy'}{y^2 + x^2} - \frac{y}{y^2 + x^2} = 0$	[[_1st_order, _with_lin- ear_symmetries], _exact, _rational]	✓

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Table 2.12 first order ode exact  
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#	ODE	CAS classification	Solved?
5726	$1 + e^{\frac{x}{y}} + e^{\frac{x}{y}} \left(1 - \frac{x}{y}\right) y' = 0$	[[_homogeneous, 'class A', _exact, _dAlembert]	✓
5727	$e^x(x^2 + y^2 + 2x) + 2ye^xy' = 0$	[[_homogeneous, 'class D', _exact, _rational, _Bernoulli]	✓
5728	$n \cos(nx + my) - m \sin(mx + ny)$ $+ (m \cos(nx + my) - n \sin(mx + ny)) y' = 0$	[_exact]	✓
5729	$\frac{x}{\sqrt{1+x^2+y^2}} + \frac{yy'}{\sqrt{1+x^2+y^2}}$ $+ \frac{y}{y^2+x^2} - \frac{xy'}{y^2+x^2} = 0$	[[_1st_order, _with_lin- ear_symmetries], _exact]	✓
5731	$2xy + (y^2 - 2x^2) y' = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5732	$\frac{1}{x} + \frac{y'}{y} + \frac{2}{y} - \frac{2y'}{x} = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
5737	$\left(x \cos\left(\frac{y}{x}\right) + y \sin\left(\frac{y}{x}\right)\right) y$ $+ \left(x \cos\left(\frac{y}{x}\right) - y \sin\left(\frac{y}{x}\right)\right) xy' = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
5738	$(y^2x^2 + xy) y + (y^2x^2 - 1) xy' = 0$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]	✓
5739	$(x^3y^3 + y^2x^2 + xy + 1) y$ $+ (x^3y^3 - y^2x^2 - xy + 1) xy' = 0$	[[_homogeneous, 'class G', _rational]	✓
5740	$2yy' + 2x + x^2 + y^2 = 0$	[[_homogeneous, 'class D', _rational, _Bernoulli]	✓
5741	$x^2 + y^2 - 2xyy' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
5742	$2xy + (y^2 - 3x^2) y' = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5743	$y + (2y - x) y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
5750	$y'^2 - 5y' + 6 = 0$	[_quadrature]	✓
5751	$y'^2 - \frac{a^2}{x^2} = 0$	[_quadrature]	✓
5771	$2xy + (y^2 + x^2) y' = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlem- bert]	✓

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Table 2.12 first order ode exact  
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#	ODE	CAS classification	Solved?
5773	$x + y - y'(x - y) = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
5777	$\frac{y \cos(\frac{y}{x})}{x} - \left( \frac{x \sin(\frac{y}{x})}{y} + \cos(\frac{y}{x}) \right) y' = 0$	[[_homogeneous, 'class A', _dAlembert]]	✓
5778	$y + x \ln\left(\frac{y}{x}\right) y' - 2xy' = 0$	[[_homogeneous, 'class A', _dAlembert]]	✓
5779	$2y e^{\frac{x}{y}} + \left( y - 2x e^{\frac{x}{y}} \right) y' = 0$	[[_homogeneous, 'class A', _dAlembert]]	✓
5781	$y^2 + x^2 = 2xyy'$ i.c.	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
5784	$xy - y^2 - x^2y' = 0$ i.c.	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
5787	$x + y + 1 + (2x + 2y + 2) y' = 0$	[_quadrature]	✓
5791	$7y - 3 + (2x + 1) y' = 0$	[_separable]	✓
5794	$3x - 2y + 4 - (2x + 7y - 1) y' = 0$	[[_homogeneous, 'class C', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
5797	$y + 7 + (2x + y + 3) y' = 0$ i.c.	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
5799	$3x^2y + 8xy^2 + (x^3 + 8x^2y + 12y^2) y' = 0$	[_exact, _rational]	✓
5800	$\frac{1 + 2xy}{y} + \frac{(y - x) y'}{y^2} = 0$	[[_homogeneous, 'class D', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
5801	$2xy + (y^2 + x^2) y' = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlem- bert]]	✓
5802	$e^x \sin(y) + e^{-y} - (x e^{-y} - e^x \cos(y)) y' = 0$	[_exact]	✓
5803	$\cos(y) - (x \sin(y) - y^2) y' = 0$	[_exact, [_1st_or- der, 'with_symme- try_[F(x)*G(y),0']]]	✓
5804	$x - 2xy + e^y + (y - x^2 + x e^y) y' = 0$	[_exact]	✓
5805	$x^2 - x + y^2 - (e^y - 2xy) y' = 0$	[_exact]	✓
5806	$2x + y \cos(x) + (2y + \sin(x) - \sin(y)) y' = 0$	[_exact]	✓

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Table 2.12 first order ode exact

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#	ODE	CAS classification	Solved?
5807	$x\sqrt{y^2+x^2} - \frac{x^2yy'}{y-\sqrt{y^2+x^2}} = 0$	[[_homogeneous, 'class A'], _exact, _dAlembert]	✓
5808	$4x^3 - \sin(x) + y^3 - (y^2 + 1 - 3xy^2) y' = 0$	[_exact]	✓
5809	$e^x(y^3 + xy^3 + 1) + 3y^2(xe^x - 6) y' = 0$ i.c.	[_exact, _Bernoulli]	✓
5810	$\sin(x)\cos(y) + \cos(x)\sin(y) y' = 0$ i.c.	[_separable]	✓
5811	$y^2e^{xy^2} + 4x^3 + (2xye^{xy^2} - 3y^2) y' = 0$ i.c.	[_exact]	✓
5812	$y^2 + y - xy' = 0$	[_separable]	✓
5813	$y \sec(x) + \sin(x) y' = 0$	[_separable]	✓
5814	$e^x - \sin(y) + \cos(y) y' = 0$	['y=_G(x,y)']	✓
5815	$xy + y'(x^2 + 1) = 0$	[_separable]	✓
5816	$y^3 + xy^2 + y + (x^3 + x^2y + x) y' = 0$	[_rational, [_Abel, '2nd type', 'class C']]	✓
5817	$3y - xy' = 0$	[_separable]	✓
5818	$y - 3xy' = 0$	[_separable]	✓
5820	$2xy + x^2 + (y^2 + x^2) y' = 0$	[[_homogeneous, 'class A'], _exact, _rational, _dAlembert]	✓
5821	$x^2 + y \cos(x) + (y^3 + \sin(x)) y' = 0$	[_exact]	✓
5822	$x^2 + y^2 + x + xyy' = 0$	[_rational, _Bernoulli]	✓
5823	$x - 2xy + e^y + (y - x^2 + xe^y) y' = 0$	[_exact]	✓
5824	$e^x \sin(y) + e^{-y} - (xe^{-y} - e^x \cos(y)) y' = 0$	[_exact]	✓
5825	$x^2 - y^2 - y - (x^2 - y^2 - x) y' = 0$	[[_1st_order, _with_linear_symmetries], _rational]	✓
5826	$x^4y^2 - y + (x^2y^4 - x) y' = 0$	[_rational]	✓
5827	$y(2x + y^3) - x(2x - y^3) y' = 0$	[[_homogeneous, 'class G'], _rational]	✓
5828	$\arctan(xy) + \frac{xy - 2xy^2}{1 + y^2x^2} + \frac{(x^2 - 2x^2y) y'}{1 + y^2x^2} = 0$	[_exact]	✓
5829	$e^x(x + 1) + (e^y y - xe^x) y' = 0$	['y=_G(x,y)']	✓

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#	ODE	CAS classification	Solved?
5830	$\frac{xy+1}{y} + \frac{(2y-x)y'}{y^2} = 0$	[[_homogeneous, 'class D', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
5831	$y^2 - 3xy - 2x^2 + (xy - x^2)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
5832	$(1 + 2x + y)y - x(x + 2y - 1)y' = 0$	[_rational, [_Abel, '2nd type', 'class B']]]	✓
5833	$y(2x - y - 1) + x(2y - x - 1)y' = 0$	[_rational, [_Abel, '2nd type', 'class B']]]	✓
5834	$y^2 + 12x^2y + (2xy + 4x^3)y' = 0$	[[_homogeneous, 'class G', _exact, _rational, [_Abel, '2nd type', 'class B']]]	✓
5835	$x(2x + 3y)y' + 3(x + y)^2 = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
5836	$y - (x^2 + y^2 + x)y' = 0$	[_rational]	✓
5837	$2xy + (a + x^2 + y^2)y' = 0$	[_exact, _rational, [_1st_order, '_with_sym- metry_[F(x)*G(y),0']]]	✓
5838	$2xy + x^2 + b + (a + x^2 + y^2)y' = 0$	[_exact, _rational]	✓
5839	$xy' + y = x^3$	[_linear]	✓
5840	$y' + ay = b$	[_quadrature]	✓
5841	$xy' + y = y^2 \ln(x)$	[_Bernoulli]	✓
5842	$x' + 2xy = e^{-y^2}$	[_linear]	✓
5843	$r' = (r + e^{-\theta}) \tan(\theta)$	[_linear]	✓
5844	$y' - \frac{2xy}{x^2 + 1} = 1$	[_linear]	✓
5847	$\tan(\theta)r' - r = \tan(\theta)^2$	[_linear]	✓
5848	$y' + 2y = 3e^{-2x}$	[[_linear, 'class A']]]	✓
5849	$y' + 2y = \frac{3e^{-2x}}{4}$	[[_linear, 'class A']]]	✓
5850	$y' + 2y = \sin(x)$	[[_linear, 'class A']]]	✓
5851	$y' + y \cos(x) = e^{2x}$	[_linear]	✓
5852	$y' + y \cos(x) = \frac{\sin(2x)}{2}$	[_linear]	✓

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#	ODE	CAS classification	Solved?
5853	$xy' + y = x \sin(x)$	[_linear]	✓
5854	$-y + xy' = x^2 \sin(x)$	[_linear]	✓
5855	$xy' + xy^2 - y = 0$	[[_homogeneous, 'class D'], _rational, _Bernoulli]	✓
5856	$xy' - y(2y \ln(x) - 1) = 0$	[_Bernoulli]	✓
5858	$y' - y = e^x$	[[_linear, 'class A']]	✓
5861	$(x - \cos(y))y' + \tan(y) = 0$	[[_1st_order, '_with_sym- metry_[F(x)*G(y),0]']]	✓
5864	$y' = \frac{1}{x^2} - \frac{y}{x} - y^2$	[[_homogeneous, 'class G'], _rational, _Riccati]	✓
5866	$2xyy' + (x + 1)y^2 = e^x$	[_Bernoulli]	✓
5867	$\cos(y)y' + \sin(y) = x^2$	['y=_G(x,y)']	✓
5869	$e^y(y' + 1) = e^x$	[[_homogeneous, 'class C'], _dAlembert]	✓
5870	$y' \sin(y) + \sin(x) \cos(y) = \sin(x)$	[_separable]	✓
5873	$(3x + 2y + 1)y' + 4x + 3y + 2 = 0$	[[_homogeneous, 'class C'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
5874	$(x^2 - y^2)y' = 2xy$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
5877	$y^2 e^{xy^2} + 4x^3 + (2xy e^{xy^2} - 3y^2)y' = 0$	[_exact]	✓
5879	$xy' + y = x^2(1 + e^x)y^2$	[_Bernoulli]	✓
5880	$2y - xy \ln(x) - 2x \ln(x)y' = 0$	[_separable]	✓
5881	$y' + ay = k e^{bx}$	[[_linear, 'class A']]	✓
5885	$y' + ay = b \sin(kx)$	[[_linear, 'class A']]	✓
5886	$xy' - y^2 + 1 = 0$	[_separable]	✓
5887	$(y^2 + a \sin(x))y' = \cos(x)$	[[_1st_order, '_with_sym- metry_[F(x)*G(y),0]']]	✓
5889	$y' + y \cos(x) = e^{-\sin(x)}$	[_linear]	✓
5890	$xy' - y(\ln(xy) - 1) = 0$	[[_homogeneous, 'class G']]	✓
5891	$x^3y' - y^2 - x^2y = 0$	[[_homogeneous, 'class D'], _rational, _Bernoulli]	✓

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#	ODE	CAS classification	Solved?
5892	$xy' + ay + bx^n = 0$	[_linear]	✓
5894	$y^2 - 3xy - 2x^2 + (xy - x^2)y' = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
5895	$(3 + 6xy + x^2)y' + 2x + 2xy + 3y^2 = 0$	[_exact, _rational, [_Abel, '2nd type', 'class B']]	✓
5897	$(x^2 - 1)y' + 2xy - \cos(x) = 0$	[_linear]	✓
5898	$(x^2y - 1)y' + xy^2 - 1 = 0$	[_exact, _rational, [_Abel, '2nd type', 'class B']]	✓
5899	$(x^2 - 1)y' + xy - 3xy^2 = 0$	[_separable]	✓
5900	$(x^2 - 1)y' - 2xy \ln(y) = 0$	[_separable]	✓
5901	$(1 + x^2 + y^2)y' + 2xy + x^2 + 3 = 0$	[_exact, _rational]	✓
5902	$y' \cos(x) + y + (\sin(x) + 1) \cos(x) = 0$	[_linear]	✓
5903	$y^2 + 12x^2y + (2xy + 4x^3)y' = 0$	[[_homogeneous, 'class G'], _exact, _rational, [_Abel, '2nd type', 'class B']]	✓
5904	$(x^2 - y)y' + x = 0$	[_rational, [_1st_or- der, 'with symme- try_[F(x)*G(y),0]'], [_Abel, '2nd type', 'class C']]	✓
5905	$(x^2 - y)y' - 4xy = 0$	[[_homogeneous, 'class G'], _rational, [_Abel, '2nd type', 'class A']]	✓
5906	$xyy' + x^2 + y^2 = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
5907	$2xyy' + 3x^2 - y^2 = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
5908	$(2xy^3 - x^4)y' + 2x^3y - y^4 = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
5909	$(xy - 1)^2 xy' + (1 + y^2x^2)y = 0$	[[_homogeneous, 'class G'], _rational]	✓
5910	$(y^2 + x^2)y' + 2x(2x + y) = 0$	[[_homogeneous, 'class A'], _exact, _rational, _dAlem- bert]	✓
5911	$3xy^2y' + y^3 - 2x = 0$	[[_homogeneous, 'class G'], _exact, _rational, _Bernoulli]	✓

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#	ODE	CAS classification	Solved?
5913	$(2xy^3 + xy + x^2)y' - xy + y^2 = 0$	[_rational]	✓
5914	$(2y^3 + y)y' - 2x^3 - x = 0$	[_separable]	✓
6020	$axy^3 + by^2 + y' = 0$	[[_homogeneous, 'class G'], _Abel]	✓
6025	$y' + y \tan(x) = 0$	[_separable]	✓
6029	$y' = e^{ax} + ay$	[[_linear, 'class A']]	✓
6031	$x(1 - y)y' + (x + 1)y = 0$	[_separable]	✓
6032	$y' = ay^2x$	[_separable]	✓
6033	$y^2 + xy^2 + (x^2 - x^2y)y' = 0$	[_separable]	✓
6034	$xy(x^2 + 1)y' = 1 + y^2$	[_separable]	✓
6035	$\frac{x}{1 + y} = \frac{yy'}{x + 1}$	[_separable]	✓
6036	$y' + b^2y^2 = a^2$	[_quadrature]	✓
6037	$y' = \frac{1 + y^2}{x^2 + 1}$	[_separable]	✓
6038	$\sin(x) \cos(y) = \cos(x) \sin(y)y'$	[_separable]	✓
6039	$axy' + 2y = xy y'$	[_separable]	✓
6092	$y' = y$	[_quadrature]	✓
6093	$xy' = y$	[_separable]	✓
	<i>i.c.</i>		
6096	$1 + y^2 + xy y' = 0$	[_separable]	✓
	<i>i.c.</i>		
6097	$xy y' - xy = y$	[_quadrature]	✓
	<i>i.c.</i>		
6098	$y' = \frac{2xy^2 + x}{x^2y - y}$	[_separable]	✓
	<i>i.c.</i>		
6099	$yy' + xy^2 - 8x = 0$	[_separable]	✓
	<i>i.c.</i>		
6100	$y' + 2xy^2 = 0$	[_separable]	✓
	<i>i.c.</i>		
6101	$(1 + y)y' = y$	[_quadrature]	✓
	<i>i.c.</i>		
6102	$y' - xy = x$	[_separable]	✓
	<i>i.c.</i>		

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#	ODE	CAS classification	Solved?
6103	$2y' = 3(y-2)^{1/3}$ i.c.	[_quadrature]	✓
6104	$(x+xy)y' + y = 0$ i.c.	[_separable]	✓
6120	$y' + \frac{y}{x} = 2x^{3/2}\sqrt{y}$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
6121	$3xy^2y' + 3y^3 = 1$	[_separable]	✓
6122	$2xe^{3y} + e^x + (3x^2e^{3y} - y^2)y' = 0$	[_exact]	✓
6123	$y'(x-y) + x + y + 1 = 0$	[[_homogeneous, 'class C', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
6124	$\cos(x)\cos(y) + \sin(x)^2$ $- (\sin(x)\sin(y) + \cos(y)^2)y' = 0$	unknown	✓
6125	$x^2y' + y^2 - xy = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
6127	$xy + (y^2 - x^2)y' = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
6128	$y^2 - xy + (xy + x^2)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
6131	$(x-1)y' + y - \frac{1}{x^2} + \frac{2}{x^3} = 0$	[_linear]	✓
6133	$y' = \frac{2y^2}{x} + \frac{y}{x} - 2x$	[[_homogeneous, 'class D', _rational, _Riccati]	✓
6208	$x^2y' - xy = \frac{1}{x}$	[_linear]	✓
6209	$x \ln(y)y' - y \ln(x) = 0$	[_separable]	✓
6212	$2x - y \sin(2x) = (\sin(x)^2 - 2y)y'$	[_exact, [_1st_or- der, '_with_symme- try_[F(x),G(x)]', [_Abel, '2nd type', 'class A']]	✓
6214	$3x^3y^2y' - x^2y^3 = 1$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
6217	$u(-v+1) + v^2(1-u)u' = 0$	[_separable]	✓
6218	$y + 2x - xy' = 0$	[_linear]	✓

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Table 2.12 first order ode exact  
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#	ODE	CAS classification	Solved?
6224	$(2x + y)y' - x + 2y = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
6225	$(x \cos(y) - e^{-\sin(y)})y' + 1 = 0$	[[_1st_order, '_with_sym- metry_[F(x)*G(y),0]']]	✓
6226	$\sin(x)^2 y' + \sin(x)^2 + (x + y) \sin(2x) = 0$	[_linear]	✓
6228	$y' + xy = \frac{x}{y}$	[_separable]	✓
6230	$\sin(\theta) \cos(\theta) r' - \sin(\theta)^2 = r \cos(\theta)^2$	[_linear]	✓
6232	$3x^2y + x^3y' = 0$	[_separable]	✓
6233	$-y + xy' = x^2$	[_linear]	✓
6237	$xy' = xy + y$	[_separable]	✓
6239	$y' = 3x^2y$	[_separable]	✓
6241	$xy' = y$	[_separable]	✓
6257	$y' = 4y^2 - 3y + 1$	[_quadrature]	✓
6259	$y' = \frac{ye^{x+y}}{x^2 + 2}$	[_separable]	✓
6260	$(xy^2 + 3y^2)y' - 2x = 0$	[_separable]	✓
6262	$xy' = \frac{1}{y^3}$	[_separable]	✓
6263	$x' = 3xt^2$	[_separable]	✓
6264	$x' = \frac{te^{-t-2x}}{x}$	[_separable]	✓
6265	$y' = \frac{x}{y^2\sqrt{x+1}}$	[_separable]	✓
6266	$xv' = \frac{1 - 4v^2}{3v}$	[_separable]	✓
6267	$y' = \frac{\sec(y)^2}{x^2 + 1}$	[_separable]	✓
6268	$y' = 3x^2(1 + y^2)^{3/2}$	[_separable]	✓
6269	$x' - x^3 = x$	[_quadrature]	✓
6270	$x + xy^2 + e^{x^2}yy' = 0$	[_separable]	✓
6271	$\frac{y'}{y} + ye^{\cos(x)} \sin(x) = 0$	[_separable]	✓

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#	ODE	CAS classification	Solved?
6272	$y' = (1 + y^2) \tan(x)$ i.c.	[_separable]	✓
6273	$y' = x^3(1 - y)$ i.c.	[_separable]	✓
6274	$\frac{y'}{2} = \sqrt{1 + y} \cos(x)$ i.c.	[_separable]	✓
6275	$x^2 y' = \frac{4x^2 - x - 2}{(x + 1)(1 + y)}$ i.c.	[_separable]	✓
6276	$\frac{y'}{\theta} = \frac{y \sin(\theta)}{y^2 + 1}$ i.c.	[_separable]	✓
6277	$x^2 + 2yy' = 0$ i.c.	[_separable]	✓
6278	$y' = 2t \cos(y)^2$ i.c.	[_separable]	✓
6279	$y' = 8x^3 e^{-2y}$ i.c.	[_separable]	✓
6280	$y' = x^2(1 + y)$ i.c.	[_separable]	✓
6281	$\sqrt{y} + (x + 1)y' = 0$ i.c.	[_separable]	✓
6282	$y' = e^{x^2}$ i.c.	[_quadrature]	✓
6283	$y' = \frac{e^{x^2}}{y^2}$ i.c.	[_separable]	✓
6284	$y' = \sqrt{\sin(x) + 1} (1 + y^2)$ i.c.	[_separable]	✓
6285	$y' = 2y - 2ty$ i.c.	[_separable]	✓
6286	$y' = y^{1/3}$	[_quadrature]	✓
6287	$y' = y^{1/3}$ i.c.	[_quadrature]	✓
6288	$y' = (x - 3)(1 + y)^{2/3}$	[_separable]	✓
6289	$y' = xy^3$	[_separable]	✓
6290	$y' = xy^3$ i.c.	[_separable]	✓

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#	ODE	CAS classification	Solved?
6291	$y' = xy^3$ i.c.	[_separable]	✓
6292	$y' = xy^3$ i.c.	[_separable]	✓
6293	$y' = y^2 - 3y + 2$ i.c.	[_quadrature]	✓
6294	$x^2y' + \sin(x) - y = 0$	[_linear]	✓
6296	$(t^2 + 1)y' = ty - y$	[_separable]	✓
6297	$3t = e^t y' + y \ln(t)$	[_linear]	✓
6299	$3r = r' - \theta^3$	[[_linear, 'class A']]	✓
6300	$y' - y - e^{3x} = 0$	[[_linear, 'class A']]	✓
6301	$y' = \frac{y}{x} + 2x + 1$	[_linear]	✓
6302	$r' + r \tan(\theta) = \sec(\theta)$	[_linear]	✓
6303	$xy' + 2y = \frac{1}{x^3}$	[_linear]	✓
6304	$t + y + 1 - y' = 0$	[[_linear, 'class A']]	✓
6305	$y' = x^2 e^{-4x} - 4y$	[[_linear, 'class A']]	✓
6306	$yx' + 2x = 5y^3$	[_linear]	✓
6307	$xy' + 3y + 3x^2 = \frac{\sin(x)}{x}$	[_linear]	✓
6308	$y'(x^2 + 1) + xy - x = 0$	[_separable]	✓
6309	$(-x^2 + 1)y' - x^2y = (x + 1)\sqrt{-x^2 + 1}$	[_linear]	✓
6310	$y' - \frac{y}{x} = x e^x$ i.c.	[_linear]	✓
6311	$y' + 4y - e^{-x} = 0$ i.c.	[[_linear, 'class A']]	✓
6312	$t^2 x' + 3xt = t^4 \ln(t) + 1$ i.c.	[_linear]	✓
6313	$y' + \frac{3y}{x} + 2 = 3x$ i.c.	[_linear]	✓
6314	$y' \cos(x) + y \sin(x) = 2x \cos(x)^2$ i.c.	[_linear]	✓
6315	$\sin(x)y' + y \cos(x) = x \sin(x)$ i.c.	[_linear]	✓

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#	ODE	CAS classification	Solved?
6317	$(e^{4y} + 2x)y' - 1 = 0$	[[_1st_order, _with_exponential_symmetries]]	✓
6318	$y' + 2y = \frac{x}{y^2}$	[_rational, _Bernoulli]	✓
6319	$y' + \frac{3y}{x} = x^2$	[_linear]	✓
6320	$x' = \alpha - \beta \cos\left(\frac{\pi t}{12}\right) - kx$ i.c.	[[_linear, 'class A']]	✓
6321	$u' = \alpha(1 - u) - \beta u$	[_quadrature]	✓
6322	$x^2y + x^4 \cos(x) - x^3y' = 0$	[_linear]	✓
6323	$x^{10/3} - 2y + xy' = 0$	[_linear]	✓
6325	$ye^{xy} + 2x + (xe^{xy} - 2y)y' = 0$	[_exact]	✓
6326	$y' + xy = 0$	[_separable]	✓
6327	$y^2 + (2xy + \cos(y))y' = 0$	[_exact, [_1st_order, 'with_symmetry_[F(x)*G(y),0]']]	✓
6328	$2x + y \cos(xy) + (x \cos(xy) - 2y)y' = 0$	[_exact]	✓
6329	$\theta r' + 3r - \theta - 1 = 0$	[_linear]	✓
6330	$2xy + 3 + (x^2 - 1)y' = 0$	[_linear]	✓
6331	$2x + y + (x - 2y)y' = 0$	[[_homogeneous, 'class A'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
6332	$e^x \sin(y) - 3x^2 + \left(e^x \cos(y) + \frac{1}{3y^{2/3}}\right)y' = 0$	[_exact]	✓
6333	$\cos(x) \cos(y) + 2x - (\sin(x) \sin(y) + 2y)y' = 0$	[_exact]	✓
6334	$e^t(-t + y) + (1 + e^t)y' = 0$	[_linear]	✓
6335	$\frac{ty'}{y} + 1 + \ln(y) = 0$	[_separable]	✓
6336	$\cos(\theta)r' - r \sin(\theta) + e^\theta = 0$	[_linear]	✓
6337	$ye^{xy} - \frac{1}{y} + \left(xe^{xy} + \frac{x}{y^2}\right)y' = 0$	[_exact]	✓
6338	$\frac{1}{y} - \left(3y - \frac{x}{y^2}\right)y' = 0$	[[_homogeneous, 'class G'], _rational]	✓
6339	$2x + y^2 - \cos(x + y) + (2xy - \cos(x + y) - e^y)y' = 0$	[_exact]	✓

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#	ODE	CAS classification	Solved?
6340	$y' = \frac{e^{x+y}}{y-1}$	[_separable]	✓
6341	$y' - 4y = 32x^2$	[[_linear, 'class A']]	✓
6342	$\left(x^2 - \frac{2}{y^3}\right)y' + 2xy - 3x^2 = 0$	[_exact, _rational]	✓
6343	$y' + \frac{3y}{x} = x^2 - 4x + 3$	[_linear]	✓
6344	$2xy^3 - (-x^2 + 1)y' = 0$	[_separable]	✓
6345	$y^2t^3 + \frac{t^4y'}{y^6} = 0$	[_separable]	✓
6399	$y' - y = e^{2x}$	[[_linear, 'class A']]	✓
6400	$x^2y' + 2xy - x + 1 = 0$ i.c.	[_linear]	✓
6401	$y' + y = (x+1)^2$ i.c.	[[_linear, 'class A']]	✓
6402	$x^2y' + 2xy = \sinh(x)$ i.c.	[_linear]	✓
6403	$y' + \frac{y}{1-x} + 2x - x^2 = 0$	[_linear]	✓
6404	$y' + \frac{y}{1-x} + x - x^2 = 0$	[_linear]	✓
6405	$y'(x^2 + 1) = xy + 1$	[_linear]	✓
6406	$y' + xy = xy^2$	[_separable]	✓
6416	$y' - \frac{2y}{x} - x^2 = 0$	[_linear]	✓
6417	$y' + \frac{2y}{x} - x^3 = 0$	[_linear]	✓
6419	$xy' = x^2 + 2x - 3$	[_quadrature]	✓
6421	$y' + 2y = e^{3x}$	[[_linear, 'class A']]	✓
6422	$-y + xy' = x^2$	[_linear]	✓
6423	$x^2y' = x^3 \sin(3x) + 4$	[_quadrature]	✓
6424	$x \cos(y)y' - \sin(y) = 0$	[_separable]	✓
6426	$(x^2 - 1)y' + 2xy = x$	[_separable]	✓
6427	$y' + y \tanh(x) = 2 \sinh(x)$	[_linear]	✓
6428	$xy' - 2y = x^3 \cos(x)$	[_linear]	✓

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#	ODE	CAS classification	Solved?
6429	$y' + \frac{y}{x} = y^3$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
6431	$x(-3 + y)y' = 4y$	[_separable]	✓
6432	$(x^3 + 1)y' = x^2y$ i.c.	[_separable]	✓
6433	$x^3 + (1 + y)^2 y' = 0$	[_separable]	✓
6434	$\cos(y) + (1 + e^{-x}) \sin(y)y' = 0$ i.c.	[_separable]	✓
6436	$(2y - x)y' = 2x + y$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
6437	$xy + y^2 + (x^2 - xy)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
6438	$x^3 + y^3 = 3xy^2y'$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
6440	$(x^3 + 3xy^2)y' = y^3 + 3x^2y$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
6447	$x - xy^2 = (x + x^2y)y'$	[_rational, [_1st_or- der, 'with_symme- try_[F(x)*G(y),0]', [_Abel, '2nd type', 'class B']]	✓
6450	$y(xy + 1) + x(1 + xy + y^2x^2)y' = 0$	[[_homogeneous, 'class G', _rational]	✓
6456	$(-x^2 + 1)y' = xy + 1$	[_linear]	✓
6460	$y + (x^2 - 4x)y' = 0$	[_separable]	✓
6461	$y' - y \tan(x) = \cos(x) - 2x \sin(x)$ i.c.	[_linear]	✓
6462	$y' = \frac{2xy + y^2}{x^2 + 2xy}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
6463	$y'(x^2 + 1) = x(1 + y)$	[_separable]	✓
6464	$xy' + 2y = 3x - 1$ i.c.	[_linear]	✓
6465	$x^2y' = y^2 - xy y'$ i.c.	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓

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#	ODE	CAS classification	Solved?
6466	$y' = e^{-2y+3x}$ i.c.	[_separable]	✓
6467	$y' + \frac{y}{x} = \sin(2x)$ i.c.	[_linear]	✓
6468	$y^2 + x^2y' = xyy'$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
6469	$2xyy' = x^2 - y^2$	[[_homogeneous, 'class A'], _exact, _rational, _Bernoulli]	✓
6470	$y' = \frac{1+x-2y}{2x-4y}$ i.c.	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
6471	$(-x^3 + 1)y' + x^2y = x^2(-x^3 + 1)$	[_linear]	✓
6472	$y' + \frac{y}{x} = \sin(x)$ i.c.	[_linear]	✓
6473	$y' + x + xy^2 = 0$ i.c.	[_separable]	✓
6474	$y' + \left(\frac{1}{x} - \frac{2x}{-x^2 + 1}\right)y = \frac{1}{-x^2 + 1}$	[_linear]	✓
6475	$xy + y'(x^2 + 1) = (x^2 + 1)^{3/2}$	[_linear]	✓
6476	$x(1 + y^2) - y(x^2 + 1)y' = 0$	[_separable]	✓
6477	$\frac{r \tan(\theta) r'}{a^2 - r^2} = 1$ i.c.	[_separable]	✓
6478	$y' + y \cot(x) = \cos(x)$ i.c.	[_linear]	✓
6479	$y' + \frac{y}{x} = xy^2$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
6516	$y' - 5y = (x - 1)\sin(x) + (x + 1)\cos(x)$	[[_linear, 'class A']]	✓
6517	$y' - 5y = 3e^x - 2x + 1$	[[_linear, 'class A']]	✓
6518	$y' - 5y = e^x x^2 - x e^{5x}$	[[_linear, 'class A']]	✓
6524	$y' - y = e^x$	[[_linear, 'class A']]	✓
6525	$y' - y = x e^{2x} + 1$	[[_linear, 'class A']]	✓
6526	$y' - y = \sin(x) + \cos(2x)$	[[_linear, 'class A']]	✓

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#	ODE	CAS classification	Solved?
6534	$y' + \frac{4y}{x} = x^4$	[_linear]	✓
6543	$y' - \frac{y}{x} = x^2$	[_linear]	✓
6570	$xy' = 2y$	[_separable]	✓
6571	$yy' + x = 0$	[_separable]	✓
6573	$2x^3y' = y(3x^2 + y^2)$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
6580	$4y + xy' = 0$	[_separable]	✓
6581	$1 + 2y + (-x^2 + 4)y' = 0$	[_separable]	✓
6582	$y^2 - x^2y' = 0$	[_separable]	✓
6583	$1 + y - (x + 1)y' = 0$	[_separable]	✓
6584	$xy^2 + y + (x^2y - x)y' = 0$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]	✓
6585	$x \sin\left(\frac{y}{x}\right) - y \cos\left(\frac{y}{x}\right) + x \cos\left(\frac{y}{x}\right)y' = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
6587	$y\sqrt{y^2 + x^2} - x(x + \sqrt{y^2 + x^2})y' = 0$	[[_homogeneous, 'class G', _dAlembert]	✓
6589	$1 + 2y - (4 - x)y' = 0$	[_separable]	✓
6590	$xy + y'(x^2 + 1) = 0$	[_separable]	✓
6591	$x + 2y + (2x + 3y)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
6595	$y^2 - x^2 + xyy' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
6596	$y(1 + 2xy) + x(1 - xy)y' = 0$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]	✓
6597	$1 + (-x^2 + 1) \cot(y)y' = 0$	[_separable]	✓
6598	$x^3 + y^3 + 3xy^2y' = 0$	[[_homogeneous, 'class A', _exact, _rational, _Bernoulli]	✓
6600	$xy' + 2y = 0$	[_separable]	✓
	<i>i.c.</i>		
6601	$x^2 + y^2 + xyy' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
	<i>i.c.</i>		

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#	ODE	CAS classification	Solved?
6602	$\cos(y) + (1 + e^{-x}) \sin(y) y' = 0$ <i>i.c.</i>	[_separable]	✓
6606	$x^2 - y - xy' = 0$	[_linear]	✓
6607	$x^2 + y^2 + 2xyy' = 0$	[[_homogeneous, 'class A'], _exact, _rational, _Bernoulli]	✓
6608	$x + y \cos(x) + \sin(x) y' = 0$	[_linear]	✓
6609	$2x + 3y + 4 + (3x + 4y + 5) y' = 0$	[[_homogeneous, 'class C'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
6610	$4x^3y^3 + \frac{1}{x} + \left(3x^4y^2 - \frac{1}{y}\right) y' = 0$	[[_homogeneous, 'class G'], _exact, _rational]	✓
6611	$2u^2 + 2uv + (u^2 + v^2) v' = 0$	[[_homogeneous, 'class A'], _exact, _rational, _dAlembert]	✓
6612	$x\sqrt{y^2 + x^2} - y + \left(y\sqrt{y^2 + x^2} - x\right) y' = 0$	[_exact]	✓
6613	$x + y + 1 - (y - x + 3) y' = 0$	[[_homogeneous, 'class C'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
6614	$y^2 - \frac{y}{x(x+y)} + 2 + \left(\frac{1}{x+y} + 2(x+1)y\right) y' = 0$	[_exact, _rational]	✓
6615	$2xy e^{x^2y} + y^2 e^{xy^2} + 1 + \left(x^2 e^{x^2y} + 2xy e^{xy^2} - 2y\right) y' = 0$	[_exact]	✓
6616	$y(x - 2y) - x^2y' = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
6617	$x^2 + y^2 + xyy' = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
6618	$x^2 + y^2 + 2xyy' = 0$	[[_homogeneous, 'class A'], _exact, _rational, _Bernoulli]	✓
6619	$1 - \sqrt{a^2 - x^2} y' = 0$	[_quadrature]	✓
6621	$x - x^2 - y^2 + yy' = 0$	[[_homogeneous, 'class D'], _rational, _Bernoulli]	✓
6622	$2y - 3x + xy' = 0$	[_linear]	✓
6623	$x - y^2 + 2xyy' = 0$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓

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#	ODE	CAS classification	Solved?
6624	$-y - 3x^2(y^2 + x^2) + xy' = 0$	[[_homogeneous, 'class D', _rational, _Riccati]	✓
6625	$y - \ln(x) - xy' = 0$	[_linear]	✓
6626	$3x^2 + y^2 - 2xyy' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
6627	$xy - 2y^2 - (x^2 - 3xy) y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
6628	$x + y - y'(x - y) = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
6629	$2y - 3xy^2 - xy' = 0$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
6630	$y + x(x^2y - 1) y' = 0$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]	✓
6631	$y + x^3y + 2x^2 + (x + 4xy^4 + 8y^3) y' = 0$	[_rational]	✓
6632	$-y - e^x x^2 + xy' = 0$	[_linear]	✓
6634	$2y - x^3 + xy' = 0$	[_linear]	✓
6635	$y + (y^2 - x) y' = 0$	[[_homogeneous, 'class G', _rational]	✓
6636	$3y^3 - xy - (x^2 + 6xy^2) y' = 0$	[[_homogeneous, 'class G', _rational]	✓
6637	$3y^2x^2 + 4(x^3y - 3) y' = 0$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]	✓
6638	$y(x + y) - x^2y' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
6639	$2y + 3xy^2 + (x + 2x^2y) y' = 0$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]	✓
6640	$y(y^2 - 2x^2) + x(2y^2 - x^2) y' = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
6641	$-y + xy' = 0$	[_separable]	✓
6642	$y' + y = 2x + 2$	[[_linear, 'class A']]	✓
6643	$y' - y = xy$	[_separable]	✓
6644	$-3y - (-2 + x) e^x + xy' = 0$	[_linear]	✓

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#	ODE	CAS classification	Solved?
6645	$i' - 6i = 10 \sin(2t)$	[[_linear, 'class A']]	✓
6647	$y + (xy + x - 3y)y' = 0$	[_rational, [_1st_order, '_with_symmetry_[F(x)*G(y),0]'], [_Abel, '2nd type', 'class B']]	✓
6648	$(2s - e^{2t})s' = 2s e^{2t} - 2 \cos(2t)$	[_exact, [_1st_order, '_with_symmetry_[F(x),G(x)]'], [_Abel, '2nd type', 'class A']]	✓
6649	$xy' + y - x^3y^6 = 0$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
6650	$r' + 2r \cos(\theta) + \sin(2\theta) = 0$	[_linear]	✓
6651	$y(1 + y^2) = 2(1 - 2xy^2)y'$	[_rational, [_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓
6652	$yy' - xy^2 + x = 0$	[_separable]	✓
6654	$2x' - \frac{x}{y} + x^3 \cos(y) = 0$	[_Bernoulli]	✓
6655	$xy' = y(1 - x \tan(x)) + x^2 \cos(x)$	[_linear]	✓
6656	$2 + y^2 - (xy + 2y + y^3)y' = 0$	[_rational, [_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓
6657	$1 + y^2 = (\arctan(y) - x)y'$	[[_1st_order, '_with_symmetry_[F(x),G(y)]']]	✓
6659	$1 + \sin(y) = (2y \cos(y) - x(\sec(y) + \tan(y)))y'$	[[_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓
6660	$xy' = 2y + x^3e^x$ i.c.	[_linear]	✓
6661	$Li' + Ri = E \sin(2t)$ i.c.	[[_linear, 'class A']]	✓
6662	$x^2 \cos(y)y' = 2x \sin(y) - 1$	['y=_G(x,y)']	✓
6664	$xy^3 - y^3 - e^x x^2 + 3xy^2y' = 0$	[_Bernoulli]	✓
6666	$y + e^y - e^{-x} + (1 + e^y)y' = 0$	['y=_G(x,y)']	✓
6667	$x^2y'^2 + xyy' - 6y^2 = 0$	[_separable]	✓
6668	$xy'^2 + (y - 1 - x^2)y' - x(y - 1) = 0$	[_quadrature]	✓
6795	$xy' = 1 - x + 2y$	[_linear]	✓

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#	ODE	CAS classification	Solved?
6843	$y' + xy = \frac{1}{x^3}$	[_linear]	✓
7058	$y' = \frac{x^2}{y}$	[_separable]	✓
7059	$y' = \frac{x^2}{y(x^3 + 1)}$	[_separable]	✓
7060	$y' = y \sin(x)$	[_separable]	✓
7061	$xy' = \sqrt{1 - y^2}$	[_separable]	✓
7062	$y' = \frac{x^2}{1 + y^2}$	[_separable]	✓
7063	$xyy' = \sqrt{1 + y^2}$	[_separable]	✓
7064	$(x^2 - 1)y' + 2xy^2 = 0$	[_separable]	✓
	i.c.		
7065	$y' = 3y^{2/3}$	[_quadrature]	✓
	i.c.		
7066	$xy' + y = y^2$	[_separable]	✓
	i.c.		
7067	$2x^2yy' + y^2 = 2$	[_separable]	✓
7068	$y' - xy^2 = 2xy$	[_separable]	✓
7069	$(1 + z')e^{-z} = 1$	[_quadrature]	✓
7070	$y' = \frac{3x^2 + 4x + 2}{2y - 2}$	[_separable]	✓
	i.c.		
7071	$e^x - (1 + e^x)yy' = 0$	[_separable]	✓
	i.c.		
7072	$\frac{y}{x-1} + \frac{xy'}{1+y} = 0$	[_separable]	✓
7073	$x + 2x^3 + (2y^3 + y)y' = 0$	[_separable]	✓
7074	$\frac{1}{\sqrt{x}} + \frac{y'}{\sqrt{y}} = 0$	[_separable]	✓
7075	$\frac{1}{\sqrt{-x^2 + 1}} + \frac{y'}{\sqrt{1 - y^2}} = 0$	[_separable]	✓
7076	$2x\sqrt{1 - y^2} + yy' = 0$	[_separable]	✓
7077	$y' = (y - 1)(x + 1)$	[_separable]	✓
7078	$y' = e^{x-y}$	[_separable]	✓

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#	ODE	CAS classification	Solved?
7079	$y' = \frac{\sqrt{y}}{\sqrt{x}}$	[_separable]	✓
7080	$y' = \frac{\sqrt{y}}{x}$	[_separable]	✓
7081	$z' = 10^{x+z}$	[_separable]	✓
7082	$x' + t = 1$	[_quadrature]	✓
7084	$y' - y = 2x - 3$	[[_linear, 'class A']]	✓
7085	$(x + 2y)y' = 1$ i.c.	[[_homogeneous, 'class C'], [_Abel, '2nd type', 'class C'], _dAlembert]	✓
7086	$y' + y = 2x + 1$	[[_linear, 'class A']]	✓
7091	$y^2 + xy^2 + (x^2 - x^2y)y' = 0$	[_separable]	✓
7092	$(1 + y^2)(e^{2x} - e^y y') - (1 + y)y' = 0$	[_separable]	✓
7093	$x - y + (x + y)y' = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
7094	$y - 2xy + x^2 y' = 0$	[_separable]	✓
7096	$y^2 + x^2 y' = xy y'$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
7097	$(y^2 + x^2)y' = 2xy$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
7104	$x + y - y'(x - y) = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
7106	$-y + xy' = yy'$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
7107	$y^2 + (x^2 - xy)y' = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
7110	$y' = \frac{2xy}{3x^2 - y^2}$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
7111	$y' = \frac{x}{y} + \frac{y}{x}$ i.c.	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
7114	$xy' = y \ln\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A'], _dAlembert]	✓

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#	ODE	CAS classification	Solved?
7115	$y'(y' + y) = x(x + y)$ i.c.	[_quadrature]	✓
7117	$x^2y'^2 - 3xyy' + 2y^2 = 0$	[_separable]	✓
7120	$y' + \frac{x + 2y}{x} = 0$	[_linear]	✓
7121	$y' = \frac{y}{x + y}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
7122	$xy' = x + \frac{y}{2}$ i.c.	[_linear]	✓
7123	$y' = \frac{x + y - 2}{y - 4 - x}$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
7130	$x - y - 1 + (y - x + 2)y' = 0$	[[_homogeneous, 'class C', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
7132	$y + 2 = (2x + y - 4)y'$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
7150	$x(2 - 9xy^2) + y(4y^2 - 6x^3)y' = 0$	[_exact, _rational]	✓
7151	$\frac{y}{x} + (y^3 + \ln(x))y' = 0$	[_exact, [_1st_or- der, '._with_symme- try_[F(x),G(y)]']]]	✓
7152	$2x + 3 + (2y - 2)y' = 0$	[_separable]	✓
7178	$y' = x^2(1 + y^2)$	[_separable]	✓
7179	$y' = \frac{x^2}{1 - y^2}$	[_separable]	✓
7180	$y' = \frac{3x^2 + 4x + 2}{2y - 2}$ i.c.	[_separable]	✓
7183	$e^x + y + (x - 2 \sin(y))y' = 0$	[_exact]	✓
7184	$3x + \frac{6}{y} + \left(\frac{x^2}{y} + \frac{3y}{x}\right)y' = 0$	[_rational]	✓
7185	$x^2y' + y^2 - xy = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
7186	$x + y - y'(x - y) = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓

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#	ODE	CAS classification	Solved?
7187	$y' = \frac{y}{2x} + \frac{x^2}{2y}$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
7188	$y' = -\frac{2}{t} + \frac{y}{t} + \frac{y^2}{t}$	[_separable]	✓
7191	$y'^2 - a^2y^2 = 0$	[_quadrature]	✓
7192	$y'^2 = 4x^2$	[_quadrature]	✓
7223	$(1 + y^2x^2)y + (y^2x^2 - 1)xy' = 0$	[[_homogeneous, 'class G'], _rational]	✓
7224	$2x^3y^2 - y + (2x^2y^3 - x)y' = 0$	[_rational]	✓
7231	$ye^{xy} + xe^{xy}y' = 0$	[_separable]	✓
7232	$x - 2xy + e^y + (y - x^2 + xe^y)y' = 0$	[_exact]	✓
7236	$x^2 + y^2 - 2xyy' = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
7237	$x^2 - y^2 + 2xyy' = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
7238	$-y + xy' = y^2 + x^2$	[[_homogeneous, 'class D'], _rational, _Riccati]	✓
7240	$x + yy' + y - xy' = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
7256	$y' = e^{3x} + \sin(x)$	[_quadrature]	✓
7259	$y' + y \cos(x) = 0$	[_separable]	✓
7260	$y' + y \cos(x) = \sin(x) \cos(x)$	[_linear]	✓
7264	$y' + 5y = 2$	[_quadrature]	✓
7266	$y' = ky$	[_quadrature]	✓
7267	$y' - 2y = 1$	[_quadrature]	✓
7268	$y' + y = e^x$	[[_linear, 'class A']]	✓
7269	$y' - 2y = x^2 + x$	[[_linear, 'class A']]	✓
7270	$3y' + y = 2e^{-x}$	[[_linear, 'class A']]	✓
7273	$Ly' + Ry = E$	[_quadrature]	✓
7274	$Ly' + Ry = E \sin(\omega x)$ i.c.	[[_linear, 'class A']]	✓
7276	$y' + ay = b(x)$	[[_linear, 'class A']]	✓

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#	ODE	CAS classification	Solved?
7277	$y' + 2xy = x$	[_separable]	✓
7278	$xy' + y = 3x^3 - 1$	[_linear]	✓
7279	$y' + ye^x = 3e^x$	[_separable]	✓
7280	$y' - y \tan(x) = e^{\sin(x)}$	[_linear]	✓
7281	$y' + 2xy = xe^{-x^2}$	[_linear]	✓
7282	$y' + y \cos(x) = e^{-\sin(x)}$	[_linear]	✓
	i.c.		
7283	$x^2y' + 2xy = 1$	[_linear]	✓
7284	$y' + 2y = b(x)$	[[_linear, 'class A']]	✓
7285	$y' = 1 + y$	[_quadrature]	✓
	i.c.		
7286	$y' = 1 + y^2$	[_quadrature]	✓
	i.c.		
7287	$y' = 1 + y^2$	[_quadrature]	✓
	i.c.		
7407	$y' = x^2y$	[_separable]	✓
7408	$yy' = x$	[_separable]	✓
7409	$y' = \frac{x^2 + x}{y - y^2}$	[_separable]	✓
7410	$y' = \frac{e^{x-y}}{1 + e^x}$	[_separable]	✓
7411	$y' = y^2x^2 - 4x^2$	[_separable]	✓
7412	$y' = y^2$	[_quadrature]	✓
	i.c.		
7413	$y' = 2\sqrt{y}$	[_quadrature]	✓
	i.c.		
7414	$y' = 2\sqrt{y}$	[_quadrature]	✓
	i.c.		
7415	$y' = \frac{x + y}{x - y}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
7416	$y' = \frac{y^2}{xy + x^2}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓

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#	ODE	CAS classification	Solved?
7419	$y' = \frac{x - y + 2}{y - 1 + x}$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
7423	$2xy + (x^2 + 3y^2) y' = 0$	[[_homogeneous, 'class A'], _exact, _rational, _dAlem- bert]	✓
7424	$x^2 + xy + (x + y) y' = 0$	[_quadrature]	✓
7425	$e^x + e^y(1 + y) y' = 0$	[_separable]	✓
7426	$\cos(x) \cos(y)^2 - \sin(x) \sin(2y) y' = 0$	[_separable]	✓
7427	$x^2 y^3 - x^3 y^2 y' = 0$	[_separable]	✓
7428	$x + y + y'(x - y) = 0$	[[_homogeneous, 'class A'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
7429	$2y e^{2x} + 2x \cos(y) + (e^{2x} - x^2 \sin(y)) y' = 0$	[_exact]	✓
7430	$3x^2 \ln(x) + x^2 + y + xy' = 0$	[_linear]	✓
7431	$2y^3 + 2 + 3xy^2 y' = 0$	[_separable]	✓
7432	$\cos(x) \cos(y) - 2 \sin(x) \sin(y) y' = 0$	[_separable]	✓
7433	$5x^3 y^2 + 2y + (3x^4 y + 2x) y' = 0$	[[_homogeneous, 'class G'], _rational, [_Abel, '2nd type', 'class B']]	✓
7434	$e^y + x e^y + x e^y y' = 0$	[_quadrature]	✓
7449	$y' = 2x$	[_quadrature]	✓
7450	$xy' = 2y$	[_separable]	✓
7451	$yy' = e^{2x}$	[_separable]	✓
7452	$y' = ky$	[_quadrature]	✓
7455	$xy' + y = y' \sqrt{1 - y^2 x^2}$	[_rational, [_1st_or- der, '_with_symme- try_[F(x),G(y)']]]	✓
7456	$xy' = y + x^2 + y^2$	[[_homogeneous, 'class D'], _rational, _Riccati]	✓
7457	$y' = \frac{xy}{y^2 + x^2}$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
7458	$2xyy' = y^2 + x^2$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓

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#	ODE	CAS classification	Solved?
7460	$y' = \frac{y^2}{xy - x^2}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
7461	$(y \cos(y) - \sin(y) + x) y' = y$	[[_1st_order, __with_lin- ear_symmetries]]	✓
7462	$1 + y^2 + y^2 y' = 0$	[_quadrature]	✓
7463	$y' = e^{3x} - x$	[_quadrature]	✓
7464	$y' = x e^{x^2}$	[_quadrature]	✓
7465	$(x + 1) y' = x$	[_quadrature]	✓
7466	$y'(x^2 + 1) = x$	[_quadrature]	✓
7467	$y'(x^2 + 1) = \arctan(x)$	[_quadrature]	✓
7468	$xy' = 1$	[_quadrature]	✓
7469	$y' = \arcsin(x)$	[_quadrature]	✓
7470	$\sin(x) y' = 1$	[_quadrature]	✓
7471	$(x^3 + 1) y' = x$	[_quadrature]	✓
7472	$(x^2 - 3x + 2) y' = x$	[_quadrature]	✓
7473	$y' = x e^x$	[_quadrature]	✓
7474	$y' = 2 \sin(x) \cos(x)$	[_quadrature]	✓
7475	$y' = \ln(x)$	[_quadrature]	✓
7476	$(x^2 - 1) y' = 1$	[_quadrature]	✓
7477	$x(x^2 - 4) y' = 1$	[_quadrature]	✓
7478	$(x + 1)(x^2 + 1) y' = 2x^2 + x$	[_quadrature]	✓
7479	$y' = 1 + 2xy$	[_linear]	✓
7481	$y' = \frac{2xy^2}{1 - x^2y}$	[[_homogeneous, 'class G'], _rational, [_Abel, '2nd type', 'class B']]	✓
7483	$x^5 y' + y^5 = 0$	[_separable]	✓
7484	$y' = 4xy$	[_separable]	✓

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#	ODE	CAS classification	Solved?
7485	$y' + y \tan(x) = 0$	[_separable]	✓
7486	$y'(x^2 + 1) + 1 + y^2 = 0$	[_separable]	✓
7487	$y \ln(y) - xy' = 0$	[_separable]	✓
7489	$y' \sin(y) = x^2$	[_separable]	✓
7490	$y' - y \tan(x) = 0$	[_separable]	✓
7491	$xyy' = y - 1$	[_separable]	✓
7492	$xy^2 - x^2y' = 0$	[_separable]	✓
7493	$yy' = x + 1$	[_separable]	✓
7494	$x^2y' = y$	[_separable]	✓
7495	$\frac{y'}{x^2 + 1} = \frac{x}{y}$	[_separable]	✓
7496	$y^2y' = x + 2$	[_separable]	✓
7497	$y' = y^2x^2$	[_separable]	✓
7498	$(1 + y)y' = -x^2 + 1$	[_separable]	✓
7517	$xy' + y = x^4y^3$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
7518	$xy^2y' + y^3 = x \cos(x)$	[_Bernoulli]	✓
7519	$xy' + y = xy^2$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
7520	$y' + xy = xy^4$	[_separable]	✓
7521	$(e^y - 2xy)y' = y^2$	[_exact, [_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓
7522	$y - xy' = y'y^2e^y$	[[_1st_order, _with_linear_symmetries]]	✓
7524	$xy' = 2x^2y + y \ln(x)$	[_separable]	✓
7525	$y' \sin(2x) = 2y + 2 \cos(x)$	[_linear]	✓
7526	$\left(x + \frac{2}{y}\right)y' + y = 0$	[[_homogeneous, 'class G'], _exact, _rational, [_Abel, '2nd type', 'class B']]	✓

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#	ODE	CAS classification	Solved?
7527	$\sin(x) \tan(y) + 1 + \cos(x) \sec(y)^2 y' = 0$	['y=_G(x,y)']	✓
7528	$y - x^3 + (x + y^3) y' = 0$	[_exact, _rational]	✓
7530	$y + y \cos(xy) + (x + x \cos(xy)) y' = 0$	[_separable]	✓
7531	$\cos(x) \cos(y)^2 + 2 \sin(x) \sin(y) \cos(y) y' = 0$	[_separable]	✓
7532	$(\sin(x) \sin(y) - x e^y) y' = e^y + \cos(x) \cos(y)$	[_exact]	✓
7533	$-\frac{\sin\left(\frac{x}{y}\right)}{y} + \frac{x \sin\left(\frac{x}{y}\right) y'}{y^2} = 0$	[_separable]	✓
7534	$1 + y + (1 - x) y' = 0$	[_separable]	✓
7535	$2xy^3 + y \cos(x) + (3y^2x^2 + \sin(x)) y' = 0$	[_exact, [_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]]']	✓
7536	$\frac{y}{1 - y^2x^2} + \frac{xy'}{1 - y^2x^2} = 1$	[_exact, _rational, _Riccati]	✓
7537	$2xy^4 + \sin(y) + (4x^2y^3 + x \cos(y)) y' = 0$	[_exact]	✓
7538	$\frac{xy' + y}{1 - y^2x^2} + x = 0$	[_exact, _rational, _Riccati]	✓
7539	$2x(1 + \sqrt{x^2 - y}) = \sqrt{x^2 - y} y'$	[_exact, [_1st_order, '_with_symmetry_[F(x),G(y)]]']	✓
7541	$e^{y^2} - \csc(y) \csc(x)^2 + (2xy e^{y^2} - \csc(y) \cot(y) \cot(x)) y' = 0$	[_exact]	✓
7542	$1 + y^2 \sin(2x) - 2y \cos(x)^2 y' = 0$	[_exact, _Bernoulli]	✓
7543	$\frac{x}{(y^2 + x^2)^{3/2}} + \frac{yy'}{(y^2 + x^2)^{3/2}} = 0$	[_separable]	✓
7544	$3x^2(1 + \ln(y)) + \left(\frac{x^3}{y} - 2y\right) y' = 0$	[_exact, [_1st_order, '_with_symmetry_[F(x)*G(y),0]]']	✓
7545	$\frac{y - xy'}{(x + y)^2} + y' = 1$	[[_1st_order, _with_linear_symmetries], _exact, _rational]	✓
7546	$\frac{4y^2 - 2x^2}{4xy^2 - x^3} + \frac{(8y^2 - x^2) y'}{4y^3 - x^2y} = 0$	[[_homogeneous, 'class A'], _exact, _rational, _dAlembert]	✓

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#	ODE	CAS classification	Solved?
7547	$x^2 - 2y^2 + xyy' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
7548	$x^2y' - 3xy - 2y^2 = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
7550	$x \sin\left(\frac{y}{x}\right) y' = y \sin\left(\frac{y}{x}\right) + x$	[[_homogeneous, 'class A', _dAlembert]	✓
7552	$x - y - (x + y) y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
7553	$xy' = 2x - 6y$	[_linear]	✓
7555	$x^2y' = y^2 + 2xy$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
7556	$x^3 + y^3 - xy^2y' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
7561	$2x + 3y - 1 - 4(x + 1) y' = 0$	[_linear]	✓
7562	$y' = \frac{1 - xy^2}{2x^2y}$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
7563	$y' = \frac{2 + 3xy^2}{4x^2y}$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
7564	$y' = \frac{y - xy^2}{x + x^2y}$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]	✓
7569	$(3x^2 - y^2) y' - 2xy = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
7570	$xy - 1 + (x^2 - xy) y' = 0$	[_rational, [_1st_or- der, 'with symme- try_[F(x),G(x)'], [_Abel, '2nd type', 'class B']]	✓
7571	$xy' + y + 3x^3y^4y' = 0$	[[_homogeneous, 'class G', _rational]	✓
7572	$e^x + (e^x \cot(y) + 2y \csc(y)) y' = 0$	[[_1st_order, 'with sym- metry_[F(x)*G(y),0]']]	✓
7573	$(x + 2) \sin(y) + x \cos(y) y' = 0$	[_separable]	✓
7574	$y + (x - 2x^2y^3) y' = 0$	[[_homogeneous, 'class G', _rational]	✓
7575	$x + 3y^2 + 2xyy' = 0$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓

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#	ODE	CAS classification	Solved?
7576	$y + (2x - e^y y) y' = 0$	[[_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓
7577	$y \ln(y) - 2xy + (x + y) y' = 0$	['y=_G(x,y)']	✓
7578	$y^2 + xy + 1 + (x^2 + xy + 1) y' = 0$	[_rational, [_Abel, '2nd type', 'class B']]	✓
7579	$x^3 + xy^3 + 3y^2 y' = 0$	[_rational, _Bernoulli]	✓
7593	$xy' + y = x$	[_linear]	✓
7594	$x^2 y' + y = x^2$	[_linear]	✓
7595	$x^2 y' = y$	[_separable]	✓
7598	$y' = \frac{x + 2y}{2x - y}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
7599	$x^2 y' + 2xy = 0$	[_separable]	✓
7600	$-\sin(x) \sin(y) + \cos(x) \cos(y) y' = 0$	[_separable]	✓
7601	$-y + xy' = 2x$	[_linear]	✓
i.c.			
7602	$x^2 y' - 2y = 3x^2$	[_linear]	✓
i.c.			
7603	$y^2 y' = x$	[_separable]	✓
i.c.			
7605	$y' = \frac{x + y}{x - y}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
i.c.			
7607	$2x \cos(y) - x^2 \sin(y) y' = 0$	[_separable]	✓
i.c.			
7608	$\frac{1}{y} - \frac{xy'}{y^2} = 0$	[_separable]	✓
7745	$y' + y = \cos(x)$	[[_linear, 'class A']]	✓
7749	$y' = 2xy$	[_separable]	✓
7751	$y' + y = 1$	[_quadrature]	✓
7753	$y' - y = 2$	[_quadrature]	✓
7755	$y' + y = 0$	[_quadrature]	✓
7757	$y' - y = 0$	[_quadrature]	✓
7759	$y' - y = x^2$	[[_linear, 'class A']]	✓

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#	ODE	CAS classification	Solved?
7761	$xy' = y$	[_separable]	✓
7763	$x^2y' = y$	[_separable]	✓
7765	$y' - \frac{y}{x} = x^2$	[_linear]	✓
7766	$y' + \frac{y}{x} = x$	[_linear]	✓
7770	$y' = x - y$ i.c.	[[_linear, 'class A']]	✓
7891	$y' - 2y = x^2$ i.c.	[[_linear, 'class A']]	✓
8111	$x^2y'^2 - y^2 = 0$	[_separable]	✓
8112	$xy'^2 - (2x + 3y)y' + 6y = 0$	[_quadrature]	✓
8113	$x^2y'^2 - 5xyy' + 6y^2 = 0$	[_separable]	✓
8114	$x^2y'^2 + xy' - y^2 - y = 0$	[_separable]	✓
8115	$xy'^2 + (1 - x^2y)y' - xy = 0$	[_quadrature]	✓
8116	$y'^2 - (x^2y + 3)y' + 3x^2y = 0$	[_quadrature]	✓
8117	$xy'^2 - (xy + 1)y' + y = 0$	[_quadrature]	✓
8118	$y'^2 - y^2x^2 = 0$	[_separable]	✓
8119	$(x + y)^2 y'^2 = y^2$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
8120	$yy'^2 + (x - y^2)y' - xy = 0$	[_quadrature]	✓
8121	$y'^2 - xy(x + y)y' + x^3y^3 = 0$	[_separable]	✓
8122	$(4x - y)y'^2 + 6y'(x - y) + 2x - 5y = 0$	[_quadrature]	✓
8123	$(x - y)^2 y'^2 = y^2$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
8124	$xyy'^2 + (-1 + xy^2)y' - y = 0$	[_quadrature]	✓
8125	$(y^2 + x^2)^2 y'^2 = 4y^2x^2$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
8126	$(x + y)^2 y'^2 + (2y^2 + xy - x^2)y' + (y - x)y = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓

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#	ODE	CAS classification	Solved?
8127	$xy(y^2 + x^2)(-1 + y'^2) = y'(x^4 + y^2x^2 + y^4)$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
8128	$xy'^3 - (x + x^2 + y)y'^2 + (x^2 + y + xy)y' - xy = 0$	[_quadrature]	✓
8129	$xyy'^2 + (x + y)y' + 1 = 0$	[_quadrature]	✓
8145	$x^4y'^2 + 2x^3yy' - 4 = 0$	[[_homogeneous, 'class G'], _rational]	✓
8164	$y = xy' + x^3y'^2$	[[_homogeneous, 'class G'], _rational]	✓
8210	$6xy'^2 - (3x + 2y)y' + y = 0$	[_quadrature]	✓
8215	$y^2y'^2 - (x + 1)yy' + x = 0$	[_quadrature]	✓
8221	$xy'^2 - y'(x^2 + 1) + x = 0$	[_quadrature]	✓
8226	$x^2y'^2 = (x - y)^2$	[_linear]	✓
8229	$xy'^2 + (1 - x)yy' - y^2 = 0$	[_quadrature]	✓
8373	$y' = \frac{y}{x \ln(x)}$	[_separable]	✓
8374	$y'(x^2 + 1) + y^2 = -1$ i.c.	[_separable]	✓
8375	$y' + \frac{2y}{x} = 5x^2$	[_linear]	✓
8376	$tx' + 2x = 4e^t$	[_linear]	✓
8377	$y' = \frac{2x - y}{4y + x}$ i.c.	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
8378	$y' + \frac{2y}{x} = 6x^4y^2$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
8379	$y^2 + \cos(x) + (2xy + \sin(y))y' = 0$	[_exact]	✓
8380	$xy - 1 + x^2y' = 0$	[_linear]	✓
8389	$y' = \frac{\cos(y) \sec(x)}{x}$	[_separable]	✓
8390	$y' = x(\cos(y) + y)$	[_separable]	✓
8391	$y' = \frac{\sec(x)(\sin(y) + y)}{x}$	[_separable]	✓
8392	$y' = \left(5 + \frac{\sec(x)}{x}\right)(\sin(y) + y)$	[_separable]	✓

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Table 2.12 first order ode exact  
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#	ODE	CAS classification	Solved?
8393	$y' = 1 + y$	[_quadrature]	✓
8394	$y' = x + 1$	[_quadrature]	✓
8395	$y' = x$	[_quadrature]	✓
8396	$y' = y$	[_quadrature]	✓
8398	$y' = 1 + \frac{\sec(x)}{x}$	[_quadrature]	✓
8399	$y' = x + \frac{\sec(x)y}{x}$	[_linear]	✓
8400	$y' = \frac{2y}{x}$ i.c.	[_separable]	✓
8401	$y' = \frac{2y}{x}$	[_separable]	✓
8402	$y' = \frac{\ln(1+y^2)}{\ln(x^2+1)}$	[_separable]	✓
8403	$y' = \frac{1}{x}$	[_quadrature]	✓
8404	$y' = \frac{-xy-1}{4x^3y-2x^2}$	[[_homogeneous, 'class G'], _rational, [_Abel, '2nd type', 'class B']]	✓
8406	$y' = \sqrt{\frac{1+y}{y^2}}$ i.c.	[_quadrature]	✓
8410	$y^2 + x^2y' = xyy'$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
8420	$y' = \frac{1}{1-y}$ i.c.	[_quadrature]	✓
8421	$p' = ap - bp^2$ i.c.	[_quadrature]	✓
8422	$y^2 + \frac{2}{x} + 2xyy' = 0$	[[_homogeneous, 'class G'], _exact, _rational, _Bernoulli]	✓
8434	$f' = \frac{1}{f}$	[_quadrature]	✓
8465	$x' = 4Ak\left(\frac{x}{A}\right)^{3/4} - 3kx$	[_quadrature]	✓
8468	$y' = \frac{y\left(1 + \frac{a^2x}{\sqrt{a^2(x^2+1)}}\right)}{\sqrt{a^2(x^2+1)}}$	[_separable]	✓

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Table 2.12 first order ode exact  
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#	ODE	CAS classification	Solved?
8470	$y' = 2\sqrt{y}$ i.c.	[_quadrature]	✓
8472	$y' = \sqrt{1 - y^2}$	[_quadrature]	✓
8536	$w' = -\frac{1}{2} - \frac{\sqrt{1 - 12w}}{2}$ i.c.	[_quadrature]	✓
8565	$vv' = \frac{2v^2}{r^3} + \frac{\lambda r}{3}$	[_rational, _Bernoulli]	✓
8628	$y' = y(1 - y^2)$	[_quadrature]	✓
8656	$y' = \frac{y}{2y \ln(y) + y - x}$	[[_1st_order, _with_linear_symmetries]]	✓
8662	$y' = a$	[_quadrature]	✓
8663	$y' = x$	[_quadrature]	✓
8664	$y' = 1$	[_quadrature]	✓
8665	$y' = ax$	[_quadrature]	✓
8666	$y' = axy$	[_separable]	✓
8667	$y' = ax + y$	[[_linear, 'class A']]	✓
8668	$y' = ax + by$	[[_linear, 'class A']]	✓
8669	$y' = y$	[_quadrature]	✓
8670	$y' = by$	[_quadrature]	✓
8673	$cy' = a$	[_quadrature]	✓
8674	$cy' = ax$	[_quadrature]	✓
8675	$cy' = ax + y$	[[_linear, 'class A']]	✓
8676	$cy' = ax + by$	[[_linear, 'class A']]	✓
8677	$cy' = y$	[_quadrature]	✓
8678	$cy' = by$	[_quadrature]	✓
8683	$cy' = \frac{ax + by^2}{y}$	[_rational, _Bernoulli]	✓
8686	$y' = \sin(x) + y$	[[_linear, 'class A']]	✓
8688	$y' = \cos(x) + \frac{y}{x}$	[_linear]	✓
8697	$xy' = 1$	[_quadrature]	✓
8698	$xy' = \sin(x)$	[_quadrature]	✓

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#	ODE	CAS classification	Solved?
8726	$y' = e^{x+y}$	[_separable]	✓
8838	$y' + y \cot(x) = 2 \cos(x)$	[_linear]	✓
8839	$2xy^2 - y + (y^2 + x + y) y' = 0$	[_rational]	✓
8847	$y' = y^{1/3}$ i.c.	[_quadrature]	✓
9692	$y' + ay - ce^{bx} = 0$	[[_linear, 'class A']]	✓
9693	$y' + ay - b \sin(cx) = 0$	[[_linear, 'class A']]	✓
9694	$y' + 2xy - xe^{-x^2} = 0$	[_linear]	✓
9695	$y' + y \cos(x) - e^{2x} = 0$	[_linear]	✓
9696	$y' + y \cos(x) - \frac{\sin(2x)}{2} = 0$	[_linear]	✓
9697	$y' + y \cos(x) - e^{-\sin(x)} = 0$	[_linear]	✓
9698	$y' + y \tan(x) - \sin(2x) = 0$	[_linear]	✓
9699	$y' - (\sin(\ln(x)) + \cos(\ln(x)) + a)y = 0$	[_separable]	✓
9700	$y' + f'(x)y - f(x)f'(x) = 0$	[_linear]	✓
9701	$y' + f(x)y - g(x) = 0$	[_linear]	✓
9702	$y' + y^2 - 1 = 0$	[_quadrature]	✓
9707	$y' - y^2 - 3y + 4 = 0$	[_quadrature]	✓
9713	$y' + y^2a - b = 0$	[_quadrature]	✓
9716	$y' - (Ay - a)(By - b) = 0$	[_quadrature]	✓
9719	$y' - xy^2 - 3xy = 0$	[_separable]	✓
9721	$y' - ax^n(1 + y^2) = 0$	[_separable]	✓
9725	$y' + f(x)(y^2 + 2ay + b) = 0$	[_separable]	✓
9729	$y' - a_3y^3 - a_2y^2 - a_1y - a_0 = 0$	[_quadrature]	✓
9731	$axy^3 + by^2 + y' = 0$	[[_homogeneous, 'class G'], _Abel]	✓
9749	$y' - a\sqrt{1 + y^2} - b = 0$	[_quadrature]	✓
9750	$y' - \frac{\sqrt{y^2 - 1}}{\sqrt{x^2 - 1}} = 0$	[_separable]	✓
9751	$y' - \frac{\sqrt{x^2 - 1}}{\sqrt{y^2 - 1}} = 0$	[_separable]	✓

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Table 2.12 first order ode exact  
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#	ODE	CAS classification	Solved?
9754	$y' - \sqrt{\frac{y^2 a + by + c}{x^2 a + bx + c}} = 0$	[[_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]']]	✓
9755	$y' - \sqrt{\frac{y^3 + 1}{x^3 + 1}} = 0$	[[_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]']]	✓
9757	$y' - \frac{\sqrt{1-y^4}}{\sqrt{-x^4+1}} = 0$	[_separable]	✓
9758	$y' - \sqrt{\frac{ay^4 + by^2 + 1}{ax^4 + bx^2 + 1}} = 0$	[[_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]']]	✓
9759	$y' - \sqrt{(b_4 y^4 + b_3 y^3 + b_2 y^2 + b_1 y + b_0)(a_4 x^4 + a_3 x^3 + a_2 x^2 + a_1 x + a_0)} = 0$	[[_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]']]	✓
9760	$y' - \sqrt{\frac{a_4 x^4 + a_3 x^3 + a_2 x^2 + a_1 x + a_0}{b_4 y^4 + b_3 y^3 + b_2 y^2 + b_1 y + b_0}} = 0$	[[_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]']]	✓
9761	$y' - \sqrt{\frac{b_4 y^4 + b_3 y^3 + b_2 y^2 + b_1 y + b_0}{a_4 x^4 + a_3 x^3 + a_2 x^2 + a_1 x + a_0}} = 0$	[[_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]']]	✓
9763	$y' - \left(\frac{a_3 x^3 + a_2 x^2 + a_1 x + a_0}{a_3 y^3 + a_2 y^2 + a_1 y + a_0}\right)^{2/3} = 0$	[[_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]']]	✓
9766	$y' - a \cos(y) + b = 0$	[_quadrature]	✓
9779	$xy' - \sqrt{a^2 - x^2} = 0$	[_quadrature]	✓
9780	$xy' + y - x \sin(x) = 0$	[_linear]	✓
9781	$xy' - y - \frac{x}{\ln(x)} = 0$	[_linear]	✓
9782	$xy' - y - x^2 \sin(x) = 0$	[_linear]	✓
9783	$xy' - y - \frac{x \cos(\ln(\ln(x)))}{\ln(x)} = 0$	[_linear]	✓
9784	$xy' + ay + b x^n = 0$	[_linear]	✓
9786	$xy' - y^2 + 1 = 0$	[_separable]	✓
9791	$xy' + xy^2 - y = 0$	[[_homogeneous, 'class D'], _rational, _Bernoulli]	✓

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#	ODE	CAS classification	Solved?
9798	$xy' - y^2 \ln(x) + y = 0$	[_Bernoulli]	✓
9799	$xy' - y(2y \ln(x) - 1) = 0$	[_Bernoulli]	✓
9800	$xy' + f(x)(y^2 - x^2) - y = 0$	[[_homogeneous, 'class D'], _Riccati]	✓
9807	$xy' - y \ln(y) = 0$	[_separable]	✓
9808	$xy' - y(\ln(xy) - 1) = 0$	[[_homogeneous, 'class G']]	✓
9811	$xy' + (\sin(y) - 3x^2 \cos(y)) \cos(y) = 0$	['y=_G(x,y)']	✓
9819	$2xy' - y - 2x^3 = 0$	[_linear]	✓
9820	$(2x + 1)y' - 4e^{-y} + 2 = 0$	[_separable]	✓
9821	$3xy' - 3x \ln(x) y^4 - y = 0$	[_Bernoulli]	✓
9822	$x^2 y' + y - x = 0$	[_linear]	✓
9823	$x^2 y' - y + x^2 e^{x - \frac{1}{x}} = 0$	[_linear]	✓
9824	$x^2 y' - (x - 1)y = 0$	[_separable]	✓
9826	$x^2 y' - y^2 - xy = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
9829	$x^2(y' + y^2) + 4xy + 2 = 0$	[[_homogeneous, 'class G'], _rational, _Riccati]	✓
9830	$x^2(y' + y^2) + axy + b = 0$	[[_homogeneous, 'class G'], _rational, _Riccati]	✓
9832	$x^2(y' + y^2 a) - b = 0$	[[_homogeneous, 'class G'], _rational, [_Riccati, _special]]	✓
9837	$y'(x^2 + 1) + xy - 1 = 0$	[_linear]	✓
9838	$y'(x^2 + 1) + xy - x(x^2 + 1) = 0$	[_linear]	✓
9839	$y'(x^2 + 1) + 2xy - 2x^2 = 0$	[_linear]	✓
9842	$(x^2 - 1)y' - xy + a = 0$	[_linear]	✓
9843	$(x^2 - 1)y' + 2xy - \cos(x) = 0$	[_linear]	✓
9847	$(x^2 - 1)y' + axy^2 + xy = 0$	[_separable]	✓
9848	$(x^2 - 1)y' - 2xy \ln(y) = 0$	[_separable]	✓
9850	$(x^2 - 5x + 6)y' + 3xy - 8y + x^2 = 0$	[_linear]	✓

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#	ODE	CAS classification	Solved?
9854	$x(2x - 1)y' + y^2 - (1 + 4x)y + 4x = 0$	[_rational, [_1st_order, '_with_symmetry_[F(x),G(x)]'], _Riccati]	✓
9860	$x^3y' - y^2 - x^2y = 0$	[[_homogeneous, 'class D'], _rational, _Bernoulli]	✓
9863	$x(x^2 + 1)y' + x^2y = 0$	[_separable]	✓
9864	$x(x^2 - 1)y' - (2x^2 - 1)y + ax^3 = 0$	[_linear]	✓
9872	$(2x^4 - x)y' - 2(x^3 - 1)y = 0$	[_separable]	✓
9881	$\sqrt{a^2 + x^2}y' + y - \sqrt{a^2 + x^2} + x = 0$	[_linear]	✓
9882	$xy' \ln(x) + y - ax(\ln(x) + 1) = 0$	[_linear]	✓
9885	$y' \cos(x) + y + (\sin(x) + 1) \cos(x) = 0$	[_linear]	✓
9887	$\sin(x) \cos(x)y' - y - \sin(x)^3 = 0$	[_linear]	✓
9889	$(a \sin(x)^2 + b)y' + ay \sin(2x) + Ax(a \sin(x)^2 + c) = 0$	[_linear]	✓
9896	$yy' + y^2 + 4x(x + 1) = 0$	[[_homogeneous, 'class D'], _rational, _Bernoulli]	✓
9897	$yy' + y^2a - b \cos(x + c) = 0$	[_Bernoulli]	✓
9898	$yy' - \sqrt{y^2a + b} = 0$	[_quadrature]	✓
9899	$yy' + xy^2 - 4x = 0$	[_separable]	✓
9906	$(y - x^2)y' - x = 0$	[_rational, [_1st_order, '_with_symmetry_[F(x)*G(y),0]'], [_Abel, '2nd type', 'class C']]	✓
9907	$(y - x^2)y' + 4xy = 0$	[[_homogeneous, 'class G'], _rational, [_Abel, '2nd type', 'class A']]	✓
9909	$2yy' - xy^2 - x^3 = 0$	[_rational, _Bernoulli]	✓
9912	$(2y - x)y' - y - 2x = 0$	[[_homogeneous, 'class A'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
9916	$(4y - 3x - 5)y' - 3y + 7x + 2 = 0$	[[_homogeneous, 'class C'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓

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#	ODE	CAS classification	Solved?
9918	$(12y - 5x - 8)y' - 5y + 2x + 3 = 0$	[[_homogeneous, 'class C', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
9921	$x^2 + y^2 + xyy' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
9922	$xyy' - y^2 + ax^3 \cos(x) = 0$	[[_homogeneous, 'class D', _Bernoulli]]	✓
9924	$(xy + a)y' + by = 0$	[[_1st_order, _with_expo- nential_symmetries], _ratio- nal, [_Abel, '2nd type', 'class B']]]	✓
9928	$(xy - x^2)y' + y^2 - 3xy - 2x^2 = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
9929	$2xyy' - y^2 + ax = 0$	[[_homogeneous, 'class G', _rational, _Bernoulli]]	✓
9930	$2xyy' - y^2 + x^2a = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
9931	$2xyy' + 2y^2 + 1 = 0$	[_separable]	✓
9932	$x(2y + x - 1)y' - y(y + 2x + 1) = 0$	[_rational, [_Abel, '2nd type', 'class B']]]	✓
9933	$y(2x - y - 1) + x(2y - x - 1)y' = 0$	[_rational, [_Abel, '2nd type', 'class B']]]	✓
9935	$x(2x + 3y)y' + 3(x + y)^2 = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
9937	$(6xy + x^2 + 3)y' + 3y^2 + 2xy + 2x = 0$	[_exact, _rational, [_Abel, '2nd type', 'class B']]]	✓
9940	$(x^2y - 1)y' + xy^2 - 1 = 0$	[_exact, _rational, [_Abel, '2nd type', 'class B']]]	✓
9943	$x(xy - 2)y' + x^2y^3 + xy^2 - 2y = 0$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class C']]]	✓
9944	$x(xy - 3)y' + xy^2 - y = 0$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]]	✓
9945	$x^2(y - 1)y' + (x - 1)y = 0$	[_separable]	✓
9947	$2x^2yy' + y^2 - 2x^3 - x^2 = 0$	[[_homogeneous, 'class D', _rational, _Bernoulli]]	✓

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#	ODE	CAS classification	Solved?
9948	$2x^2yy' - y^2 - x^2e^{x-\frac{1}{x}} = 0$	[_Bernoulli]	✓
9949	$(x + 2x^2y)y' - x^2y^3 + 2xy^2 + y = 0$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class C']]]	✓
9950	$(2x^2y - x)y' - 2xy^2 - y = 0$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]]	✓
9952	$2x^3 + yy' + 3y^2x^2 + 7 = 0$	[_rational, _Bernoulli]	✓
9956	$yy' \sin(x)^2 + y^2 \cos(x) \sin(x) - 1 = 0$	[_exact, _Bernoulli]	✓
9957	$f(x)yy' + g(x)y^2 + h(x) = 0$	[_Bernoulli]	✓
9959	$(y^2 - x)y' - y + x^2 = 0$	[_exact, _rational]	✓
9960	$(y^2 + x^2)y' + 2x(2x + y) = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlem- bert]	✓
9962	$(y^2 + x^2 + a)y' + 2xy = 0$	[_exact, _rational, [_1st_order, '_with_sym- metry_[F(x)*G(y),0]']]]	✓
9963	$(y^2 + x^2 + a)y' + 2xy + x^2 + b = 0$	[_exact, _rational]	✓
9964	$(x^2 + y^2 + x)y' - y = 0$	[_rational]	✓
9965	$(y^2 - x^2)y' + 2xy = 0$	[[_homogeneous, 'class A', _rational, _dAlem- bert]	✓
9966	$(y^2 + x^4)y' - 4x^3y = 0$	[[_homogeneous, 'class G', _rational]	✓
9967	$(y^2 + 4 \sin(x))y' - \cos(x) = 0$	[[_1st_order, '_with_sym- metry_[F(x)*G(y),0]']]]	✓
9972	$3(y^2 - x^2)y' + 2y^3 - 6x(x + 1)y - 3e^x = 0$	['y=_G(x,y)']	✓
9973	$(4y^2 + x^2)y' - xy = 0$	[[_homogeneous, 'class A', _rational, _dAlem- bert]	✓
9974	$(4y^2 + 2xy + 3x^2)y' + y^2 + 6xy + 2x^2 = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlem- bert]	✓
9977	$(6y^2 - 3x^2y + 1)y' - 3xy^2 + x = 0$	[_exact, _rational, [_1st_order, '_with_sym- metry_[F(x)*G(y),0]']]]	✓
9978	$(6y - x)^2y' - 6y^2 + 2xy + a = 0$	[_exact, _rational, [_1st_order, '_with_sym- metry_[F(x),G(x)]']]]	✓

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Table 2.12 first order ode exact

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#	ODE	CAS classification	Solved?
9979	$(y^2 a + 2bxy + c x^2) y' + by^2 + 2cxy + d x^2 = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlem- bert]	✓
9983	$x(y^2 + x^2 - a) y' - y(y^2 + x^2 + a) = 0$	[_rational, [_1st_or- der, ['_with_symme- try_[F(x),G(x)*y+H(x)']]]	✓
9984	$x(y^2 + xy - x^2) y' - y^3 + xy^2 + x^2 y = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
9987	$3xy^2 y' + y^3 - 2x = 0$	[[_homogeneous, 'class G', _exact, _rational, _Bernoulli]	✓
9988	$(3xy^2 - x^2) y' + y^3 - 2xy = 0$	[[_homogeneous, 'class G', _exact, _rational]	✓
9989	$6xy^2 y' + x + 2y^3 = 0$	[[_homogeneous, 'class G', _exact, _rational, _Bernoulli]	✓
9990	$(x^2 + 6xy^2) y' - y(3y^2 - x) = 0$	[[_homogeneous, 'class G', _rational]	✓
9991	$(y^2 x^2 + x) y' + y = 0$	[[_homogeneous, 'class G', _rational]	✓
9992	$(xy - 1)^2 xy' + (1 + y^2 x^2) y = 0$	[[_homogeneous, 'class G', _rational]	✓
9993	$(10x^3 y^2 + x^2 y + 2x) y' + 5x^2 y^3 + xy^2 = 0$	[[_homogeneous, 'class G', _rational]	✓
9994	$(y^3 - 3x) y' - 3y + x^2 = 0$	[_exact, _rational]	✓
9995	$(y^3 - x^3) y' - x^2 y = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
9996	$(y^2 + x^2 + a) yy' + (y^2 + x^2 - a) x = 0$	[_exact, _rational]	✓
9997	$2y^3 y' + xy^2 = 0$	[_separable]	✓
9998	$(2y^3 + y) y' - 2x^3 - x = 0$	[_separable]	✓
9999	$(2y^3 + 5x^2 y) y' + 5xy^2 + x^3 = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlem- bert]	✓
10000	$(20y^3 - 3xy^2 + 6x^2 y + 3x^3) y' - y^3 + 6xy^2 + 9x^2 y + 4x^3 = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlem- bert]	✓
10003	$xy^3 y' + y^4 - x \sin(x) = 0$	[_Bernoulli]	✓

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Table 2.12 first order ode exact  
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#	ODE	CAS classification	Solved?
10004	$(2xy^3 - x^4)y' - y^4 + 2x^3y = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
10005	$(2xy^3 + y)y' + 2y^2 = 0$	[_rational, [_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓
10006	$(2xy^3 + xy + x^2)y' - xy + y^2 = 0$	[_rational]	✓
10007	$(3xy^3 - 4xy + y)y' + y^2(y^2 - 2) = 0$	[_rational, [_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓
10008	$(7xy^3 + y - 5x)y' + y^4 - 5y = 0$	[_rational, [_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓
10011	$(10x^2y^3 - 3y^2 - 2)y' + 5xy^4 + x = 0$	[_exact, _rational, [_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓
10012	$(axy^3 + c)xy' + (bx^3y + c)y = 0$	[_rational]	✓
10013	$(2x^3y^3 - x)y' + 2x^3y^3 - y = 0$	[_rational]	✓
10021	$(\sqrt{xy} - 1)xy' - (\sqrt{xy} + 1)y = 0$	[[_homogeneous, 'class G']]	✓
10024	$\sqrt{y^2 - 1}y' - \sqrt{x^2 - 1} = 0$	[_separable]	✓
10025	$(\sqrt{1 + y^2} + ax)y' + \sqrt{x^2 + 1} + ay = 0$	[_exact]	✓
10029	$\left( \frac{e1(x+a)}{(y^2+(x+a)^2)^{3/2}} + \frac{e2(x-a)}{((x-a)^2+y^2)^{3/2}} \right) y'$ $- y \left( \frac{e1}{(y^2+(x+a)^2)^{3/2}} + \frac{e2}{((x-a)^2+y^2)^{3/2}} \right) = 0$	unknown	✓
10030	$(xe^y + e^x)y' + e^y + ye^x = 0$	[_exact]	✓
10031	$x(3e^{xy} + 2e^{-xy})(xy' + y) + 1 = 0$	[[_homogeneous, 'class G']]	✓
10032	$(\ln(y) + x)y' - 1 = 0$	[[_1st_order, _with_exponential_symmetries]]	✓
10033	$(\ln(y) + 2x - 1)y' - 2y = 0$	[[_1st_order, _with_linear_symmetries]]	✓
10034	$x(2x^2y \ln(y) + 1)y' - 2y = 0$	[[_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓
10035	$x(y \ln(xy) + y - ax)y' - y(ax \ln(xy) - y + ax) = 0$	['y=_G(x,y)']	✓
10036	$y'(\sin(x) + 1)\sin(y) + \cos(x)(\cos(y) - 1) = 0$	[_separable]	✓

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Table 2.12 first order ode exact

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#	ODE	CAS classification	Solved?
10037	$(x \cos(y) + \sin(x))y' + y \cos(x) + \sin(y) = 0$	[_exact]	✓
10041	$y'(\cos(y) - \sin(\alpha)\sin(x))\cos(y) + (\cos(x) - \sin(\alpha)\sin(y))\cos(x) = 0$	unknown	✓
10042	$x \cos(y)y' + \sin(y) = 0$	[_separable]	✓
10043	$(x \sin(y) - 1)y' + \cos(y) = 0$	[[_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓
10044	$(x \cos(y) + \cos(x))y' - y \sin(x) + \sin(y) = 0$	[_exact]	✓
10045	$(x^2 \cos(y) + 2y \sin(x))y' + 2x \sin(y) + y^2 \cos(x) = 0$	[_exact]	✓
10047	$\sin(x) \cos(y) + \cos(x) \sin(y)y' = 0$	[_separable]	✓
10049	$y' \cos(ay) - b(1 - c \cos(ay)) \sqrt{\cos(ay)^2 - 1 + c \cos(ay)} = 0$	[_quadrature]	✓
10050	$(x \sin(xy) + \cos(x+y) - \sin(y))y' + y \sin(xy) + \cos(x+y) + \cos(x) = 0$	[_exact]	✓
10051	$(x^2y \sin(xy) - 4x)y' + xy^2 \sin(xy) - y = 0$	[[_homogeneous, 'class G']]	✓
10052	$(-y + xy') \cos\left(\frac{y}{x}\right)^2 + x = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓
10053	$\left(y \sin\left(\frac{y}{x}\right) - x \cos\left(\frac{y}{x}\right)\right)xy' - \left(x \cos\left(\frac{y}{x}\right) + y \sin\left(\frac{y}{x}\right)\right)y = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓
10054	$(yf(y^2 + x^2) - x)y' + y + xf(y^2 + x^2) = 0$	[[_1st_order, '_with_linear_symmetries]]	✓
10080	$y'^2 + (bx + ay)y' + abxy = 0$	[_quadrature]	✓
10084	$y'^2 + y(y-x)y' - xy^3 = 0$	[_separable]	✓
10122	$y' - 1 = 0$	[_quadrature]	✓
10126	$x^2y'^2 + 3xyy' + 2y^2 = 0$	[_separable]	✓
10128	$x^2y'^2 + 4xyy' - 5y^2 = 0$	[_separable]	✓
10130	$x^2y'^2 + (x^2y - 2xy + x^3)y' + (y^2 - x^2y)(1-x) = 0$	[_linear]	✓
10132	$x^2y'^2 + (ax^2y^3 + b)y' + aby^3 = 0$	[_quadrature]	✓
10136	$(-a^2 + x^2)y'^2 + 2xyy' + y^2 = 0$	[_separable]	✓
10150	$yy'^2 - e^{2x} = 0$	[[_1st_order, '_with_linear_symmetries]]	✓
10158	$yy'^2 - (y-x)y' - x = 0$	[_quadrature]	✓

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Table 2.12 first order ode exact  
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#	ODE	CAS classification	Solved?
10168	$xyy'^2 + (y^2 + x^2)y' + xy = 0$	[_separable]	✓
10192	$xy^2y'^2 - 2y^3y' + 2xy^2 - x^3 = 0$	[_separable]	✓
10213	$y'^3 - (y^2 + xy + x^2)y'^2 + (xy^3 + y^2x^2 + x^3y)y' - x^3y^3 = 0$	[_quadrature]	✓
10223	$(-a^2 + x^2)y'^3 + bx(-a^2 + x^2)y'^2 + y' + bx = 0$	[_quadrature]	✓
10226	$y'^3 \sin(x) - (y \sin(x) - \cos(x)^2)y'^2 - (y \cos(x)^2 + \sin(x))y' + y \sin(x) = 0$	[_quadrature]	✓
10227	$2yy'^3 - yy'^2 + 2xy' - x = 0$	[_quadrature]	✓
10338	$y' = \frac{(\ln(y) + x^2)y}{x}$	[[_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]']]	✓
10343	$y' = \frac{(\ln(y) + x^3)y}{x}$	[[_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]']]	✓
10360	$y' = \frac{-\sin(2y) + \cos(2y)x^2 + x^2}{2x}$	['y=_G(x,y)']	✓
10370	$y' = \frac{y(-1 + \ln(x(x+1)))yx^4 - \ln(x(x+1))x^3}{x}$	[_Bernoulli]	✓
10374	$y' = \frac{y - \ln\left(\frac{x+1}{x-1}\right)x^3 + \ln\left(\frac{x+1}{x-1}\right)xy^2}{x}$	[[_homogeneous, 'class D'], _Riccati]	✓
10375	$y' = \frac{y + e^{\frac{x+1}{x-1}}x^3 + e^{\frac{x+1}{x-1}}xy^2}{x}$	[[_homogeneous, 'class D'], _Riccati]	✓
10378	$y' = \frac{-\sin(2y) + \cos(2y)x^3 + x^3}{2x}$	['y=_G(x,y)']	✓
10392	$y' = \frac{(\ln(y) + x + x^3 + x^4)y}{x}$	[[_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]']]	✓
10415	$y' = \frac{(x^3 + 3y^2)y}{(6y^2 + x)x}$	[_rational, [_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]']]	✓
10416	$y' = \frac{y(x-y)}{x(x-y^3)}$	[_rational]	✓
10435	$y' = \frac{y(x+y)}{x(x+y^3)}$	[_rational]	✓

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Table 2.12 first order ode exact  
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#	ODE	CAS classification	Solved?
10437	$y' = \frac{(x^2 + 3y^2)y}{(6y^2 + x)x}$	[_rational, [_1st_order, '._with_symmetry_[F(x),G(x)*y+H(x)]']]	✓
10438	$y' = \frac{(\ln(y)x + \ln(y) + x^4)y}{x(x+1)}$	[[_1st_order, '._with_symmetry_[F(x),G(x)*y+H(x)]']]	✓
10450	$y' = \frac{(\ln(y)x + \ln(y) + x)y}{x(x+1)}$	[[_1st_order, '._with_symmetry_[F(x),G(x)*y+H(x)]']]	✓
10452	$y' = \frac{y(-1 - \ln(\frac{(x-1)(x+1)}{x}) + \ln(\frac{(x-1)(x+1)}{x})xy)}{x}$	[_Bernoulli]	✓
10468	$y' = \frac{(x^4 + x^3 + x + 3y^2)y}{(6y^2 + x)x}$	[_rational, [_1st_order, '._with_symmetry_[F(x),G(x)*y+H(x)]']]	✓
10480	$y' = -\frac{y(xy+1)}{x(xy+1-y)}$	[_rational, [_Abel, '2nd type', 'class B']]	✓
10484	$y' = \frac{y(-1 - \cosh(\frac{x+1}{x-1})x + \cosh(\frac{x+1}{x-1})x^2y - \cosh(\frac{x+1}{x-1})x^2 + \cosh(\frac{x+1}{x-1})x^3y)}{x}$	[_Bernoulli]	✓
10486	$y' = \frac{y(-1 - xe^{\frac{x+1}{x-1}} + x^2e^{\frac{x+1}{x-1}}y - e^{\frac{x+1}{x-1}}x^2 + x^3e^{\frac{x+1}{x-1}}y)}{x}$	[_Bernoulli]	✓
10505	$y' = \frac{y}{x(-1 + xy + xy^3 + xy^4)}$	[_rational, [_1st_order, '._with_symmetry_[F(x)*G(y),0]']]	✓
10508	$y' = \frac{y(xy+1)}{x(-xy-1+x^3y^4)}$	[_rational]	✓
10510	$y' = \frac{y(x+y)}{x(x+y+y^3+y^4)}$	[_rational]	✓
10517	$y' = \frac{y(x-y)}{x(x-y-y^3-y^4)}$	[_rational]	✓
10540	$y' = \frac{14xy + 12 + 2x + x^3y^3 + 6y^2x^2}{x^2(xy + 2 + x)}$	[_rational, [_1st_order, '._with_symmetry_[F(x),G(x)]'], [_Abel, '2nd type', 'class C']]	✓
10547	$y' = \frac{-\sin(2y) + x \cos(2y) + \cos(2y)x^3 + \cos(2y)x^4}{2x} + \frac{[y = G(x,y)]}{x+x^3+x}$		✓

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Table 2.12 first order ode exact  
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#	ODE	CAS classification	Solved?
10558	$y' = \frac{-30x^3y + 12x^6 + 70x^{7/2} - 30x^3 - 25\sqrt{x}y + 50x}{5(-5y + 2x^3 + 10\sqrt{x} - 5)x}$	[_rational, [_1st_order, '_with_symmetry_[F(x),G(x)]', [_Abel, '2nd type', 'class B']]	✓
10573	$y' = \frac{ya^2x + a + a^2x + y^3a^3x^3 + 3y^2a^2x^2 + 3axy + 1}{a^2x^2(axy + 1 + ax)}$	[_rational, [_1st_order, '_with_symmetry_[F(x),G(x)]', [_Abel, '2nd type', 'class C']]	✓
10587	$y' = \frac{(y - a \ln(y)x + x^2)y}{(-y \ln(y) - y \ln(x) - y + ax)x}$	[NONE]	✓
10645	$y' = \frac{-y \sin(\frac{y}{x}) + y \sin(\frac{3y}{2x}) \cos(\frac{y}{2x}) + y \cos(\frac{y}{2x}) \sin(\frac{y}{2x})}{2 \cos(\frac{y}{x}) \cos(\frac{y}{2x}) \sin(\frac{y}{2x})x}$	[[_homogeneous, 'class D']]	✓
10646	$y' = \frac{-y \sin(\frac{y}{x}) + y \sin(\frac{3y}{2x}) \cos(\frac{y}{2x}) + y \cos(\frac{y}{2x}) \sin(\frac{y}{2x})}{2 \cos(\frac{y}{x}) \cos(\frac{y}{2x}) \sin(\frac{y}{2x})x}$	[[_homogeneous, 'class D']]	✓
10651	$y' = \frac{-y \sin(\frac{y}{x}) + y \sin(\frac{3y}{2x}) \cos(\frac{y}{2x}) + y \cos(\frac{y}{2x}) \sin(\frac{y}{2x})}{2 \cos(\frac{y}{x}) \cos(\frac{y}{2x}) \sin(\frac{y}{2x})x} + 2 \sin(\frac{y}{x})x^3 \cos(\frac{y}{2x}) \sin(\frac{y}{2x})$	[[_homogeneous, 'class D']]	✓
10654	$y' = \frac{-\sin(\frac{y}{x})yx - y \sin(\frac{y}{x}) + y \sin(\frac{3y}{2x}) \cos(\frac{y}{2x})x + y \sin(\frac{y}{2x}) \cos(\frac{y}{2x})x + y \cos(\frac{y}{2x}) \sin(\frac{y}{2x})x + y \cos(\frac{y}{2x}) \sin(\frac{y}{2x})x}{2 \cos(\frac{y}{x}) \cos(\frac{y}{2x}) \sin(\frac{y}{2x})x(x+1)}$	[[_homogeneous, 'class D']]	✓
10655	$y' = \frac{y \sin(\frac{3y}{2x}) \cos(\frac{y}{2x})x + y \sin(\frac{3y}{2x}) \cos(\frac{y}{2x}) + y \cos(\frac{y}{2x}) \sin(\frac{y}{2x})}{2 \cos(\frac{y}{x}) \sin(\frac{y}{2x})x \cos(\frac{y}{2x})(x+1)} - \sin(\frac{y}{x})yx - y \sin(\frac{y}{x})$	[[_homogeneous, 'class D']]	✓
10666	$y' = \frac{x^3y^3 + 6y^2x^2 + 12xy + 8 + 2x}{x^3}$	[_rational, [_1st_order, '_with_symmetry_[F(x),G(x)]', _Abel]	✓
10667	$y' = \frac{y^3a^3x^3 + 3y^2a^2x^2 + 3axy + 1 + a^2x}{x^3a^3}$	[_rational, [_1st_order, '_with_symmetry_[F(x),G(x)]', _Abel]	✓
11677	$y' = f(x)$	[_quadrature]	✓
11678	$y' = f(y)$	[_quadrature]	✓
11679	$y' = f(x)g(y)$	[_separable]	✓
11680	$g(x)y' = f_1(x)y + f_0(x)$	[_linear]	✓
11695	$x^2y' = ax^2y^2 + b$	[[_homogeneous, 'class G'], _rational, [_Riccati, _special]]	✓

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Table 2.12 first order ode exact

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#	ODE	CAS classification	Solved?
11731	$x^2y' = ax^2y^2 + bxy + c$	[[_homogeneous, 'class G', _rational, _Riccati]	✓
11841	$y' = a \ln(x)^n y - abx \ln(x)^{n+1} y + b \ln(x) + b$	[_linear]	✓
12002	$yy' - y = A$	[_quadrature]	✓
12170	$(Ay + Bx + a)y' + By + kx + b = 0$	[[_homogeneous, 'class C', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
12173	$(y + Ax^n + a)y' + nAx^{n-1}y + kx^m + b = 0$	[_exact, _rational, [_1st_order, '_with_sym- metry_[F(x),G(x)']', [_Abel, '2nd type', 'class A']]	✓
12474	$\frac{1 + 2xy}{y} + \frac{(y-x)y'}{y^2} = 0$	[[_homogeneous, 'class D', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
12475	$\frac{y^2 - 2x^2}{xy^2 - x^3} + \frac{(2y^2 - x^2)y'}{y^3 - x^2y} = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlem- bert]	✓
12476	$\frac{1}{\sqrt{y^2 + x^2}} + \left(\frac{1}{y} - \frac{x}{y\sqrt{y^2 + x^2}}\right)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlem- bert]	✓
12477	$y + x + xy' = 0$	[_linear]	✓
12478	$6x - 2y + 1 + (2y - 2x - 3)y' = 0$	[[_homogeneous, 'class C', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
12481	$2(1 - y^2)xy + (x^2 + 1)(1 + y^2)y' = 0$	[_separable]	✓
12485	$y^2 - xy + x^2y' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
12487	$y^3 + x^3y' = 0$	[_separable]	✓
12488	$x + y \cos\left(\frac{y}{x}\right) - x \cos\left(\frac{y}{x}\right)y' = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
12492	$y + 2xy^2 - x^2y^3 + 2x^2yy' = 0$	[[_homogeneous, 'class G', _rational, _Riccati]	✓
12493	$2y + 3xy^2 + (x + 2x^2y)y' = 0$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]	✓

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Table 2.12 first order ode exact  
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#	ODE	CAS classification	Solved?
12494	$y + xy^2 + (x - x^2y) y' = 0$	[[_homogeneous, 'class G'], _rational, [_Abel, '2nd type', 'class B']]	✓
12495	$y' + y \cot(x) = \sec(x)$	[_linear]	✓
12496	$xy' + (x + 1)y = e^x$	[_linear]	✓
12497	$y' - \frac{2y}{x+1} = (x+1)^3$	[_linear]	✓
12498	$(x^3 + x)y' + 4x^2y = 2$	[_linear]	✓
12499	$x^2y' + (-2x + 1)y = x^2$	[_linear]	✓
12501	$yy' + xy^2 = x$	[_separable]	✓
12502	$\sin(y)y' + \sin(x)\cos(y) = \sin(x)$	[_separable]	✓
12506	$y^2(3y - 6xy') - x(y - 2xy') = 0$	[_separable]	✓
12508	$y^2 - xy + x^2y' = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
12509	$\frac{-y + xy'}{\sqrt{x^2 - y^2}} = xy'$	['y=_G(x,y)']	✓
12510	$x + y - y'(x - y) = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
12511	$x^2 + y^2 - 2xyy' = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
12512	$x - y^2 + 2xyy' = 0$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
12513	$-y + xy' = y^2 + x^2$	[[_homogeneous, 'class D'], _rational, _Riccati]	✓
12514	$3x^2 + 6xy + 3y^2 + (2x^2 + 3xy)y' = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
12515	$2x + (x^2 + y^2 + 2y)y' = 0$	[_rational, [_1st_or- der, 'with_symme- try_[F(x)*G(y),0]']]	✓
12516	$y^4 + 2y + (xy^3 + 2y^4 - 4x)y' = 0$	[_rational, [_1st_or- der, 'with_symme- try_[F(x)*G(y),0]']]	✓
12517	$x^3y - y^4 + (xy^3 - x^4)y' = 0$	[_separable]	✓
12519	$xy' - y + 2x^2y - x^3 = 0$	[_linear]	✓

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Table 2.12 first order ode exact  
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#	ODE	CAS classification	Solved?
12520	$(x + y)y' - 1 = 0$	[[_homogeneous, 'class C'], [_Abel, '2nd type', 'class C'], _dAlembert]	✓
12521	$x + yy' + y - xy' = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
12525	$y' - x^2y = x^5$	[_linear]	✓
12527	$xy' + y + x^4y^4e^x = 0$	[_Bernoulli]	✓
12528	$(1 - x)y + x(1 - y)y' = 0$	[_separable]	✓
12529	$(y - x)y' + y = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
12532	$x \sin\left(\frac{y}{x}\right) - y \cos\left(\frac{y}{x}\right) + x \cos\left(\frac{y}{x}\right)y' = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓
12534	$y' + \frac{y}{(-x^2 + 1)^{3/2}} = \frac{x + \sqrt{-x^2 + 1}}{(-x^2 + 1)^2}$	[_linear]	✓
12535	$(-x^2 + 1)y' - xy = axy^2$	[_separable]	✓
12536	$xy^2(3y + xy') - 2y + xy' = 0$	[[_homogeneous, 'class G'], _rational]	✓
12537	$y'(x^2 + 1) + y = \arctan(x)$	[_linear]	✓
12538	$5xy - 3y^3 + (3x^2 - 7xy^2)y' = 0$	[[_homogeneous, 'class G'], _rational]	✓
12539	$y' + y \cos(x) = \frac{\sin(2x)}{2}$	[_linear]	✓
12540	$xy^2 + y - xy' = 0$	[[_homogeneous, 'class D'], _rational, _Bernoulli]	✓
12541	$(1 - x)y - (1 + y)xy' = 0$	[_separable]	✓
12542	$3x^2y + (x^3 + x^3y^2)y' = 0$	[_separable]	✓
12545	$y^3 - 2x^2y + (2xy^2 - x^3)y' = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
12546	$2x^3y^2 - y + (2x^2y^3 - x)y' = 0$	[_rational]	✓
12549	$xy' - y^2 \ln(x) + y = 0$	[_Bernoulli]	✓
12552	$y'^2 + (x + y)y' + xy = 0$	[_quadrature]	✓
12557	$y'^3 - (2x + y^2)y'^2 + (x^2 - y^2 + 2xy^2)y' - (x^2 - y^2)y^2 = 0$	[_quadrature]	✓

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Table 2.12 first order ode exact  
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#	ODE	CAS classification	Solved?
12585	$x^2y'^2 - 2(xy + 2y')y' + y^2 = 0$	[_separable]	✓
12591	$x^2y'^2 - (x - 1)^2 = 0$	[_quadrature]	✓
12701	$x' = \frac{2x}{t}$	[_separable]	✓
12702	$x' = -\frac{t}{x}$	[_separable]	✓
12703	$x' = -x^2$	[_quadrature]	✓
12705	$x' = e^{-x}$	[_quadrature]	✓
12706	$x' + 2x = t^2 + 4t + 7$	[[_linear, 'class A']]	✓
12707	$2tx' = x$	[_separable]	✓
12710	$x' = x\left(1 - \frac{x}{4}\right)$	[_quadrature]	✓
12712	$x' = t \cos(t^2)$	[_quadrature]	✓
	i.c.		
12713	$x' = \frac{t+1}{\sqrt{t}}$	[_quadrature]	✓
	i.c.		
12715	$x' = te^{-2t}$	[_quadrature]	✓
12716	$x' = \frac{1}{t \ln(t)}$	[_quadrature]	✓
12717	$\sqrt{t}x' = \cos(\sqrt{t})$	[_quadrature]	✓
12718	$x' = \frac{e^{-t}}{\sqrt{t}}$	[_quadrature]	✓
	i.c.		
12720	$x' = \sqrt{x}$	[_quadrature]	✓
	i.c.		
12721	$x' = e^{-2x}$	[_quadrature]	✓
	i.c.		
12722	$y' = 1 + y^2$	[_quadrature]	✓
12723	$u' = \frac{1}{5 - 2u}$	[_quadrature]	✓
12724	$x' = ax + b$	[_quadrature]	✓
12725	$Q' = \frac{Q}{4 + Q^2}$	[_quadrature]	✓
12726	$x' = e^{x^2}$	[_quadrature]	✓
12727	$y' = r(a - y)$	[_quadrature]	✓

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Table 2.12 first order ode exact  
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#	ODE	CAS classification	Solved?
12728	$x' = \frac{2x}{t+1}$	[_separable]	✓
12729	$\theta' = t\sqrt{t^2+1} \sec(\theta)$	[_separable]	✓
12730	$(2u+1)u' - t - 1 = 0$	[_separable]	✓
12731	$R' = (t+1)(1+R^2)$	[_separable]	✓
12732	$y' + y + \frac{1}{y} = 0$	[_quadrature]	✓
12733	$(t+1)x' + x^2 = 0$	[_separable]	✓
12734	$y' = \frac{1}{2y+1}$	[_quadrature]	✓
i.c.			
12736	$x' = 2tx^2$	[_separable]	✓
i.c.			
12737	$x' = t^2e^{-x}$	[_separable]	✓
i.c.			
12738	$x' = x(x+4)$	[_quadrature]	✓
i.c.			
12739	$x' = e^{t+x}$	[_separable]	✓
i.c.			
12740	$T' = 2at(T^2 - a^2)$	[_separable]	✓
i.c.			
12742	$x' = \frac{(4+2t)x}{\ln(x)}$	[_separable]	✓
i.c.			
12743	$y' = \frac{2ty^2}{t^2+1}$	[_separable]	✓
i.c.			
12744	$x' = \frac{t^2}{1-x^2}$	[_separable]	✓
i.c.			
12745	$x' = 6t(x-1)^{2/3}$	[_separable]	✓
12746	$x' = \frac{4t^2+3x^2}{2xt}$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
12747	$x'e^{2t} + 2xe^{2t} = e^{-t}$	[[_linear, 'class A']]	✓
i.c.			
12749	$y' = \frac{y^2+2ty}{t^2}$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
12750	$y' = -y^2e^{-t^2}$	[_separable]	✓
i.c.			

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Table 2.12 first order ode exact  
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#	ODE	CAS classification	Solved?
12751	$x' = 2t^3x - 6$	[_linear]	✓
12754	$7t^2x' = 3x - 2t$	[_linear]	✓
12757	$x' = -\frac{2x}{t} + t$	[_linear]	✓
12758	$y' + y = e^t$	[[_linear, 'class A']]	✓
12759	$x' + 2xt = e^{-t^2}$	[_linear]	✓
12760	$tx' = -x + t^2$	[_linear]	✓
12761	$\theta' = -a\theta + e^{tb}$	[[_linear, 'class A']]	✓
12762	$(t^2 + 1)x' = -3xt + 6t$	[_separable]	✓
12763	$x' + \frac{5x}{t} = t + 1$	[_linear]	✓
	i.c.		
12764	$x' = \left(a + \frac{b}{t}\right)x$	[_separable]	✓
	i.c.		
12765	$R' + \frac{R}{t} = \frac{2}{t^2 + 1}$	[_linear]	✓
	i.c.		
12766	$N' = N - 9e^{-t}$	[[_linear, 'class A']]	✓
12767	$\cos(\theta)v' + v = 3$	[_separable]	✓
12768	$R' = \frac{R}{t} + te^{-t}$	[_linear]	✓
	i.c.		
12769	$y' + ay = \sqrt{t+1}$	[[_linear, 'class A']]	✓
12770	$x' = 2xt$	[_separable]	✓
12771	$x' + \frac{e^{-t}x}{t} = t$	[_linear]	✓
	i.c.		
12774	$x' = ax + b$	[_quadrature]	✓
12775	$x' + p(t)x = 0$	[_separable]	✓
12776	$x' = \frac{2x}{3t} + \frac{2t}{x}$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
12778	$x' = -\frac{x}{t} + \frac{1}{tx^2}$	[_separable]	✓
12780	$x' = ax + bx^3$	[_quadrature]	✓
12782	$x^3 + 3tx^2x' = 0$	[_separable]	✓

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Table 2.12 first order ode exact  
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#	ODE	CAS classification	Solved?
12783	$t^3 + \frac{x}{t} + (x^2 + \ln(t)) x' = 0$	[_exact]	✓
12784	$x' = -\frac{\sin(x) - x \sin(t)}{t \cos(x) + \cos(t)}$	[NONE]	✓
12785	$x + 3tx^2 x' = 0$	[_separable]	✓
12786	$x^2 - t^2 x' = 0$	[_separable]	✓
12787	$t \cot(x) x' = -2$	[_separable]	✓
12922	$y' + y = x + 1$	[[_linear, 'class A']]	✓
12926	$x^2 + y^2 + 2xyy' = 0$	[[_homogeneous, 'class A'], _exact, _rational, _Bernoulli]	✓
12927	$xy' + y = x^3 y^3$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
12928	$y' + 3y = 3x^2 e^{-3x}$	[[_linear, 'class A']]	✓
12929	$y' + 4xy = 8x$	[_separable]	✓
12934	$y' + 2y = 6e^x + 4xe^{-2x}$	[[_linear, 'class A']]	✓
12938	$y' + y = 2xe^{-x}$	[[_linear, 'class A']]	✓
i.c.			
12939	$y' + y = 2xe^{-x}$	[[_linear, 'class A']]	✓
i.c.			
12945	$y' = x^2 \sin(y)$	[_separable]	✓
i.c.			
12946	$y' = \frac{y^2}{-2 + x}$	[_separable]	✓
i.c.			
12947	$y' = y^{1/3}$	[_quadrature]	✓
i.c.			
12948	$3x + 2y + (2x + y) y' = 0$	[[_homogeneous, 'class A'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
12949	$y^2 + 3 + (2xy - 4) y' = 0$	[_exact, _rational, [_1st_order, '_with_sym- metry_[F(x)*G(y),0']], [_Abel, '2nd type', 'class B']]	✓

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Table 2.12 first order ode exact

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#	ODE	CAS classification	Solved?
12950	$2xy + 1 + (x^2 + 4y)y' = 0$	[_exact, _rational, [_1st_order, '_with_symmetry_[F(x),G(x)]'], [_Abel, '2nd type', 'class A']]	✓
12952	$6xy + 2y^2 - 5 + (3x^2 + 4xy - 6)y' = 0$	[_exact, _rational, [_Abel, '2nd type', 'class B']]	✓
12953	$y \sec(x)^2 + \sec(x) \tan(x) + (\tan(x) + 2y)y' = 0$	[_exact, [_Abel, '2nd type', 'class A']]	✓
12954	$\frac{x}{y^2} + x + \left(\frac{x^2}{y^3} + y\right)y' = 0$	[_rational, [_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓
12955	$\frac{(2s-1)s'}{t} + \frac{s-s^2}{t^2} = 0$	[_separable]	✓
12956	$\frac{2y^{3/2} + 1}{\sqrt{x}} + (3\sqrt{x}\sqrt{y} - 1)y' = 0$	[_rational, [_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓
12957 i.c.	$2xy - 3 + (x^2 + 4y)y' = 0$	[_exact, _rational, [_1st_order, '_with_symmetry_[F(x),G(x)]'], [_Abel, '2nd type', 'class A']]	✓
12958 i.c.	$3y^2x^2 - y^3 + 2x + (2x^3y - 3xy^2 + 1)y' = 0$	[_exact, _rational]	✓
12959 i.c.	$2y \sin(x) \cos(x) + y^2 \sin(x) + (\sin(x)^2 - 2y \cos(x))y' = 0$	[_exact, [_Abel, '2nd type', 'class B']]	✓
12960 i.c.	$ye^x + 2e^x + y^2 + (e^x + 2xy)y' = 0$	[_exact, [_Abel, '2nd type', 'class B']]	✓
12961 i.c.	$\frac{3-y}{x^2} + \frac{(y^2-2x)y'}{xy^2} = 0$	[_exact, _rational, [_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓
12962 i.c.	$\frac{1+8xy^{2/3}}{x^{2/3}y^{1/3}} + \frac{(2x^{4/3}y^{2/3} - x^{1/3})y'}{y^{4/3}} = 0$	[[_homogeneous, 'class G'], _exact, _rational]	✓
12963	$4x + 3y^2 + 2xyy' = 0$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
12964	$y^2 + 2xy - x^2y' = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓

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Table 2.12 first order ode exact  
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#	ODE	CAS classification	Solved?
12965	$y + x(y^2 + x^2)^2 + (y(y^2 + x^2)^2 - x) y' = 0$	[[_1st_order, _with_linear_symmetries], _rational]	✓
12966	$4xy + y'(x^2 + 1) = 0$	[_separable]	✓
12967	$xy + 2x + y + 2 + (x^2 + 2x) y' = 0$	[_separable]	✓
12970	$\tan(\theta) + 2r\theta' = 0$	[_separable]	✓
12971	$(e^v + 1) \cos(u) + e^v(1 + \sin(u)) v' = 0$	[_separable]	✓
12972	$(4 + x)(1 + y^2) + y(x^2 + 3x + 2) y' = 0$	[_separable]	✓
12973	$x + y - xy' = 0$	[_linear]	✓
12974	$2xy + 3y^2 - (2xy + x^2) y' = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
12977	$(2s^2 + 2st + t^2) s' + s^2 + 2st - t^2 = 0$	[[_homogeneous, 'class A'], _exact, _rational, _dAlembert]	✓
12978	$x^3 + y^2\sqrt{y^2 + x^2} - xy\sqrt{y^2 + x^2} y' = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓
12980	$y + 2 + y(4 + x) y' = 0$	[_separable]	✓
12982	$(3x + 8)(y^2 + 4) - 4y(x^2 + 5x + 6) y' = 0$	[_separable]	✓
12983	$x^2 + 3y^2 - 2xyy' = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
12985	$3x^2 + 9xy + 5y^2 - (6x^2 + 4xy) y' = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
12986	$x + 2y + (2x - y) y' = 0$	[[_homogeneous, 'class A'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
12987	$3x - y - (x + y) y' = 0$	[[_homogeneous, 'class A'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
12988	$x^2 + 2y^2 + (4xy - y^2) y' = 0$	[[_homogeneous, 'class A'], _exact, _rational, _dAlembert]	✓
12989	$2x^2 + 2xy + y^2 + (2xy + x^2) y' = 0$	[[_homogeneous, 'class A'], _exact, _rational, [_Abel, '2nd type', 'class B']]	✓

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Table 2.12 first order ode exact  
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#	ODE	CAS classification	Solved?
12990	$y' + \frac{3y}{x} = 6x^2$	[_linear]	✓
12991	$x^4 y' + 2x^3 y = 1$	[_linear]	✓
12992	$y' + 3y = 3x^2 e^{-3x}$	[[_linear, 'class A']]	✓
12993	$y' + 4xy = 8x$	[_separable]	✓
12994	$x' + \frac{x}{t^2} = \frac{1}{t^2}$	[_separable]	✓
12995	$(u^2 + 1) v' + 4vu = 3u$	[_separable]	✓
12996	$xy' + \frac{(2x+1)y}{x+1} = x-1$	[_linear]	✓
12997	$(x^2 + x - 2) y' + 3(x+1)y = x-1$	[_linear]	✓
12998	$xy' + xy + y - 1 = 0$	[_linear]	✓
12999	$y + (xy^2 + x - y) y' = 0$	[_rational, [_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓
13000	$r' + r \tan(t) = \cos(t)$	[_linear]	✓
13001	$\cos(t) r' + r \sin(t) - \cos(t)^4 = 0$	[_linear]	✓
13002	$\cos(x)^2 - y \cos(x) - (\sin(x) + 1) y' = 0$	[_linear]	✓
13003	$y \sin(2x) - \cos(x) + (1 + \sin(x)^2) y' = 0$	[_linear]	✓
13004	$y' - \frac{y}{x} = -\frac{y^2}{x}$	[_separable]	✓
13005	$xy' + y = -2x^6 y^4$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
13006	$y' + \left(4y - \frac{8}{y^3}\right) x = 0$	[_separable]	✓
13007	$x' + \frac{(t+1)x}{2t} = \frac{t+1}{xt}$	[_separable]	✓
13008	$xy' - 2y = 2x^4$	[_linear]	✓
13009	$y' + 3x^2 y = x^2$	[_separable]	✓
13010	$e^x (y - 3(1 + e^x)^2) + (1 + e^x) y' = 0$	[_linear]	✓
13011	$2x(1 + y) - y'(x^2 + 1) = 0$	[_separable]	✓

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Table 2.12 first order ode exact  
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#	ODE	CAS classification	Solved?
13012	$r' + r \tan(t) = \cos(t)^2$ i.c.	[_linear]	✓
13013	$x' - x = \sin(2t)$ i.c.	[[_linear, 'class A']]	✓
13014	$y' + \frac{y}{2x} = \frac{x}{y^3}$ i.c.	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
13015	$xy' + y = (xy)^{3/2}$ i.c.	[[_homogeneous, 'class G'], _rational]	✓
13020	$ay' + by = ke^{-\lambda x}$	[[_linear, 'class A']]	✓
13021	$y' + y = 2 \sin(x) + 5 \sin(2x)$	[[_linear, 'class A']]	✓
13022	$\cos(y) y' + \frac{\sin(y)}{x} = 1$	['y=_G(x,y)']	✓
13023	$(1 + y)y' + x(2y + y^2) = x$	[_separable]	✓
13027	$6x^2y - (x^3 + 1)y' = 0$	[_separable]	✓
13028	$(3y^2x^2 - x)y' + 2xy^3 - y = 0$	[[_homogeneous, 'class G'], _exact, _rational]	✓
13029	$y - 1 + x(x + 1)y' = 0$	[_separable]	✓
13030	$x^2 - 2y + xy' = 0$	[_linear]	✓
13032	$e^{2x}y^2 + (e^{2x}y - 2y)y' = 0$	[_separable]	✓
13033	$8x^3y - 12x^3 + (x^4 + 1)y' = 0$	[_separable]	✓
13035	$y' = \frac{4x^3y^2 - 3x^2y}{x^3 - 2x^4y}$	[[_homogeneous, 'class G'], _rational, [_Abel, '2nd type', 'class B']]	✓
13036	$(x + 1)y' + xy = e^{-x}$	[_linear]	✓
13038	$x^2y' + xy = xy^3$	[_separable]	✓
13039	$(x^3 + 1)y' + 6x^2y = 6x^2$	[_separable]	✓
13040	$y' = \frac{2x^2 + y^2}{2xy - x^2}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
13041	$x^2 + y^2 - 2xyy' = 0$ i.c.	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
13042	$2y^2 + 8 + (-x^2 + 1)yy' = 0$ i.c.	[_separable]	✓

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Table 2.12 first order ode exact  
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#	ODE	CAS classification	Solved?
13043 i.c.	$e^{2x}y^2 - 2x + e^{2x}yy' = 0$	[_exact, _Bernoulli]	✓
13044 i.c.	$3x^2 + 2xy^2 + (2x^2y + 6y^2)y' = 0$	[_exact, _rational]	✓
13045 i.c.	$4xyy' = 1 + y^2$	[_separable]	✓
13047 i.c.	$y' = \frac{xy}{x^2 + 1}$	[_separable]	✓
13051	$5xy + 4y^2 + 1 + (2xy + x^2)y' = 0$	[_rational, [_Abel, '2nd type', 'class B']]	✓
13052	$2x + \tan(y) + (x - x^2 \tan(y))y' = 0$	[[_1st_order, '_with_symmetry_[F(x),G(x)']]]	✓
13053	$y^2(x + 1) + y + (1 + 2xy)y' = 0$	[_rational, [_Abel, '2nd type', 'class B']]	✓
13054	$2xy^2 + y + (2y^3 - x)y' = 0$	[_rational]	✓
13055	$4xy^2 + 6y + (5x^2y + 8x)y' = 0$	[[_homogeneous, 'class G'], _rational, [_Abel, '2nd type', 'class B']]	✓
13057	$5x + 2y + 1 + (y + 2x + 1)y' = 0$	[[_homogeneous, 'class C'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
13061 i.c.	$6x + 4y + 1 + (4x + 2y + 2)y' = 0$	[[_homogeneous, 'class C'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
13380	$x' = \sin(t) + \cos(t)$	[_quadrature]	✓
13381	$y' = \frac{1}{x^2 - 1}$	[_quadrature]	✓
13382	$u' = 4t \ln(t)$	[_quadrature]	✓
13383	$z' = x e^{-2x}$	[_quadrature]	✓
13384	$T' = e^{-t} \sin(2t)$	[_quadrature]	✓
13385 i.c.	$x' = \sec(t)^2$	[_quadrature]	✓
13386 i.c.	$y' = x - \frac{1}{3}x^3$	[_quadrature]	✓
13387 i.c.	$x' = 2 \sin(t)^2$	[_quadrature]	✓

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Table 2.12 first order ode exact  
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#	ODE	CAS classification	Solved?
13388	$xV' = x^2 + 1$ i.c.	[_quadrature]	✓
13389	$x'e^{3t} + 3xe^{3t} = e^{-t}$ i.c.	[[_linear, 'class A']]	✓
13390	$x' = -x + 1$	[_quadrature]	✓
13391	$x' = x(2 - x)$	[_quadrature]	✓
13393	$x' = -x(-x + 1)(2 - x)$	[_quadrature]	✓
13394	$x' = x^2 - x^4$	[_quadrature]	✓
13395	$x' = t^3(-x + 1)$ i.c.	[_separable]	✓
13396	$y' = (1 + y^2) \tan(x)$ i.c.	[_separable]	✓
13397	$x' = t^2x$	[_separable]	✓
13398	$x' = -x^2$	[_quadrature]	✓
13399	$y' = y^2e^{-t^2}$	[_separable]	✓
13400	$x' + px = q$	[_quadrature]	✓
13401	$xy' = ky$	[_separable]	✓
13402	$i' = p(t) i$	[_separable]	✓
13403	$x' = \lambda x$	[_quadrature]	✓
13404	$mv' = -mg + kv^2$	[_quadrature]	✓
13405	$x' = kx - x^2$ i.c.	[_quadrature]	✓
13406	$x' = -x(k^2 + x^2)$ i.c.	[_quadrature]	✓
13407	$y' + \frac{y}{x} = x^2$	[_linear]	✓
13408	$x' + xt = 4t$ i.c.	[_separable]	✓
13409	$z' = z \tan(y) + \sin(y)$	[_linear]	✓
13410	$y' + e^{-x}y = 1$ i.c.	[_linear]	✓
13411	$x' + x \tanh(t) = 3$	[_linear]	✓
13412	$y' + 2y \cot(x) = 5$ i.c.	[_linear]	✓
13413	$x' + 5x = t$	[[_linear, 'class A']]	✓

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Table 2.12 first order ode exact  
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#	ODE	CAS classification	Solved?
13414	$x' + \left(a + \frac{1}{t}\right)x = b$ i.c.	[_linear]	✓
13415	$T' = -k(T - \mu - a \cos(\omega(t - \phi)))$	[[_linear, 'class A']]	✓
13416	$2xy - \sec(x)^2 + (x^2 + 2y)y' = 0$	[_exact, [_1st_order, '_with_symmetry_[F(x),G(x)]'], [_Abel, '2nd type', 'class A']]	✓
13417	$1 + ye^x + xe^xy + (xe^x + 2)y' = 0$	[_linear]	✓
13418	$(x \cos(y) + \cos(x))y' - y \sin(x) + \sin(y) = 0$	[_exact]	✓
13419	$e^x \sin(y) + y + (e^x \cos(y) + x + e^y)y' = 0$	[_exact]	✓
13420	$e^{-y} \sec(x) + 2 \cos(x) - e^{-y}y' = 0$	[[_1st_order, '_with_symmetry_[F(x),G(x)]']]	✓
13421	$V'(x) + 2yy' = 0$	[_separable]	✓
13422	$\left(\frac{1}{y} - a\right)y' + \frac{2}{x} - b = 0$	[_separable]	✓
13425	$x' = kx - x^2$	[_quadrature]	✓
13527	$xy' + y = x^3$	[_linear]	✓
13528	$y - xy' = x^2yy'$	[[_homogeneous, 'class G'], _rational, [_Abel, '2nd type', 'class B']]	✓
13529	$x' + 3x = e^{2t}$	[[_linear, 'class A']]	✓
13530	$y \sin(x) + y' \cos(x) = 1$	[_linear]	✓
13531	$y' = e^{x-y}$	[_separable]	✓
13532	$x' = x + \sin(t)$	[[_linear, 'class A']]	✓
13533	$x(\ln(x) - \ln(y))y' - y = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓
13534	$xyy'^2 - (y^2 + x^2)y' + xy = 0$	[_separable]	✓
13535	$y'^2 = 9y^4$	[_quadrature]	✓
13538	$y = xy' + \frac{1}{y}$	[_separable]	✓
13540	$y' = \frac{y}{x + y^3}$	[[_homogeneous, 'class G'], _rational]	✓

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#	ODE	CAS classification	Solved?
13544	$y' - \frac{y}{x+1} + y^2 = 0$	[[_1st_order, _with_linear_symmetries], _rational, _Bernoulli]	✓
13553	$(x-y)y - x^2y' = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
13554	$x' + 5x = 10t + 2$ i.c.	[[_linear, 'class A']]	✓
13555	$x' = \frac{x}{t} + \frac{x^2}{t^3}$ i.c.	[[_homogeneous, 'class D'], _rational, _Bernoulli]	✓
13559	$x' - x \cot(t) = 4 \sin(t)$	[_linear]	✓
13563	$x^2 - y + (y^2x^2 + x)y' = 0$	[_rational]	✓
13565	$(x-y)y - x^2y' = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
13566	$y' = \frac{x+y-3}{y-x+1}$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
13567	$xy' - y^2 \ln(x) + y = 0$	[_Bernoulli]	✓
13568	$(x^2 - 1)y' + 2xy - \cos(x) = 0$	[_linear]	✓
13570	$(y^2 - x)y' - y + x^2 = 0$	[_exact, _rational]	✓
13571	$(y^2 - x^2)y' + 2xy = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
13572	$3xy^2y' + y^3 - 2x = 0$	[[_homogeneous, 'class G'], _exact, _rational, _Bernoulli]	✓
13624	$y' = ye^{x+y}(x^2 + 1)$	[_separable]	✓
13629	$xy' + y = xy^2$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
13631	$y' = xe^{y^2-x}$	[_separable]	✓
13633	$x(1+y)^2 = (x^2 + 1)ye^yy'$	[_separable]	✓
13640	$y' \cos(x) + ye^{x^2} = \sinh(x)$	[_linear]	✓
13642	$yy' = 1$	[_quadrature]	✓
13644	$5y' - xy = 0$	[_separable]	✓

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#	ODE	CAS classification	Solved?
13645	$y'^2 \sqrt{y} = \sin(x)$	[[_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)][']]	✓
13830	$y' + y \cos(x) = \frac{\sin(2x)}{2}$	[_linear]	✓
13838	$y - xy' = 0$	[_separable]	✓
13839	$(1 + u)v + (1 - v)uv' = 0$	[_separable]	✓
13840	$1 + y - (1 - x)y' = 0$	[_separable]	✓
13841	$(t^2 + t^2x)x' + x^2 + tx^2 = 0$	[_separable]	✓
13842	$y - a + x^2y' = 0$	[_separable]	✓
13843	$z - (-a^2 + t^2)z' = 0$	[_separable]	✓
13844	$y' = \frac{1 + y^2}{x^2 + 1}$	[_separable]	✓
13846	$r' + r \tan(t) = 0$	[_separable]	✓
13849	$3e^x \tan(y) + (1 - e^x) \sec(y)^2 y' = 0$	[_separable]	✓
13850	$x - xy^2 + (y - x^2y)y' = 0$	[_separable]	✓
13851	$y - x + (x + y)y' = 0$	[[_homogeneous, 'class A'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
13852	$y + x + xy' = 0$	[_linear]	✓
13853	$x + y + (y - x)y' = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
13857	$t - s + ts' = 0$	[_linear]	✓
13858	$xy^2y' = x^3 + y^3$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
13859	$x \cos\left(\frac{y}{x}\right)(xy' + y) = y \sin\left(\frac{y}{x}\right)(-y + xy')$	[[_homogeneous, 'class A'], _dAlembert]	✓
13862	$x + 2y + 1 - (2x - 3)y' = 0$	[_linear]	✓
13864	$\frac{x + yy'}{\sqrt{y^2 + x^2}} = m$	[[_homogeneous, 'class A'], _exact, _dAlembert]	✓
13867	$y' - \frac{2y}{x+1} = (x+1)^3$	[_linear]	✓
13868	$y' - \frac{ay}{x} = \frac{x+1}{x}$	[_linear]	✓

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#	ODE	CAS classification	Solved?
13869	$(-x^2 + x)y' + (2x^2 - 1)y - ax^3 = 0$	[_linear]	✓
13870	$s' \cos(t) + s \sin(t) = 1$	[_linear]	✓
13871	$s' + s \cos(t) = \frac{\sin(2t)}{2}$	[_linear]	✓
13872	$y' - \frac{ny}{x} = e^x x^n$	[_linear]	✓
13873	$y' + \frac{ny}{x} = ax^{-n}$	[_linear]	✓
13874	$y' + y = e^{-x}$	[[_linear, 'class A']]	✓
13875	$y' + \frac{(-2x+1)y}{x^2} - 1 = 0$	[_linear]	✓
13877	$(-x^2 + 1)y' - xy + axy^2 = 0$	[_separable]	✓
13878	$3y^2y' - ay^3 - x - 1 = 0$	[_rational, _Bernoulli]	✓
13882	$x^2 + y + (x - 2y)y' = 0$	[_exact, _rational, [_1st_order, '_with_symmetry_[F(x),G(x)']], [_Abel, '2nd type', 'class A']]	✓
13883	$y - 3x^2 - (4y - x)y' = 0$	[_exact, _rational, [_1st_order, '_with_symmetry_[F(x),G(x)']], [_Abel, '2nd type', 'class A']]	✓
13884	$(y^3 - x)y' = y$	[[_homogeneous, 'class G'], _exact, _rational]	✓
13885	$\frac{y^2}{(x-y)^2} - \frac{1}{x} + \left(\frac{1}{y} - \frac{x^2}{(x-y)^2}\right)y' = 0$	[_exact, _rational]	✓
13886	$6xy^2 + 4x^3 + 3(2x^2y + y^2)y' = 0$	[_exact, _rational]	✓
13887	$\frac{x}{(x+y)^2} + \frac{(2x+y)y'}{(x+y)^2} = 0$	[[_homogeneous, 'class A'], _exact, _rational, [_Abel, '2nd type', 'class C'], _dAlembert]	✓
13888	$\frac{1}{x^2} + \frac{3y^2}{x^4} = \frac{2yy'}{x^3}$	[[_homogeneous, 'class A'], _exact, _rational, _Bernoulli]	✓
13889	$\frac{x^2y'}{(x-y)^2} - \frac{y^2}{(x-y)^2} = 0$	[_separable]	✓

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#	ODE	CAS classification	Solved?
13890	$x + yy' = \frac{y}{y^2 + x^2} - \frac{xy'}{y^2 + x^2}$	[[_1st_order, __with_linear_symmetries], __exact, _rational]	✓
13895	$y = yy' + y' - y'^2$	[_quadrature]	✓
13897	$y = xy' + y'$	[_separable]	✓
13900	$y' = \frac{2y}{x} - \sqrt{3}$	[_linear]	✓
13952	$\frac{x^2 y'}{(x-y)^2} - \frac{y^2}{(x-y)^2} = 0$	[_separable]	✓
13955	$y'(x^2 + 1) - xy - \alpha = 0$	[_linear]	✓
13956	$x \cos\left(\frac{y}{x}\right) y' = y \cos\left(\frac{y}{x}\right) - x$	[[_homogeneous, 'class A'], _dAlembert]	✓
13958	$xy' - y^2 \ln(x) + y = 0$	[_Bernoulli]	✓
13960	$3e^x \tan(y) + (1 - e^x) \sec(y)^2 y' = 0$	[_separable]	✓
13965	$y' + \frac{y}{x} = e^x$	[_linear]	✓
	<i>i.c.</i>		
13987	$-y + xy' = 0$	[_separable]	✓
13991	$y' + \frac{1}{2y} = 0$	[_quadrature]	✓
13992	$y' - \frac{y}{x} = 1$	[_linear]	✓
13994	$x^2 y' + 2xy = 0$	[_separable]	✓
13995	$y' - y^2 = 1$	[_quadrature]	✓
13997	$xy' - \sin(x) = 0$	[_quadrature]	✓
13998	$y' + 3y = 0$	[_quadrature]	✓
14002	$2xy' - y = 0$	[_separable]	✓
14008	$y'^2 = x^6$	[_quadrature]	✓
14009	$y' - 2xy = 0$	[_separable]	✓
14010	$y' + y = x^2 + 2x - 1$	[[_linear, 'class A']]	✓
14012	$y' = x\sqrt{y}$	[_separable]	✓
14014	$y' = 3y^{2/3}$	[_quadrature]	✓
14015	$xy' \ln(x) - (\ln(x) + 1)y = 0$	[_separable]	✓

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#	ODE	CAS classification	Solved?
14027	$y' = 1 - x$	[_quadrature]	✓
14028	$y' = x - 1$	[_quadrature]	✓
14029	$y' = 1 - y$	[_quadrature]	✓
14030	$y' = 1 + y$	[_quadrature]	✓
14031	$y' = y^2 - 4$	[_quadrature]	✓
14032	$y' = 4 - y^2$	[_quadrature]	✓
14033	$y' = xy$	[_separable]	✓
14034	$y' = -xy$	[_separable]	✓
14037	$y' = x + y$	[[_linear, 'class A']]	✓
14038	$y' = xy$	[_separable]	✓
14039	$y' = \frac{x}{y}$	[_separable]	✓
14040	$y' = \frac{y}{x}$	[_separable]	✓
14041	$y' = 1 + y^2$	[_quadrature]	✓
14042	$y' = y^2 - 3y$	[_quadrature]	✓
14044	$y' =  y $	[_quadrature]	✓
14045	$y' = e^{x-y}$	[_separable]	✓
14047	$y' = \frac{2x - y}{3y + x}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
14049	$y' = \frac{3y}{(x - 5)(x + 3)} + e^{-x}$	[_linear]	✓
14050	$y' = \frac{xy}{y^2 + x^2}$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
14051	$y' = \frac{1}{xy}$	[_separable]	✓
14052	$y' = \ln(y - 1)$	[_quadrature]	✓
14053	$y' = \sqrt{(y + 2)(y - 1)}$	[_quadrature]	✓
14054	$y' = \frac{y}{y - x}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
14055	$y' = \frac{x}{y^2}$	[_separable]	✓

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#	ODE	CAS classification	Solved?
14056	$y' = \frac{\sqrt{y}}{x}$	[_separable]	✓
14057	$y' = \frac{xy}{1-y}$	[_separable]	✓
14058	$y' = (xy)^{1/3}$	[[_homogeneous, 'class G']]	✓
14059	$y' = \sqrt{\frac{y-4}{x}}$	[[_homogeneous, 'class C'], _dAlembert]	✓
14060	$y' = -\frac{y}{x} + y^{1/4}$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
14061	$y' = 4y - 5$	[_quadrature]	✓
14062	$y' + 3y = 1$	[_quadrature]	✓
14063	$y' = ay + b$	[_quadrature]	✓
14064	$y' = x^2 + e^x - \sin(x)$	[_quadrature]	✓
14065	$y' = xy + \frac{1}{x^2 + 1}$	[_linear]	✓
14066	$y' = \frac{y}{x} + \cos(x)$	[_linear]	✓
14067	$y' = \frac{y}{x} + \tan(x)$	[_linear]	✓
14068	$y' = \frac{y}{-x^2 + 4} + \sqrt{x}$	[_linear]	✓
14069	$y' = \frac{y}{-x^2 + 4} + \sqrt{x}$	[_linear]	✓
14070	$y' = y \cot(x) + \csc(x)$	[_linear]	✓
14071	$y' = -x\sqrt{1-y^2}$	[_separable]	✓
14073	$y' = 3x + 1$	[_quadrature]	✓
14074	$y' = x + \frac{1}{x}$	[_quadrature]	✓

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#	ODE	CAS classification	Solved?
14075	$y' = 2 \sin(x)$ i.c.	[_quadrature]	✓
14076	$y' = x \sin(x)$ i.c.	[_quadrature]	✓
14077	$y' = \frac{1}{x-1}$ i.c.	[_quadrature]	✓
14078	$y' = \frac{1}{x-1}$ i.c.	[_quadrature]	✓
14079	$y' = \frac{1}{x^2-1}$ i.c.	[_quadrature]	✓
14080	$y' = \frac{1}{x^2-1}$ i.c.	[_quadrature]	✓
14081	$y' = \tan(x)$ i.c.	[_quadrature]	✓
14082	$y' = \tan(x)$ i.c.	[_quadrature]	✓
14083	$y' = 3y$ i.c.	[_quadrature]	✓
14084	$y' = 1 - y$ i.c.	[_quadrature]	✓
14085	$y' = 1 - y$ i.c.	[_quadrature]	✓
14086	$y' = x e^{y-x^2}$ i.c.	[_separable]	✓
14087	$y' = \frac{y}{x}$ i.c.	[_separable]	✓
14088	$y' = \frac{2x}{y}$ i.c.	[_separable]	✓
14089	$y' = -2y + y^2$ i.c.	[_quadrature]	✓
14090	$y' = x + xy$ i.c.	[_separable]	✓
14091	$x e^y + y' = 0$ i.c.	[_separable]	✓
14092	$y - x^2 y' = 0$ i.c.	[_separable]	✓

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#	ODE	CAS classification	Solved?
14093	$2yy' = 1$	[_quadrature]	✓
14094	$2xyy' + y^2 = -1$	[_separable]	✓
14095	$y' = \frac{1 - xy}{x^2}$	[_linear]	✓
14096	$y' = -\frac{y(2x + y)}{x(x + 2y)}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
14097	$y' = \frac{y^2}{1 - xy}$	[[_homogeneous, 'class G'], _rational, [_Abel, '2nd type', 'class B']]	✓
14098 i.c.	$y' = 4y + 1$	[_quadrature]	✓
14099 i.c.	$y' = xy + 2$	[_linear]	✓
14100 i.c.	$y' = \frac{y}{x}$	[_separable]	✓
14101 i.c.	$y' = \frac{y}{x - 1} + x^2$	[_linear]	✓
14102 i.c.	$y' = \frac{y}{x} + \sin(x^2)$	[_linear]	✓
14103 i.c.	$y' = \frac{2y}{x} + e^x$	[_linear]	✓
14104 i.c.	$y' = y \cot(x) + \sin(x)$	[_linear]	✓
14105	$x - yy' = 0$	[_separable]	✓
14106	$y - xy' = 0$	[_separable]	✓
14107	$x^2 - y + xy' = 0$	[_linear]	✓
14108	$xy(1 - y) - 2y' = 0$	[_separable]	✓
14109	$x(1 - y^3) - 3y^2y' = 0$	[_separable]	✓
14110	$y(2x - 1) + x(x + 1)y' = 0$	[_separable]	✓
14111 i.c.	$y' = \frac{1}{x - 1}$	[_quadrature]	✓
14112 i.c.	$y' = x + y$	[[_linear, 'class A']]	✓

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#	ODE	CAS classification	Solved?
14113	$y' = \frac{y}{x}$ i.c.	[_separable]	✓
14114	$y' = \frac{y}{x}$ i.c.	[_separable]	✓
14115	$y' = \frac{y}{-x^2 + 1} + \sqrt{x}$ i.c.	[_linear]	✓
14116	$y' = \frac{y}{-x^2 + 1} + \sqrt{x}$	[_linear]	✓
14117	$y' = \frac{y}{-x^2 + 1} + \sqrt{x}$ i.c.	[_linear]	✓
14118	$y' = y^2$ i.c.	[_quadrature]	✓
14119	$y' = y^2$ i.c.	[_quadrature]	✓
14120	$y' = y^2$ i.c.	[_quadrature]	✓
14121	$y' = y^3$ i.c.	[_quadrature]	✓
14122	$y' = y^3$ i.c.	[_quadrature]	✓
14123	$y' = y^3$ i.c.	[_quadrature]	✓
14124	$y' = -\frac{3x^2}{2y}$ i.c.	[_separable]	✓
14125	$y' = -\frac{3x^2}{2y}$ i.c.	[_separable]	✓
14126	$y' = -\frac{3x^2}{2y}$ i.c.	[_separable]	✓
14127	$y' = -\frac{3x^2}{2y}$ i.c.	[_separable]	✓
14128	$y' = \frac{\sqrt{y}}{x}$ i.c.	[_separable]	✓
14129	$y' = \frac{\sqrt{y}}{x}$ i.c.	[_separable]	✓

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#	ODE	CAS classification	Solved?
14130	$y' = \frac{\sqrt{y}}{x}$ i.c.	[_separable]	✓
14131	$y' = \frac{\sqrt{y}}{x}$ i.c.	[_separable]	✓
14132	$y' = 3xy^{1/3}$ i.c.	[_separable]	✓
14133	$y' = 3xy^{1/3}$ i.c.	[_separable]	✓
14134	$y' = 3xy^{1/3}$ i.c.	[_separable]	✓
14135	$y' = 3xy^{1/3}$ i.c.	[_separable]	✓
14136	$y' = 3xy^{1/3}$ i.c.	[_separable]	✓
14137	$y' = \sqrt{(y+2)(y-1)}$ i.c.	[_quadrature]	✓
14138	$y' = \sqrt{(y+2)(y-1)}$ i.c.	[_quadrature]	✓
14139	$y' = \sqrt{(y+2)(y-1)}$ i.c.	[_quadrature]	✓
14140	$y' = \frac{y}{y-x}$ i.c.	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
14141	$y' = \frac{y}{y-x}$ i.c.	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
14142	$y' = \frac{y}{y-x}$ i.c.	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
14143	$y' = \frac{y}{y-x}$ i.c.	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
14144	$y' = \frac{xy}{y^2+x^2}$ i.c.	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
14146	$y' = \frac{xy}{y^2+x^2}$ i.c.	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓

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#	ODE	CAS classification	Solved?
14147	$y' = x\sqrt{1-y^2}$ i.c.	[_separable]	✓
14148	$y' = x\sqrt{1-y^2}$ i.c.	[_separable]	✓
14149	$y' = x\sqrt{1-y^2}$ i.c.	[_separable]	✓
14150	$y' = x\sqrt{1-y^2}$ i.c.	[_separable]	✓
14277	$y' = \frac{y+1}{t+1}$	[_separable]	✓
14278	$y' = t^2y^2$	[_separable]	✓
14279	$y' = t^4y$	[_separable]	✓
14280	$y' = 2y + 1$	[_quadrature]	✓
14281	$y' = 2 - y$	[_quadrature]	✓
14282	$y' = e^{-y}$	[_quadrature]	✓
14283	$x' = 1 + x^2$	[_quadrature]	✓
14284	$y' = 2ty^2 + 3y^2$	[_separable]	✓
14285	$y' = \frac{t}{y}$	[_separable]	✓
14286	$y' = \frac{t}{t^2y + y}$	[_separable]	✓
14287	$y' = ty^{1/3}$	[_separable]	✓
14288	$y' = \frac{1}{2y+1}$	[_quadrature]	✓
14289	$y' = \frac{2y+1}{t}$	[_separable]	✓
14290	$y' = y(1-y)$	[_quadrature]	✓
14291	$y' = \frac{4t}{1+3y^2}$	[_separable]	✓
14292	$v' = t^2v - 2 - 2v + t^2$	[_separable]	✓
14293	$y' = \frac{1}{ty + t + y + 1}$	[_separable]	✓
14294	$y' = \frac{e^ty}{1+y^2}$	[_separable]	✓
14295	$y' = y^2 - 4$	[_quadrature]	✓

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#	ODE	CAS classification	Solved?
14296	$w' = \frac{w}{t}$	[_separable]	✓
14297	$y' = \sec(y)$	[_quadrature]	✓
14298	$x' = -xt$	[_separable]	✓
14299	$y' = ty$	[_separable]	✓
14300	$y' = -y^2$	[_quadrature]	✓
14301	$y' = t^2y^3$	[_separable]	✓
14302	$y' = -y^2$	[_quadrature]	✓
14303	$y' = \frac{t}{y - t^2y}$	[_separable]	✓
14304	$y' = 2y + 1$	[_quadrature]	✓
14305	$y' = ty^2 + 2y^2$	[_separable]	✓
14306	$x' = \frac{t^2}{x + t^3x}$	[_separable]	✓
14307	$y' = \frac{1 - y^2}{y}$	[_quadrature]	✓
14308	$y' = (1 + y^2)t$	[_separable]	✓
14309	$y' = \frac{1}{2y + 3}$	[_quadrature]	✓
14310	$y' = 2ty^2 + 3t^2y^2$	[_separable]	✓
14311	$y' = \frac{y^2 + 5}{y}$	[_quadrature]	✓
14312	$y' = t^2 + t$	[_quadrature]	✓
14313	$y' = t^2 + 1$	[_quadrature]	✓
14314	$y' = 1 - 2y$	[_quadrature]	✓
14315	$y' = 4y^2$	[_quadrature]	✓

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Table 2.12 first order ode exact  
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#	ODE	CAS classification	Solved?
14316	$y' = 2y(1 - y)$	[_quadrature]	✓
14317	$y' = y + t + 1$	[[_linear, 'class A']]	✓
14318	$y' = 3y(1 - y)$	[_quadrature]	✓
14319	$y' = 2y - t$	[[_linear, 'class A']]	✓
14321	$y' = (t + 1)y$	[_separable]	✓
14322	$S' = S^3 - 2S^2 + S$	[_quadrature]	✓
14323	$S' = S^3 - 2S^2 + S$	[_quadrature]	✓
14325	$S' = S^3 - 2S^2 + S$	[_quadrature]	✓
14326	$S' = S^3 - 2S^2 + S$	[_quadrature]	✓
14327	$y' = y^2 + y$	[_quadrature]	✓
14328	$y' = y^2 - y$	[_quadrature]	✓
14329	$y' = y^3 + y^2$	[_quadrature]	✓
14330	$y' = -t^2 + 2$	[_quadrature]	✓
14331	$y' = ty + ty^2$	[_separable]	✓
14332	$y' = t^2 + t^2y$	[_separable]	✓
14333	$y' = t + ty$	[_separable]	✓
14334	$y' = t^2 - 2$	[_quadrature]	✓
14335	$\theta' = \frac{9}{10} - \frac{11 \cos(\theta)}{10}$	[_quadrature]	✓
14336	$\theta' = 2$	[_quadrature]	✓
14337	$\theta' = \frac{11}{10} - \frac{9 \cos(\theta)}{10}$	[_quadrature]	✓
14338	$v' = -\frac{v}{RC}$	[_quadrature]	✓
14339	$v' = \frac{K - v}{RC}$	[_quadrature]	✓
14340	$v' = 2V(t) - 2v$	[[_linear, 'class A']]	✓
14341	$y' = 2y + 1$	[_quadrature]	✓

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Table 2.12 first order ode exact  
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#	ODE	CAS classification	Solved?
14344	$y' = \sin(y)$ i.c.	[_quadrature]	✓
14345	$w' = (3 - w)(w + 1)$ i.c.	[_quadrature]	✓
14346	$w' = (3 - w)(w + 1)$ i.c.	[_quadrature]	✓
14347	$y' = e^{\frac{2}{y}}$ i.c.	[_quadrature]	✓
14348	$y' = e^{\frac{2}{y}}$ i.c.	[_quadrature]	✓
14349	$y' = y^2 - y^3$ i.c.	[_quadrature]	✓
14351	$y' = \sqrt{y}$ i.c.	[_quadrature]	✓
14352	$y' = 2 - y$ i.c.	[_quadrature]	✓
14353	$\theta' = \frac{9}{10} - \frac{11 \cos(\theta)}{10}$ i.c.	[_quadrature]	✓
14354	$y' = y(-1 + y)(y - 3)$ i.c.	[_quadrature]	✓
14356	$y' = y(-1 + y)(y - 3)$ i.c.	[_quadrature]	✓
14357	$y' = y(-1 + y)(y - 3)$ i.c.	[_quadrature]	✓
14358	$y' = -y^2$	[_quadrature]	✓
14359	$y' = y^3$ i.c.	[_quadrature]	✓
14360	$y' = \frac{1}{(y + 1)(t - 2)}$ i.c.	[_separable]	✓
14361	$y' = \frac{1}{(2 + y)^2}$ i.c.	[_quadrature]	✓
14362	$y' = \frac{t}{y - 2}$ i.c.	[_separable]	✓
14363	$y' = 3y(y - 2)$ i.c.	[_quadrature]	✓
14364	$y' = 3y(y - 2)$ i.c.	[_quadrature]	✓

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#	ODE	CAS classification	Solved?
14365	$y' = 3y(y - 2)$ i.c.	[_quadrature]	✓
14367	$y' = y^2 - 4y - 12$ i.c.	[_quadrature]	✓
14368	$y' = y^2 - 4y - 12$ i.c.	[_quadrature]	✓
14370	$y' = y^2 - 4y - 12$ i.c.	[_quadrature]	✓
14371	$y' = \cos(y)$ i.c.	[_quadrature]	✓
14372	$y' = \cos(y)$ i.c.	[_quadrature]	✓
14374	$y' = \cos(y)$ i.c.	[_quadrature]	✓
14375	$w' = w \cos(w)$	[_quadrature]	✓
14376	$w' = w \cos(w)$ i.c.	[_quadrature]	✓
14377	$w' = w \cos(w)$ i.c.	[_quadrature]	✓
14378	$w' = w \cos(w)$ i.c.	[_quadrature]	✓
14379	$w' = w \cos(w)$ i.c.	[_quadrature]	✓
14381	$y' = \frac{1}{y - 2}$	[_quadrature]	✓
14382	$v' = -v^2 - 2v - 2$	[_quadrature]	✓
14383	$w' = 3w^3 - 12w^2$	[_quadrature]	✓
14384	$y' = 1 + \cos(y)$	[_quadrature]	✓
14385	$y' = \tan(y)$	[_quadrature]	✓
14386	$y' = y \ln( y )$	[_quadrature]	✓
14387	$w' = (w^2 - 2) \arctan(w)$	[_quadrature]	✓
14388	$y' = y^2 - 4y + 2$ i.c.	[_quadrature]	✓
14389	$y' = y^2 - 4y + 2$ i.c.	[_quadrature]	✓
14390	$y' = y^2 - 4y + 2$ i.c.	[_quadrature]	✓

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#	ODE	CAS classification	Solved?
14391	$y' = y^2 - 4y + 2$ i.c.	[_quadrature]	✓
14392	$y' = y^2 - 4y + 2$ i.c.	[_quadrature]	✓
14393	$y' = y^2 - 4y + 2$ i.c.	[_quadrature]	✓
14394	$y' = y \cos\left(\frac{\pi y}{2}\right)$	[_quadrature]	✓
14395	$y' = y - y^2$	[_quadrature]	✓
14396	$y' = y \sin\left(\frac{\pi y}{2}\right)$	[_quadrature]	✓
14397	$y' = y^3 - y^2$	[_quadrature]	✓
14399	$y' = y^2 - y$	[_quadrature]	✓
14400	$y' = y \sin\left(\frac{\pi y}{2}\right)$	[_quadrature]	✓
14401	$y' = y^2 - y^3$	[_quadrature]	✓
14402	$y' = -4y + 9e^{-t}$	[[_linear, 'class A']]	✓
14403	$y' = -4y + 3e^{-t}$	[[_linear, 'class A']]	✓
14404	$y' = -3y + 4 \cos(2t)$	[[_linear, 'class A']]	✓
14405	$y' = 2y + \sin(2t)$	[[_linear, 'class A']]	✓
14406	$y' = 3y - 4e^{3t}$	[[_linear, 'class A']]	✓
14407	$y' = \frac{y}{2} + 4e^{\frac{t}{2}}$	[[_linear, 'class A']]	✓
14408	$y' + 2y = e^{\frac{t}{3}}$ i.c.	[[_linear, 'class A']]	✓
14409	$y' - 2y = 3e^{-2t}$ i.c.	[[_linear, 'class A']]	✓
14410	$y' + y = \cos(2t)$ i.c.	[[_linear, 'class A']]	✓
14411	$y' + 3y = \cos(2t)$ i.c.	[[_linear, 'class A']]	✓
14412	$y' - 2y = 7e^{2t}$ i.c.	[[_linear, 'class A']]	✓
14413	$y' + 2y = 3t^2 + 2t - 1$	[[_linear, 'class A']]	✓
14414	$y' + 2y = t^2 + 2t + 1 + e^{4t}$	[[_linear, 'class A']]	✓
14415	$y' + y = t^3 + \sin(3t)$	[[_linear, 'class A']]	✓

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#	ODE	CAS classification	Solved?
14416	$y' - 3y = 2t - e^{4t}$	[[_linear, 'class A']]	✓
14417	$y' + y = \cos(2t) + 3 \sin(2t) + e^{-t}$	[[_linear, 'class A']]	✓
14418	$y' = -\frac{y}{t} + 2$	[_linear]	✓
14419	$y' = \frac{3y}{t} + t^5$	[_linear]	✓
14420	$y' = -\frac{y}{t+1} + t^2$	[_linear]	✓
14421	$y' = -2ty + 4e^{-t^2}$	[_linear]	✓
14422	$y' - \frac{2ty}{t^2+1} = 3$	[_linear]	✓
14423	$y' - \frac{2y}{t} = t^3 e^t$	[_linear]	✓
14424	$y' = -\frac{y}{t+1} + 2$	[_linear]	✓
	i.c.		
14425	$y' = \frac{y}{t+1} + 4t^2 + 4t$	[_linear]	✓
	i.c.		
14426	$y' = -\frac{y}{t} + 2$	[_linear]	✓
	i.c.		
14427	$y' = -2ty + 4e^{-t^2}$	[_linear]	✓
	i.c.		
14428	$y' - \frac{2y}{t} = 2t^2$	[_linear]	✓
	i.c.		
14429	$y' - \frac{3y}{t} = 2t^3 e^{2t}$	[_linear]	✓
	i.c.		
14430	$y' = \sin(t)y + 4$	[_linear]	✓
14431	$y' = t^2 y + 4$	[_linear]	✓
14432	$y' = \frac{y}{t^2} + 4 \cos(t)$	[_linear]	✓
14433	$y' = y + 4 \cos(t^2)$	[[_linear, 'class A']]	✓
14434	$y' = -y e^{-t^2} + \cos(t)$	[_linear]	✓
14436	$y' = aty + 4e^{-t^2}$	[_linear]	✓
14437	$y' = t^r y + 4$	[_linear]	✓
14438	$v' + \frac{2v}{5} = 3 \cos(2t)$	[[_linear, 'class A']]	✓

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Table 2.12 first order ode exact  
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#	ODE	CAS classification	Solved?
14439	$y' = -2ty + 4e^{-t^2}$	[_linear]	✓
14440	$y' + 2y = 3e^{-2t}$	[[_linear, 'class A']]	✓
14441	$y' = 3y$	[_quadrature]	✓
14442	$y' = t^2(t^2 + 1)$	[_quadrature]	✓
14443	$y' = -\sin(y)^5$	[_quadrature]	✓
14444	$y' = \frac{(t^2 - 4)(y + 1)e^y}{(t - 1)(3 - y)}$	[_separable]	✓
14445	$y' = \sin(y)^2$	[_quadrature]	✓
14447	$y' = y + e^{-t}$	[[_linear, 'class A']]	✓
14448	$y' = 3 - 2y$	[_quadrature]	✓
14449	$y' = ty$	[_separable]	✓
14450	$y' = 3y + e^{7t}$	[[_linear, 'class A']]	✓
14451	$y' = \frac{ty}{t^2 + 1}$	[_separable]	✓
14452	$y' = -5y + \sin(3t)$	[[_linear, 'class A']]	✓
14453	$y' = t + \frac{2y}{t + 1}$	[_linear]	✓
14454	$y' = 3 + y^2$	[_quadrature]	✓
14455	$y' = 2y - y^2$	[_quadrature]	✓
14456	$y' = -3y + e^{-2t} + t^2$	[[_linear, 'class A']]	✓
14457	$x' = -xt$	[_separable]	✓
14458	$y' = 2y + \cos(4t)$	[[_linear, 'class A']]	✓
14459	$y' = 3y + 2e^{3t}$	[[_linear, 'class A']]	✓
14460	$y' = t^2y^3 + y^3$	[_separable]	✓
14461	$y' + 5y = 3e^{-5t}$	[[_linear, 'class A']]	✓
14462	$y' = 2ty + 3te^{t^2}$	[_linear]	✓

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#	ODE	CAS classification	Solved?
14463	$y' = \frac{(t+1)^2}{(y+1)^2}$ i.c.	[_separable]	✓
14464	$y' = 2ty^2 + 3t^2y^2$ i.c.	[_separable]	✓
14466	$y' = \frac{t^2}{y + t^3y}$ i.c.	[_separable]	✓
14467	$y' = y^2 - 2y + 1$ i.c.	[_quadrature]	✓
14470	$y' = t^2y + 1 + y + t^2$	[_separable]	✓
14471	$y' = \frac{2y+1}{t}$	[_separable]	✓
14472	$y' = 3 - y^2$ i.c.	[_quadrature]	✓
14655	$y' = 3 - \sin(x)$	[_quadrature]	✓
14656	$y' = 3 - \sin(y)$	[_quadrature]	✓
14657	$y' + 4y = e^{2x}$	[[_linear, 'class A']]	✓
14659	$yy' = 2x$	[_separable]	✓
14665	$y' = 4x^3$	[_quadrature]	✓
14666	$y' = 20e^{-4x}$	[_quadrature]	✓
14667	$xy' + \sqrt{x} = 2$	[_quadrature]	✓
14668	$\sqrt{4+x}y' = 1$	[_quadrature]	✓
14669	$y' = x \cos(x^2)$	[_quadrature]	✓
14670	$y' = x \cos(x)$	[_quadrature]	✓
14671	$x = (x^2 - 9)y'$	[_quadrature]	✓
14672	$1 = (x^2 - 9)y'$	[_quadrature]	✓
14673	$1 = x^2 - 9y'$	[_quadrature]	✓
14677	$y' = 40xe^{2x}$ i.c.	[_quadrature]	✓
14678	$(x+6)^{1/3}y' = 1$ i.c.	[_quadrature]	✓
14679	$y' = \frac{x-1}{x+1}$ i.c.	[_quadrature]	✓

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#	ODE	CAS classification	Solved?
14680	$xy' + 2 = \sqrt{x}$ i.c.	[_quadrature]	✓
14681	$y' \cos(x) - \sin(x) = 0$ i.c.	[_quadrature]	✓
14682	$y'(x^2 + 1) = 1$ i.c.	[_quadrature]	✓
14684	$y' = \sin\left(\frac{x}{2}\right)$	[_quadrature]	✓
14685	$y' = \sin\left(\frac{x}{2}\right)$ i.c.	[_quadrature]	✓
14686	$y' = \sin\left(\frac{x}{2}\right)$ i.c.	[_quadrature]	✓
14687	$y' = 3\sqrt{x+3}$	[_quadrature]	✓
14688	$y' = 3\sqrt{x+3}$ i.c.	[_quadrature]	✓
14689	$y' = 3\sqrt{x+3}$ i.c.	[_quadrature]	✓
14690	$y' = 3\sqrt{x+3}$ i.c.	[_quadrature]	✓
14691	$y' = xe^{-x^2}$ i.c.	[_quadrature]	✓
14692	$y' = \frac{x}{\sqrt{x^2+5}}$ i.c.	[_quadrature]	✓
14693	$y' = \frac{1}{x^2+1}$ i.c.	[_quadrature]	✓
14694	$y' = e^{-9x^2}$ i.c.	[_quadrature]	✓
14695	$xy' = \sin(x)$ i.c.	[_quadrature]	✓
14696	$xy' = \sin(x^2)$ i.c.	[_quadrature]	✓
14700	$y' + 3xy = 6x$	[_separable]	✓
14702	$y' - y^3 = 8$	[_quadrature]	✓
14703	$x^2y' + xy^2 = x$	[_separable]	✓
14705	$y^3 - 25y + y' = 0$	[_quadrature]	✓
14706	$(-2+x)y' = y+3$	[_separable]	✓

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Table 2.12 first order ode exact  
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#	ODE	CAS classification	Solved?
14707	$(y - 2)y' = x - 3$	[_separable]	✓
14708	$y' + 2y - y^2 = -2$	[_quadrature]	✓
14710	$y' = 2\sqrt{y}$ i.c.	[_quadrature]	✓
14711	$y' = 3y^2 - y^2 \sin(x)$	[_separable]	✓
14712	$y' = 3x - y \sin(x)$	[_linear]	✓
14714	$y' = \sqrt{x^2 + 1}$	[_quadrature]	✓
14715	$y' + 4y = 8$	[_quadrature]	✓
14716	$y' + xy = 4x$	[_separable]	✓
14717	$y' + 4y = x^2$	[[_linear, 'class A']]	✓
14718	$y' = xy - 3x - 2y + 6$	[_separable]	✓
14720	$yy' = e^{x-3y^2}$	[_separable]	✓
14721	$y' = \frac{x}{y}$	[_separable]	✓
14722	$y' = y^2 + 9$	[_quadrature]	✓
14723	$xyy' = y^2 + 9$	[_separable]	✓
14724	$y' = \frac{1 + y^2}{x^2 + 1}$	[_separable]	✓
14725	$\cos(y)y' = \sin(x)$	[_separable]	✓
14726	$y' = e^{2x-3y}$	[_separable]	✓
14727	$y' = \frac{x}{y}$ i.c.	[_separable]	✓
14728	$y' = 2x - 1 + 2xy - y$ i.c.	[_separable]	✓
14729	$yy' = xy^2 + x$ i.c.	[_separable]	✓
14730	$yy' = 3\sqrt{xy^2 + 9x}$ i.c.	[[_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]]']]	✓
14731	$y' = xy - 4x$	[_separable]	✓
14732	$y' - 4y = 2$	[_quadrature]	✓
14733	$yy' = xy^2 - 9x$	[_separable]	✓
14734	$y' = \sin(y)$	[_quadrature]	✓

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#	ODE	CAS classification	Solved?
14735	$y' = e^{x+y^2}$	[_separable]	✓
14736	$y' = 200y - 2y^2$	[_quadrature]	✓
14737	$y' = xy - 4x$	[_separable]	✓
14738	$y' = xy - 3x - 2y + 6$	[_separable]	✓
14739	$y' = 3y^2 - y^2 \sin(x)$	[_separable]	✓
14740	$y' = \tan(y)$	[_quadrature]	✓
14741	$y' = \frac{y}{x}$	[_separable]	✓
14742	$y' = \frac{6x^2 + 4}{3y^2 - 4y}$	[_separable]	✓
14743	$y'(x^2 + 1) = 1 + y^2$	[_separable]	✓
14744	$(y^2 - 1)y' = 4xy^2$	[_separable]	✓
14745	$y' = e^{-y}$	[_quadrature]	✓
14746	$y' = e^{-y} + 1$	[_quadrature]	✓
14747	$y' = 3xy^3$	[_separable]	✓
14748	$y' = \frac{2 + \sqrt{x}}{2 + \sqrt{y}}$	[_separable]	✓
14749	$y' - 3y^2x^2 = -3x^2$	[_separable]	✓
14750	$y' - 3y^2x^2 = 3x^2$	[_separable]	✓
14751	$y' = 200y - 2y^2$	[_quadrature]	✓
14752	$y' - 2y = -10$	[_quadrature]	✓
14753	$yy' = \sin(x)$	[_separable]	✓
14754	$y' = 2x - 1 + 2xy - y$	[_separable]	✓
14755	$xy' = y^2 - y$	[_separable]	✓
14756	$xy' = y^2 - y$	[_separable]	✓
14757	$y' = \frac{y^2 - 1}{xy}$	[_separable]	✓
14758	$(y^2 - 1)y' = 4xy$	[_separable]	✓

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Table 2.12 first order ode exact  
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#	ODE	CAS classification	Solved?
14759	$x^2y' + 3x^2y = \sin(x)$	[[_linear, 'class A']]	✓
14763	$y' = 1 + xy + 3y$	[_linear]	✓
14764	$y' = 4y + 8$	[_quadrature]	✓
14765	$y' - e^{2x} = 0$	[_quadrature]	✓
14766	$y' = y \sin(x)$	[_separable]	✓
14767	$y' + 4y = y^3$	[_quadrature]	✓
14768	$xy' + \cos(x^2) = 827y$	[_linear]	✓
14769	$y' + 2y = 6$	[_quadrature]	✓
14770	$y' + 2y = 20e^{3x}$	[[_linear, 'class A']]	✓
14771	$y' = 4y + 16x$	[[_linear, 'class A']]	✓
14772	$y' - 2xy = x$	[_separable]	✓
14773	$xy' + 3y - 10x^2 = 0$	[_linear]	✓
14774	$x^2y' + 2xy = \sin(x)$	[_linear]	✓
14775	$xy' = \sqrt{x} + 3y$	[_linear]	✓
14776	$y' \cos(x) + y \sin(x) = \cos(x)^2$	[_linear]	✓
14777	$xy' + (5x + 2)y = \frac{20}{x}$	[_linear]	✓
14778	$2\sqrt{x}y' + y = 2xe^{-\sqrt{x}}$	[_linear]	✓
14779	$y' - 3y = 6$	[_quadrature]	✓
	i.c.		
14780	$y' - 3y = 6$	[_quadrature]	✓
	i.c.		
14781	$y' + 5y = e^{-3x}$	[[_linear, 'class A']]	✓
	i.c.		
14782	$3y + xy' = 20x^2$	[_linear]	✓
	i.c.		
14783	$xy' = y + x^2 \cos(x)$	[_linear]	✓
	i.c.		
14784	$y'(x^2 + 1) = x(3 + 3x^2 - y)$	[_linear]	✓
	i.c.		
14785	$y' + 6xy = \sin(x)$	[_linear]	✓
	i.c.		
14786	$x^2y' + xy = \sqrt{x} \sin(x)$	[_linear]	✓
	i.c.		

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#	ODE	CAS classification	Solved?
14787	$-y + xy' = x^2 e^{-x^2}$ i.c.	[_linear]	✓
14789	$y' = \frac{(-2y + 3x)^2 + 1}{-2y + 3x} + \frac{3}{2}$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
14790	$\cos(-4y + 8x - 3)y' = 2 + 2\cos(-4y + 8x - 3)$	[[_homogeneous, 'class C', _exact, _dAlembert]	✓
14792	$x^2 y' - xy = y^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
14793	$y' = \frac{y}{x} + \frac{x}{y}$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
14794	$\cos\left(\frac{y}{x}\right)\left(y' - \frac{y}{x}\right) = 1 + \sin\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A', _dAlembert]	✓
14795	$y' = \frac{x - y}{x + y}$ i.c.	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
14796	$y' + 3y = 3y^3$	[_quadrature]	✓
14797	$y' - \frac{3y}{x} = \frac{y^2}{x^2}$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
14799	$y' - \frac{y}{x} = \frac{1}{y}$ i.c.	[[_homogeneous, 'class D', _rational, _Bernoulli]	✓
14800	$y' = \frac{y}{x} + \frac{x^2}{y^2}$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
14803	$y' = 4 + \frac{1}{\sin(4x - y)}$	[[_homogeneous, 'class C', _dAlembert]	✓
14804	$(y - x)y' = 1$	[[_homogeneous, 'class C', _Abel, '2nd type', 'class C', _dAlembert]	✓
14805	$(x + y)y' = y$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
14806	$(2xy + 2x^2)y' = x^2 + 2xy + 2y^2$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
14807	$y' + \frac{y}{x} = x^2 y^3$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓

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#	ODE	CAS classification	Solved?
14811	$y' + 3y = \frac{28e^{2x}}{y^3}$	[[_1st_order, __with_linear_symmetries], _Bernoulli]	✓
14814	$\cos(y)y' = e^{-x} - \sin(y)$	['y=_G(x,y)']	✓
14816	$y' = \frac{1}{y} - \frac{y}{2x}$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
14817	$e^{xy^2-x^2}(y^2 - 2x) + 2e^{xy^2-x^2}xyy' = 0$	[[_homogeneous, 'class G'], _exact, _rational, _Bernoulli]	✓
14818	$2xy + y^2 + (2xy + x^2)y' = 0$	[[_homogeneous, 'class A'], _exact, _rational, [_Abel, '2nd type', 'class B']]	✓
14819	$2xy^3 + 4x^3 + 3x^2y^2y' = 0$	[[_homogeneous, 'class G'], _exact, _rational, _Bernoulli]	✓
14820	$2 - 2x + 3y^2y' = 0$	[_separable]	✓
14821	$1 + 3y^2x^2 + (2x^3y + 6y)y' = 0$	[_exact, _rational, _Bernoulli]	✓
14822	$4x^3y + (x^4 - y^4)y' = 0$	[[_homogeneous, 'class A'], _exact, _rational, _dAlembert]	✓
14823	$1 + \ln(xy) + \frac{xy'}{y} = 0$	[[_homogeneous, 'class G'], _exact]	✓
14824	$1 + e^y + xe^yy' = 0$	[_separable]	✓
14825	$e^y + (xe^y + 1)y' = 0$	[[_1st_order, __with_exponential_symmetries], _exact]	✓
14826	$1 + y^4 + xy^3y' = 0$	[_separable]	✓
14827	$y + (y^4 - 3x)y' = 0$	[[_homogeneous, 'class G'], _rational]	✓
14829	$1 + (1 - x \tan(y))y' = 0$	[[_1st_order, '.__with_symmetry_[F(x)*G(y),0]']]	✓
14830	$3y + 3y^2 + (2x + 4xy)y' = 0$	[_separable]	✓
14831	$2x(1 + y) - y' = 0$	[_separable]	✓
14833	$4xy + (3x^2 + 5y)y' = 0$	[[_homogeneous, 'class G'], _rational, [_Abel, '2nd type', 'class A']]	✓

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#	ODE	CAS classification	Solved?
14834	$6 + 12y^2x^2 + \left(7x^3y + \frac{x}{y}\right)y' = 0$	[[_homogeneous, 'class G', _rational]	✓
14835	$xy' = 2y - 6x^3$	[_linear]	✓
14836	$xy' = 2y^2 - 6y$	[_separable]	✓
14837	$4y^2 - y^2x^2 + y' = 0$	[_separable]	✓
14839	$x^2y' - \sqrt{x} = 3$	[_quadrature]	✓
14842	$4xy - 6 + x^2y' = 0$	[_linear]	✓
14843	$xy^2 - 6 + x^2yy' = 0$	[[_homogeneous, 'class G', _exact, _rational, _Bernoulli]	✓
14844	$x^3 + y^3 + xy^2y' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
14845	$3y - x^3 + xy' = 0$	[_linear]	✓
14846	$1 + 2xy^2 + (2x^2y + 2y)y' = 0$	[_exact, _rational, _Bernoulli]	✓
14848	$2 + 2x^2 - 2xy + y'(x^2 + 1) = 0$	[_linear]	✓
14849	$(y^2 - 4)y' = y$	[_quadrature]	✓
14850	$(x^2 - 4)y' = x$	[_quadrature]	✓
14851	$y' = \frac{1}{xy - 3x}$	[_separable]	✓
14853	$\sin(y) + (x + y)\cos(y)y' = 0$	[_exact, [_1st_or- der, 'with_symme- try_[F(x)*G(y),0]']]	✓
14854	$\sin(y) + (x + 1)\cos(y)y' = 0$	[_separable]	✓
14855	$\sin(x) + 2y'\cos(x) = 0$	[_quadrature]	✓
14856	$xyy' = 2y^2 + 2x^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
14858	$y' = \frac{x + 2y}{2x - y}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
14860	$y' = xy^2 + 3y^2 + x + 3$	[_separable]	✓
14861	$1 - (x + 2y)y' = 0$	[[_homogeneous, 'class C', [_Abel, '2nd type', 'class C', _dAlembert]	✓

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#	ODE	CAS classification	Solved?
14862	$\ln(y) + \left(\frac{x}{y} + 3\right) y' = 0$	[_exact, [_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓
14863	$y^2 + 1 - y' = 0$	[_quadrature]	✓
14864	$y' - 3y = 12e^{2x}$	[[_linear, 'class A']]	✓
14866	$(x + 2)y' - x^3 = 0$	[_quadrature]	✓
14867	$xy^3y' = y^4 - x^2$	[[_homogeneous, 'class D'], _rational, _Bernoulli]	✓
14868	$y' = 4y - \frac{16e^{4x}}{y^2}$	[[_1st_order, _with_linear_symmetries], _Bernoulli]	✓
14869	$2y - 6x + (x + 1)y' = 0$	[_linear]	✓
14870	$xy^2 + (x^2y + 10y^4)y' = 0$	[[_homogeneous, 'class G'], _exact, _rational]	✓
14871	$yy' - xy^2 = 6xe^{4x^2}$	[_Bernoulli]	✓
14872	$(y - x + 3)^2 (y' - 1) = 1$	[[_homogeneous, 'class C'], _exact, _rational, _dAlembert]	✓
14873	$x + ye^{xy} + xe^{xy}y' = 0$	[_exact, [_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]']]	✓
14874	$y^2 - y^2 \cos(x) + y' = 0$	[_separable]	✓
14875	$y' + 2y = \sin(x)$	[[_linear, 'class A']]	✓
14876	$y' + 2x = \sin(x)$	[_quadrature]	✓
14877	$y' = y^3 - y^3 \cos(x)$	[_separable]	✓
14878	$y^2e^{xy^2} - 2x + 2xye^{xy^2}y' = 0$	[_exact, [_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]']]	✓
14879	$y' = e^{4x+3y}$	[_separable]	✓
14881	$y' = e^{4x+3y}$	[_separable]	✓
14882	$y' = x(6y + e^{x^2})$	[_linear]	✓

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#	ODE	CAS classification	Solved?
14883	$x(1 - 2y) + (y - x^2)y' = 0$	[_exact, _rational, [_1st_order, ‘_with_symmetry_[F(x)*G(y),0]’], [_Abel, ‘2nd type’, ‘class A’]]	✓
14884	$x^2y' + 3xy = 6e^{-x^2}$	[_linear]	✓
14942	$3y + xy' = e^{2x}$	[_linear]	✓
15464	$2x - 1 - y' = 0$	[_quadrature]	✓
15466	$y' + 2y = 0$	[_quadrature]	✓
15467	$y' + xy = 0$	[_separable]	✓
15468	$y' + y = \sin(x)$	[[_linear, ‘class A’]]	✓
15478	$y' = -\frac{x}{y}$	[_separable]	✓
15479	$3y(t^2 + y) + t(t^2 + 6y)y' = 0$	[[_homogeneous, ‘class G’], _exact, _rational, [_Abel, ‘2nd type’, ‘class B’]]	✓
15480	$y' = -\frac{2y}{x} - 3$	[_linear]	✓
15481	$y \cos(t) + (2y + \sin(t))y' = 0$	[_exact, [_1st_order, ‘_with_symmetry_[F(x),G(y)]’], [_Abel, ‘2nd type’, ‘class A’]]	✓
15482	$\frac{y}{x} + \cos(y) + (\ln(x) - x \sin(y))y' = 0$	[_exact]	✓
15483	$y' = (x^2 - 1)(x^3 - 3x)^3$	[_quadrature]	✓
15484	$y' = x \sin(x^2)$	[_quadrature]	✓
15485	$y' = \frac{x}{\sqrt{x^2 - 16}}$	[_quadrature]	✓
15486	$y' = \frac{1}{x \ln(x)}$	[_quadrature]	✓
15487	$y' = x \ln(x)$	[_quadrature]	✓
15488	$y' = x e^{-x}$	[_quadrature]	✓
15489	$y' = \frac{-2x - 10}{(x + 2)(x - 4)}$	[_quadrature]	✓
15490	$y' = \frac{-x^2 + x}{(x + 1)(x^2 + 1)}$	[_quadrature]	✓

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#	ODE	CAS classification	Solved?
15491	$y' = \frac{\sqrt{x^2 - 16}}{x}$	[_quadrature]	✓
15492	$y' = (-x^2 + 4)^{3/2}$	[_quadrature]	✓
15493	$y' = \frac{1}{x^2 - 16}$	[_quadrature]	✓
15494	$y' = \cos(x) \cot(x)$	[_quadrature]	✓
15495	$y' = \sin(x)^3 \tan(x)$	[_quadrature]	✓
15496	$y' + 2y = 0$	[_quadrature]	✓
15497	$y' + y = \sin(t)$	[[_linear, 'class A']]	✓
15504	$y' = 4x^3 - x + 2$	[_quadrature]	✓
15505	$y' = \sin(2t) - \cos(2t)$	[_quadrature]	✓
15506	$y' = \frac{\cos(\frac{1}{x})}{x^2}$	[_quadrature]	✓
15507	$y' = \frac{\ln(x)}{x}$	[_quadrature]	✓
15508	$y' = \frac{(x-4)y^3}{x^3(y-2)}$	[_separable]	✓
15509	$y' = \frac{y^2 + 2xy}{x^2}$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
15510	$xy' + y = \cos(x)$	[_linear]	✓
15514	$y' = \sin(x)^4$	[_quadrature]	✓
15518	$y' + y \cos(x) = 0$	[_separable]	✓
15519	$y' - y = \sin(x)$	[[_linear, 'class A']]	✓
15526	$2x - 3y + (2y - 3x)y' = 0$	[[_homogeneous, 'class A'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
15527	$y \cos(xy) + \sin(x) + x \cos(xy) y' = 0$	[_exact, [_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)']]]	✓
15528	$y' = x e^{-x^2}$	[_quadrature]	✓

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#	ODE	CAS classification	Solved?
15529	$y' = x^2 \sin(x)$	[_quadrature]	✓
15530	$y' = \frac{2x^2 - x + 1}{(x - 1)(x^2 + 1)}$	[_quadrature]	✓
15531	$y' = \frac{x^2}{\sqrt{x^2 - 1}}$	[_quadrature]	✓
15532	$y' + 2y = x^2$ i.c.	[[_linear, 'class A']]	✓
15535	$y' = \cos(x)^2 \sin(x)$ i.c.	[_quadrature]	✓
15536	$y' = \frac{4x - 9}{3(x - 3)^{2/3}}$ i.c.	[_quadrature]	✓
15539	$y' = y + \frac{1}{-t + 1}$	[_linear]	✓
15540	$y' = y^{1/5}$ i.c.	[_quadrature]	✓
15541	$\frac{y'}{t} = \sqrt{y}$ i.c.	[_separable]	✓
15543	$y' = y\sqrt{t}$ i.c.	[_separable]	✓
15544	$y' = 6y^{2/3}$ i.c.	[_quadrature]	✓
15545	$ty' = y$	[_separable]	✓
15546	$y' = y \tan(t)$ i.c.	[_separable]	✓
15547	$y' = \frac{1}{t^2 + 1}$ i.c.	[_quadrature]	✓
15548	$y' = \sqrt{y^2 - 1}$ i.c.	[_quadrature]	✓
15549	$y' = \sqrt{y^2 - 1}$ i.c.	[_quadrature]	✓
15550	$y' = \sqrt{y^2 - 1}$ i.c.	[_quadrature]	✓
15551	$y' = \sqrt{y^2 - 1}$ i.c.	[_quadrature]	✓
15552	$y' = \sqrt{25 - y^2}$ i.c.	[_quadrature]	✓

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#	ODE	CAS classification	Solved?
15553	$y' = \sqrt{25 - y^2}$ i.c.	[_quadrature]	✓
15554	$y' = \sqrt{25 - y^2}$ i.c.	[_quadrature]	✓
15555	$y' = \sqrt{25 - y^2}$ i.c.	[_quadrature]	✓
15556	$ty' + y = t^3$ i.c.	[_linear]	✓
15557	$t^3y' + t^4y = 2t^3$ i.c.	[_linear]	✓
15558	$2y' + ty = \ln(t)$ i.c.	[_linear]	✓
15559	$y' + y \sec(t) = t$ i.c.	[_linear]	✓
15560	$y' + \frac{y}{t-3} = \frac{1}{t-1}$ i.c.	[_linear]	✓
15561	$(t-2)y' + (t^2-4)y = \frac{1}{t+2}$ i.c.	[_linear]	✓
15562	$y' + \frac{y}{\sqrt{-t^2+4}} = t$ i.c.	[_linear]	✓
15563	$y' + \frac{y}{\sqrt{-t^2+4}} = t$ i.c.	[_linear]	✓
15564	$ty' + y = t \sin(t)$ i.c.	[_linear]	✓
15565	$y' + y \tan(t) = \sin(t)$ i.c.	[_linear]	✓
15566	$y' = y^2$ i.c.	[_quadrature]	✓
15567	$y' = ty^2$ i.c.	[_separable]	✓
15568	$y' = -\frac{t}{y}$ i.c.	[_separable]	✓
15569	$y' = -y^3$ i.c.	[_quadrature]	✓
15570	$y' = \frac{x}{y^2}$	[_separable]	✓

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#	ODE	CAS classification	Solved?
15571	$\frac{1}{2\sqrt{t}} + y^2 y' = 0$	[_separable]	✓
15572	$y' = \frac{\sqrt{y}}{x^2}$	[_separable]	✓
15573	$y' = \frac{1 + y^2}{y}$	[_quadrature]	✓
15574	$6 + 4t^3 + \left(5 + \frac{9}{y^8}\right) y' = 0$	[_separable]	✓
15575	$\frac{6}{t^9} - \frac{6}{t^3} + t^7 + \left(9 + \frac{1}{s^2} - 4s^8\right) s' = 0$	[_separable]	✓
15576	$4 \sinh(4y) y' = 6 \cosh(3x)$	[_separable]	✓
15577	$y' = \frac{y + 1}{t + 1}$	[_separable]	✓
15578	$y' = \frac{2 + y}{2t + 1}$	[_separable]	✓
15579	$\frac{3}{t^2} = \left(\frac{1}{\sqrt{y}} + \sqrt{y}\right) y'$	[_separable]	✓
15580	$3 \sin(x) - 4 \cos(y) y' = 0$	[_separable]	✓
15581	$\cos(y) y' = 8 \sin(8t)$	[_separable]	✓
15582	$y' + ky = 0$	[_quadrature]	✓
15583	$(5x^5 - 4 \cos(x)) x' + 2 \cos(9t) + 2 \sin(7t) = 0$	[_separable]	✓
15584	$\cosh(6t) + 5 \sinh(4t) + 20 \sinh(y) y' = 0$	[_separable]	✓
15585	$y' = e^{2y+10t}$	[_separable]	✓
15586	$y' = e^{3y+2t}$	[_separable]	✓
15587	$\sin(t)^2 = \cos(y)^2 y'$	[_separable]	✓
15588	$3 \sin(t) - \sin(3t) = (\cos(4y) - 4 \cos(y)) y'$	[_separable]	✓
15589	$x' = \frac{\sec(t)^2}{\sec(x) \tan(x)}$	[_separable]	✓
15590	$\left(2 - \frac{5}{y^2}\right) y' + 4 \cos(x)^2 = 0$	[_separable]	✓
15591	$y' = \frac{t^3}{y \sqrt{(1-y^2)(t^4+9)}}$	[[_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]']]	✓
15592	$\tan(y) \sec(y)^2 y' + \cos(2x)^3 \sin(2x) = 0$	[_separable]	✓

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#	ODE	CAS classification	Solved?
15593	$y' = \frac{(1 + 2e^y)e^{-y}}{t \ln(t)}$	[_separable]	✓
15594	$x \sin(x^2) = \frac{\cos(\sqrt{y})y'}{\sqrt{y}}$	[_separable]	✓
15595	$\frac{-2+x}{x^2-4x+3} = \frac{(1-\frac{1}{y})^2 y'}{y^2}$	[_separable]	✓
15596	$\frac{\cos(y)y'}{(1-\sin(y))^2} = \sin(x)^3 \cos(x)$	[_separable]	✓
15597	$y' = \frac{(5-2\cos(x))^3 \sin(x) \cos(y)^4}{\sin(y)}$	[_separable]	✓
15598	$\frac{\sqrt{\ln(x)}}{x} = \frac{e^{\frac{3}{y}} y'}{y}$	[_separable]	✓
15599	$y' = \frac{5^{-t}}{y^2}$	[_separable]	✓
15600	$y' = t^2 y^2 + y^2 - t^2 - 1$	[_separable]	✓
15601	$y' = y^2 - 3y + 2$	[_quadrature]	✓
15604	$y' = y^3 + 1$	[_quadrature]	✓
15605	$y' = y^3 - 1$	[_quadrature]	✓
15606	$y' = y^3 + y$	[_quadrature]	✓
15607	$y' = y^3 - y^2$	[_quadrature]	✓
15608	$y' = y^3 - y$	[_quadrature]	✓
15609	$y' = y^3 + y$	[_quadrature]	✓
15610	$y' = x^3$	[_quadrature]	✓
15611	$y' = \cos(t)$	[_quadrature]	✓
15612	$1 = \cos(y)y'$	[_quadrature]	✓
15613	$\sin(y)^2 = x'$	[_quadrature]	✓
15614	$y' = \frac{\sqrt{t}}{y}$	[_separable]	✓
15615	$y' = \sqrt{\frac{y}{t}}$	[[_homogeneous, 'class A'], _dAlembert]	✓

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#	ODE	CAS classification	Solved?
15616	$y' = \frac{e^t}{y+1}$ i.c.	[_separable]	✓
15617	$y' = e^{t-y}$ i.c.	[_separable]	✓
15618	$y' = \frac{y}{\ln(y)}$ i.c.	[_quadrature]	✓
15619	$y' = t \sin(t^2)$ i.c.	[_quadrature]	✓
15620	$y' = \frac{1}{x^2+1}$ i.c.	[_quadrature]	✓
15621	$y' = \frac{\sin(x)}{\cos(y)+1}$ i.c.	[_separable]	✓
15622	$y' = \frac{y+3}{3x+1}$ i.c.	[_separable]	✓
15623	$y' = e^{x-y}$ i.c.	[_separable]	✓
15624	$y' = e^{2x-y}$ i.c.	[_separable]	✓
15625	$y' = \frac{3y+1}{x+3}$ i.c.	[_separable]	✓
15626	$y' = y \cos(t)$ i.c.	[_separable]	✓
15627	$y' = y^2 \cos(t)$ i.c.	[_separable]	✓
15628	$y' = \sqrt{y} \cos(t)$ i.c.	[_separable]	✓
15629	$y' + yf(t) = 0$ i.c.	[_separable]	✓
15630	$y' = -\frac{y-2}{-2+x}$ i.c.	[_separable]	✓
15634	$y' = (3y+1)^4$	[_quadrature]	✓
15635	$y' = 3y$	[_quadrature]	✓
15636	$y' = -y$	[_quadrature]	✓
15637	$y' = y^2 - y$	[_quadrature]	✓

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#	ODE	CAS classification	Solved?
15638	$y' = 16y - 8y^2$	[_quadrature]	✓
15639	$y' = 12 + 4y - y^2$	[_quadrature]	✓
15640	$y' = yf(t)$ i.c.	[_separable]	✓
15641	$y' - y = 10$	[_quadrature]	✓
15642	$y' - y = 2e^{-t}$	[[_linear, 'class A']]	✓
15643	$y' - y = 2\cos(t)$	[[_linear, 'class A']]	✓
15644	$y' - y = t^2 - 2t$	[[_linear, 'class A']]	✓
15645	$y' - y = 4te^{-t}$	[[_linear, 'class A']]	✓
15646	$ty' + y = t^2$	[_linear]	✓
15647	$ty' + y = t$	[_linear]	✓
15648	$xy' + y = xe^x$	[_linear]	✓
15649	$xy' + y = e^{-x}$	[_linear]	✓
15650	$y' - \frac{2ty}{t^2 + 1} = 2$	[_linear]	✓
15651	$y' - \frac{4ty}{4t^2 + 1} = 4t$	[_linear]	✓
15652	$y' = 2x + \frac{xy}{x^2 - 1}$	[_linear]	✓
15653	$y' + y \cot(t) = \cos(t)$	[_linear]	✓
15654	$y' - \frac{3ty}{t^2 - 4} = t$	[_linear]	✓
15655	$y' - \frac{4ty}{4t^2 - 9} = t$	[_linear]	✓
15656	$y' - \frac{9xy}{9x^2 + 49} = x$	[_linear]	✓
15657	$y' + 2y \cot(x) = \cos(x)$	[_linear]	✓
15658	$y' + xy = x^3$	[_linear]	✓
15659	$y' - xy = x$	[_separable]	✓
15660	$y' = \frac{1}{x + y^2}$	[[_1st_order, _with_exponential_symmetries]]	✓
15661	$y' - x = y$	[[_linear, 'class A']]	✓
15662	$y - (x + 3y^2)y' = 0$	[[_homogeneous, 'class G'], _rational]	✓

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Table 2.12 first order ode exact  
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#	ODE	CAS classification	Solved?
15663	$x' = \frac{3xt^2}{-t^3 + 1}$	[_separable]	✓
15664	$p' = t^3 + \frac{p}{t}$	[_linear]	✓
15665	$v' + v = e^{-s}$	[[_linear, 'class A']]	✓
15666	$y' - y = 4e^t$	[[_linear, 'class A']]	✓
15667	$y' + y = e^{-t}$	[[_linear, 'class A']]	✓
15668	$y' + 3t^2y = e^{-t^3}$	[_linear]	✓
15669	$y' + 2ty = 2t$	[_separable]	✓
15670	$ty' + y = \cos(t)$	[_linear]	✓
15671	$ty' + y = 2te^t$	[_linear]	✓
15672	$(1 + e^t)y' + e^ty = t$	[_linear]	✓
15673	$(t^2 + 4)y' + 2ty = 2t$	[_separable]	✓
15674	$x' = x + t + 1$	[[_linear, 'class A']]	✓
15675	$y' = e^{2t} + 2y$	[[_linear, 'class A']]	✓
15676	$y' - \frac{y}{t} = \ln(t)$	[_linear]	✓
15680	$y' - y = \sin(2t)$	[[_linear, 'class A']]	✓
15681	$y' + y = 5e^{2t}$	[[_linear, 'class A']]	✓
15682	$y' + y = e^{-t}$	[[_linear, 'class A']]	✓
15683	$y' + y = 2 - e^{2t}$	[[_linear, 'class A']]	✓
15684	$y' - 5y = t$	[[_linear, 'class A']]	✓
15685	$y' + 3y = 27t^2 + 9$	[[_linear, 'class A']]	✓
15686	$y' - \frac{y}{2} = 5\cos(t) + 2e^t$	[[_linear, 'class A']]	✓
15687	$y' + 4y = 8\cos(4t)$	[[_linear, 'class A']]	✓
15688	$y' + 10y = 2e^t$	[[_linear, 'class A']]	✓

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#	ODE	CAS classification	Solved?
15689	$y' - 3y = 27t^2$	[[_linear, 'class A']]	✓
15690	$y' - y = 2e^t$	[[_linear, 'class A']]	✓
15691	$y' + y = 4 + 3e^t$	[[_linear, 'class A']]	✓
15692	$y' + y = 2 \cos(t) + t$	[[_linear, 'class A']]	✓
15693	$y' + \frac{y}{2} = \sin(t)$ i.c.	[[_linear, 'class A']]	✓
15694	$y' - \frac{y}{2} = \sin(t)$ i.c.	[[_linear, 'class A']]	✓
15695	$ty' + y = t \cos(t)$	[_linear]	✓
15696	$y' + y = t$ i.c.	[[_linear, 'class A']]	✓
15697	$y' + y = \sin(t)$ i.c.	[[_linear, 'class A']]	✓
15698	$y' + y = \cos(t)$ i.c.	[[_linear, 'class A']]	✓
15699	$y' + y = e^t$ i.c.	[[_linear, 'class A']]	✓
15700	$y^2 - \frac{y}{2\sqrt{t}} + (2ty - \sqrt{t} + 1)y' = 0$	[_exact, _rational, [_Abel, '2nd type', 'class B']]	✓
15701	$\frac{t}{\sqrt{t^2 + y^2}} + \frac{yy'}{\sqrt{t^2 + y^2}} = 0$	[_separable]	✓
15702	$y \cos(ty) + t \cos(ty)y' = 0$	[_separable]	✓
15703	$y \sec(t)^2 + 2t + \tan(t)y' = 0$	[_linear]	✓
15704	$3ty^2 + y^3y' = 0$	[_separable]	✓
15705	$t - \sin(t)y + (y^6 + \cos(t))y' = 0$	[_exact]	✓
15706	$y \sin(2t) + (\sqrt{y} + \cos(2t))y' = 0$	[[_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓
15707	$\ln(ty) + \frac{ty'}{y} = 0$	[[_homogeneous, 'class G'], _exact]	✓
15708	$e^{ty} + \frac{te^{ty}y'}{y} = 0$	[_separable]	✓
15709	$3t^2 - y' = 0$	[_quadrature]	✓
15710	$-1 + 3y^2y' = 0$	[_quadrature]	✓
15711	$y^2 + 2tyy' = 0$	[_separable]	✓

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Table 2.12 first order ode exact  
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#	ODE	CAS classification	Solved?
15712	$\frac{3t^2}{y} - \frac{t^3 y'}{y^2} = 0$	[_separable]	✓
15713	$2t + y^3 + (3ty^2 + 4)y' = 0$	[_exact, _rational]	✓
15714	$-\frac{1}{y} + \left(\frac{t}{y^2} + 3y^2\right)y' = 0$	[[_homogeneous, 'class G', _exact, _rational]	✓
15715	$2ty + (t^2 + y^2)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]	✓
15716	$2ty^3 + (1 + 3t^2 y^2)y' = 0$	[[_homogeneous, 'class G', _exact, _rational]	✓
15717	$\sin(y)^2 + t \sin(2y)y' = 0$	[_separable]	✓
15718	$3t^2 + 3y^2 + 6tyy' = 0$	[[_homogeneous, 'class A', _exact, _rational, _Bernoulli]	✓
15719	$e^t \sin(y) + (1 + e^t \cos(y))y' = 0$	[_exact, [_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓
15720	$3t^2 y + 3y^2 - 1 + (t^3 + 6ty)y' = 0$	[_exact, _rational, [_Abel, '2nd type', 'class B']]	✓
15721	$-2ty^2 \sin(t^2) + 2y \cos(t^2)y' = 0$	[_separable]	✓
15722	$2t - y^2 \sin(ty) + (\cos(ty) - ty \sin(ty))y' = 0$	[_exact]	✓
15724	$2t \sin(y) - 2ty \sin(t^2) + (t^2 \cos(y) + \cos(t^2))y' = 0$	[_exact]	✓
15725	$(3 + t) \cos(y + t) + \sin(y + t) + (3 + t) \cos(y + t)y' = 0$	[[_1st_order, _with_linear_symmetries], _exact]	✓
15726	$\frac{2t^2 y \cos(t^2) - y \sin(t^2)}{t^2} + \frac{(2ty + \sin(t^2))y'}{t} = 0$	[_exact, [_1st_order, '_with_symmetry_[F(x)*G(y),0]'], [_Abel, '2nd type', 'class B']]	✓
15727	$-\frac{y^2 e^{\frac{y}{t}}}{t^2} + 1 + e^{\frac{y}{t}} \left(1 + \frac{y}{t}\right)y' = 0$	[[_homogeneous, 'class A', _exact, _dAlembert]	✓
15728	$2t \sin\left(\frac{y}{t}\right) - y \cos\left(\frac{y}{t}\right) + t \cos\left(\frac{y}{t}\right)y' = 0$	[[_homogeneous, 'class A', _exact, _dAlembert]	✓
15729	$2ty^2 + 2t^2 yy' = 0$ i.c.	[_separable]	✓
15730	$1 + \frac{y}{t^2} - \frac{y'}{t} = 0$ i.c.	[_linear]	✓

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Table 2.12 first order ode exact

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#	ODE	CAS classification	Solved?
15731	$2ty + 3t^2 + (t^2 - 1)y' = 0$ i.c.	[_linear]	✓
15732	$1 + 5t - y - (t + 2y)y' = 0$ i.c.	[[_homogeneous, 'class C'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
15733	$e^y - 2ty + (te^y - t^2)y' = 0$ i.c.	[_exact]	✓
15734	$2tye^{t^2} + 2te^{-y} + (e^{t^2} - t^2e^{-y} + 1)y' = 0$ i.c.	[_exact]	✓
15735	$y^2 - 2\sin(2t) + (1 + 2ty)y' = 0$ i.c.	[_exact, [_Abel, '2nd type', 'class B']]	✓
15736	$\cos(t)^2 - \sin(t)^2 + y + (\sec(y)\tan(y) + t)y' = 0$ i.c.	[_exact]	✓
15737	$\frac{1}{t^2 + 1} - y^2 - 2tyy' = 0$ i.c.	[_exact, _rational, _Bernoulli]	✓
15738	$\frac{2t}{t^2 + 1} + y + (e^y + t)y' = 0$ i.c.	[_exact]	✓
15739	$-2x - y\cos(xy) + (2y - x\cos(xy))y' = 0$ i.c.	[_exact]	✓
15740	$-4x^3 + 6y\sin(6xy) + (4y^3 + 6x\sin(6xy))y' = 0$ i.c.	[_exact]	✓
15741	$t^2y + t^3y' = 0$	[_separable]	✓
15742	$y(2e^t + 4t) + 3(e^t + t^2)y' = 0$	[_separable]	✓
15743	$y + (2t - ye^y)y' = 0$	[[_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓
15744	$2ty + y^2 - t^2y' = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
15745	$y + 2t^2 + (t^2y - t)y' = 0$	[_rational, [_1st_order, '_with_symmetry_[F(x),G(x)']], [_Abel, '2nd type', 'class B']]	✓
15746	$5ty + 4y^2 + 1 + (t^2 + 2ty)y' = 0$	[_rational, [_Abel, '2nd type', 'class B']]	✓
15748	$2t + \tan(y) + (t - t^2\tan(y))y' = 0$	[[_1st_order, '_with_symmetry_[F(x),G(x)']]	✓
15749	$2t - y^2\sin(ty) + (\cos(ty) - ty\sin(ty))y' = 0$	[_exact]	✓
15750	$-1 + e^{ty}y + y\cos(ty) + (1 + e^{ty}t + t\cos(ty))y' = 0$	[_exact]	✓

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#	ODE	CAS classification	Solved?
15751	$2t + 2y + (2t + 2y)y' = 0$	[_quadrature]	✓
15752	$\frac{9t}{5} + 2y + (2t + 2y)y' = 0$	[[_homogeneous, 'class A'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
15753	$2t + \frac{19y}{10} + \left(\frac{19t}{10} + 2y\right)y' = 0$	[[_homogeneous, 'class A'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
15754	$y' - \frac{y}{2} = \frac{t}{y}$	[_rational, _Bernoulli]	✓
15756	$2ty' - y = 2ty^3 \cos(t)$	[_Bernoulli]	✓
15758	$y' - 2y = \frac{\cos(t)}{\sqrt{y}}$	[_Bernoulli]	✓
15760	$y' - \frac{y}{t} = ty^2$	[[_homogeneous, 'class D'], _rational, _Bernoulli]	✓
15761	$y' - \frac{y}{t} = \frac{y^2}{t^2}$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
15762	$y' - \frac{y}{t} = \frac{y^2}{t}$	[_separable]	✓
15766	$2 \ln(t) - \ln(4y^2)y' = 0$	[_separable]	✓
15767	$\frac{2}{t} + \frac{1}{y} + \frac{ty'}{y^2} = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
15768	$\frac{\sin(2t)}{\cos(2y)} + \frac{\ln(y)y'}{\ln(t)} = 0$	[_separable]	✓
15769	$\sqrt{t^2 + 1} + yy' = 0$	[_separable]	✓
15771	$2y - 3t + ty' = 0$	[_linear]	✓
15772	$ty - y^2 + t(t - 3y)y' = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
15774	$t^3 + y^3 - ty^2y' = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
15775	$y' = \frac{t + 4y}{4t + y}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
15776	$t - y + ty' = 0$	[_linear]	✓

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#	ODE	CAS classification	Solved?
15777	$y + (y + t)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
15780	$y^2 = (ty - 4t^2)y'$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
15782	$(t^2 - y^2)y' + y^2 + ty = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
15785	$t(\ln(t) - \ln(y))y' = y$	[[_homogeneous, 'class A', _dAlembert]]	✓
15788 i.c.	$y' = \frac{4y^2 - t^2}{2ty}$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
15789 i.c.	$t + y - ty' = 0$	[_linear]	✓
15791 i.c.	$t^3 + y^2\sqrt{t^2 + y^2} - ty\sqrt{t^2 + y^2}y' = 0$	[[_homogeneous, 'class A', _dAlembert]]	✓
15792 i.c.	$y^3 - t^3 - ty^2y' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
15796	$5t + 2y + 1 + (2t + y + 1)y' = 0$	[[_homogeneous, 'class C', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
15799	$y' - \frac{2y}{x} = -x^2y$	[_separable]	✓
15808	$y = t(y' + 1) + 2y' + 1$	[_linear]	✓
15811 i.c.	$y' = \frac{y^2 - t^2}{ty}$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
15812 i.c.	$y \sin\left(\frac{t}{y}\right) - \left(t + t \sin\left(\frac{t}{y}\right)\right)y' = 0$	[[_homogeneous, 'class A', _dAlembert]]	✓
15813	$y' = \frac{2t^5}{5y^2}$	[_separable]	✓
15814	$\cos(4x) - 8 \sin(y)y' = 0$	[_separable]	✓
15815	$y' - \frac{y}{t} = \frac{y^2}{t}$	[_separable]	✓
15816	$y' = \frac{e^{8y}}{t}$	[_separable]	✓
15817	$y' = \frac{e^{5t}}{y^4}$	[_separable]	✓

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Table 2.12 first order ode exact  
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#	ODE	CAS classification	Solved?
15818	$-\frac{1}{x^5} + \frac{1}{x^3} = (2y^4 - 6y^9) y'$	[_separable]	✓
15819	$y' = \frac{y e^{-2t}}{\ln(y)}$	[_separable]	✓
15820	$y' = \frac{(4-7x)(2y-3)}{(x-1)(2x-5)}$	[_separable]	✓
15821	$y' + 3y = -10 \sin(t)$	[[_linear, 'class A']]	✓
15823	$y - t + (y + t) y' = 0$	[[_homogeneous, 'class A'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
15824	$y - x + y' = 0$	[[_linear, 'class A']]	✓
15826	$r' = \frac{r^2 + t^2}{rt}$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
15827	$x' = \frac{5tx}{x^2 + t^2}$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
15828	$t^2 - y + (-t + y) y' = 0$	[_exact, _rational, [_1st_order, '_with_sym- metry_[F(x),G(x)'], [_Abel, '2nd type', 'class A']]	✓
15829	$t^2 y + \sin(t) + \left(\frac{t^3}{3} - \cos(y)\right) y' = 0$	[_exact]	✓
15830	$\tan(y) - t + (t \sec(y)^2 + 1) y' = 0$	[_exact]	✓
15831	$t \ln(y) + \left(\frac{t^2}{2y} + 1\right) y' = 0$	[_exact, [_1st_or- der, '_with_symme- try_[F(x)*G(y),0]']]	✓
15832	$y' + y = 5$	[_quadrature]	✓
15833	$y' + ty = t$	[_separable]	✓
15834	$x' + \frac{x}{y} = y^2$	[_linear]	✓
15835	$tr' + r = t \cos(t)$	[_linear]	✓
15837	$y' + y = \frac{e^t}{y^2}$	[[_1st_order, _with_lin- ear_symmetries], _Bernoulli]	✓
15839	$y - ty' = 2y^2 \ln(t)$	[[_homogeneous, 'class D'], _Bernoulli]	✓

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Table 2.12 first order ode exact  
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#	ODE	CAS classification	Solved?
15842	$2x - y - 2 + (2y - x)y' = 0$ i.c.	[[_homogeneous, 'class C'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
15843	$\cos(t - y) + (1 - \cos(t - y))y' = 0$ i.c.	[[_homogeneous, 'class C'], _exact, _dAlembert]	✓
15844	$e^{ty}y - 2t + te^{ty}y' = 0$ i.c.	[_exact, [_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)']]]	✓
15845	$\sin(y) - y \cos(t) + (t \cos(y) - \sin(t))y' = 0$ i.c.	[_exact]	✓
15846	$y^2 + (2ty - 2 \cos(y) \sin(y))y' = 0$ i.c.	[_exact, [_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓
15847	$\frac{y}{t} + \ln(y) + \left(\frac{t}{y} + \ln(t)\right)y' = 0$ i.c.	[_exact]	✓
15850	$y' = ty^3$ i.c.	[_separable]	✓
15851	$y' = \frac{t}{y^3}$ i.c.	[_separable]	✓
15852	$y' = -\frac{y}{t-2}$ i.c.	[_separable]	✓
15976	$y' - 4y = t^2$	[[_linear, 'class A']]	✓
15977	$y' + y = \cos(2t)$ i.c.	[[_linear, 'class A']]	✓
15978	$y' - y = e^{4t}$ i.c.	[[_linear, 'class A']]	✓
15979	$y' + 4y = e^{-4t}$ i.c.	[[_linear, 'class A']]	✓
15980	$y' + 4y = te^{-4t}$	[[_linear, 'class A']]	✓
16341	$y' = \frac{x}{y}$	[_separable]	✓
16342	$y' = y + 3y^{1/3}$	[_quadrature]	✓
16345	$y' = \sqrt{1 - y^2}$	[_quadrature]	✓
16346	$y' = \frac{1 + y}{x - y}$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
16348	$y' = 1 - \cot(y)$	[_quadrature]	✓

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Table 2.12 first order ode exact  
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#	ODE	CAS classification	Solved?
16351	$xy' + y = \cos(x)$	[_linear]	✓
16352	$y' + 2y = e^x$	[[_linear, 'class A']]	✓
16353	$(-x^2 + 1)y' + xy = 2x$	[_separable]	✓
16354	$y' = x + 1$	[_quadrature]	✓
16355	$y' = x + y$	[[_linear, 'class A']]	✓
16356	$y' = y - x$	[[_linear, 'class A']]	✓
16357	$y' = \frac{x}{2} - y + \frac{3}{2}$	[[_linear, 'class A']]	✓
16358	$y' = (y - 1)^2$	[_quadrature]	✓
16359	$y' = (y - 1)x$	[_separable]	✓
16362	$y' = y - x^2$	[[_linear, 'class A']]	✓
16363	$y' = x^2 + 2x - y$	[[_linear, 'class A']]	✓
16364	$y' = \frac{1 + y}{x - 1}$	[_separable]	✓
16365	$y' = \frac{x + y}{x - y}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
16366	$y' = 1 - x$	[_quadrature]	✓
16367	$y' = 2x - y$	[[_linear, 'class A']]	✓
16368	$y' = y + x^2$	[[_linear, 'class A']]	✓
16369	$y' = -\frac{y}{x}$	[_separable]	✓
16370	$y' = 1$	[_quadrature]	✓
16371	$y' = \frac{1}{x}$	[_quadrature]	✓
16372	$y' = y$	[_quadrature]	✓
16373	$y' = y^2$	[_quadrature]	✓
16376	$y' = x + y$	[[_linear, 'class A']]	✓
	<i>i.c.</i>		
16377	$y' = 2y - 2x^2 - 3$	[[_linear, 'class A']]	✓
	<i>i.c.</i>		
16378	$xy' = 2x - y$	[_linear]	✓
	<i>i.c.</i>		
16379	$1 + y^2 + y'(x^2 + 1) = 0$	[_separable]	✓

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Table 2.12 first order ode exact  
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#	ODE	CAS classification	Solved?
16380	$1 + y^2 + xy y' = 0$	[_separable]	✓
16381	$y' \sin(x) - y \cos(x) = 0$ i.c.	[_separable]	✓
16382	$1 + y^2 = xy'$	[_separable]	✓
16385	$e^{-y} y' = 1$	[_quadrature]	✓
16387	$y' = a^{x+y}$	[_separable]	✓
16388	$e^y (x^2 + 1) y' - 2x(1 + e^y) = 0$	[_separable]	✓
16389	$2x\sqrt{1 - y^2} = y'(x^2 + 1)$	[_separable]	✓
16393	$y' = ax + by + c$	[[_linear, 'class A']]	✓
16395	$xy' + y = a(xy + 1)$ i.c.	[_linear]	✓
16397	$y' = \frac{y}{x}$ i.c.	[_separable]	✓
16409	$e^y = e^{4y} y' + 1$	[_quadrature]	✓
16410	$(x + 1) y' = y - 1$	[_separable]	✓
16411	$y' = 2x(\pi + y)$	[_separable]	✓
16414	$x - y + xy' = 0$	[_linear]	✓
16415	$xy' = y(\ln(y) - \ln(x))$	[[_homogeneous, 'class A', _dAlembert]	✓
16419	$4x - 3y + (2y - 3x) y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
16420	$y - x + (x + y) y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
16421	$x + y - 2 + (1 - x) y' = 0$	[_linear]	✓
16423	$x + y - 2 + (x - y + 4) y' = 0$	[[_homogeneous, 'class C', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
16424	$x + y + (x - y - 2) y' = 0$	[[_homogeneous, 'class C', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
16425	$2x + 3y - 5 + (3x + 2y - 5) y' = 0$	[[_homogeneous, 'class C', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓

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#	ODE	CAS classification	Solved?
16426	$8x + 4y + 1 + (4x + 2y + 1)y' = 0$	[[_homogeneous, 'class C'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
16428	$x + y + (y - 1 + x)y' = 0$	[[_homogeneous, 'class C'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
16429	$2xy'(x - y^2) + y^3 = 0$	[[_homogeneous, 'class G'], _rational]	✓
16430	$4y^6 + x^3 = 6xy^5y'$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
16433	$y' + 2y = e^{-x}$	[[_linear, 'class A']]	✓
16434	$x^2 - xy' = y$ i.c.	[_linear]	✓
16435	$y' - 2xy = 2x e^{x^2}$	[_linear]	✓
16436	$y' + 2xy = e^{-x^2}$	[_linear]	✓
16437	$y' \cos(x) - y \sin(x) = 2x$ i.c.	[_linear]	✓
16438	$xy' - 2y = x^3 \cos(x)$	[_linear]	✓
16439	$y' - y \tan(x) = \frac{1}{\cos(x)^3}$ i.c.	[_linear]	✓
16440	$y'x \ln(x) - y = 3x^3 \ln(x)^2$	[_linear]	✓
16441	$(2x - y^2)y' = 2y$	[[_homogeneous, 'class G'], _rational]	✓
16442	$y' + y \cos(x) = \cos(x)$ i.c.	[_separable]	✓
16443	$y' = \frac{y}{2y \ln(y) + y - x}$	[[_1st_order, _with_linear_symmetries]]	✓
16444	$\left(\frac{e^{-y^2}}{2} - xy\right)y' - 1 = 0$	[[_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓
16445	$y' - y e^x = 2x e^{e^x}$	[_linear]	✓
16446	$y' + xy e^x = e^{(1-x)e^x}$	[_linear]	✓
16447	$y' - y \ln(2) = 2^{\sin(x)}(\cos(x) - 1) \ln(2)$	[[_linear, 'class A']]	✓
16448	$y' - y = -2e^{-x}$ i.c.	[[_linear, 'class A']]	✓

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#	ODE	CAS classification	Solved?
16449	$y' \sin(x) - y \cos(x) = -\frac{\sin(x)^2}{x^2}$ i.c.	[_linear]	✓
16450	$x^2 y' \cos\left(\frac{1}{x}\right) - y \sin\left(\frac{1}{x}\right) = -1$ i.c.	[_linear]	✓
16451	$2xy' - y = 1 - \frac{2}{\sqrt{x}}$ i.c.	[_linear]	✓
16452	$x^2 y' + y = (x^2 + 1)e^x$ i.c.	[_linear]	✓
16453	$xy' + y = 2x$	[_linear]	✓
16454	$y' \sin(x) + y \cos(x) = 1$	[_linear]	✓
16455	$y' \cos(x) - y \sin(x) = -\sin(2x)$ i.c.	[_linear]	✓
16456	$y' + 2xy = 2xy^2$	[_separable]	✓
16457	$3xy^2 y' - 2y^3 = x^3$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
16458	$(x^3 + e^y) y' = 3x^2$	[[_1st_order, _with_linear_symmetries]]	✓
16459	$y' + 3xy = y e^{x^2}$	[_separable]	✓
16461	$2y' \ln(x) + \frac{y}{x} = \frac{\cos(x)}{y}$	[_Bernoulli]	✓
16463	$(1 + x^2 + y^2) y' + xy = 0$	[_rational, [_1st_order, 'with_symmetry_[F(x)*G(y),0]']]	✓
16464	$y' - y \cos(x) = y^2 \cos(x)$	[_separable]	✓
16465	$y' - \tan(y) = \frac{e^x}{\cos(y)}$	['y=_G(x,y)']	✓
16467	$\cos(y) y' + \sin(y) = x + 1$	[[_1st_order, 'with_symmetry_[F(x),G(y)]']]	✓
16470	$x(2x^2 + y^2) + y(x^2 + 2y^2) y' = 0$	[[_homogeneous, 'class A'], _exact, _rational, _dAlembert]	✓
16471	$3x^2 + 6xy^2 + (6x^2y + 4y^3) y' = 0$	[_exact, _rational]	✓
16472	$\frac{x}{\sqrt{y^2 + x^2}} + \frac{1}{x} + \frac{1}{y} + \left(\frac{y}{\sqrt{y^2 + x^2}} + \frac{1}{y} - \frac{x}{y^2}\right) y' = 0$	[_exact]	✓

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#	ODE	CAS classification	Solved?
16473	$3x^2 \tan(y) - \frac{2y^3}{x^3} + \left(x^3 \sec(y)^2 + 4y^3 + \frac{3y^2}{x^2}\right) y' = 0$	[_exact]	✓
16474	$2x + \frac{y^2 + x^2}{x^2 y} = \frac{(y^2 + x^2) y'}{xy^2}$	[[_homogeneous, 'class D'], _exact, _rational]	✓
16475	$\frac{\sin(2x)}{y} + x + \left(y - \frac{\sin(x)^2}{y^2}\right) y' = 0$	[_exact]	✓
16476	$3x^2 - 2x - y + (2y - x + 3y^2) y' = 0$	[_exact, _rational]	✓
16477	$\frac{xy}{\sqrt{x^2 + 1}} + 2xy - \frac{y}{x} + \left(\sqrt{x^2 + 1} + x^2 - \ln(x)\right) y' = 0$	[_separable]	✓
16478	$\sin(y) + y \sin(x) + \frac{1}{x}$ $+ \left(x \cos(y) - \cos(x) + \frac{1}{y}\right) y' = 0$	[_exact]	✓
16479	$\frac{y + \sin(x) \cos(xy)^2}{\cos(xy)^2} + \left(\frac{x}{\cos(xy)^2} + \sin(y)\right) y' = 0$	[_exact]	✓
16480	$\frac{2x}{y^3} + \frac{(y^2 - 3x^2) y'}{y^4} = 0$ i.c.	[[_homogeneous, 'class A'], _exact, _rational, _dAlembert]	✓
16481	$y(x^2 + y^2 + a^2) y' + x(x^2 + y^2 - a^2) = 0$	[_exact, _rational]	✓
16482	$3x^2 y + y^3 + (x^3 + 3xy^2) y' = 0$	[[_homogeneous, 'class A'], _exact, _rational, _dAlembert]	✓
16483	$1 - x^2 y + x^2(y - x) y' = 0$	[_rational, [_1st_order, '_with_symmetry_[F(x),G(x)]'], [_Abel, '2nd type', 'class B']]	✓
16484	$x^2 + y - xy' = 0$	[_linear]	✓
16485	$x + y^2 - 2xyy' = 0$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
16486	$2x^2 y + 2y + 5 + (2x^3 + 2x) y' = 0$	[_linear]	✓
16487	$x^4 \ln(x) - 2xy^3 + 3x^2 y^2 y' = 0$	[_Bernoulli]	✓
16488	$x + \sin(x) + \sin(y) + \cos(y) y' = 0$	['y=_G(x,y)']	✓
16489	$2xy^2 - 3y^3 + (7 - 3xy^2) y' = 0$	[_rational]	✓
16491	$x^2 + y^2 + 1 - 2xyy' = 0$	[_rational, _Bernoulli]	✓

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#	ODE	CAS classification	Solved?
16492	$x - xy + (y + x^2)y' = 0$	[_rational, [_1st_order, '_with_symmetry_[F(x)*G(y),0]'], [_Abel, '2nd type', 'class A']]	✓
16495	$y'^2 - 2xy' - 8x^2 = 0$	[_quadrature]	✓
16496	$x^2y'^2 + 3xyy' + 2y^2 = 0$	[_separable]	✓
16497	$y'^2 - (2x + y)y' + x^2 + xy = 0$	[_quadrature]	✓
16499	$y'^3 = yy'^2 - x^2y' + x^2y$	[_quadrature]	✓
16527	$x^2y' = y^2x^2 + xy + 1$	[[_homogeneous, 'class G'], _rational, _Riccati]	✓
16531	$y'^2 - y^2 = 0$	[_quadrature]	✓
16532	$y' = y^{2/3} + a$	[_quadrature]	✓
16536	$(y' - 1)^2 = y^2$	[_quadrature]	✓
16544	$x \sin(x)y' + (\sin(x) - x \cos(x))y = \sin(x) \cos(x) - x$	[_linear]	✓
16546	$x^3 - 3xy^2 + (y^3 - 3x^2y)y' = 0$	[[_homogeneous, 'class A'], _exact, _rational, _dAlembert]	✓
16547	$5xy - 4y^2 - 6x^2 + \left(y^2 - 8xy + \frac{5x^2}{2}\right)y' = 0$	[[_homogeneous, 'class A'], _exact, _rational, _dAlembert]	✓
16548	$3xy^2 - x^2 + (3x^2y - 6y^2 - 1)y' = 0$	[_exact, _rational]	✓
16549	$y - xy^2 \ln(x) + xy' = 0$	[_Bernoulli]	✓
16550	$2xye^{x^2} - x \sin(x) + e^{x^2}y' = 0$	[_linear]	✓
16551	$y' = \frac{1}{2x - y^2}$	[[_1st_order, _with_exponential_symmetries]]	✓
16552	$x^2 + xy' = 3x + y'$	[_quadrature]	✓
16553	$xyy' - y^2 = x^4$	[[_homogeneous, 'class D'], _rational, _Bernoulli]	✓
16555	$(2x - 1)y' - 2y = \frac{1 - 4x}{x^2}$	[_linear]	✓
16558	$y'(3x^2 - 2x) - y(6x - 2) = 0$	[_separable]	✓
16559	$xy^2y' - y^3 = \frac{x^4}{3}$	[[_homogeneous, 'class D'], _rational, _Bernoulli]	✓

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#	ODE	CAS classification	Solved?
16560	$1 + e^{\frac{x}{y}} + e^{\frac{x}{y}} \left(1 - \frac{x}{y}\right) y' = 0$ i.c.	[[_homogeneous, 'class A', _exact, _dAlembert]	✓
16561	$x^2 + y^2 - xyy' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
16563	$xy^2 + y - xy' = 0$	[[_homogeneous, 'class D', _rational, _Bernoulli]	✓
16564	$x^2 + y^2 + 2x + 2yy' = 0$	[[_homogeneous, 'class D', _rational, _Bernoulli]	✓
16566	$(x - 2xy - y^2) y' + y^2 = 0$	[_rational, [_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓
16567	$y \cos(x) + (2y - \sin(x)) y' = 0$	[[_1st_order, '_with_symmetry_[F(x),G(y)]', [_Abel, '2nd type', 'class A']]	✓
16572	$x - y^2 + 2xyy' = 0$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
16573	$xy' + y = y^2 \ln(x)$ i.c.	[_Bernoulli]	✓
16574	$\sin(\ln(x)) - \cos(\ln(y)) y' = 0$	[_separable]	✓
16575	$y' = \sqrt{\frac{9y^2 - 6y + 2}{x^2 - 2x + 5}}$	[[_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]']]	✓
16578	$y^3 + 2(x^2 - xy^2) y' = 0$	[[_homogeneous, 'class G', _rational]	✓
16580	$4x^2y'^2 - y^2 = xy^3$	[[_homogeneous, 'class G']]	✓
16586	$y'^4 = 1$	[_quadrature]	✓
16976	$y' = \frac{x^4}{y}$	[_separable]	✓
16977	$y' = \frac{x^2(x^3 + 1)}{y}$	[_separable]	✓
16978	$y' + y^3 \sin(x) = 0$	[_separable]	✓
16979	$y' = \frac{7x^2 - 1}{7 + 5y}$	[_separable]	✓
16980	$y' = \sin(2x)^2 \cos(y)^2$	[_separable]	✓
16981	$xy' = \sqrt{1 - y^2}$	[_separable]	✓

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#	ODE	CAS classification	Solved?
16982	$yy' = (xy^2 + x) e^{x^2}$	[_separable]	✓
16983	$y' = \frac{x^2 + e^{-x}}{y^2 - e^y}$	[_separable]	✓
16984	$y' = \frac{x^2}{1 + y^2}$	[_separable]	✓
16985	$y' = \frac{\sec(x)^2}{y^3 + 1}$	[_separable]	✓
16986	$y' = 4\sqrt{xy}$	[[_homogeneous, 'class G']]	✓
16987	$y' = x(y - y^2)$	[_separable]	✓
16988	$y' = (1 - 12x)y^2$	[_separable]	✓
	i.c.		
16989	$y' = \frac{3 - 2x}{y}$	[_separable]	✓
	i.c.		
16990	$x + ye^{-x}y' = 0$	[_separable]	✓
	i.c.		
16991	$r' = \frac{r^2}{\theta}$	[_separable]	✓
	i.c.		
16992	$y' = \frac{3x}{y + x^2y}$	[_separable]	✓
	i.c.		
16993	$y' = \frac{2x}{1 + 2y}$	[_separable]	✓
	i.c.		
16994	$y' = 2xy^2 + 4x^3y^2$	[_separable]	✓
	i.c.		
16995	$y' = x^2e^{-3y}$	[_separable]	✓
	i.c.		
16996	$y' = (1 + y^2) \tan(2x)$	[_separable]	✓
	i.c.		
16997	$y' = \frac{x(x^2 + 1)y^5}{6}$	[_separable]	✓
	i.c.		
16998	$y' = \frac{3x^2 - e^x}{2y - 11}$	[_separable]	✓
	i.c.		
16999	$x^2y' = y - xy$	[_separable]	✓
	i.c.		

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#	ODE	CAS classification	Solved?
17000	$y' = \frac{e^{-x} - e^x}{3 + 4y}$ i.c.	[_separable]	✓
17001	$2yy' = \frac{x}{\sqrt{x^2 - 4}}$ i.c.	[_separable]	✓
17002	$\sin(2x) + \cos(3y)y' = 0$ i.c.	[_separable]	✓
17003	$y^2\sqrt{-x^2 + 1}y' = \arcsin(x)$ i.c.	[_separable]	✓
17004	$y' = \frac{3x^2 + 1}{12y^2 - 12y}$ i.c.	[_separable]	✓
17005	$y' = \frac{2x^2}{2y^2 - 6}$ i.c.	[_separable]	✓
17006	$y' = 2y^2 + xy^2$ i.c.	[_separable]	✓
17007	$y' = \frac{6 - e^x}{3 + 2y}$ i.c.	[_separable]	✓
17008	$y' = \frac{2\cos(2x)}{10 + 2y}$ i.c.	[_separable]	✓
17009	$y' = 2(x + 1)(1 + y^2)$ i.c.	[_separable]	✓
17010	$y' = \frac{ty(4 - y)}{3}$ i.c.	[_separable]	✓
17011	$y' = \frac{ty(4 - y)}{t + 1}$ i.c.	[_separable]	✓
17012	$y' = \frac{ay + b}{cy + d}$	[_quadrature]	✓
17013	$y' + 4y = t + e^{-2t}$	[[_linear, 'class A']]	✓
17014	$y' - 2y = t^2e^{2t}$	[[_linear, 'class A']]	✓
17015	$y' + y = te^{-t} + 1$	[[_linear, 'class A']]	✓
17016	$y' + \frac{y}{t} = 5 + \cos(2t)$	[_linear]	✓
17017	$y' - 2y = 3e^t$	[[_linear, 'class A']]	✓
17018	$ty' + 2y = \sin(t)$	[_linear]	✓

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#	ODE	CAS classification	Solved?
17019	$y' + 2ty = 16te^{-t^2}$	[_linear]	✓
17020	$(t^2 + 1)y' + 4ty = \frac{1}{(t^2 + 1)^2}$	[_linear]	✓
17021	$2y' + y = 3t$	[[_linear, 'class A']]	✓
17022	$ty' - y = t^3e^{-t}$	[_linear]	✓
17023	$y' + y = 5\sin(2t)$	[[_linear, 'class A']]	✓
17024	$2y' + y = 3t^2$	[[_linear, 'class A']]	✓
17025	$y' - y = 2te^{2t}$	[[_linear, 'class A']]	✓
i.c.			
17026	$y' + 2y = te^{-2t}$	[[_linear, 'class A']]	✓
i.c.			
17027	$ty' + 4y = t^2 - t + 1$	[_linear]	✓
i.c.			
17028	$y' + \frac{2y}{t} = \frac{\cos(t)}{t^2}$	[_linear]	✓
i.c.			
17029	$y' - 2y = e^{2t}$	[[_linear, 'class A']]	✓
i.c.			
17030	$ty' + 2y = \sin(t)$	[_linear]	✓
i.c.			
17031	$t^3y' + 4t^2y = e^{-t}$	[_linear]	✓
i.c.			
17032	$ty' + (t + 1)y = t$	[_linear]	✓
i.c.			
17033	$y' - \frac{y}{3} = 3\cos(t)$	[[_linear, 'class A']]	✓
i.c.			
17034	$2y' - y = e^{\frac{t}{3}}$	[[_linear, 'class A']]	✓
i.c.			
17035	$3y' - 2y = e^{-\frac{\pi t}{2}}$	[[_linear, 'class A']]	✓
i.c.			
17036	$ty' + (t + 1)y = 2te^{-t}$	[_linear]	✓
i.c.			
17037	$ty' + 2y = \frac{\sin(t)}{t}$	[_linear]	✓
i.c.			
17038	$\sin(t)y' + y\cos(t) = e^t$	[_linear]	✓
i.c.			

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Table 2.12 first order ode exact  
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#	ODE	CAS classification	Solved?
17039	$y' + \frac{y}{2} = 2 \cos(t)$ i.c.	[[_linear, 'class A']]	✓
17040	$y' + \frac{4y}{3} = 1 - \frac{t}{4}$ i.c.	[[_linear, 'class A']]	✓
17041	$y' + \frac{y}{4} = 3 + 2 \cos(2t)$ i.c.	[[_linear, 'class A']]	✓
17042	$y' - y = 1 + 3 \sin(t)$ i.c.	[[_linear, 'class A']]	✓
17043	$y' - \frac{3y}{2} = 3t + 3e^t$ i.c.	[[_linear, 'class A']]	✓
17044	$y' - 6y = t^6 e^{6t}$	[[_linear, 'class A']]	✓
17045	$y' + \frac{y}{t} = 3 \cos(2t)$	[_linear]	✓
17046	$ty' + 2y = \sin(t)$	[_linear]	✓
17047	$2y' + y = 3t^2$	[[_linear, 'class A']]	✓
17048	$(t - 3)y' + \ln(t)y = 2t$ i.c.	[_linear]	✓
17049	$t(-4 + t)y' + y = 0$ i.c.	[_separable]	✓
17050	$y' + y \tan(t) = \sin(t)$ i.c.	[_linear]	✓
17051	$(-t^2 + 4)y' + 2ty = 3t^2$ i.c.	[_linear]	✓
17052	$(-t^2 + 4)y' + 2ty = 3t^2$ i.c.	[_linear]	✓
17053	$\ln(t)y' + y = \cot(t)$ i.c.	[_linear]	✓
17058	$y' = \frac{t^2 + 1}{3y - y^2}$	[_separable]	✓
17059	$y' = \frac{\cot(t)y}{y + 1}$	[_separable]	✓
17060	$y' = y^{1/3}$ i.c.	[_quadrature]	✓
17062	$y' = -\frac{4t}{y}$ i.c.	[_separable]	✓

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#	ODE	CAS classification	Solved?
17063	$y' = 2ty^2$ i.c.	[_separable]	✓
17064	$y' + y^3 = 0$ i.c.	[_quadrature]	✓
17065	$y' = \frac{t^2}{y(t^3 + 1)}$ i.c.	[_separable]	✓
17066	$y' = ty(3 - y)$	[_separable]	✓
17071	$2x + 3 + (2y - 2)y' = 0$	[_separable]	✓
17073	$3x^2 - 2xy + 2 + (6y^2 - x^2 + 3)y' = 0$	[_exact, _rational]	✓
17074	$2xy^2 + 2y + (2x^2y + 2x)y' = 0$	[_separable]	✓
17075	$y' = -\frac{4x + 2y}{2x + 3y}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
17077	$e^x \sin(y) - 2y \sin(x) + (e^x \cos(y) + 2 \cos(x))y' = 0$	[_exact]	✓
17079	$ye^{xy} \cos(2x) - 2e^{xy} \sin(2x) + 2x$ $+ (xe^{xy} \cos(2x) - 3)y' = 0$	[_exact]	✓
17080	$\frac{y}{x} + 6x + (\ln(x) - 2)y' = 0$	[_linear]	✓
17082	$\frac{x}{(y^2 + x^2)^{3/2}} + \frac{yy'}{(y^2 + x^2)^{3/2}} = 0$	[_separable]	✓
17083	$2x - y + (2y - x)y' = 0$ i.c.	[[_homogeneous, 'class A'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
17084	$9x^2 + y - 1 - (4y - x)y' = 0$ i.c.	[_exact, _rational, [_1st_order, '_with_sym- metry_[F(x),G(x)'], [_Abel, '2nd type', 'class A']]	✓
17085	$x^2y^3 + x(1 + y^2)y' = 0$	[_separable]	✓
17086	$\frac{\sin(y)}{y} - 2e^{-x} \sin(x)$ $+ \frac{(\cos(y) + 2e^{-x} \cos(x))y'}{y} = 0$	unknown	✓
17087	$y + (2x - ye^y)y' = 0$	unknown	✓
17088	$(x + 2) \sin(y) + x \cos(y)y' = 0$	[_separable]	✓
17089	$3x^2y + 2xy + y^3 + (y^2 + x^2)y' = 0$	[[_homogeneous, 'class D'], _rational]	✓

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Table 2.12 first order ode exact  
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#	ODE	CAS classification	Solved?
17090	$y' = e^{2x} + y - 1$	[[linear, 'class A']]	✓
17092	$y + (2xy - e^{-2y}) y' = 0$	[[1st_order, _with_exponential_symmetries]]	✓
17093	$e^x + (e^x \cot(y) + 2y \csc(y)) y' = 0$	[[1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓
17095	$3x + \frac{6}{y} + \left(\frac{x^2}{y} + \frac{3y}{x}\right) y' = 0$	[_rational]	✓
17096	$3xy + y^2 + (xy + x^2) y' = 0$	[[homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
17097	$yy' = x + 1$	[_separable]	✓
17098	$(y^4 + 1) y' = x^4 + 1$	[_separable]	✓
17100	$x(x - 1) y' = y(1 + y)$	[_separable]	✓
17106	$\left(y + x e^{\frac{x}{y}}\right) y' = y e^{\frac{x}{y}}$	[[homogeneous, 'class A'], _dAlembert]	✓
17107	$xyy' = y^2 + x^2$ i.c.	[[homogeneous, 'class A'], _rational, _Bernoulli]	✓
17109	$ty' + y = t^2 y^2$	[[homogeneous, 'class G'], _rational, _Bernoulli]	✓
17113	$5(t^2 + 1) y' = 4ty(y^3 - 1)$	[_separable]	✓
17115	$y' = y + \sqrt{y}$	[_quadrature]	✓
17116	$y' = ry - k^2 y^2$	[_quadrature]	✓
17117	$y' = ay + by^3$	[_quadrature]	✓
17120	$1 = (3e^y - 2x) y'$	[[1st_order, _with_exponential_symmetries]]	✓
17122	$xy' + (x + 1) y = x$	[_linear]	✓
17123	$y' = \frac{xy^2 - \frac{\sin(2x)}{2}}{(-x^2 + 1) y}$	[_Bernoulli]	✓
17124	$\frac{\sqrt{x} y'}{y} = 1$	[_separable]	✓
17125	$5xy^2 + 5y + (5x^2y + 5x) y' = 0$	[_separable]	✓
17126	$2xyy' + \ln(x) = -y^2 - 1$	[_exact, _Bernoulli]	✓
17127	$(2 - x) y' = y + 2(2 - x)^5$	[_linear]	✓

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Table 2.12 first order ode exact  
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#	ODE	CAS classification	Solved?
17128	$xy' = -\frac{1}{\ln(x)}$	[_quadrature]	✓
17129	$x' = \frac{2xy + x^2}{3y^2 + 2xy}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
17130	$4xyy' = 8x^2 + 5y^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
17131	$y' + y - y^{1/4} = 0$	[_quadrature]	✓
17219	$x' = \frac{x\sqrt{6x-9}}{3}$	[_quadrature]	✓
	i.c.		
17567	$y' = 2$	[_quadrature]	✓
17568	$y' = -x^3$	[_quadrature]	✓
17571	$\sec(x)^2 \tan(y) + \sec(y)^2 \tan(x) y' = 0$	[_separable]	✓
17573	$y' = \frac{2xy}{y^2 + x^2}$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
17574	$y' = \frac{y(1 + \ln(y) - \ln(x))}{x}$	[[_homogeneous, 'class A', _dAlembert]]	✓
17575	$y^2 + x^2 y' = xy y'$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
17576	$(x + y) y' = y - x$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
17577	$x - y \cos\left(\frac{y}{x}\right) + x \cos\left(\frac{y}{x}\right) y' = 0$	[[_homogeneous, 'class A', _dAlembert]]	✓
17583	$y' \cos(x) = y \sin(x) + \cos(x)^2$	[_linear]	✓
17584	$y' = 2xy - x^3 + x$	[_linear]	✓
17585	$y' + \frac{xy}{x^2 + 1} = \frac{1}{x(x^2 + 1)}$	[_linear]	✓
17586	$(x - 2xy - y^2) y' + y^2 = 0$	[_rational, [_1st_or- der, 'with_symme- try_[F(x)*G(y),0']]]	✓
17587	$xy' + y = xy^2 \ln(x)$	[_Bernoulli]	✓
17588	$y' - \frac{xy}{2x^2 - 2} - \frac{x}{2y} = 0$	[_rational, _Bernoulli]	✓

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Table 2.12 first order ode exact  
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#	ODE	CAS classification	Solved?
17590	$x - y^2 + 2xyy' = 0$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
17591	$y' = \frac{y^2}{3} + \frac{2}{3x^2}$	[[_homogeneous, 'class G', _rational, [_Riccati, _spe- cial]]	✓
17592	$y' + y^2 + \frac{y}{x} - \frac{4}{x^2} = 0$	[[_homogeneous, 'class G', _rational, _Riccati]	✓
17597	$y' = \frac{x - y^2}{2y(x + y^2)}$	[[_homogeneous, 'class G', _rational]	✓
17599	$y' = ky + f(x)$	[[_linear, 'class A']]	✓
17601	$\frac{x + yy'}{\sqrt{1 + x^2 + y^2}} + \frac{y - xy'}{y^2 + x^2} = 0$	[[_1st_order, _with_lin- ear_symmetries], _exact]	✓
17602	$\frac{2x}{y^3} + \frac{(y^2 - 3x^2)y'}{y^4} = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlem- bert]	✓
17603	$\frac{\sin\left(\frac{x}{y}\right)}{y} - \frac{y \cos\left(\frac{x}{y}\right)}{x^2} + 1$ $+ \left(\frac{\cos\left(\frac{x}{y}\right)}{x} - \frac{x \sin\left(\frac{x}{y}\right)}{y^2} + \frac{1}{y^2}\right) y' = 0$	[_exact]	✓
17604	$\frac{1}{x} - \frac{y^2}{(x - y)^2} + \left(\frac{x^2}{(x - y)^2} - \frac{1}{y}\right) y' = 0$	[_exact, _rational]	✓
17605	$y^3 + 2(x^2 - xy^2)y' = 0$	[[_homogeneous, 'class G', _rational]	✓
17606	$(y^2x^2 - 1)y' + 2xy^3 = 0$	[[_homogeneous, 'class G', _rational]	✓
17608	$2xy^2 - y + (y^2 + x + y)y' = 0$	[_rational]	✓
17609	$y' = 2xy - x^3 + x$	[_linear]	✓
17610	$y - xy^2 \ln(x) + xy' = 0$	[_Bernoulli]	✓
17612	$yy'^2 + y'(x - y) - x = 0$	[_quadrature]	✓
17614	$y'^3 - (y^2 + xy + x^2)y'^2$ $+ (x^3y + y^2x^2 + xy^3)y' - x^3y^3 = 0$	[_quadrature]	✓
17633	$y' = \sqrt{y}$	[_quadrature]	✓
17634	$y' = y \ln(y)$	[_quadrature]	✓
17635	$y' = y \ln(y)^2$	[_quadrature]	✓

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Table 2.12 first order ode exact  
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#	ODE	CAS classification	Solved?
17732	$y' = 2x$	[_quadrature]	✓
17733	$xy' = 2y$	[_separable]	✓
17734	$yy' = e^{2x}$	[_separable]	✓
17735	$y' = ky$	[_quadrature]	✓
17738	$xy' + y = y' \sqrt{1 - y^2 x^2}$	[_rational, [_1st_order, '_with_symmetry_[F(x),G(y)]]]	✓
17739	$xy' = y + x^2 + y^2$	[[_homogeneous, 'class D'], _rational, _Riccati]	✓
17740	$y' = \frac{xy}{y^2 + x^2}$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
17741	$2xyy' = y^2 + x^2$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
17743	$y' = \frac{y^2}{xy - x^2}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
17744	$(y \cos(y) - \sin(y) + x) y' = y$	[[_1st_order, _with_linear_symmetries]]	✓
17745	$1 + y^2 + y^2 y' = 0$	[_quadrature]	✓
17746	$y' = e^{3x} - x$	[_quadrature]	✓
17747	$xy' = 1$	[_quadrature]	✓
17748	$y' = x e^{x^2}$	[_quadrature]	✓
17749	$y' = \arcsin(x)$	[_quadrature]	✓
17750	$(x + 1) y' = x$	[_quadrature]	✓
17751	$y'(x^2 + 1) = x$	[_quadrature]	✓
17752	$(x^3 + 1) y' = x$	[_quadrature]	✓
17753	$y'(x^2 + 1) = \arctan(x)$	[_quadrature]	✓
17754	$xyy' = y - 1$	[_separable]	✓
17755	$x^5 y' + y^5 = 0$	[_separable]	✓
17757	$y' = 2xy$	[_separable]	✓
17758	$y' \sin(y) = x^2$	[_separable]	✓
17759	$y' \sin(x) = 1$	[_quadrature]	✓

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#	ODE	CAS classification	Solved?
17760	$y' + y \tan(x) = 0$	[_separable]	✓
17761	$y' - y \tan(x) = 0$	[_separable]	✓
17762	$1 + y^2 + y'(x^2 + 1) = 0$	[_separable]	✓
17763	$y \ln(y) - xy' = 0$	[_separable]	✓
17764	$y' = x e^x$	[_quadrature]	✓
i.c.			
17765	$y' = 2 \sin(x) \cos(x)$	[_quadrature]	✓
i.c.			
17766	$y' = \ln(x)$	[_quadrature]	✓
i.c.			
17767	$(x^2 - 1) y' = 1$	[_quadrature]	✓
i.c.			
17768	$x(x^2 - 4) y' = 1$	[_quadrature]	✓
i.c.			
17769	$(x + 1)(x^2 + 1) y' = 2x^2 + x$	[_quadrature]	✓
i.c.			
17770	$y' = e^{-2y+3x}$	[_separable]	✓
i.c.			
17771	$xy' = 2x^2 + 1$	[_quadrature]	✓
i.c.			
17773	$3 \cos(3x) \cos(2y) - 2 \sin(3x) \sin(2y) y' = 0$	[_separable]	✓
i.c.			
17774	$y' = e^x \cos(x)$	[_quadrature]	✓
i.c.			
17776	$y' = 1 + 2xy$	[_linear]	✓
17779	$v' = g - \frac{kv^2}{m}$	[_quadrature]	✓
17780	$x^2 - 2y^2 + xyy' = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
17781	$x^2y' - 3xy - 2y^2 = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
17783	$x \sin\left(\frac{y}{x}\right) y' = y \sin\left(\frac{y}{x}\right) + x$	[[_homogeneous, 'class A'], _dAlembert]	✓
17785	$x - y - (x + y) y' = 0$	[[_homogeneous, 'class A'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
17786	$xy' = 2x + 3y$	[_linear]	✓

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#	ODE	CAS classification	Solved?
17788	$x^2 y' = y^2 + 2xy$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
17789	$x^3 + y^3 - xy^2 y' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
17796	$2x + 3y - 1 - 4(x + 1) y' = 0$	[_linear]	✓
17797	$y' = \frac{1 - xy^2}{2x^2 y}$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
17798	$y' = \frac{2 + 3xy^2}{4x^2 y}$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
17799	$y' = \frac{y - xy^2}{x + x^2 y}$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]	✓
17800	$\left(x + \frac{2}{y}\right) y' + y = 0$	[[_homogeneous, 'class G', _exact, _rational, [_Abel, '2nd type', 'class B']]	✓
17801	$\sin(x) \tan(y) + 1 + \cos(x) \sec(y)^2 y' = 0$	['y=_G(x,y)']	✓
17802	$y - x^3 + (x + y^3) y' = 0$	[_exact, _rational]	✓
17803	$y + y \cos(xy) + (x + x \cos(xy)) y' = 0$	[_separable]	✓
17804	$\cos(x) \cos(y)^2 + 2 \sin(x) \sin(y) \cos(y) y' = 0$	[_separable]	✓
17805	$(\sin(x) \sin(y) - x e^y) y' = e^y + \cos(x) \cos(y)$	[_exact]	✓
17806	$-\frac{\sin\left(\frac{x}{y}\right)}{y} + \frac{x \sin\left(\frac{x}{y}\right) y'}{y^2} = 0$	[_separable]	✓
17807	$1 + y + (1 - x) y' = 0$	[_separable]	✓
17808	$2xy^3 + y \cos(x) + (3y^2 x^2 + \sin(x)) y' = 0$	[_exact, [_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)']]	✓
17809	$1 = \frac{y}{1 - y^2 x^2} + \frac{xy'}{1 - y^2 x^2}$	[_exact, _rational, _Riccati]	✓
17810	$2xy^4 + \sin(y) + (4x^2 y^3 + x \cos(y)) y' = 0$	[_exact]	✓
17811	$\frac{xy' + y}{1 - y^2 x^2} + x = 0$	[_exact, _rational, _Riccati]	✓
17812	$2x(1 + \sqrt{x^2 - y}) = \sqrt{x^2 - y} y'$	[_exact, [_1st_order, '_with_symmetry_[F(x),G(y)']]	✓

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Table 2.12 first order ode exact  
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#	ODE	CAS classification	Solved?
17814	$e^{y^2} - \csc(y) \csc(x)^2 + (2xy e^{y^2} - \csc(y) \cot(y) \cot(x)) y' = 0$	[_exact]	✓
17815	$1 + y^2 \sin(2x) - 2y \cos(x)^2 y' = 0$	[_exact, _Bernoulli]	✓
17816	$\frac{x}{(y^2 + x^2)^{3/2}} + \frac{yy'}{(y^2 + x^2)^{3/2}} = 0$	[_separable]	✓
17817	$3x^2(1 + \ln(y)) + \left(\frac{x^3}{y} - 2y\right) y' = 0$	[_exact, [_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓
17818	$\frac{y - xy'}{(x + y)^2} + y' = 1$	[[_1st_order, _with_linear_symmetries], _exact, _rational]	✓
17819	$\frac{4y^2 - 2x^2}{4xy^2 - x^3} + \frac{(8y^2 - x^2) y'}{4y^3 - x^2y} = 0$	[[_homogeneous, 'class A'], _exact, _rational, _dAlembert]	✓
17820	$(3x^2 - y^2) y' - 2xy = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
17821	$xy - 1 + (x^2 - xy) y' = 0$	[_rational, [_1st_order, '_with_symmetry_[F(x),G(x)]'], [_Abel, '2nd type', 'class B']]	✓
17822	$xy' + y + 3x^3y^4y' = 0$	[[_homogeneous, 'class G'], _rational]	✓
17823	$e^x + (e^x \cot(y) + 2y \csc(y)) y' = 0$	[[_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓
17824	$(x + 2) \sin(y) + x \cos(y) y' = 0$	[_separable]	✓
17825	$y + (x - 2x^2y^3) y' = 0$	[[_homogeneous, 'class G'], _rational]	✓
17826	$x + 3y^2 + 2xyy' = 0$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
17827	$y + (2x - ye^y) y' = 0$	[[_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓
17828	$y \ln(y) - 2xy + (x + y) y' = 0$	['y=_G(x,y)']	✓
17829	$y^2 + xy + 1 + (x^2 + xy + 1) y' = 0$	[_rational, [_Abel, '2nd type', 'class B']]	✓
17830	$x^3 + xy^3 + 3y^2y' = 0$	[_rational, _Bernoulli]	✓
17831	$-y + xy' = (1 + y^2) y'$	[[_1st_order, _with_linear_symmetries], _rational]	✓

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Table 2.12 first order ode exact  
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#	ODE	CAS classification	Solved?
17832	$y - xy' = xy^3y'$	[_separable]	✓
17833	$xy' = x^5 + x^3y^2 + y$	[[_homogeneous, 'class D'], _rational, _Riccati]	✓
17834	$(x + y)y' = y - x$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
17836	$y^2 - y + xy' = 0$	[_separable]	✓
17837	$-y + xy' = 2x^2 - 3$	[_linear]	✓
17838	$xy' + y = \sqrt{xy}y'$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
17839	$y - xy^2 + (y^2x^2 + x)y' = 0$	[_rational]	✓
17840	$-y + xy' = x^2y^4(xy' + y)$	[[_homogeneous, 'class G'], _rational]	✓
17841	$xy' + y + x^2y^5y' = 0$	[[_homogeneous, 'class G'], _rational]	✓
17842	$2xy^2 - y + xy' = 0$	[[_homogeneous, 'class D'], _rational, _Bernoulli]	✓
17843	$y' + \frac{y}{x} = \sin(x)$	[_linear]	✓
17845	$xy' - 3y = x^4$	[_linear]	✓
17846	$y' + y = \frac{1}{1 + e^{2x}}$	[_linear]	✓
17847	$y'(x^2 + 1) + 2xy = \cot(x)$	[_linear]	✓
17848	$y' + y = 2xe^{-x} + x^2$	[[_linear, 'class A']]	✓
17849	$y' + y \cot(x) = 2x \csc(x)$	[_linear]	✓
17850	$2y - x^3 = xy'$	[_linear]	✓
17851	$y - x + xy \cot(x) + xy' = 0$	[_linear]	✓
17852	$y' - 2xy = 6xe^{x^2}$	[_linear]	✓
17853	$x \ln(x)y' + y = 3x^3$	[_linear]	✓
17854	$y - 2xy - x^2 + x^2y' = 0$	[_linear]	✓
17855	$xy' + y = x^4y^3$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
17856	$xy^2y' + y^3 = x \cos(x)$	[_Bernoulli]	✓
17857	$xy' + y = xy^2$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓

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#	ODE	CAS classification	Solved?
17858	$(e^y - 2xy) y' = y^2$	[_exact, [_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓
17859	$y - xy' = y'y^2e^y$	[[_1st_order, __with_linear_symmetries]]	✓
17861	$xy' = 2x^2y + y \ln(y)$	[[_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]']]	✓
17862	$y' \sin(2x) = 2y + 2 \cos(x)$	[_linear]	✓
17876	$(1 - xy) y' = y^2$	[[_homogeneous, 'class G'], _rational, [_Abel, '2nd type', 'class B']]	✓
17880	$x^2y^3 + y = (x^3y^2 - x) y'$	[[_homogeneous, 'class G'], _rational]	✓
17882	$xy' + y = y^2 + x^2y'$	[_separable]	✓
17883	$xyy' = y^2 + x^2y'$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
17884	$(e^x - 3y^2x^2) y' + ye^x = 2xy^3$	[_exact, [_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]']]	✓
17886	$y + x^2 = xy'$	[_linear]	✓
17887	$xy' + y = x^2 \cos(x)$	[_linear]	✓
17889	$\cos(x + y) = x \sin(x + y) + x \sin(x + y) y'$	[[_1st_order, __with_linear_symmetries], _exact]	✓
17891	$y^2e^{xy} + \cos(x) + (e^{xy} + xy e^{xy}) y' = 0$	[_exact]	✓
17892	$y' \ln(x - y) = 1 + \ln(x - y)$	[[_homogeneous, 'class C'], _exact, _dAlembert]	✓
17893	$y' + 2xy = e^{-x^2}$	[_linear]	✓
17894	$y^2 - 3xy - 2x^2 = (x^2 - xy) y'$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
17895	$y'(x^2 + 1) + 2xy = 4x^3$	[_linear]	✓
17896	$e^x \sin(y) + e^x \cos(y) y' = y \sin(xy) + x \sin(xy) y'$	[_exact]	✓
17899	$e^x(x + 1) = (x e^x - y e^y) y'$	['y=_G(x,y)']	✓
17900	$x^2y^4 + x^6 - x^3y^3y' = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓

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Table 2.12 first order ode exact  
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#	ODE	CAS classification	Solved?
17901	$y' = 1 + 3y \tan(x)$	[_linear]	✓
17903	$y' = \frac{2xy e^{\frac{x^2}{y^2}}}{y^2 + y^2 e^{\frac{x^2}{y^2}} + 2x^2 e^{\frac{x^2}{y^2}}}$	[[_homogeneous, 'class A'], _dAlembert]	✓
17904	$y' = \frac{x + 2y + 2}{y - 2x}$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
17905	$3x^2 \ln(y) + \frac{x^3 y'}{y} = 0$	[_separable]	✓
17906	$\frac{3y^2}{x^2 + 3x} + \left(2y \ln\left(\frac{5x}{x+3}\right) + 3 \sin(y)\right) y' = 0$	[_exact, [_1st_or- der, '_with_symme- try_[F(x)*G(y),0]']]	✓
17907	$\frac{y-x}{(x+y)^3} - \frac{2xy'}{(x+y)^3} = 0$	[_linear]	✓
17908	$xy^2 + y + xy' = 0$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
17910	$3x^2 y - y^3 - (3xy^2 - x^3) y' = 0$	[[_homogeneous, 'class A'], _exact, _rational, _dAlem- bert]	✓
17911	$x(x^2 + 1) y' + 2y = (x^2 + 1)^3$	[_linear]	✓
17912	$y' = \frac{-3x - 2y - 1}{2x + 3y - 1}$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
17913	$e^{x^2 y} (1 + 2x^2 y) + x^3 e^{x^2 y} y' = 0$	[_linear]	✓
17914	$3x^2 e^y - 2x + (x^3 e^y - \sin(y)) y' = 0$	[_exact]	✓
17916	$3xy + y^2 + (3xy + x^2) y' = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
17918	$xy' + y = y^2 \ln(x)$	[_Bernoulli]	✓
17919	$\frac{\cos(y)}{x+3} - \left(\sin(y) \ln(5x+15) - \frac{1}{y}\right) y' = 0$	[_exact, [_1st_or- der, '_with_symme- try_[F(x)*G(y),0]']]	✓
17921	$xy + y - 1 + xy' = 0$	[_linear]	✓
17922	$x^2 y' - y^2 = 2xy$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
17924	$x' + x \cot(y) = \sec(y)$	[_linear]	✓

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Table 2.12 first order ode exact  
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#	ODE	CAS classification	Solved?
18164	$x' = 3t^2 + 4t$ i.c.	[_quadrature]	✓
18165	$x' = be^t$ i.c.	[_quadrature]	✓
18166	$x' = \frac{1}{t^2 + 1}$ i.c.	[_quadrature]	✓
18167	$x' = \frac{1}{\sqrt{t^2 + 1}}$ i.c.	[_quadrature]	✓
18168	$x' = \cos(t)$ i.c.	[_quadrature]	✓
18169	$x' = \frac{\cos(t)}{\sin(t)}$ i.c.	[_quadrature]	✓
18171	$x' = be^x$ i.c.	[_quadrature]	✓
18172	$x' = (x - 1)^2$ i.c.	[_quadrature]	✓
18173	$x' = \sqrt{x^2 - 1}$ i.c.	[_quadrature]	✓
18174	$x' = 2\sqrt{x}$ i.c.	[_quadrature]	✓
18175	$x' = \tan(x)$ i.c.	[_quadrature]	✓
18176	$3t^2x - xt + (3t^3x^2 + t^3x^4)x' = 0$	[_separable]	✓
18177	$1 + 2x + (-t^2 + 4)x' = 0$	[_separable]	✓
18179	$(t^2 - x^2)x' = xt$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
18180	$e^{3t}x' + 3xe^{3t} = 2t$	[[_linear, 'class A']]	✓
18181	$2t + 3x + (3t - x)x' = t^2$	[_exact, _rational, [_1st_order, '_with_symmetry_[F(x),G(x)'], [_Abel, '2nd type', 'class A']]	✓
18182	$x' + 2x = e^t$	[[_linear, 'class A']]	✓
18183	$x' + x \tan(t) = 0$	[_separable]	✓
18184	$x' - x \tan(t) = 4 \sin(t)$	[_linear]	✓
18185	$t^3x' + (-3t^2 + 2)x = t^3$	[_linear]	✓

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Table 2.12 first order ode exact  
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#	ODE	CAS classification	Solved?
18186	$x' + 2xt + tx^4 = 0$	[_separable]	✓
18187	$tx' + x \ln(t) = t^2$	[_linear]	✓
18188	$tx' + xg(t) = h(t)$	[_linear]	✓
18190	$x' = -\lambda x$	[_quadrature]	✓
18208	$y' + cy = a$	[_quadrature]	✓
18211	$y' = \frac{\sqrt{1-y^2} \arcsin(y)}{x}$	[_separable]	✓
18213	$v' + u^2v = \sin(u)$	[_linear]	✓
18215	$v' + \frac{2v}{u} = 3$	[_linear]	✓
18217	$y' + \sqrt{\frac{1-y^2}{-x^2+1}} = 0$	unknown	✓
18218	$y - xy' = b(1 + x^2y')$	[_separable]	✓
18219	$x' = k(A - nx)(M - mx)$	[_quadrature]	✓
18220	$y' = 1 + \frac{1}{x} - \frac{1}{y^2+2} - \frac{1}{x(y^2+2)}$	[_separable]	✓
18221	$y^2 = x(y-x)y'$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
18223	$2ax + by + (2cy + bx + e)y' = g$	[[_homogeneous, 'class C', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
18226	$\frac{2x}{y^3} + \left(\frac{1}{y^2} - \frac{3x^2}{y^4}\right)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]	✓
18227	$\left(T + \frac{1}{\sqrt{t^2 - T^2}}\right)T' = \frac{T}{t\sqrt{t^2 - T^2}} - t$	[_exact]	✓
18228	$y' + xy = x$	[_separable]	✓
18229	$y' + \frac{y}{x} = \sin(x)$	[_linear]	✓
18230	$y' + \frac{y}{x} = \frac{\sin(x)}{y^3}$	[_Bernoulli]	✓
18231	$p' = \frac{p + at^3 - 2pt^2}{t(-t^2 + 1)}$	[_linear]	✓
18232	$(T \ln(t) - 1)T = tT'$	[_Bernoulli]	✓
18233	$y' + y \cos(x) = \frac{\sin(2x)}{2}$	[_linear]	✓

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Table 2.12 first order ode exact  
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#	ODE	CAS classification	Solved?
18242	$\sec(\theta)^2 = \frac{ms'}{k}$	[_quadrature]	✓
18245	$y' = x(y^2a + b)$	[_separable]	✓
18246	$n' = (n^2 + 1)x$	[_separable]	✓
18247	$v' + \frac{2v}{u} = 3v$	[_separable]	✓
18250	$\frac{y'}{x} = y \sin(x^2 - 1) - \frac{2y}{\sqrt{x}}$	[_separable]	✓
18251	$y' = 1 + \frac{2y}{x - y}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
18252	$v' + 2uv = 2u$	[_separable]	✓
18253	$1 + v^2 + (u^2 + 1)vv' = 0$	[_separable]	✓
18264	$5x' + x = \sin(3t)$	[[_linear, 'class A']]	✓
18280	$y' + \frac{xy}{x^2 + 1} = \frac{1}{x(x^2 + 1)}$	[_linear]	✓
18295	$y' + \frac{y}{x} = -x^2 + 1$	[_linear]	✓
18296	$y' + y \cot(x) = \csc(x)^2$	[_linear]	✓
18297	$y' = x - y$	[[_linear, 'class A']]	✓
18299	$y' + \frac{xy}{x^2 + 1} = \frac{1}{x(x^2 + 1)}$	[_linear]	✓
18300	$x(-x^2 + 1)y' + (x^2 - 1)y = x^3$	[_linear]	✓
18301	$y' + y \cos(x) = \frac{\sin(2x)}{2}$	[_linear]	✓
18302	$x(-x^2 + 1)y' + (2x^2 - 1)y = ax^3$	[_linear]	✓
18303	$y' + y \sin(x) = y^2 \sin(x)$	[_separable]	✓
18304	$(-x^2 + 1)y' - xy = axy^2$	[_separable]	✓
18306	$3y^2y' + y^3 = x - 1$	[_rational, _Bernoulli]	✓
18308	$y\sqrt{x^2 - 1} + x\sqrt{y^2 - 1}y' = 0$	[_separable]	✓
18309	$(1 + e^y) \cos(x) + e^y \sin(x)y' = 0$	[_separable]	✓
18311	$y(y + 3)y' = x(3 + 2y)$	[_separable]	✓
18312	$x^3 - 3x^2y + 5xy^2 - 7y^3$ $+ (y^4 + 2y^2 - x^3 + 5x^2y - 21xy^2)y' = 0$	[_exact, _rational]	✓

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Table 2.12 first order ode exact  
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#	ODE	CAS classification	Solved?
18313	$x^3 + 4xy + y^2 + (2x^2 + 2xy + 4y^3) y' = 0$	[_exact, _rational]	✓
18314	$\sin(x) \cos(y) + \cos(x) \sin(y) y' = 0$	[_separable]	✓
18315	$x^2 + \ln(y) + \frac{xy'}{y} = 0$	[_exact, [_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)']]]	✓
18317	$5xyy' - y^2 - x^2 = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
18320	$5xyy' - 4x^2 - y^2 = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
18321	$(x^2 - 2xy) y' + x^2 - 3xy + 2y^2 = 0$	[_linear]	✓
18323	$(3x + 2y - 7) y' = 2x - 3y + 6$	[[_homogeneous, 'class C', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
18403	$(1 - x) y' - 1 - y = 0$	[_separable]	✓
18404	$y' + \sqrt{\frac{1 - y^2}{-x^2 + 1}} = 0$	unknown	✓
18405	$y - xy' = a(y^2 + y')$	[_separable]	✓
18406	$3e^x \tan(y) + (1 - e^x) \sec(y)^2 y' = 0$	[_separable]	✓
18407	$x^2 + y^2 - 2xyy' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
18409	$x^2y - (x^3 + y^3) y' = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
18413	$x^2 - 4xy - 2y^2 + (y^2 - 4xy - 2x^2) y' = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]	✓
18414	$x + yy' + \frac{-y + xy'}{y^2 + x^2} = 0$	[[_1st_order, _with_linear_symmetries], _exact, _rational]	✓
18415	$a^2 - 2xy - y^2 - (x + y)^2 y' = 0$	[_exact, _rational, [_1st_order, '_with_symmetry_[F(x),G(x)']]]	✓
18416	$2ax + by + g + (2cy + bx + e) y' = 0$	[[_homogeneous, 'class C', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
18417	$(2x^2y + 4x^3 - 12xy^2 + 3y^2 - x e^y + e^{2x}) y' + 12x^2y + 2xy^2 + 4x^3 - 4y^3 + 2y e^{2x} - e^y = 0$	[_exact]	✓
18418	$y - xy' + \ln(x) = 0$	[_linear]	✓

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Table 2.12 first order ode exact  
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#	ODE	CAS classification	Solved?
18419	$(xy + 1)y - (1 - xy)xy' = 0$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]]	✓
18420	$a(xy' + 2y) = xyy'$	[_separable]	✓
18421	$x^4e^x - 2mxy^2 + 2m x^2yy' = 0$	[[_homogeneous, 'class D', _Bernoulli]]	✓
18422	$y(e^x + 2xy) - e^xy' = 0$	[_Bernoulli]	✓
18423	$x^2y - 2xy^2 - (x^3 - 3x^2y)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
18424	$y(xy + 2y^2x^2) + x(xy - y^2x^2)y' = 0$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]]	✓
18425	$x^2 + y^2 + 2x + 2yy' = 0$	[[_homogeneous, 'class D', _rational, _Bernoulli]]	✓
18426	$x^2 + y^2 - x^2yy' = 0$	[_rational, _Bernoulli]	✓
18427	$3x^2y^4 + 2xy + (2x^3y^3 - x^2)y' = 0$	[[_homogeneous, 'class G', _rational]]	✓
18428	$y^4 + 2y + (xy^3 + 2y^4 - 4x)y' = 0$	[_rational, [_1st_or- der, '._with_symme- try_[F(x)*G(y),0]']]	✓
18429	$y^3 - 2x^2y + (2xy^2 - x^3)y' = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
18432	$xy' - ay = x + 1$	[_linear]	✓
18433	$y' + y = e^{-x}$	[[_linear, 'class A']]]	✓
18434	$\cos(x)^2 y' + y = \tan(x)$	[_linear]	✓
18435	$(x + 1)y' - ny = e^x(x + 1)^{n+1}$	[_linear]	✓
18436	$y'(x^2 + 1) + 2xy = 4x^2$	[_linear]	✓
18437	$y' + \frac{y}{x} = x^2y^6$	[[_homogeneous, 'class G', _rational, _Bernoulli]]	✓
18438	$1 + y^2 = (\arctan(y) - x)y'$	[[_1st_order, '._with_sym- metry_[F(x),G(y)]']]	✓
18441	$3x(-x^2 + 1)y^2y' + (2x^2 - 1)y^3 = ax^3$	[_rational, _Bernoulli]	✓
18445	$\sec(x)^2 \tan(y) + \sec(y)^2 \tan(x)y' = 0$	[_separable]	✓
18446	$(x^2 - x^2y)y' + y^2 + xy^2 = 0$	[_separable]	✓

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Table 2.12 first order ode exact  
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#	ODE	CAS classification	Solved?
18447	$y' + \frac{(-2x+1)y}{x^2} = 1$	[_linear]	✓
18448	$3y' + \frac{2y}{x+1} = \frac{x^3}{y^2}$	[_rational, _Bernoulli]	✓
18449	$2x - y + 1 + (2y - x - 1)y' = 0$	[[_homogeneous, 'class C', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
18450	$y' + \frac{y}{\sqrt{-x^2+1}} = \frac{x + \sqrt{-x^2+1}}{(-x^2+1)^2}$	[_linear]	✓
18451	$xy' + \frac{y^2}{x} = y$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
18452	$x(x^2 + y^2 - a^2) + y(x^2 - y^2 - b^2)y' = 0$	[_exact, _rational]	✓
18453	$y' + \frac{4xy}{x^2+1} = \frac{1}{(x^2+1)^3}$	[_linear]	✓
18454	$x^2y - (x^3 + y^3)y' = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
18455	$x(-x^2+1)y' + (2x^2-1)y = ax^3$	[_linear]	✓
18456	$x^2 + y^2 + 1 - 2xyy' = 0$	[_rational, _Bernoulli]	✓
18457	$x + yy' = m(-y + xy')$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
18459	$(x+1)y' + 1 = 2e^y$	[_separable]	✓
18462	$(1 + 6y^2 - 3x^2y)y' = 3xy^2 - x^2$	[_exact, _rational]	✓
18463	$y(x^2 + y^2 + a^2)y' + x(x^2 + y^2 - a^2) = 0$	[_exact, _rational]	✓
18465	$yy' = ax$	[_separable]	✓
18466	$\sqrt{a^2+x^2}y' + y = \sqrt{a^2+x^2} - x$	[_linear]	✓
18467	$(x+y)y' + x - y = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
18468	$yy' + by^2 = a \cos(x)$	[_Bernoulli]	✓
18469	$2xy + (y^2 - x^2)y' = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
18470	$y - xy' = b(1 + x^2y')$	[_separable]	✓
18472	$(x^3y^3 + y^2x^2 + xy + 1)y$ $+ (x^3y^3 - y^2x^2 - xy + 1)xy' = 0$	[[_homogeneous, 'class G', _rational]	✓

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Table 2.12 first order ode exact  
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#	ODE	CAS classification	Solved?
18474	$y^2 + x^2y' = xyy'$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
18475	$y' + \frac{ny}{x} = ax^{-n}$	[_linear]	✓
18477	$y'^3 + 2xy'^2 - y^2y'^2 - 2xy^2y' = 0$	[_quadrature]	✓
18479	$y'^3(x + 2y) + 3y'^2(x + y) + (2x + y)y' = 0$	[_quadrature]	✓
18481	$4y^2y'^2 + 2y'xy(3x + 1) + 3x^3 = 0$	[_separable]	✓
18482	$y'^2 - 7y' + 12 = 0$	[_quadrature]	✓
18497	$xy(y - xy') = x + yy'$	[_separable]	✓
18501	$xy^2(y'^2 + 2) = 2y'y^3 + x^3$	[_separable]	✓
18503	$y'^2 - 9y' + 18 = 0$	[_quadrature]	✓
18513	$\left(y'^2 - \frac{1}{a^2 - x^2}\right) \left(y' - \sqrt{\frac{y}{x}}\right) = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓
18515	$xyy'^2 + y'(3x^2 - 2y^2) - 6xy = 0$	[_separable]	✓
18517	$y'^3 - (y^2 + xy + x^2)y'^2$ $+ (x^3y + y^2x^2 + xy^3)y' - x^3y^3 = 0$	[_quadrature]	✓



## 2.3.11 first order ode clairaut

Table 2.13: first order ode clairaut

#	ODE	CAS classification	Solved?
169	$y = xy' - \frac{y'^2}{4}$	[[_1st_order, __with_linear_symmetries], _Clairaut]	✓
1536	$y' = -\frac{x}{2} - 1 + \frac{\sqrt{x^2 + 4x + 4y}}{2}$	[[_1st_order, __with_linear_symmetries], _Clairaut]	✓
3325	$y = xy' + y'^2$	[[_1st_order, __with_linear_symmetries], _Clairaut]	✓
3326	$y = xy' + \frac{1}{y'}$	[[_homogeneous, 'class G'], _rational, _Clairaut]	✓
3327	$y = xy' - \sqrt{y'}$	[[_homogeneous, 'class G'], _Clairaut]	✓
3328	$y = xy' + \ln(y')$	[[_1st_order, __with_linear_symmetries], _Clairaut]	✓
3329	$y = xy' + \frac{3}{y'^2}$	[[_1st_order, __with_linear_symmetries], _Clairaut]	✓
3330	$y = xy' - y'^{2/3}$	[[_1st_order, __with_linear_symmetries], _Clairaut]	✓
3331	$y = xy' + e^{y'}$	[[_1st_order, __with_linear_symmetries], _Clairaut]	✓
3332	$(y - xy')^2 = 1 + y'^2$	[[_1st_order, __with_linear_symmetries], _rational, _Clairaut]	✓
3333	$xy'^2 - yy' - 2 = 0$	[[_homogeneous, 'class G'], _rational, _Clairaut]	✓
4088	$(y - xy')^2 = 1 + y'^2$	[[_1st_order, __with_linear_symmetries], _rational, _Clairaut]	✓
4383	$xy'^3 - yy'^2 + 1 = 0$	[[_1st_order, __with_linear_symmetries], _Clairaut]	✓
4384	$y = xy' + y'^3$	[[_1st_order, __with_linear_symmetries], _Clairaut]	✓

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Table 2.13 first order ode clairaut  
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#	ODE	CAS classification	Solved?
4388	$2y'^2(y - xy') = 1$	[[_1st_order, __with_linear_symmetries], _Clairaut]	✓
5365	$y'^2 + xy' - y = 0$	[[_1st_order, __with_linear_symmetries], _Clairaut]	✓
5366	$y'^2 - xy' + y = 0$	[[_1st_order, __with_linear_symmetries], _Clairaut]	✓
5369	$y'^2 + (1 - x)y' + y = 0$	[[_1st_order, __with_linear_symmetries], _Clairaut]	✓
5370	$y'^2 - (x + 1)y' + y = 0$	[[_1st_order, __with_linear_symmetries], _Clairaut]	✓
5371	$y'^2 - (2 - x)y' + 1 - y = 0$	[[_1st_order, __with_linear_symmetries], _Clairaut]	✓
5372	$y'^2 + (x + a)y' - y = 0$	[[_1st_order, __with_linear_symmetries], _Clairaut]	✓
5377	$y'^2 - 2xy' + 2y = 0$	[[_1st_order, __with_linear_symmetries], _Clairaut]	✓
5381	$y'^2 - 4(x + 1)y' + 4y = 0$	[[_1st_order, __with_linear_symmetries], _Clairaut]	✓
5383	$y'^2 - axy' + ay = 0$	[[_1st_order, __with_linear_symmetries], _Clairaut]	✓
5385	$y'^2 + (bx + a)y' + c = by$	[[_1st_order, __with_linear_symmetries], _Clairaut]	✓
5415	$2y'^2 - (1 - x)y' - y = 0$	[[_1st_order, __with_linear_symmetries], _Clairaut]	✓
5437	$xy'^2 - yy' + a = 0$	[[_homogeneous, 'class G'], _rational, _Clairaut]	✓
5442	$xy'^2 + (-y + a)y' + b = 0$	[[_1st_order, __with_linear_symmetries], _rational, _Clairaut]	✓

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Table 2.13 first order ode clairaut  
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#	ODE	CAS classification	Solved?
5443	$xy'^2 + (x - y)y' + 1 - y = 0$	[[_1st_order, __with_linear_symmetries], _rational, _dAlembert]	✓
5444	$xy'^2 + (a + x - y)y' - y = 0$	[[_1st_order, __with_linear_symmetries], _rational, _dAlembert]	✓
5458	$(x + 1)y'^2 - (x + y)y' + y = 0$	[[_1st_order, __with_linear_symmetries], _rational, _dAlembert]	✓
5459	$(-x + a)y'^2 + yy' - b = 0$	[[_1st_order, __with_linear_symmetries], _Clairaut]	✓
5462	$(3x + 1)y'^2 - 3(y + 2)y' + 9 = 0$	[[_1st_order, __with_linear_symmetries], _Clairaut]	✓
5480	$x^2y'^2 - (1 + 2xy)y' + 1 + y^2 = 0$	[[_1st_order, __with_linear_symmetries], _rational, _Clairaut]	✓
5481	$x^2y'^2 - (a + 2xy)y' + y^2 = 0$	[[_homogeneous, 'class G'], _rational, _Clairaut]	✓
5502	$(a^2 + x^2)y'^2 - 2xyy' + b + y^2 = 0$	[[_1st_order, __with_linear_symmetries], _rational, _Clairaut]	✓
5599	$y'^3 + axy' - ay = 0$	[[_1st_order, __with_linear_symmetries], _Clairaut]	✓
5600	$y'^3 - (bx + a)y' + by = 0$	[[_1st_order, __with_linear_symmetries], _Clairaut]	✓
5608	$y'^3 - y'^2 + xy' - y = 0$	[[_1st_order, __with_linear_symmetries], _Clairaut]	✓
5623	$xy'^3 - yy'^2 + a = 0$	[[_1st_order, __with_linear_symmetries], _Clairaut]	✓
5629	$x^2y'^3 - 2xyy'^2 + y^2y' + 1 = 0$	[[_1st_order, __with_linear_symmetries], _Clairaut]	✓
5660	$2\sqrt{ay'} + xy' - y = 0$	[[_homogeneous, 'class G'], _Clairaut]	✓

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Table 2.13 first order ode clairaut  
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#	ODE	CAS classification	Solved?
5666	$\sqrt{a^2 + b^2 y'^2} + xy' - y = 0$	[[_1st_order, _with_linear_symmetries], _Clairaut]	✓
5667	$a\sqrt{1 + y'^2} + xy' - y = 0$	[[_1st_order, _with_linear_symmetries], _Clairaut]	✓
5670	$a(1 + y'^3)^{1/3} + xy' - y = 0$	[_Clairaut]	✓
5671	$\cos(y') + xy' = y$	[_Clairaut]	✓
5676	$(1 + y'^2) \sin(-y + xy')^2 = 1$	[_Clairaut]	✓
5680	$\ln(y') + xy' + a = y$	[[_1st_order, _with_linear_symmetries], _Clairaut]	✓
5683	$\ln(y') + a(-y + xy') = 0$	[[_1st_order, _with_linear_symmetries], _Clairaut]	✓
5686	$y' \ln(y') - (x + 1)y' + y = 0$	[[_1st_order, _with_linear_symmetries], _Clairaut]	✓
5687	$y' \ln\left(y' + \sqrt{a + y'^2}\right) - \sqrt{1 + y'^2} - xy' + y = 0$	[_Clairaut]	✓
5697	$y = xy' + \frac{ay'}{\sqrt{1 + y'^2}}$	[_Clairaut]	✓
5761	$y = xy' + y' - y'^2$	[[_1st_order, _with_linear_symmetries], _Clairaut]	✓
5762	$y = xy' + \sqrt{b^2 - a^2 y'^2}$	[[_1st_order, _with_linear_symmetries], _rational, _Clairaut]	✓
6572	$y = xy' + y'^4$	[[_1st_order, _with_linear_symmetries], _Clairaut]	✓
6673	$y'^2 - xy' + y = 0$	[[_1st_order, _with_linear_symmetries], _Clairaut]	✓
6675	$xy'^5 - yy'^4 + (x^2 + 1)y'^3 - 2xyy'^2 + (x + y^2)y' - y = 0$	[[_homogeneous, 'class G'], _rational, _Clairaut]	✓

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Table 2.13 first order ode clairaut  
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#	ODE	CAS classification	Solved?
6682	$y = xy' - 2y'^2$	[[_1st_order, __with_linear_symmetries], _Clairaut]	✓
8133	$y'^2 - xy' + y = 0$	[[_1st_order, __with_linear_symmetries], _Clairaut]	✓
8142	$y'^2 - xy' + y = 0$	[[_1st_order, __with_linear_symmetries], _Clairaut]	✓
8143	$y = xy' + ky'^2$	[[_1st_order, __with_linear_symmetries], _Clairaut]	✓
8148	$xy'^2 + (x - y)y' + 1 - y = 0$	[[_1st_order, __with_linear_symmetries], _rational, _dAlembert]	✓
8149	$y'(xy' - y + k) + a = 0$	[[_1st_order, __with_linear_symmetries], _rational, _Clairaut]	✓
8153	$xy'^3 - yy'^2 + 1 = 0$	[[_1st_order, __with_linear_symmetries], _Clairaut]	✓
8219	$x^2y'^3 - 2xyy'^2 + y^2y' + 1 = 0$	[[_1st_order, __with_linear_symmetries], _Clairaut]	✓
8224	$x^2y'^2 - (1 + 2xy)y' + 1 + y^2 = 0$	[[_1st_order, __with_linear_symmetries], _rational, _Clairaut]	✓
8227	$(y' + 1)^2(y - xy') = 1$	[[_1st_order, __with_linear_symmetries], _dAlembert]	✓
8228	$y'^3 - y'^2 + xy' - y = 0$	[[_1st_order, __with_linear_symmetries], _Clairaut]	✓
8231	$xy'^2 + (k - x - y)y' + y = 0$	[[_1st_order, __with_linear_symmetries], _rational, _dAlembert]	✓
8405	$\frac{y'^2}{4} - xy' + y = 0$	[[_1st_order, __with_linear_symmetries], _Clairaut]	✓
8423	$xf' - f = \frac{f'^2(1 - f'^\lambda)^2}{\lambda^2}$	[_Clairaut]	✓

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Table 2.13 first order ode clairaut  
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#	ODE	CAS classification	Solved?
10066	$y'^2 + (-2 + x)y' - y + 1 = 0$	[[_1st_order, __with_linear_symmetries], _Clairaut]	✓
10067	$y'^2 + (x + a)y' - y = 0$	[[_1st_order, __with_linear_symmetries], _Clairaut]	✓
10068	$y'^2 - (x + 1)y' + y = 0$	[[_1st_order, __with_linear_symmetries], _Clairaut]	✓
10073	$y'^2 + (ax + b)y' - ay + c = 0$	[[_1st_order, __with_linear_symmetries], _Clairaut]	✓
10087	$2y'^2 + (x - 1)y' - y = 0$	[[_1st_order, __with_linear_symmetries], _Clairaut]	✓
10105	$xy'^2 - yy' + a = 0$	[[_homogeneous, 'class G'], _rational, _Clairaut]	✓
10113	$(x + 1)y'^2 - (x + y)y' + y = 0$	[[_1st_order, __with_linear_symmetries], _rational, _dAlembert]	✓
10114	$(3x + 1)y'^2 - 3(y + 2)y' + 9 = 0$	[[_1st_order, __with_linear_symmetries], _Clairaut]	✓
10115	$(3x + 5)y'^2 - (3y + x)y' + y = 0$	[[_1st_order, __with_linear_symmetries], _rational, _dAlembert]	✓
10116	$axy'^2 + (bx - ay + c)y' - by = 0$	[[_1st_order, __with_linear_symmetries], _rational, _dAlembert]	✓
10117	$axy'^2 - (ay + bx - a - b)y' + by = 0$	[[_1st_order, __with_linear_symmetries], _rational, _dAlembert]	✓
10125	$x^2y'^2 - (a + 2xy)y' + y^2 = 0$	[[_homogeneous, 'class G'], _rational, _Clairaut]	✓
10133	$(x^2 + 1)y'^2 - 2xyy' + y^2 - 1 = 0$	[[_1st_order, __with_linear_symmetries], _rational, _Clairaut]	✓
10138	$(x^2 + a)y'^2 - 2xyy' + y^2 + b = 0$	[[_1st_order, __with_linear_symmetries], _rational, _Clairaut]	✓

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Table 2.13 first order ode clairaut  
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#	ODE	CAS classification	Solved?
10208	$y'^3 + xy' - y = 0$	[[_1st_order, __with_linear_symmetries], _Clairaut]	✓
10209	$y'^3 - (x + 5)y' + y = 0$	[[_1st_order, __with_linear_symmetries], _Clairaut]	✓
10220	$xy'^3 - yy'^2 + a = 0$	[[_1st_order, __with_linear_symmetries], _Clairaut]	✓
10242	$\sqrt{1 + y'^2} + xy' - y = 0$	[[_1st_order, __with_linear_symmetries], _rational, _Clairaut]	✓
10251	$\ln(y') + a(-y + xy') = 0$	[[_1st_order, __with_linear_symmetries], _Clairaut]	✓
10256	$(1 + y'^2) \sin(-y + xy')^2 - 1 = 0$	[_Clairaut]	✓
12568	$(-y + xy')^2 = 1 + y'^2$	[[_1st_order, __with_linear_symmetries], _rational, _Clairaut]	✓
12578	$yy' = (x - b)y'^2 + a$	[[_1st_order, __with_linear_symmetries], _rational, _Clairaut]	✓
12584	$(x^2 + 1)y'^2 - 2xyy' + y^2 - 1 = 0$	[[_1st_order, __with_linear_symmetries], _rational, _Clairaut]	✓
12588	$y = xy' + \frac{1}{y'}$	[[_homogeneous, 'class G'], _rational, _Clairaut]	✓
12590	$x^2y'^2 - 2(xy - 2)y' + y^2 = 0$	[[_homogeneous, 'class G'], _Clairaut]	✓
13556 i.c.	$y = xy' + y'^2$	[[_1st_order, __with_linear_symmetries], _Clairaut]	✓
13557 i.c.	$y = xy' + y'^2$	[[_1st_order, __with_linear_symmetries], _Clairaut]	✓
13573	$y'^2 + (x + a)y' - y = 0$	[[_1st_order, __with_linear_symmetries], _Clairaut]	✓

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Table 2.13 first order ode clairaut  
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#	ODE	CAS classification	Solved?
13831	$y'^2 - y' - xy' + y = 0$	[[_1st_order, _with_linear_symmetries], _Clairaut]	✓
13896	$y = xy' + \sqrt{1 - y'^2}$	[[_1st_order, _with_linear_symmetries], _rational, _Clairaut]	✓
13898	$y = xy' + \frac{1}{y'}$	[[_homogeneous, 'class G'], _rational, _Clairaut]	✓
13899	$y = xy' - \frac{1}{y'^2}$	[[_1st_order, _with_linear_symmetries], _Clairaut]	✓
14072 i.c.	$y' = -\frac{x}{2} + \frac{\sqrt{x^2 + 4y}}{2}$	[[_1st_order, _with_linear_symmetries], _Clairaut]	✓
14151 i.c.	$y' = -\frac{x}{2} + \frac{\sqrt{x^2 + 4y}}{2}$	[[_1st_order, _with_linear_symmetries], _Clairaut]	✓
14152 i.c.	$y' = -\frac{x}{2} + \frac{\sqrt{x^2 + 4y}}{2}$	[[_1st_order, _with_linear_symmetries], _Clairaut]	✓
14153 i.c.	$y' = -\frac{x}{2} + \frac{\sqrt{x^2 + 4y}}{2}$	[[_1st_order, _with_linear_symmetries], _Clairaut]	✓
14154 i.c.	$y' = -\frac{x}{2} + \frac{\sqrt{x^2 + 4y}}{2}$	[[_1st_order, _with_linear_symmetries], _Clairaut]	✓
14155 i.c.	$y' = -\frac{x}{2} + \frac{\sqrt{x^2 + 4y}}{2}$	[[_1st_order, _with_linear_symmetries], _Clairaut]	✓
14813	$y' + 2x = 2\sqrt{y + x^2}$	[[_1st_order, _with_linear_symmetries], _Clairaut]	✓
15801	$ty' - y'^3 = y$	[[_1st_order, _with_linear_symmetries], _Clairaut]	✓
15802	$ty' - y - 2(ty' - y)^2 = y' + 1$	[[_1st_order, _with_linear_symmetries], _rational, _Clairaut]	✓

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Table 2.13 first order ode clairaut  
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#	ODE	CAS classification	Solved?
15803	$ty' - y - 1 = y'^2 - y'$	[[_1st_order, _with_linear_symmetries], _Clairaut]	✓
15804	$1 + y - ty' = \ln(y')$	[[_1st_order, _with_linear_symmetries], _Clairaut]	✓
15805	$1 - 2ty' + 2y = \frac{1}{y'^2}$	[[_1st_order, _with_linear_symmetries], _Clairaut]	✓
15838	$y = ty' + 3y'^4$	[[_1st_order, _with_linear_symmetries], _Clairaut]	✓
15840	$y - ty' = -2y'^3$	[[_1st_order, _with_linear_symmetries], _Clairaut]	✓
15841	$y - ty' = -4y'^2$	[[_1st_order, _with_linear_symmetries], _Clairaut]	✓
16519	$y = xy' + \frac{a}{y'^2}$	[[_1st_order, _with_linear_symmetries], _Clairaut]	✓
16520	$y = xy' + y'^2$	[[_1st_order, _with_linear_symmetries], _Clairaut]	✓
16521	$xy'^2 - yy' - y' + 1 = 0$	[[_1st_order, _with_linear_symmetries], _rational, _Clairaut]	✓
16522	$y = xy' + a\sqrt{1 + y'^2}$	[[_1st_order, _with_linear_symmetries], _Clairaut]	✓
16523	$x = \frac{y}{y'} + \frac{1}{y'^2}$	[[_homogeneous, 'class G'], _rational, _Clairaut]	✓
16542	$y = xy' + \sqrt{a^2y'^2 + b^2}$	[[_1st_order, _with_linear_symmetries], _rational, _Clairaut]	✓
17061	$y' = -\frac{t}{2} + \frac{\sqrt{t^2 + 4y}}{2}$ i.c.	[[_1st_order, _with_linear_symmetries], _Clairaut]	✓

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Table 2.13 first order ode clairaut  
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#	ODE	CAS classification	Solved?
17627	$y = xy' + y' - y'^2$	[[_1st_order, _with_linear_symmetries], _Clairaut]	✓
17629	$y'^2(x^2 - 1) - 2xyy' + y^2 - 1 = 0$	[[_1st_order, _with_linear_symmetries], _rational, _Clairaut]	✓
17636	$y' = -x + \sqrt{x^2 + 2y}$	[[_1st_order, _with_linear_symmetries], _Clairaut]	✓
17637	$y' = -x - \sqrt{x^2 + 2y}$	[[_1st_order, _with_linear_symmetries], _Clairaut]	✓
18277	$y = xy' + y' - y'^3$	[[_1st_order, _with_linear_symmetries], _Clairaut]	✓
18384	$y = xy' - y'^2$	[[_1st_order, _with_linear_symmetries], _Clairaut]	✓
18399	$y'^2 + xy' - y = 0$	[[_1st_order, _with_linear_symmetries], _Clairaut]	✓
18495	$y = xy' + \arcsin(y')$	[_Clairaut]	✓
18500	$y = y'(x - b) + \frac{a}{y'}$	[[_1st_order, _with_linear_symmetries], _Clairaut]	✓
18522	$y = xy' + \frac{m}{y'}$	[[_homogeneous, 'class G'], _rational, _Clairaut]	✓
18524	$y = xy' + a\sqrt{1 + y'^2}$	[[_1st_order, _with_linear_symmetries], _rational, _Clairaut]	✓
18525	$y'^2 + xy' - y = 0$	[[_1st_order, _with_linear_symmetries], _Clairaut]	✓
18535	$y^2 - 2xyy' + y'^2(x^2 - 1) = m^2$	[[_1st_order, _with_linear_symmetries], _rational, _Clairaut]	✓
18536	$y = xy' + \sqrt{b^2 + a^2y'}$	[[_1st_order, _with_linear_symmetries], _rational, _Clairaut]	✓

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Table 2.13 first order ode clairaut  
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#	ODE	CAS classification	Solved?
18537	$y = xy' - y'^2$	[[_1st_order, _with_linear_symmetries], _Clairaut]	✓
18541	$y'^2(-a^2 + x^2) - 2xyy' + y^2 - b^2 = 0$	[[_1st_order, _with_linear_symmetries], _Clairaut]	✓

## 2.3.12 first order ode dAlembert

Table 2.14: first order ode dAlembert

#	ODE	CAS classification	Solved?
31	$y' = \sqrt{x-y}$ i.c.	[[_homogeneous, 'class C'], _dAlembert]	✓
32	$y' = \sqrt{x-y}$ i.c.	[[_homogeneous, 'class C'], _dAlembert]	✓
33	$yy' = x - 1$ i.c.	[_separable]	✓
34	$yy' = x - 1$ i.c.	[_separable]	✓
67	$y' = 6e^{2x-y}$ i.c.	[_separable]	✓
105	$(x+y)y' = x-y$	[[_homogeneous, 'class A'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
106	$2xyy' = x^2 + 2y^2$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
107	$xy' = y + 2\sqrt{xy}$	[[_homogeneous, 'class A'], _dAlembert]	✓
110	$(x+2y)y' = y$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
111	$xy^2y' = x^3 + y^3$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
115	$(x^2 - y^2)y' = 2xy$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
117	$xy' = y + \sqrt{y^2 + x^2}$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
120	$y' = \sqrt{x+y+1}$	[[_homogeneous, 'class C'], _dAlembert]	✓
122	$(x+y)y' = 1$	[[_homogeneous, 'class C'], [_Abel, '2nd type', 'class C'], _dAlembert]	✓
135	$2x + 3y + (3x + 2y)y' = 0$	[[_homogeneous, 'class A'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
136	$4x - y + (6y - x)y' = 0$	[[_homogeneous, 'class A'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓

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Table 2.14 first order ode dAlembert  
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#	ODE	CAS classification	Solved?
137	$3x^2 + 2y^2 + (4xy + 6y^2) y' = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]]	✓
159	$y' = f(ax + by + c)$	[[_homogeneous, 'class C', _dAlembert]]	✓
163	$y' = \frac{x - y - 1}{x + y + 3}$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
164	$y' = \frac{2y - x + 7}{4x - 3y - 18}$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
165	$y' = \sin(x - y)$	[[_homogeneous, 'class C', _dAlembert]]	✓
166	$y' = -\frac{y(2x^3 - y^3)}{x(2y^3 - x^3)}$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
168	$y' + 2xy = 1 + x^2 + y^2$	[[_homogeneous, 'class C', _Riccati]]	✓
192	$x^3 y' = x^2 y - y^3$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
196	$2x^2 y - x^3 y' = y^3$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
208	$y' = \sqrt{x + y}$	[[_homogeneous, 'class C', _dAlembert]]	✓
212	$y' = \frac{3y + x}{y - 3x}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
673	$yy' = x - 1$ i.c.	[_separable]	✓
674	$yy' = x - 1$ i.c.	[_separable]	✓
702	$y' = 6e^{2x-y}$ i.c.	[_separable]	✓
729	$(x + y) y' = x - y$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
730	$2xyy' = y^2 + x^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
731	$xy' = y + 2\sqrt{xy}$	[[_homogeneous, 'class A', _dAlembert]]	✓

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Table 2.14 first order ode dAlembert  
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#	ODE	CAS classification	Solved?
734	$(x + 2y)y' = y$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
735	$xy^2y' = x^3 + y^3$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
739	$(x^2 - y^2)y' = 2xy$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
741	$xy' = y + \sqrt{y^2 + x^2}$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
744	$y' = \sqrt{x + y + 1}$	[[_homogeneous, 'class C'], _dAlembert]	✓
759	$2x + 3y + (3x + 2y)y' = 0$	[[_homogeneous, 'class A'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
760	$4x - y + (6y - x)y' = 0$	[[_homogeneous, 'class A'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
761	$3x^2 + 2y^2 + (4xy + 6y^2)y' = 0$	[[_homogeneous, 'class A'], _exact, _rational, _dAlembert]	✓
784	$x^3y' = x^2y - y^3$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
788	$2x^2y - x^3y' = y^3$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
804	$y' = \frac{3y + x}{y - 3x}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
1138	$y' = \frac{-2x + 1}{y}$ i.c.	[_separable]	✓
1160	$y' = \frac{4y - 3x}{2x - y}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
1161	$y' = -\frac{4x + 3y}{2x + y}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
1183	$y' = y(-2 + y)(-1 + y)$	[_quadrature]	✓
1193	$3 + 2x + (2y - 2)y' = 0$	[_separable]	✓

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Table 2.14 first order ode dAlembert  
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#	ODE	CAS classification	Solved?
1197	$y' = \frac{-ax - by}{bx + cy}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
1205	$2x - y + (2y - x)y' = 0$ i.c.	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
1237	$y' = e^{x+y}$	[_separable]	✓
1619	$y' = \sqrt{x+y}$	[[_homogeneous, 'class C', _dAlembert]]	✓
1644	$xy^3y' = y^4 + x^4$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
1650	$y' = \frac{x^3 + y^3}{xy^2}$ i.c.	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
1657	$y' = \frac{y^3 + 2xy^2 + x^2y + x^3}{x(x+y)^2}$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
1658	$y' = \frac{x + 2y}{2x + y}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
1659	$y' = \frac{y}{y - 2x}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
1660	$y' = \frac{xy^2 + 2y^3}{x^3 + x^2y + xy^2}$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
1661	$y' = \frac{x^3 + x^2y + 3y^3}{x^3 + 3xy^2}$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
1663	$xyy' = x^2 - xy + y^2$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
1666	$y' = \frac{-6x + y - 3}{2x - y - 1}$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
1667	$y' = \frac{2x + y + 1}{x + 2y - 4}$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
1668	$y' = \frac{-x + 3y - 14}{x + y - 2}$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓

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Table 2.14 first order ode dAlembert  
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#	ODE	CAS classification	Solved?
1685	$4x + 7y + (3x + 4y)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
1702	$7x + 4y + (4x + 3y)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
1800	$y' + y^2 + 4xy + 4x^2 + 2 = 0$	[[_homogeneous, 'class C', _Riccati]]	✓
2321	$y' = e^{3+t+y}$	[_separable]	✓
2330	<i>i.c.</i> $ty' = y + \sqrt{t^2 + y^2}$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
2332	$(t - \sqrt{ty})y' = y$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
2334	$e^{\frac{t}{y}}(-t + y)y' + y(1 + e^{\frac{t}{y}}) = 0$	[[_homogeneous, 'class A', _dAlembert]]	✓
2336	$1 + t - 2y + (4t - 3y - 6)y' = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
2337	$t + 2y + 3 + (2t + 4y - 1)y' = 0$	[[_homogeneous, 'class C', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
2355	<i>i.c.</i> $y' = e^{(-t+y)^2}$	[[_homogeneous, 'class C', _dAlembert]]	✓
2492	$y' = e^{3+t+y}$	[_separable]	✓
2502	<i>i.c.</i> $ty' = y + \sqrt{t^2 + y^2}$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
2504	$(t - \sqrt{ty})y' = y$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
2506	$e^{\frac{t}{y}}(-t + y)y' + y(1 + e^{\frac{t}{y}}) = 0$	[[_homogeneous, 'class A', _dAlembert]]	✓
2508	$1 + t - 2y + (4t - 3y - 6)y' = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
2509	$t + 2y + 3 + (2t + 4y - 1)y' = 0$	[[_homogeneous, 'class C', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
2530	<i>i.c.</i> $y' = e^{(-t+y)^2}$	[[_homogeneous, 'class C', _dAlembert]]	✓

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Table 2.14 first order ode dAlembert  
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#	ODE	CAS classification	Solved?
2873	$-y + xy' = \sqrt{xy}$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
2874	$y' = \frac{2x - y}{4y + x}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
2877	$xy' - y + \sqrt{y^2 - x^2} = 0$	[[_homogeneous, 'class A', _dAlembert]]	✓
2878	$y^2 + x^2 = xyy'$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
2880	$xy' + y = 2\sqrt{xy}$	[[_homogeneous, 'class A', _dAlembert]]	✓
2881	$x + y + (x - y)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
2882	$y(x^2 - xy + y^2) + xy'(y^2 + xy + x^2) = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
2883	$xy' - y - x \sin\left(\frac{y}{x}\right) = 0$	[[_homogeneous, 'class A', _dAlembert]]	✓
2884	$y' = \frac{y}{x} + \cosh\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A', _dAlembert]]	✓
2892	$y^2(yy' - x) + x^3 = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
2893	$y' = \frac{y}{x} + \tanh\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A', _dAlembert]]	✓
2895	$x + (x - 2y + 2)y' = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class C', _dAlem- bert]]	✓
2898	$x - y + (y - x + 1)y' = 0$	[[_homogeneous, 'class C', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
2900	$x + y + (2x + 2y - 1)y' = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
2901	$x - y + 1 + (x - y - 1)y' = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
2902	$x + 2y + (3x + 6y + 3)y' = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓

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Table 2.14 first order ode dAlembert  
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#	ODE	CAS classification	Solved?
2903	$x + 2y + 2 = (2x + y - 1)y'$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
2904 i.c.	$3x - y + 1 + (x - 3y - 5)y' = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
2905 i.c.	$6x - 3y + 6 + (2x - y + 5)y' = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
2907 i.c.	$x + y + 4 = (2x + 2y - 1)y'$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
2908 i.c.	$2x + 3y - 1 + (2x + 3y + 2)y' = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
2911 i.c.	$x - 2y + 3 + (1 - x + 2y)y' = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
2912 i.c.	$2x + y + (4x + 2y + 1)y' = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
2914	$x + y + (x - 2y)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
2915	$3x + y + (3y + x)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
2916	$a_1x + b_1y + c_1 + (b_1x + b_2y + c_2)y' = 0$	[[_homogeneous, 'class C', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
2919	$2xy - (y^2 + x^2)y' = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
2934	$\frac{x^2 + 3y^2}{x(3x^2 + 4y^2)} + \frac{(2x^2 + y^2)y'}{y(3x^2 + 4y^2)} = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]]	✓
2935	$\frac{x^2 - y^2}{x(2x^2 + y^2)} + \frac{(x^2 + 2y^2)y'}{y(2x^2 + y^2)} = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]]	✓
2964	$y + (2x - 3y)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓

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Table 2.14 first order ode dAlembert  
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#	ODE	CAS classification	Solved?
3008	$x - 2y + 1 + (y - 2)y' = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
3012	$x - 3y = (3y - x + 2)y'$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
3014	$x^2y - (x^3 + y^3)y' = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
3019	$y + (-2y + 3x)y' = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
3023	$xy' - y - \sqrt{y^2 + x^2} = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
3026	$1 + e^{\frac{x}{y}} + e^{\frac{x}{y}} \left(1 - \frac{x}{y}\right) y' = 0$	[[_homogeneous, 'class A'], _exact, _dAlembert]	✓
3036	$y \cos\left(\frac{x}{y}\right) - \left(y + x \cos\left(\frac{x}{y}\right)\right) y' = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓
3053 i.c.	$x - 2y + 3 = (x - 2y + 1)y'$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
3286	$xyy'^2 + (x + y)y' + 1 = 0$	[_quadrature]	✓
3288	$x(-1 + y'^2) = 2yy'$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
3295	$y = y'x(y' + 1)$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
3296	$y = x + 3 \ln(y')$	[_separable]	✓
3297	$y(1 + y'^2) = 2$	[_quadrature]	✓
3298	$yy'^2 - 2xy' + y = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
3300	$x(-1 + y'^2) = 2yy'$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
3301	$4x - 2yy' + xy'^2 = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
3303	$yy'^2 = 3xy' + y$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
3304	$8x + 1 = yy'^2$	[[_homogeneous, 'class C'], _rational, _dAlembert]	✓

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Table 2.14 first order ode dAlembert  
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#	ODE	CAS classification	Solved?
3306	$(1 + y'^2)x = (x + y)y'$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
3308	$y + 2xy' = xy'^2$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
3311	$x + 2yy' = xy'^2$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
3312	$4x - 2yy' + xy'^2 = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
3313	$xy'^3 = yy' + 1$	[_dAlembert]	✓
3314	$y(1 + y'^2) = 2xy'$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
3315	$2x + xy'^2 = 2yy'$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
3316	$x = yy' + y'^2$	[_dAlembert]	✓
3317	$4xy'^2 + 2xy' = y$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
3318	$y = y'x(y' + 1)$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
3319	$2xy'^3 + 1 = yy'^2$	[[_1st_order, __with_lin- ear_symmetries], _dAlem- bert]	✓
3321	$3y'^4x = y'^3y + 1$	[[_1st_order, __with_lin- ear_symmetries], _dAlem- bert]	✓
3322	$2y'^5 + 2xy' = y$	[_dAlembert]	✓
3323	$\frac{1}{y'^2} + xy' = 2y$	[[_1st_order, __with_lin- ear_symmetries], _dAlem- bert]	✓
3324	$2y = 3xy' + 4 + 2 \ln(y')$	[[_1st_order, __with_lin- ear_symmetries], _dAlem- bert]	✓
3468	$y' = \frac{1}{x + 2y + 1}$	[[_homogeneous, 'class C', [_Abel, '2nd type', 'class C', _dAlembert]	✓
3469	$y' = -\frac{x + y}{3x + 3y - 4}$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓

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Table 2.14 first order ode dAlembert  
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#	ODE	CAS classification	Solved?
3479	$(5x + y - 7)y' = 3x + 3y + 3$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
3517	$e^{x+y}y' - 1 = 0$	[_separable]	✓
3548	$-y + xy' = \sqrt{9x^2 + y^2}$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
3549	$x(x^2 - y^2) - x(y^2 + x^2)y' = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
3550	$xy' + y \ln(x) = y \ln(y)$	[[_homogeneous, 'class A', _dAlembert]	✓
3556	$xy' = x \tan\left(\frac{y}{x}\right) + y$	[[_homogeneous, 'class A', _dAlembert]	✓
3595	$e^{x+y}y' - 1 = 0$	[_separable]	✓
3641	$-y + xy' = \sqrt{9x^2 + y^2}$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
3643	$xy' + y \ln(x) = y \ln(y)$	[[_homogeneous, 'class A', _dAlembert]	✓
3649	$xy' = x \tan\left(\frac{y}{x}\right) + y$	[[_homogeneous, 'class A', _dAlembert]	✓
3652	$y' = \frac{2x - y}{4y + x}$ i.c.	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
3653	$y' = \frac{y - \sqrt{y^2 + x^2}}{x}$ i.c.	[[_homogeneous, 'class A', _dAlembert]	✓
3673	$y' = (4x + y + 2)^2$	[[_homogeneous, 'class C', _Riccati]	✓
3674	$y' = \sin(3x - 3y + 1)^2$	[[_homogeneous, 'class C', _dAlembert]	✓
3682	$\frac{y'}{y} - \frac{2 \ln(y)}{x} = \frac{1 - 2 \ln(x)}{x}$ i.c.	[[_homogeneous, 'class A', _dAlembert]	✓
4081	$5x + 2y + 1 + (2x + y + 1)y' = 0$	[[_homogeneous, 'class C', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
4082	$3x - y + 1 - (6x - 2y - 3)y' = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓

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Table 2.14 first order ode dAlembert  
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#	ODE	CAS classification	Solved?
4084	$6x + 4y + 1 + (4x + 2y + 2)y' = 0$ i.c.	[[_homogeneous, 'class C'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
4086	$2x + 3y + 1 + (4x + 6y + 1)y' = 0$ i.c.	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
4089	$y - x = y'^2 \left(1 - \frac{2y'}{3}\right)$	[[_homogeneous, 'class C'], _dAlembert]	✓
4098	$x^3 + y^3 - xy^2y' = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
4102	$y' = e^{x-2y}$ i.c.	[_separable]	✓
4113	$y' = \frac{3x - y + 1}{3y - x + 5}$ i.c.	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
4216	$y' = e^{x-y}$	[_separable]	✓
4239	$(y - 1 + x)y' = x + 1 - y$	[[_homogeneous, 'class C'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
4241	$x^2 - y^2 + xy y' = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
4247	$y' = \sin(x + 1 - y)^2$	[[_homogeneous, 'class C'], _dAlembert]	✓
4249	$y' = \frac{x + y + 4}{x + y - 6}$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
4281	$(xy - x^2)y' = y^2$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
4285	$6x + 4y + 3 + (3x + 2y + 2)y' = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
4288	$y' \ln(x - y) = 1 + \ln(x - y)$	[[_homogeneous, 'class C'], _exact, _dAlembert]	✓
4296	$x + y + (x - y)y' = 0$ i.c.	[[_homogeneous, 'class A'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
4316	$x \cos\left(\frac{y}{x}\right)^2 - y + xy' = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓

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Table 2.14 first order ode dAlembert  
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#	ODE	CAS classification	Solved?
4317	$xy' = y(1 + \ln(y) - \ln(x))$	[[_homogeneous, 'class A', _dAlembert]	✓
4319	$(1 - e^{-\frac{y}{x}})y' + 1 - \frac{y}{x} = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
4320	$x^2 - xy + y^2 - xyy' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
4321	$(3 + 2x + 4y)y' = x + 2y + 1$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
4323	$y + 2 = (2x + y - 4)y'$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
4324	$y' = \sin(x - y)^2$	[[_homogeneous, 'class C', _dAlembert]	✓
4325	$y' = (x + 1)^2 + (4y + 1)^2 + 8xy + 1$	[[_homogeneous, 'class C', _Riccati]	✓
4386	$xy'(y' + 2) = y$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
4394	$xy' + y = 4\sqrt{y'}$	[[_homogeneous, 'class G', _dAlembert]	✓
4395	$2xy' - y = \ln(y')$	[[_1st_order, __with_lin- ear_symmetries], _dAlem- bert]	✓
4401	$2\sqrt{xy} - y - xy' = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
4402	$y' = e^{\frac{xy'}{y}}$	[[_homogeneous, 'class A', _dAlembert]	✓
4405	$-y + xy' = x \tan\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A', _dAlembert]	✓
4413	$4x - 2yy' + xy'^2 = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
4434	$2y'^3 - 3y'^2 + x = y$	[[_homogeneous, 'class C', _dAlembert]	✓
4652	$y' = 3 - 3x + 3y + (x - y)^2$	[[_homogeneous, 'class C', _Riccati]	✓
4659	$y' = (3 + x - 4y)^2$	[[_homogeneous, 'class C', _Riccati]	✓

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Table 2.14 first order ode dAlembert  
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#	ODE	CAS classification	Solved?
4660	$y' = (1 + 4x + 9y)^2$	[[_homogeneous, 'class C', _Riccati]	✓
4711	$y' = a + b \cos(Ax + By)$	[[_homogeneous, 'class C', _dAlembert]	✓
4731	$y' = e^{x+y}$	[_separable]	✓
4736	$y' = f(a + bx + cy)$	[[_homogeneous, 'class C', _dAlembert]	✓
4741	$3y' = x + \sqrt{x^2 - 3y}$	[[_1st_order, __with_lin- ear_symmetries], _dAlem- bert]	✓
4794	$xy' = y + \sqrt{y^2 + x^2}$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
4798	$xy' = y + a\sqrt{y^2 + b^2x^2}$	[[_homogeneous, 'class A', _dAlembert]	✓
4800	$xy' + x - y + x \cos\left(\frac{y}{x}\right) = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
4801	$xy' = y - x \cos\left(\frac{y}{x}\right)^2$	[[_homogeneous, 'class A', _dAlembert]	✓
4808	$xy' = y + x \sin\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A', _dAlembert]	✓
4811	$xy' = y - x \tan\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A', _dAlembert]	✓
4816	$xy' = (1 + \ln(x) - \ln(y))y$	[[_homogeneous, 'class A', _dAlembert]	✓
4818	$xy' = y - 2x \tanh\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A', _dAlembert]	✓
4860	$x^2y' = (x + ay)y$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
4861	$x^2y' = (ax + by)y$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
4921	$(x - a)^2 y' + k(x + y - a)^2 + y^2 = 0$	[[_homogeneous, 'class C', _rational, _Riccati]	✓
4938	$ax^2y' = x^2 + axy + b^2y^2$	[[_homogeneous, 'class A', _rational, _Riccati]	✓
4951	$x^3y' = (2x^2 + y^2)y$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
4965	$2x^3y' = (x^2 - y^2)y$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓

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Table 2.14 first order ode dAlembert  
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#	ODE	CAS classification	Solved?
4966	$2x^3y' = (3x^2 + y^2a)y$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
5027	$yy' = \sqrt{y^2 + a^2}$	[_quadrature]	✓
5028	$yy' = \sqrt{y^2 - a^2}$	[_quadrature]	✓
5032	$(x + y)y' + y = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
5033	$(x - y)y' = y$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
5035	$(x + y)y' = x - y$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
5039	$(x - y)y' = \left(e^{-\frac{x}{y}} + 1\right)y$	[[_homogeneous, 'class A', _dAlembert]	✓
5040	$(x + y + 1)y' + 1 + 4x + 3y = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
5041	$(2 + x + y)y' = 1 - x - y$	[[_homogeneous, 'class C', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
5042	$(3 - x - y)y' = 1 + x - 3y$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
5043	$(3 - x + y)y' = 11 - 4x + 3y$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
5045	$(2 + 2x - y)y' + 3 + 6x - 3y = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
5046	$(3 + 2x - y)y' + 2 = 0$	[[_homogeneous, 'class C', [_Abel, '2nd type', 'class C', _dAlembert]	✓
5047	$(4 + 2x - y)y' + 5 + x - 2y = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
5048	$(5 - 2x - y)y' + 4 - x - 2y = 0$	[[_homogeneous, 'class C', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓

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Table 2.14 first order ode dAlembert  
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#	ODE	CAS classification	Solved?
5049	$(1 - 3x + y)y' = 2x - 2y$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
5050	$(2 - 3x + y)y' + 5 - 2x - 3y = 0$	[[_homogeneous, 'class C', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
5051	$(4x - y)y' + 2x - 5y = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
5052	$(6 - 4x - y)y' = 2x - y$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
5053	$(1 + 5x - y)y' + 5 + x - 5y = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
5054	$(a + bx + y)y' + a - bx - y = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
5060	$(x - 2y)y' = y$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
5062	$(x - 2y)y' + 2x + y = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
5063	$(x - 2y + 1)y' = 1 + 2x - y$	[[_homogeneous, 'class C', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
5064	$(x + 2y + 1)y' + 1 - x - 2y = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
5065	$(x + 2y + 1)y' + 7 + x - 4y = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
5067	$(3 + 2x - 2y)y' = 1 + 6x - 2y$	[[_homogeneous, 'class C', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
5068	$(1 - 4x - 2y)y' + 2x + y = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
5069	$(6x - 2y)y' = 2 + 3x - y$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓

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Table 2.14 first order ode dAlembert  
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#	ODE	CAS classification	Solved?
5070	$(19 + 9x + 2y)y' + 18 - 2x - 6y = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
5076	$(x - 3y)y' + 4 + 3x - y = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
5077	$(4 - x - 3y)y' + 3 - x - 3y = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
5078	$(2x + 3y + 2)y' = 1 - 2x - 3y$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
5079	$(5 - 2x - 3y)y' + 1 - 2x - 3y = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
5080	$(1 + 9x - 3y)y' + 2 + 3x - y = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
5082	$(3 + 2x + 4y)y' = x + 2y + 1$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
5083	$(5 + 2x - 4y)y' = x - 2y + 3$	[[_homogeneous, 'class C'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
5084	$(5 + 3x - 4y)y' = 2 + 7x - 3y$	[[_homogeneous, 'class C'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
5085	$4(1 - x - y)y' + 2 - x = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class C'], _dAlem- bert]	✓
5086	$(11 - 11x - 4y)y' = 62 - 8x - 25y$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
5087	$(6 + 3x + 5y)y' = 2 + x + 7y$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
5088	$(7x + 5y)y' + 10x + 8y = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓

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Table 2.14 first order ode dAlembert  
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#	ODE	CAS classification	Solved?
5090	$(5 - x + 6y)y' = 3 - x + 4y$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
5091	$3(x + 2y)y' = 1 - x - 2y$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
5092	$(3 - 3x + 7y)y' + 7 - 7x + 3y = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
5094	$(8 + 5x - 12y)y' = 3 + 2x - 5y$	[[_homogeneous, 'class C', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
5095	$(140 + 7x - 16y)y' + 25 + 8x + y = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
5096	$(3 + 9x + 21y)y' = 45 + 7x - 5y$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
5098	$(ax + by)y' + y = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
5099	$(ax + by)y' + bx + ay = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
5100	$(ax + by)y' = bx + ay$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
5106	$xyy' = x^2 - xy + y^2$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
5112	$xyy' + x^2e^{-\frac{2y}{x}} - y^2 = 0$	[[_homogeneous, 'class A', _dAlembert]]	✓
5123	$x(x - y)y' + y^2 = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
5139	$2xyy' = y^2 + x^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
5143	$x(x - 2y)y' + y^2 = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
5154	$axy' = y^2 + x^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓

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Table 2.14 first order ode dAlembert  
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#	ODE	CAS classification	Solved?
5155	$axy y' + x^2 - y^2 = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
5173	$x^2(x - 2y) y' = 2x^3 - 4xy^2 + y^3$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class C'], _dAlem- bert]	✓
5176	$x^2(4x - 3y) y' = (6x^2 - 3xy + 2y^2) y$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class C'], _dAlem- bert]	✓
5181	$8x^3 y y' + 3x^4 - 6y^2 x^2 - y^4 = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5194	$(x^2 - y^2) y' = 2xy$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5196	$(y^2 + x^2) y' + 2x(2x + y) = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlem- bert]	✓
5208	$(x + y)^2 y' = a^2$	[[_homogeneous, 'class C', _dAlembert]	✓
5209	$(x - y)^2 y' = a^2$	[[_homogeneous, 'class C', _dAlembert]	✓
5210	$(x^2 + 2xy - y^2) y' + x^2 - 2xy + y^2 = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5213	$(2x^2 + 4xy - y^2) y' = x^2 - 4xy - 2y^2$	[[_homogeneous, 'class A', _exact, _rational, _dAlem- bert]	✓
5214	$(3x + y)^2 y' = 4(3x + 2y) y$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5219	$(2x^2 + 3y^2) y' + x(3x + y) = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5221	$(3x^2 + 2xy + 4y^2) y' + 2x^2 + 6xy + y^2 = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlem- bert]	✓
5226	$(x^2 + xy + y^2 a) y' = x^2 a + xy + y^2$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5227	$(x^2 a + 2xy - y^2 a) y' + x^2 - 2axy - y^2 = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5228	$(x^2 a + 2bxy + cy^2) y' + k x^2 + 2axy + by^2 = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlem- bert]	✓

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Table 2.14 first order ode dAlembert  
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#	ODE	CAS classification	Solved?
5234	$x(2x^2 + y^2) y' = (2x^2 + 3y^2) y$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5237	$x(x^2 - xy + y^2) y' + (y^2 + xy + x^2) y = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5238	$x(x^2 - xy - y^2) y' = (x^2 + xy - y^2) y$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5240	$x(x^2 - 2y^2) y' = (2x^2 - y^2) y$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5241	$x(x^2 + 2y^2) y' = (2x^2 + 3y^2) y$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5242	$2x(5x^2 + y^2) y' = x^2y - y^3$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5251	$x(x^2 - 6y^2) y' = 4(x^2 + 3y^2) y$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5267	$(x^3 - y^3) y' + x^2y = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5268	$(x^3 + y^3) y' + x^2(ax + 3y) = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]	✓
5272	$(3x^2 + y^2) yy' + x(x^2 + 3y^2) = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]	✓
5274	$2y'y^3 = x^3 - xy^2$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5276	$(3x^2 + 2y^2) yy' + x^3 = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5277	$(5x^2 + 2y^2) yy' + x(x^2 + 5y^2) = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]	✓
5279	$(3x^3 + 6x^2y - 3xy^2 + 20y^3) y' + 4x^3 + 9x^2y + 6xy^2 - y^3 = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]	✓
5280	$(x^3 + ay^3) y' = x^2y$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5283	$x(2x^3 + y^3) y' = (2x^3 - x^2y + y^3) y$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5284	$x(2x^3 - y^3) y' = (x^3 - 2y^3) y$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓

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Table 2.14 first order ode dAlembert  
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#	ODE	CAS classification	Solved?
5285	$x(x^3 + 3x^2y + y^3) y' = (3x^2 + y^2) y^2$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5286	$x(x^3 - 2y^3) y' = (2x^3 - y^3) y$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5301	$(ax^3 + (ax + by)^3) yy' + x((ax + by)^3 + by^3) = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5314	$(1 + \sqrt{x+y}) y' + 1 = 0$	[[_homogeneous, 'class C', _dAlembert]	✓
5316	$(x - 2\sqrt{xy}) y' = y$	[[_homogeneous, 'class A', _dAlembert]	✓
5328	$x\left(x - y \tan\left(\frac{y}{x}\right)\right) y' + \left(x + y \tan\left(\frac{y}{x}\right)\right) y = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
5335	$y'^2 = x - y$	[[_homogeneous, 'class C', _dAlembert]	✓
5357	$y'^2 - 2y' + a(x - y) = 0$	[[_homogeneous, 'class C', _dAlembert]	✓
5367	$y'^2 - xy' - y = 0$	[[_1st_order, __with_lin- ear_symmetries], _dAlem- bert]	✓
5368	$y'^2 + xy' + x - y = 0$	[[_1st_order, __with_lin- ear_symmetries], _dAlem- bert]	✓
5375	$y'^2 + 2xy' - y = 0$	[[_1st_order, __with_lin- ear_symmetries], _dAlem- bert]	✓
5376	$y'^2 + 2xy' - y = 0$	[[_1st_order, __with_lin- ear_symmetries], _dAlem- bert]	✓
5379	$y'^2 + 2(1 - x) y' - 2x + 2y = 0$	[[_1st_order, __with_lin- ear_symmetries], _dAlem- bert]	✓
5380	$y'^2 + 3xy' - y = 0$	[[_1st_order, __with_lin- ear_symmetries], _dAlem- bert]	✓
5394	$y'^2 - 2yy' - 2x = 0$	[_dAlembert]	✓
5400	$y'^2 + ayy' - ax = 0$	[_dAlembert]	✓
5401	$y'^2 - ayy' - ax = 0$	[_dAlembert]	✓

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Table 2.14 first order ode dAlembert  
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#	ODE	CAS classification	Solved?
5413	$y'^2 = e^{4x-2y}(y' - 1)$	[[_homogeneous, 'class C', _dAlembert]	✓
5414	$2y'^2 + xy' - 2y = 0$	[[_1st_order, __with_lin- ear_symmetries], _dAlem- bert]	✓
5418	$3y'^2 - 2xy' + y = 0$	[[_1st_order, __with_lin- ear_symmetries], _dAlem- bert]	✓
5422	$4y'^2 + 2e^{2x-2y}y' - e^{2x-2y} = 0$	[[_homogeneous, 'class C', _dAlembert]	✓
5423	$5y'^2 + 3xy' - y = 0$	[[_1st_order, __with_lin- ear_symmetries], _dAlem- bert]	✓
5424	$5y'^2 + 6xy' - 2y = 0$	[[_1st_order, __with_lin- ear_symmetries], _dAlem- bert]	✓
5428	$xy'^2 = y$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5429	$xy'^2 + x - 2y = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5430	$xy'^2 + y' = y$	[_rational, _dAlembert]	✓
5431	$xy'^2 + 2y' - y = 0$	[_rational, _dAlembert]	✓
5432	$xy'^2 - 2y' - y = 0$	[_rational, _dAlembert]	✓
5433	$xy'^2 + 4y' - 2y = 0$	[_rational, _dAlembert]	✓
5434	$xy'^2 + xy' - y = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5436	$xy'^2 + yy' + a = 0$	[[_homogeneous, 'class G', _dAlembert]	✓
5438	$xy'^2 - yy' + ax = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5440	$xy'^2 - yy' + ay = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5445	$xy'^2 - (3x - y)y' + y = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
5446	$xy'^2 + a + bx - y - by = 0$	[[_homogeneous, 'class C', _rational, _dAlembert]	✓
5447	$xy'^2 - 2yy' + a = 0$	[[_homogeneous, 'class G', _rational, _dAlembert]	✓

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Table 2.14 first order ode dAlembert  
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#	ODE	CAS classification	Solved?
5448	$xy'^2 - 2yy' + ax = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
5449	$xy'^2 - 2yy' + x + 2y = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
5452	$xy'^2 - ayy' + b = 0$	[[_homogeneous, 'class G'], _rational, _dAlembert]	✓
5453	$xy'^2 + ayy' + bx = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓
5457	$(x + 1)y'^2 = y$	[[_homogeneous, 'class C'], _rational, _dAlembert]	✓
5460	$2xy'^2 + (2x - y)y' + 1 - y = 0$	[_rational, _dAlembert]	✓
5461	$3xy'^2 - 6yy' + x + 2y = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
5463	$(5 + 3x)y'^2 - (3 + 3y)y' + y = 0$	[_rational, _dAlembert]	✓
5465	$4xy'^2 + 2xy' - y = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
5466	$4xy'^2 - 3yy' + 3 = 0$	[[_homogeneous, 'class G'], _rational, _dAlembert]	✓
5467	$4xy'^2 + 4yy' = 1$	[[_homogeneous, 'class G'], _dAlembert]	✓
5482	$x^2y'^2 - x(x - 2y)y' + y^2 = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
5504	$ax^2y'^2 - 2axy'y' + a(-a + 1)x^2 + y^2 = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
5519	$yy'^2 = a$	[_quadrature]	✓
5520	$yy'^2 = a^2x$	[[_homogeneous, 'class A'], _dAlembert]	✓
5522	$yy'^2 + 2axy' - ay = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
5523	$yy'^2 - 4a^2xy' + a^2y = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓
5524	$yy'^2 + axy' + by = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
5525	$yy'^2 - (-2bx + a)y' - by = 0$	[[_homogeneous, 'class C'], _rational, _dAlembert]	✓
5528	$yy'^2 - (x + y)y' + y = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓

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Table 2.14 first order ode dAlembert  
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#	ODE	CAS classification	Solved?
5529	$yy'^2 - (xy + 1)y' + x = 0$	[_quadrature]	✓
5531	$yy'^2 + y = a$	[_quadrature]	✓
5532	$(x + y)y'^2 + 2xy' - y = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5533	$(2x - y)y'^2 - 2(1 - x)y' + 2 - y = 0$	[[_homogeneous, 'class C', _dAlembert]	✓
5534	$2yy'^2 + (5 - 4x)y' + 2y = 0$	[[_homogeneous, 'class C', _rational, _dAlembert]	✓
5538	$xyy'^2 + (x + y)y' + 1 = 0$	[_quadrature]	✓
5547	$y^2y'^2 = a^2$	[_quadrature]	✓
5548	$y^2y'^2 - a^2 + y^2 = 0$	[_quadrature]	✓
5552	$y^2y'^2 - (x + 1)yy' + x = 0$	[_quadrature]	✓
5564	$(x + y)^2y'^2 = y^2$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
5565	$(x + y)^2y'^2 - (x^2 - xy - 2y^2)y' - (x - y)y = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
5566	$(a^2 - (x - y)^2)y'^2 + 2a^2y' + a^2 - (x - y)^2 = 0$	[[_homogeneous, 'class C', _dAlembert]	✓
5570	$(x^2 - 4y^2)y'^2 + 6xyy' - 4x^2 + y^2 = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
5575	$a^2(b^2 - (cx - ay)^2)y'^2 + 2ab^2cy'$ $+ c^2(b^2 - (cx - ay)^2) = 0$	[[_homogeneous, 'class C', _dAlembert]	✓
5579	$4x^2y^2y'^2 = (y^2 + x^2)^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
5595	$y'^3 - xy' + ay = 0$	[[_1st_order, __with_lin- ear_symmetries], _dAlem- bert]	✓
5596	$y'^3 + 2xy' - y = 0$	[[_1st_order, __with_lin- ear_symmetries], _dAlem- bert]	✓
5597	$y'^3 - 2xy' - y = 0$	[[_1st_order, __with_lin- ear_symmetries], _dAlem- bert]	✓

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Table 2.14 first order ode dAlembert  
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#	ODE	CAS classification	Solved?
5604	$y'^3 + e^{-2y+3x}(y' - 1) = 0$	[[_homogeneous, 'class C'], _dAlembert]	✓
5609	$y'^3 - ay'^2 + by + abx = 0$	[[_homogeneous, 'class C'], _dAlembert]	✓
5618	$2y'^3 + xy' - 2y = 0$	[[_1st_order, __with_lin- ear_symmetries], _dAlem- bert]	✓
5622	$8y'^3 + 12y'^2 = 27x + 27y$	[[_homogeneous, 'class C'], _dAlembert]	✓
5626	$2xy'^3 - 3yy'^2 - x = 0$	[[_1st_order, __with_lin- ear_symmetries], _dAlem- bert]	✓
5627	$4xy'^3 - 6yy'^2 - x + 3y = 0$	[[_1st_order, __with_lin- ear_symmetries], _dAlem- bert]	✓
5628	$8xy'^3 - 12yy'^2 + 9y = 0$	[[_1st_order, __with_lin- ear_symmetries], _dAlem- bert]	✓
5636	$2yy'^3 - 3xy' + 2y = 0$	[[_1st_order, __with_lin- ear_symmetries], _dAlem- bert]	✓
5637	$y'^3(x + 2y) + 3(x + y)y'^2 + (2x + y)y' = 0$	[_quadrature]	✓
5649	$y'^4 + xy' - 3y = 0$	[[_1st_order, __with_lin- ear_symmetries], _dAlem- bert]	✓
5661	$(x - y)\sqrt{y'} = a(y' + 1)$	[[_homogeneous, 'class C'], _dAlembert]	✓
5675	$y'^2(x + \sin(y')) = y$	[_dAlembert]	✓
5682	$\ln(y') + 4xy' - 2y = 0$	[[_1st_order, __with_lin- ear_symmetries], _dAlem- bert]	✓
5684	$a(\ln(y') - y') - x + y = 0$	[[_homogeneous, 'class C'], _dAlembert]	✓
5688	$\ln(\cos(y')) + y' \tan(y') = y$	[_dAlembert]	✓
5691	$y' = \frac{2x + y - 1}{4x + 2y + 5}$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
5696	$y^2(1 + y'^2) = R^2$	[_quadrature]	✓

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Table 2.14 first order ode dAlembert  
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#	ODE	CAS classification	Solved?
5698	$y = xy'^2 + y'^2$	[[_homogeneous, 'class C', _rational, _dAlembert]	✓
5705	$(y - x)y' + y = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
5706	$(2\sqrt{xy} - x)y' + y = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
5707	$xy' - y - \sqrt{y^2 + x^2} = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5709	$(7x + 5y)y' + 10x + 8y = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
5711	$(3 - 3x + 7y)y' + 7 - 7x + 3y = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
5733	$-y + xy' = \sqrt{y^2 + x^2}$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5734	$(7x + 5y)y' + 10x + 8y = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
5753	$y'^2 + \frac{2xy'}{y} - 1 = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5768	$y - \frac{1}{\sqrt{1 + y'^2}} = x + \frac{y'}{\sqrt{1 + y'^2}}$	[[_homogeneous, 'class C', _dAlembert]	✓
5769	$y - 2xy' = xy'^2$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5774	$xy' - y - x \sin\left(\frac{y}{x}\right) = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
5775	$2x^2y + y^3 + (xy^2 - 2x^3)y' = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5779	$2ye^{\frac{x}{y}} + \left(y - 2xe^{\frac{x}{y}}\right)y' = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
5780	$xe^{\frac{y}{x}} - y \sin\left(\frac{y}{x}\right) + x \sin\left(\frac{y}{x}\right)y' = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
5786	$3x + 2y + 1 - (3x + 2y - 1)y' = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓

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Table 2.14 first order ode dAlembert  
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#	ODE	CAS classification	Solved?
5788	$x + y - 1 + (2x + 2y - 3)y' = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
5790	$x + y + (2x + 2y - 1)y' = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
5792	$x + 2y + (3x + 6y + 3)y' = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
5793	$x + 2y + (y - 1)y' = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
5795	<i>i.c.</i> $x + y + (3x + 3y - 4)y' = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
5796	$3x + 2y + 3 - (x + 2y - 1)y' = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
5797	<i>i.c.</i> $y + 7 + (2x + y + 3)y' = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
5869	$e^y(y' + 1) = e^x$	[[_homogeneous, 'class C', _dAlembert]]	✓
5871	$(x - y)^2 y' = 4$	[[_homogeneous, 'class C', _dAlembert]]	✓
5872	$-y + xy' = \sqrt{y^2 + x^2}$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
5873	$(3x + 2y + 1)y' + 4x + 3y + 2 = 0$	[[_homogeneous, 'class C', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
5874	$(x^2 - y^2)y' = 2xy$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
5893	$xy' - y - x \sin\left(\frac{y}{x}\right) = 0$	[[_homogeneous, 'class A', _dAlembert]]	✓
5907	$2xyy' + 3x^2 - y^2 = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
5908	$(2xy^3 - x^4)y' + 2x^3y - y^4 = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
5910	$(y^2 + x^2)y' + 2x(2x + y) = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlem- bert]]	✓

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Table 2.14 first order ode dAlembert  
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#	ODE	CAS classification	Solved?
5912	$2y'y^3 + xy^2 - x^3 = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
6027	$yy'^2 + 2xy' - y = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
6123	$(x - y)y' + x + y + 1 = 0$	[[_homogeneous, 'class C', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
6129	$y' = \cos(x + y)$	[[_homogeneous, 'class C', _dAlembert]	✓
6130	$y' = \frac{y}{x} - \tan\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A', _dAlembert]	✓
6224	$(2x + y)y' - x + 2y = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
6256	$y' - \sin(x + y) = 0$	[[_homogeneous, 'class C', _dAlembert]	✓
6425	$(x^3 + xy^2)y' = 2y^3$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
6436	$(2y - x)y' = 2x + y$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
6438	$x^3 + y^3 = 3xy^2y'$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
6439	$y - 3x + (3x + 4y)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
6440	$(x^3 + 3xy^2)y' = y^3 + 3x^2y$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
6446	$(3x + 3y - 4)y' = -x - y$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
6449	$(3 - 3x + 7y)y' + 7 - 7x + 3y = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
6466	$y' = e^{-2y+3x}$ i.c.	[_separable]	✓
6470	$y' = \frac{x - 2y + 1}{2x - 4y}$ i.c.	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓

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Table 2.14 first order ode dAlembert  
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#	ODE	CAS classification	Solved?
6573	$2x^3y' = y(3x^2 + y^2)$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
6588	$x + y + 1 + (2x + 2y + 1)y' = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
6591	$x + 2y + (2x + 3y)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
6592	$2xy' - 2y = \sqrt{4y^2 + x^2}$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
6593	$(3 - 3x + 7y)y' + 7 - 7x + 3y = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
6598	$x^3 + y^3 + 3xy^2y' = 0$	[[_homogeneous, 'class A', _exact, _rational, _Bernoulli]	✓
6599	$3x + 2y + 1 - (3x + 2y - 1)y' = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
6604	$y' = -2(2x + 3y)^2$	[[_homogeneous, 'class C', _Riccati]	✓
6669	$4x - 2yy' + xy'^2 = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
6671	$8yy'^2 - 2xy' + y = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
6676	$xy'^2 - yy' - y = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
6678	$y'^2 - xy' - y = 0$	[[_1st_order, __with_lin- ear_symmetries], _dAlem- bert]	✓
6679	$y = (y' + 1)x + y'^2$	[[_1st_order, __with_lin- ear_symmetries], _dAlem- bert]	✓
6681	$yy'^2 - xy' + 3y = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
6684	$4x - 2yy' + xy'^2 = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
6685	$xy'^2 - 2yy' + x + 2y = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓

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Table 2.14 first order ode dAlembert  
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#	ODE	CAS classification	Solved?
6688	$2y = y'^2 + 4xy'$	[[_1st_order, __with_linear_symmetries], _dAlembert]	✓
6689	$y(3 - 4y)^2 y'^2 = 4 - 4y$	[_quadrature]	✓
7074	$\frac{1}{\sqrt{x}} + \frac{y'}{\sqrt{y}} = 0$	[_separable]	✓
7078	$y' = e^{x-y}$	[_separable]	✓
7079	$y' = \frac{\sqrt{y}}{\sqrt{x}}$	[_separable]	✓
7081	$z' = 10^{x+z}$	[_separable]	✓
7083	$y' = \cos(x - y)$	[[_homogeneous, 'class C'], _dAlembert]	✓
7085	<i>i.c.</i> $(x + 2y) y' = 1$	[[_homogeneous, 'class C'], [_Abel, '2nd type', 'class C'], _dAlembert]	✓
7087	$y' = \cos(x - y - 1)$	[[_homogeneous, 'class C'], _dAlembert]	✓
7088	$y' + \sin(x + y)^2 = 0$	[[_homogeneous, 'class C'], _dAlembert]	✓
7089	$y' = 2\sqrt{2x + y + 1}$	[[_homogeneous, 'class C'], _dAlembert]	✓
7090	$y' = (x + y + 1)^2$	[[_homogeneous, 'class C'], _Riccati]	✓
7097	$(y^2 + x^2) y' = 2xy$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
7098	$-y + xy' = x \tan\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A'], _dAlembert]	✓
7100	$-y + xy' = (x + y) \ln\left(\frac{x + y}{x}\right)$	[[_homogeneous, 'class A'], _dAlembert]	✓
7101	$xy' = y \cos\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A'], _dAlembert]	✓
7102	$y + \sqrt{xy} - xy' = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
7105	<i>i.c.</i> $x^2 + 2xy - y^2 + (y^2 + 2xy - x^2) y' = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
7106	$-y + xy' = yy'$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓

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Table 2.14 first order ode dAlembert  
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#	ODE	CAS classification	Solved?
7109	$\frac{1}{x^2 - xy + y^2} = \frac{y'}{2y^2 - xy}$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
7112	$xy' = y + \sqrt{y^2 - x^2}$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
7113	$(2\sqrt{xy} - x)y' + y = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
7114	$xy' = y \ln\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A', _dAlembert]	✓
7118	$-y + xy' = \sqrt{y^2 + x^2}$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
7119	$yy'^2 + 2xy' - y = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
7121	$y' = \frac{y}{x + y}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
7123	$y' = \frac{x + y - 2}{y - 4 - x}$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
7124	$2x - 4y + 6 + (x + y - 2)y' = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
7125	$y' = \frac{2y - x + 5}{2x - y - 4}$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
7126	$y' = -\frac{4x + 3y + 15}{2x + y + 7}$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
7129	$2x + y + 1 - (4x + 2y - 3)y' = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
7130	$x - y - 1 + (y - x + 2)y' = 0$	[[_homogeneous, 'class C', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
7131	$(4y + x)y' = 2x + 3y - 5$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
7132	$y + 2 = (2x + y - 4)y'$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓

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Table 2.14 first order ode dAlembert  
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#	ODE	CAS classification	Solved?
7134	$y' = \frac{x - 2y + 5}{y - 2x - 4}$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
7152	$3 + 2x + (2y - 2)y' = 0$	[_separable]	✓
7181	$xy' - 2\sqrt{xy} = y$	[[_homogeneous, 'class A'], _dAlembert]	✓
7219	$y + \sqrt{y^2 + x^2} - xy' = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
7236	$x^2 + y^2 - 2xyy' = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
7237	$x^2 - y^2 + 2xyy' = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
7419	$y' = \frac{x - y + 2}{y - 1 + x}$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
7421	$y' = \frac{x + y + 1}{2x + 2y - 1}$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
7458	$2xyy' = y^2 + x^2$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
7460	$y' = \frac{y^2}{xy - x^2}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
7462	$1 + y^2 + y^2y' = 0$	[_quadrature]	✓
7552	$x - y - (x + y)y' = 0$	[[_homogeneous, 'class A'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
7556	$x^3 + y^3 - xy^2y' = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
7558	$y' = \frac{x + y + 4}{x + y - 6}$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
7560	$y' = \frac{y - 1 + x}{x + 4y + 2}$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
7565	$y' = \sin\left(\frac{y}{x}\right) - \cos\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A'], _dAlembert]	✓

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Table 2.14 first order ode dAlembert  
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#	ODE	CAS classification	Solved?
7566	$e^{\frac{x}{y}} - \frac{yy'}{x} = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
7568	$y' = \frac{y \tan(\frac{y}{x})}{x}$	[[_homogeneous, 'class A', _dAlembert]	✓
7597	$y' = \frac{y^2 + x^2}{x^2 - y^2}$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
7606	$y' = \frac{x^2 + 2y^2}{x^2 - 2y^2}$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
8119	$(x + y)^2 y'^2 = y^2$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
8122	$(4x - y)y'^2 + 6(x - y)y' + 2x - 5y = 0$	[_quadrature]	✓
8123	$(x - y)^2 y'^2 = y^2$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
8125	$(y^2 + x^2)^2 y'^2 = 4y^2 x^2$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
8126	$(x + y)^2 y'^2 + (2y^2 + xy - x^2)y' + (y - x)y = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
8127	$xy(y^2 + x^2)(-1 + y'^2) = y'(x^4 + y^2 x^2 + y^4)$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
8129	$xyy'^2 + (x + y)y' + 1 = 0$	[_quadrature]	✓
8130	$4x - 2yy' + xy'^2 = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
8132	$y'^2 - xy' - y = 0$	[[_1st_order, __with_lin- ear_symmetries], _dAlem- bert]	✓
8137	$y'^3 + xy'^2 - y = 0$	[_dAlembert]	✓
8146	$4x - 2yy' + xy'^2 = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
8154	$y'^2 - xy' - y = 0$	[[_1st_order, __with_lin- ear_symmetries], _dAlem- bert]	✓
8155	$2y'^3 + xy' - 2y = 0$	[[_1st_order, __with_lin- ear_symmetries], _dAlem- bert]	✓

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Table 2.14 first order ode dAlembert  
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#	ODE	CAS classification	Solved?
8156	$2y'^2 + xy' - 2y = 0$	[[_1st_order, __with_linear_symmetries], _dAlembert]	✓
8157	$y'^3 + 2xy' - y = 0$	[[_1st_order, __with_linear_symmetries], _dAlembert]	✓
8158	$4xy'^2 - 3yy' + 3 = 0$	[[_homogeneous, 'class G'], _rational, _dAlembert]	✓
8159	$y'^3 - xy' + 2y = 0$	[[_1st_order, __with_linear_symmetries], _dAlembert]	✓
8160	$5y'^2 + 6xy' - 2y = 0$	[[_1st_order, __with_linear_symmetries], _dAlembert]	✓
8161	$2xy'^2 + (2x - y)y' + 1 - y = 0$	[_rational, _dAlembert]	✓
8162	$5y'^2 + 3xy' - y = 0$	[[_1st_order, __with_linear_symmetries], _dAlembert]	✓
8163	$y'^2 + 3xy' - y = 0$	[[_1st_order, __with_linear_symmetries], _dAlembert]	✓
8214	$5y'^2 + 6xy' - 2y = 0$	[[_1st_order, __with_linear_symmetries], _dAlembert]	✓
8215	$y^2y'^2 - (x + 1)yy' + x = 0$	[_quadrature]	✓
8218	$y'^4 + xy' - 3y = 0$	[[_1st_order, __with_linear_symmetries], _dAlembert]	✓
8222	$y'^3 - 2xy' - y = 0$	[[_1st_order, __with_linear_symmetries], _dAlembert]	✓
8230	$yy'^2 - (x + y)y' + y = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
8377	$y' = \frac{2x - y}{4y + x}$ i.c.	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
8410	$y^2 + x^2y' = xyy'$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓

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#	ODE	CAS classification	Solved?
8417	$y = xy'^2 + y'^2$	[[_homogeneous, 'class C', _rational, _dAlembert]	✓
8419	$2t + 3x + (x + 2)x' = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
8432	$y = xy'^2$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
8433	$yy' = 1 - xy'^3$	[_dAlembert]	✓
8434	$f' = \frac{1}{f}$	[_quadrature]	✓
8447	$y' + \sin(x - y) = 0$	[[_homogeneous, 'class C', _dAlembert]	✓
8466	$\frac{y'y}{1 + \frac{\sqrt{1+y'^2}}{2}} = -x$	[[_homogeneous, 'class A', _dAlembert]	✓
8467	$\frac{y'y}{1 + \frac{\sqrt{1+y'^2}}{2}} = -x$ i.c.	[[_homogeneous, 'class A', _dAlembert]	✓
8562	$y' = e^{-\frac{y}{x}}$	[[_homogeneous, 'class A', _dAlembert]	✓
8710	$y'^2 = x + y$	[[_homogeneous, 'class C', _dAlembert]	✓
8711	$y'^2 = \frac{y}{x}$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
8720	$y' = \sqrt{1 + 6x + y}$	[[_homogeneous, 'class C', _dAlembert]	✓
8724	$y' = (\pi + x + 7y)^{7/2}$	[[_homogeneous, 'class C', _dAlembert]	✓
8725	$y' = (a + bx + cy)^6$	[[_homogeneous, 'class C', _dAlembert]	✓
8726	$y' = e^{x+y}$	[_separable]	✓
8727	$y' = 10 + e^{x+y}$	[[_homogeneous, 'class C', _dAlembert]	✓
9768	$y' + a \sin(\alpha y + \beta x) + b = 0$	[[_homogeneous, 'class C', _dAlembert]	✓
9774	$y' - f(ax + by) = 0$	[[_homogeneous, 'class C', _dAlembert]	✓
9802	$xy' - y - \sqrt{y^2 + x^2} = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓

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#	ODE	CAS classification	Solved?
9803	$xy' + a\sqrt{y^2 + x^2} - y = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
9812	$xy' - y - x \sin\left(\frac{y}{x}\right) = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
9813	$xy' + x - y + x \cos\left(\frac{y}{x}\right) = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
9814	$xy' + x \tan\left(\frac{y}{x}\right) - y = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
9898	$yy' - \sqrt{y^2 a + b} = 0$	[_quadrature]	✓
9900	$yy' - x e^{\frac{x}{y}} = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
9910	$(x + 2y + 1)y' - x - 2y + 1 = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
9912	$(2y - x)y' - y - 2x = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
9913	$(2y - 6x)y' - y + 3x + 2 = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
9914	$(3 + 2x + 4y)y' - 2y - x - 1 = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
9915	$(4y - 2x - 3)y' + 2y - x - 1 = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
9916	$(4y - 3x - 5)y' - 3y + 7x + 2 = 0$	[[_homogeneous, 'class C', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
9917	$(4y + 11x - 11)y' - 25y - 8x + 62 = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
9918	$(12y - 5x - 8)y' - 5y + 2x + 3 = 0$	[[_homogeneous, 'class C', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
9920	$(ay + bx + c)y' + \alpha y + \beta x + \gamma = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
9930	$2xyy' - y^2 + x^2 a = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓

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Table 2.14 first order ode dAlembert  
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#	ODE	CAS classification	Solved?
9951	$(2x^2y - x^3)y' + y^3 - 4xy^2 + 2x^3 = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class C'], _dAlem- bert]	✓
9960	$(y^2 + x^2)y' + 2x(2x + y) = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlem- bert]	✓
9965	$2xy + (y^2 - x^2)y' = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
9969	$(x + y)^2 y' - a^2 = 0$	[[_homogeneous, 'class C', _dAlembert]	✓
9974	$(3x^2 + 2xy + 4y^2)y' + y^2 + 6xy + 2x^2 = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlem- bert]	✓
9979	$(y^2a + 2bxy + cx^2)y' + by^2 + 2cxy + dx^2 = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlem- bert]	✓
9984	$x(y^2 + xy - x^2)y' - y^3 + xy^2 + x^2y = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
9986	$2x(5x^2 + y^2)y' + y^3 - x^2y = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
9995	$(y^3 - x^3)y' - x^2y = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
9999	$(2y^3 + 5x^2y)y' + 5xy^2 + x^3 = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlem- bert]	✓
10000	$(20y^3 - 3xy^2 + 6x^2y + 3x^3)y' - y^3 + 6xy^2 + 9x^2y + 4x^3 = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlem- bert]	✓
10004	$(2xy^3 - x^4)y' + 2x^3y - y^4 = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
10014	$y(y^3 - 2x^3)y' + (2y^3 - x^3)x = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
10015	$y((bx + ay)^3 + bx^3)y' + x((bx + ay)^3 + ay^3) = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
10019	$(f(x + y) + 1)y' + f(x + y) = 0$	[[_homogeneous, 'class C', _exact, _dAlembert]	✓
10023	$(1 + \sqrt{x + y})y' + 1 = 0$	[[_homogeneous, 'class C', _dAlembert]	✓

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Table 2.14 first order ode dAlembert  
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#	ODE	CAS classification	Solved?
10069	$y'^2 + 2xy' - y = 0$	[[_1st_order, __with_linear_symmetries], _dAlembert]	✓
10070	$y'^2 - 2xy' + y = 0$	[[_1st_order, __with_linear_symmetries], _dAlembert]	✓
10077	$y'^2 - 2yy' - 2x = 0$	[_dAlembert]	✓
10079	$y'^2 + ayy' - bx - c = 0$	[_dAlembert]	✓
10089	$3y'^2 - 2xy' + y = 0$	[[_1st_order, __with_linear_symmetries], _dAlembert]	✓
10095	$xy'^2 - y = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
10096	$xy'^2 - 2y + x = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
10097	$xy'^2 - 2y' - y = 0$	[_rational, _dAlembert]	✓
10098	$xy'^2 + 4y' - 2y = 0$	[_rational, _dAlembert]	✓
10099	$xy'^2 + xy' - y = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
10100	$xy'^2 + yy' + a = 0$	[[_homogeneous, 'class G', _rational, _dAlembert]	✓
10104	$xy'^2 + (y - 3x)y' + y = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
10106	$xy'^2 - yy' + ay = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
10107	$xy'^2 + 2yy' - x = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
10108	$xy'^2 - 2yy' + a = 0$	[[_homogeneous, 'class G', _rational, _dAlembert]	✓
10109	$xy'^2 - 2yy' - x = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
10110	$4x - 2yy' + xy'^2 = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
10111	$xy'^2 - 2yy' + x + 2y = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
10112	$xy'^2 + ayy' + bx = 0$	[[_homogeneous, 'class A', _dAlembert]	✓

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Table 2.14 first order ode dAlembert

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#	ODE	CAS classification	Solved?
10141	$a x^2 y'^2 - 2axy y' + y^2 - a(a-1)x^2 = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
10149	$yy'^2 - 1 = 0$	[_quadrature]	✓
10151	$yy'^2 + 2xy' - y = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
10152	$yy'^2 + 2xy' - 9y = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
10153	$yy'^2 - 2xy' + y = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
10154	$yy'^2 - 4xy' + y = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
10155	$yy'^2 - 4a^2xy' + a^2y = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
10156	$yy'^2 + axy' + by = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
10159	$(x+y)y'^2 + 2xy' - y = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
10160	$(y-2x)y'^2 - 2(x-1)y' + y - 2 = 0$	[[_homogeneous, 'class C', _dAlembert]	✓
10161	$2yy'^2 - (4x-5)y' + 2y = 0$	[[_homogeneous, 'class C', _rational, _dAlembert]	✓
10162	$4yy'^2 + 2xy' - y = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
10164	$ayy'^2 + (2x-b)y' - y = 0$	[[_homogeneous, 'class C', _rational, _dAlembert]	✓
10173	$y^2y'^2 - a^2 + y^2 = 0$	[_quadrature]	✓
10181	$(y^2 - a^2x^2)y'^2 + 2xyy' + (-a^2 + 1)x^2 = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
10183	$(y-x)^2(1+y'^2) - a^2(y'+1)^2 = 0$	[[_homogeneous, 'class C', _dAlembert]	✓
10189	$(ay-bx)^2(a^2y'^2 + b^2) - c^2(ay'+b)^2 = 0$	[[_homogeneous, 'class C', _dAlembert]	✓
10215	$y'^3 + ay'^2 + by + abx = 0$	[[_homogeneous, 'class C', _dAlembert]	✓
10216	$y'^3 + xy'^2 - y = 0$	[_dAlembert]	✓

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#	ODE	CAS classification	Solved?
10221	$4xy'^3 - 6yy'^2 - x + 3y = 0$	[[_1st_order, _with_linear_symmetries], _dAlembert]	✓
10222	$8xy'^3 - 12yy'^2 + 9y = 0$	[[_1st_order, _with_linear_symmetries], _dAlembert]	✓
10227	$2yy'^3 - yy'^2 + 2xy' - x = 0$	[_quadrature]	✓
10233	$y'^4 + 3(x-1)y'^2 - 3(2y-1)y' + 3x = 0$	unknown	✓
10243	$\sqrt{1+y'^2} + xy'^2 + y = 0$	[_dAlembert]	✓
10482	$y' = \frac{x^3 + 3x^2a + 3a^2x + a^3 + xy^2 + y^2a + y^3}{(x+a)^3}$	[[_homogeneous, 'class C'], _rational, _Abel]	✓
10487	$y' = \frac{-b^3 + 6b^2x - 12bx^2 + 8x^3 - 4by^2 + 8xy^2 + 8y^3}{(2x-b)^3}$	[[_homogeneous, 'class C'], _rational, _Abel]	✓
10496	$y' = \frac{-125 + 300x - 240x^2 + 64x^3 - 80y^2 + 64xy^2 + 64y^3}{(4x-5)^3}$	[[_homogeneous, 'class C'], _rational, _Abel]	✓
10538	$y' = \frac{b^3 + y^2b^3 + 2yb^2ax + x^2ba^2 + y^3b^3 + 3y^2b^2ax + 3yba^2x^2 + a^3x^3}{b^3}$	[[_homogeneous, 'class C'], _Abel]	✓
10539	$y' = \frac{\alpha^3 + y^2\alpha^3 + 2y\alpha^2\beta x + \alpha\beta^2x^2 + y^3\alpha^3 + 3y^2\alpha^2\beta x + 3y\alpha\beta^2x^2 + \beta^3x^3}{\alpha^3}$	[[_homogeneous, 'class C'], _Abel]	✓
10545	$y' = \frac{a^3 + y^2a^3 + 2ya^2bx + ab^2x^2 + y^3a^3 + 3y^2a^2bx + 3yab^2x^2 + b^3x^3}{a^3}$	[[_homogeneous, 'class C'], _Abel]	✓
11682	$y' = f\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A'], _dAlembert]	✓
12002	$yy' - y = A$	[_quadrature]	✓
12170	$(Ay + Bx + a)y' + By + kx + b = 0$	[[_homogeneous, 'class C'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
12171	$(y + ax + b)y' = \alpha y + \beta x + \gamma$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
12475	$\frac{y^2 - 2x^2}{xy^2 - x^3} + \frac{(2y^2 - x^2)y'}{y^3 - x^2y} = 0$	[[_homogeneous, 'class A'], _exact, _rational, _dAlembert]	✓

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#	ODE	CAS classification	Solved?
12476	$\frac{1}{\sqrt{y^2 + x^2}} + \left(\frac{1}{y} - \frac{x}{y\sqrt{y^2 + x^2}}\right) y' = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]]	✓
12478	$6x - 2y + 1 + (2y - 2x - 3) y' = 0$	[[_homogeneous, 'class C', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
12484	$2x^2y + 3y^3 - (x^3 + 2xy^2) y' = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
12486	$2x^2y + y^3 - x^3y' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
12489	$(x + y + 1) y' + 1 + 4x + 3y = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
12491	$2x + y - (4x + 2y - 1) y' = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
12511	$x^2 + y^2 - 2xyy' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
12518	$y^2 - x^2 + 2myx + (my^2 - mx^2 - 2xy) y' = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
12520	$(x + y) y' - 1 = 0$	[[_homogeneous, 'class C', [_Abel, '2nd type', 'class C', _dAlembert]]	✓
12526	$(y - x)^2 y' = 1$	[[_homogeneous, 'class C', _dAlembert]]	✓
12529	$(y - x) y' + y = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
12530	$-y + xy' = \sqrt{y^2 + x^2}$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
12533	$x - 2y + 5 + (2x - y + 4) y' = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
12544	$2x + 3y - 1 + (2x + 3y - 5) y' = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
12545	$y^3 - 2x^2y + (2xy^2 - x^3) y' = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
12548	$1 + e^{\frac{y}{x}} + e^{\frac{x}{y}} \left(1 - \frac{x}{y}\right) y' = 0$	[[_homogeneous, 'class A', _dAlembert]]	✓

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#	ODE	CAS classification	Solved?
12551	$(2\sqrt{xy} - x)y' + y = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
12553	$xy'^2 - 2yy' - x = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
12558	$2xy' - y + \ln(y') = 0$	[[_1st_order, __with_linear_symmetries], _dAlembert]	✓
12559	$4xy'^2 + 2xy' - y = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
12560	$xy'^2 - 2yy' - x = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
12563	$y'^2 + 2xy' - y = 0$	[[_1st_order, __with_linear_symmetries], _dAlembert]	✓
12565	$a^2yy'^2 - 2xy' + y = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
12566	$xy'^2 - 2yy' - x = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
12570	$4e^{2y}y'^2 + 2e^{2x}y' - e^{2x} = 0$	[[_homogeneous, 'class C', _dAlembert]	✓
12575	$a^2yy'^2 - 2xy' + y = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
12577	$y^2(1 + y'^2) = a^2$	[_quadrature]	✓
12580	$3xy'^2 - 6yy' + x + 2y = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
12581	$y = (x + 1)y'^2$	[[_homogeneous, 'class C', _rational, _dAlembert]	✓
12589	$xy'^2 - 2yy' - x = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
12592	$8(y' + 1)^3 = 27(x + y)(1 - y')^3$	[[_homogeneous, 'class C', _dAlembert]	✓
12594	$y(3 - 4y)^2y'^2 = 4 - 4y$	[_quadrature]	✓
12730	$(2u + 1)u' - t - 1 = 0$	[_separable]	✓
12732	$y' + y + \frac{1}{y} = 0$	[_quadrature]	✓
12739	$x' = e^{t+x}$	[_separable]	✓
	<i>i.c.</i>		

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Table 2.14 first order ode dAlembert  
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#	ODE	CAS classification	Solved?
12776	$x' = \frac{2x}{3t} + \frac{2t}{x}$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
12948	$3x + 2y + (2x + y)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
12975	$v^3 + (u^3 - uv^2)v' = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
12976	$x \tan\left(\frac{y}{x}\right) + y - xy' = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
12977	$(2s^2 + 2st + t^2)s' + s^2 + 2st - t^2 = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]	✓
12984	$(4x - y)y' + 2x - 5y = 0$ i.c.	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
12986	$x + 2y + (2x - y)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
12987	$3x - y - (x + y)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
13031	$3x - 5y + (x + y)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
13037	$y' = \frac{2x - 7y}{3y - 8x}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
13040	$y' = \frac{2x^2 + y^2}{2xy - x^2}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
13041	$x^2 + y^2 - 2xyy' = 0$ i.c.	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
13046	$y' = \frac{2x + 7y}{2x - 2y}$ i.c.	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
13050	$x^2y' + xy = \frac{y^3}{x}$ i.c.	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓

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#	ODE	CAS classification	Solved?
13057	$5x + 2y + 1 + (2x + y + 1)y' = 0$	[[_homogeneous, 'class C', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
13058	$3x - y + 1 - (6x - 2y - 3)y' = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
13060	$10x - 4y + 12 - (x + 5y + 3)y' = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
13061	$6x + 4y + 1 + (4x + 2y + 2)y' = 0$ i.c.	[[_homogeneous, 'class C', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
13063	$2x + 3y + 1 + (4x + 6y + 1)y' = 0$ i.c.	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
13064	$(x + y + 1)y' + 1 + 4x + 3y = 0$ i.c.	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
13393	$x' = -x(-x + 1)(2 - x)$	[_quadrature]	✓
13525	$12x + 6y - 9 + (5x + 2y - 3)y' = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
13526	$xy' = y + \sqrt{y^2 + x^2}$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
13531	$y' = e^{x-y}$	[_separable]	✓
13543	$y' = \frac{2y - x - 4}{2x - y + 5}$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
13548	$2x + 2y - 1 + (x + y - 2)y' = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
13550	$y = 5xy' - y'^2$	[[_1st_order, _with_lin- ear_symmetries], _dAlem- bert]	✓
13558	$y' = \frac{3x - 4y - 2}{3x - 4y - 3}$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
13562	$y(1 + y'^2) = a$	[_quadrature]	✓

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Table 2.14 first order ode dAlembert  
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#	ODE	CAS classification	Solved?
13566	$y' = \frac{x+y-3}{y-x+1}$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
13569	$(3+2x+4y)y' - 2y - x - 1 = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
13571	$2xy + (y^2 - x^2)y' = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
13574	$y'^2 - 2xy' + y = 0$	[[_1st_order, __with_lin- ear_symmetries], _dAlem- bert]	✓
13628	$y' = \cos(x+y)$	[[_homogeneous, 'class C'], _dAlembert]	✓
13642	$yy' = 1$	[_quadrature]	✓
13832	$yy'^2 + 2xy' - y = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
13851	$y - x + (x+y)y' = 0$	[[_homogeneous, 'class A'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
13854	$-y + xy' = \sqrt{y^2 + x^2}$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
13855	$(7x+5y)y' + 10x + 8y = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
13856	$2\sqrt{st} - s + ts' = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓
13858	$xy^2y' = x^3 + y^3$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
13860	$3y - 7x + 7 - (3x - 7y - 3)y' = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
13861	$x + 2y + 1 - (3 + 2x + 4y)y' = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
13863	$\frac{y - xy'}{\sqrt{y^2 + x^2}} = m$	[[_homogeneous, 'class A'], _dAlembert]	✓
13865	$y + \frac{x}{y'} = \sqrt{y^2 + x^2}$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓

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Table 2.14 first order ode dAlembert  
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#	ODE	CAS classification	Solved?
13891	$y = 2xy' + y'^2$	[[_1st_order, __with_linear_symmetries], _dAlembert]	✓
13892	$y = xy'^2 + y'^2$	[[_homogeneous, 'class C'], _rational, _dAlembert]	✓
13893	$y = (y' + 1)x + y'^2$	[[_1st_order, __with_linear_symmetries], _dAlembert]	✓
13894	$y = yy'^2 + 2xy'$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
13953	$y = xy'^2 + y'^2$	[[_homogeneous, 'class C'], _rational, _dAlembert]	✓
13959	$2x + 2y - 1 + (x + y - 2)y' = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
13991	$y' + \frac{1}{2y} = 0$	[_quadrature]	✓
14045	$y' = e^{x-y}$	[_separable]	✓
14046	$y' = \ln(x + y)$	[[_homogeneous, 'class C'], _dAlembert]	✓
14047	$y' = \frac{2x - y}{3y + x}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
14054	$y' = \frac{y}{y - x}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
14059	$y' = \sqrt{\frac{y-4}{x}}$	[[_homogeneous, 'class C'], _dAlembert]	✓
14093	$2yy' = 1$	[_quadrature]	✓
14140	$y' = \frac{y}{y - x}$ i.c.	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
14142	$y' = \frac{y}{y - x}$ i.c.	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
14143	$y' = \frac{y}{y - x}$ i.c.	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓

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Table 2.14 first order ode dAlembert  
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#	ODE	CAS classification	Solved?
14307	$y' = \frac{1-y^2}{y}$ i.c.	[_quadrature]	✓
14354	$y' = y(-1+y)(y-3)$ i.c.	[_quadrature]	✓
14355	$y' = y(-1+y)(y-3)$ i.c.	[_quadrature]	✓
14707	$(y-2)y' = x-3$	[_separable]	✓
14719	$y' = \sin(x+y)$	[[_homogeneous, 'class C', _dAlembert]	✓
14726	$y' = e^{2x-3y}$	[_separable]	✓
14788	$y' = \frac{1}{(3x+3y+2)^2}$	[[_homogeneous, 'class C', _dAlembert]	✓
14789	$y' = \frac{(-2y+3x)^2+1}{-2y+3x} + \frac{3}{2}$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
14790	$\cos(-4y+8x-3)y' = 2+2\cos(-4y+8x-3)$	[[_homogeneous, 'class C', _exact, _dAlembert]	✓
14793	$y' = \frac{y}{x} + \frac{x}{y}$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
14795	$y' = \frac{x-y}{x+y}$ i.c.	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
14800	$y' = \frac{y}{x} + \frac{x^2}{y^2}$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
14801	$3y' = -2 + \sqrt{2x+3y+4}$	[[_homogeneous, 'class C', _dAlembert]	✓
14803	$y' = 4 + \frac{1}{\sin(4x-y)}$	[[_homogeneous, 'class C', _dAlembert]	✓
14804	$(y-x)y' = 1$	[[_homogeneous, 'class C', _Abel, '2nd type', 'class C', _dAlembert]	✓
14805	$(x+y)y' = y$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
14806	$(2xy+2x^2)y' = x^2+2xy+2y^2$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓

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Table 2.14 first order ode dAlembert  
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#	ODE	CAS classification	Solved?
14808	$y' = 2\sqrt{2x + y - 3} - 2$	[[_homogeneous, 'class C', _dAlembert]	✓
14809	$y' = 2\sqrt{2x + y - 3}$	[[_homogeneous, 'class C', _dAlembert]	✓
14810	$-y + xy' = \sqrt{xy + x^2}$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
14812	$y' = (x - y + 3)^2$	[[_homogeneous, 'class C', _Riccati]	✓
14822	$4x^3y + (x^4 - y^4)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]	✓
14838	$y' = \sqrt{x + y}$	[[_homogeneous, 'class C', _dAlembert]	✓
14844	$x^3 + y^3 + xy^2y' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
14857	$y' = \frac{x + 2y}{x + 2y + 3}$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
14859	$y' = \frac{y}{x} + \tan\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A', _dAlembert]	✓
14861	$1 - (x + 2y)y' = 0$	[[_homogeneous, 'class C', [_Abel, '2nd type', 'class C', _dAlembert]	✓
14872	$(y - x + 3)^2(y' - 1) = 1$	[[_homogeneous, 'class C', _exact, _rational, _dAlembert]	✓
14879	$y' = e^{4x+3y}$	[_separable]	✓
14880	$y' = \tan(6x + 3y + 1) - 2$	[[_homogeneous, 'class C', _dAlembert]	✓
14881	$y' = e^{4x+3y}$	[_separable]	✓
15526	$2x - 3y + (2y - 3x)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
15573	$y' = \frac{1 + y^2}{y}$	[_quadrature]	✓
15585	$y' = e^{2y+10t}$	[_separable]	✓
15586	$y' = e^{3y+2t}$	[_separable]	✓

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Table 2.14 first order ode dAlembert  
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#	ODE	CAS classification	Solved?
15615	$y' = \sqrt{\frac{y}{t}}$ i.c.	[[_homogeneous, 'class A', _dAlembert]	✓
15617	$y' = e^{t-y}$ i.c.	[_separable]	✓
15623	$y' = e^{x-y}$ i.c.	[_separable]	✓
15624	$y' = e^{2x-y}$ i.c.	[_separable]	✓
15631	$y' = \frac{x+y+3}{3x+3y+1}$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
15632	$y' = \frac{x-y+2}{2x-2y-1}$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
15633	$y' = (x+y-4)^2$	[[_homogeneous, 'class C', _Riccati]	✓
15710	$-1 + 3y^2y' = 0$	[_quadrature]	✓
15727	$-\frac{y^2e^{\frac{y}{t}}}{t^2} + 1 + e^{\frac{y}{t}}\left(1 + \frac{y}{t}\right)y' = 0$	[[_homogeneous, 'class A', _exact, _dAlembert]	✓
15752	$\frac{9t}{5} + 2y + (2t+2y)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
15753	$2t + \frac{19y}{10} + \left(\frac{19t}{10} + 2y\right)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
15774	$t^3 + y^3 - ty^2y' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
15775	$y' = \frac{t+4y}{4t+y}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
15777	$y + (y+t)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
15779	$y + 2\sqrt{t^2+y^2} - ty' = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
15780	$y^2 = (ty - 4t^2)y'$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓

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Table 2.14 first order ode dAlembert  
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#	ODE	CAS classification	Solved?
15781	$y - (3\sqrt{ty} + t)y' = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
15782	$(t^2 - y^2)y' + y^2 + ty = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
15783	$tyy' - t^2e^{-\frac{y}{t}} - y^2 = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
15784	$y' = \frac{1}{\frac{2ye^{-\frac{t}{y}}}{t} + \frac{t}{y}}$	[[_homogeneous, 'class A', _dAlembert]	✓
15790 i.c.	$ty' - y - \sqrt{t^2 + y^2} = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
15792 i.c.	$y^3 - t^3 - ty^2y' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
15795	$t - 2y + 1 + (4t - 3y - 6)y' = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
15796	$5t + 2y + 1 + (2t + y + 1)y' = 0$	[[_homogeneous, 'class C', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
15797	$3t - y + 1 - (6t - 2y - 3)y' = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
15798	$2t + 3y + 1 + (4t + 6y + 1)y' = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
15806	$y = -ty' + \frac{y'^5}{5}$	[_dAlembert]	✓
15807	$y = ty'^2 + 3y'^2 - 2y'^3$	[_dAlembert]	✓
15809	$y = t(2 - y') + 2y'^2 + 1$	[[_1st_order, __with_lin- ear_symmetries], _dAlem- bert]	✓
15822	$3t + (t - 4y)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class C'], _dAlem- bert]	✓
15823	$y - t + (y + t)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
15826	$r' = \frac{r^2 + t^2}{rt}$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓

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Table 2.14 first order ode dAlembert  
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#	ODE	CAS classification	Solved?
15842	$2x - y - 2 + (2y - x)y' = 0$ i.c.	[[_homogeneous, 'class C'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
15849	$y' = \sqrt{x - y}$ i.c.	[[_homogeneous, 'class C'], _dAlembert]	✓
16343	$y' = \sqrt{x - y}$	[[_homogeneous, 'class C'], _dAlembert]	✓
16346	$y' = \frac{1 + y}{x - y}$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
16361	$y' = \cos(x - y)$	[[_homogeneous, 'class C'], _dAlembert]	✓
16387	$y' = a^{x+y}$	[_separable]	✓
16392	$y' = \sin(x - y)$	[[_homogeneous, 'class C'], _dAlembert]	✓
16394	$(x + y)^2 y' = a^2$	[[_homogeneous, 'class C'], _dAlembert]	✓
16413	$xy' = y + x \cos\left(\frac{y}{x}\right)^2$	[[_homogeneous, 'class A'], _dAlembert]	✓
16415	$xy' = y(\ln(y) - \ln(x))$	[[_homogeneous, 'class A'], _dAlembert]	✓
16417	$xy' = y + \sqrt{y^2 - x^2}$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
16419	$4x - 3y + (2y - 3x)y' = 0$	[[_homogeneous, 'class A'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
16420	$y - x + (x + y)y' = 0$	[[_homogeneous, 'class A'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
16422	$3y - 7x + 7 - (3x - 7y - 3)y' = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
16423	$x + y - 2 + (x - y + 4)y' = 0$	[[_homogeneous, 'class C'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
16424	$x + y + (x - y - 2)y' = 0$	[[_homogeneous, 'class C'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓

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Table 2.14 first order ode dAlembert  
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#	ODE	CAS classification	Solved?
16425	$2x + 3y - 5 + (3x + 2y - 5)y' = 0$	[[_homogeneous, 'class C', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
16426	$8x + 4y + 1 + (4x + 2y + 1)y' = 0$	[[_homogeneous, 'class C', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
16427	$x - 2y - 1 + (3x - 6y + 2)y' = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
16428	$x + y + (y - 1 + x)y' = 0$	[[_homogeneous, 'class C', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
16457	$3xy^2y' - 2y^3 = x^3$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
16470	$x(2x^2 + y^2) + y(x^2 + 2y^2)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlem- bert]]	✓
16480	$\frac{2x}{y^3} + \frac{(y^2 - 3x^2)y'}{y^4} = 0$ i.c.	[[_homogeneous, 'class A', _exact, _rational, _dAlem- bert]]	✓
16482	$3x^2y + y^3 + (x^3 + 3xy^2)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlem- bert]]	✓
16503	$y' = e^{\frac{y'}{y}}$	[_quadrature]	✓
16514	$y = 2xy' + \ln(y')$	[[_1st_order, _with_lin- ear_symmetries], _dAlem- bert]]	✓
16515	$y = (y' + 1)x + y'^2$	[[_1st_order, _with_lin- ear_symmetries], _dAlem- bert]]	✓
16516	$y = 2xy' + \sin(y')$	[_dAlembert]]	✓
16517	$y = xy'^2 - \frac{1}{y'}$	[_dAlembert]]	✓
16518	$y = \frac{3xy'}{2} + e^{y'}$	[_dAlembert]]	✓
16535	$8y'^3 - 12y'^2 = 27y - 27x$	[[_homogeneous, 'class C', _dAlembert]]	✓
16537	$y = y'^2 - xy' + x$	[[_1st_order, _with_lin- ear_symmetries], _dAlem- bert]]	✓

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Table 2.14 first order ode dAlembert  
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#	ODE	CAS classification	Solved?
16539	$y^2 y' + y^2 = 1$	[_quadrature]	✓
16541	$3xy'^2 - 6yy' + x + 2y = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
16543	$y' = (x - y)^2 + 1$	[[_homogeneous, 'class C', _Riccati]	✓
16546	$x^3 - 3xy^2 + (y^3 - 3x^2y) y' = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]	✓
16554	$\frac{1}{x^2 - xy + y^2} = \frac{y'}{2y^2 - xy}$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
16561	$x^2 + y^2 - xyy' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
16562	$x - y + 2 + (x - y + 3) y' = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
16568	$y' - 1 = e^{x+2y}$	[[_homogeneous, 'class C', _dAlembert]	✓
16571	$(3x + 3y + a^2) y' = 4x + 4y + b^2$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
16576	$(5x - 7y + 1) y' + y - 1 + x = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
16577 i.c.	$x + y + 1 + (2x + 2y - 1) y' = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
16581	$y' + xy'^2 - y = 0$	[_rational, _dAlembert]	✓
16989 i.c.	$y' = \frac{3 - 2x}{y}$	[_separable]	✓
17071	$3 + 2x + (2y - 2) y' = 0$	[_separable]	✓
17075	$y' = -\frac{4x + 2y}{2x + 3y}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
17083 i.c.	$2x - y + (2y - x) y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
17099	$\frac{(3x^3 - xy^2) y'}{3x^2y + y^3} = 1$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓

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Table 2.14 first order ode dAlembert  
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#	ODE	CAS classification	Solved?
17105	$y' = \frac{y^4 + 2xy^3 - 3y^2x^2 - 2x^3y}{2y^2x^2 - 2x^3y - 2x^4}$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
17106	$(y + x e^{\frac{x}{y}}) y' = y e^{\frac{x}{y}}$	[[_homogeneous, 'class A', _dAlembert]	✓
17573	$y' = \frac{2xy}{y^2 + x^2}$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
17574	$y' = \frac{y(1 + \ln(y) - \ln(x))}{x}$	[[_homogeneous, 'class A', _dAlembert]	✓
17578	$3y - 7x + 7 = (3x - 7y - 3) y'$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
17579	$(x + 2y + 1) y' = 3 + 2x + 4y$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
17581	$(x + y)^2 y' = a^2$	[[_homogeneous, 'class C', _dAlembert]	✓
17615	$xy'^2 + 2xy' - y = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
17621	$y(1 + y'^2) = 2\alpha$	[_quadrature]	✓
17625	$x = yy' + ay'^2$	unknown	✓
17626	$y = xy'^2 + y'^3$	unknown	✓
17630	$y'^2 + 2xy' + 2y = 0$	[[_1st_order, _with_lin- ear_symmetries], _dAlem- bert]	✓
17631	$y' = \sqrt{y - x}$	[[_homogeneous, 'class C', _dAlembert]	✓
17632	$y' = \sqrt{y - x} + 1$	[[_homogeneous, 'class C', _dAlembert]	✓
17635	$y' = y \ln(y)^2$	[_quadrature]	✓
17638	$4x - 2yy' + xy'^2 = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
17639	$xy'^2 + 2xy' - y = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
17642	$x^2y'^2 - 2xyy' + 2xy = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
17741	$2xyy' = y^2 + x^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓

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Table 2.14 first order ode dAlembert  
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#	ODE	CAS classification	Solved?
17743	$y' = \frac{y^2}{xy - x^2}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
17745	$1 + y^2 + y^2 y' = 0$	[_quadrature]	✓
17770 i.c.	$y' = e^{-2y+3x}$	[_separable]	✓
17785	$x - y - (x + y) y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
17789	$x^3 + y^3 - xy^2 y' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
17791	$y' = \sin(x + 1 - y)^2$	[[_homogeneous, 'class C', _dAlembert]]	✓
17793	$y' = \frac{x + y + 4}{x + y - 6}$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
17795	$y' = \frac{y - 1 + x}{x + 4y + 2}$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
17819	$\frac{4y^2 - 2x^2}{4xy^2 - x^3} + \frac{(8y^2 - x^2) y'}{4y^3 - x^2 y} = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlem- bert]]	✓
17838	$xy' + y = \sqrt{xy} y'$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
17888	$6x + 4y + 3 + (3x + 2y + 2) y' = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
17892	$y' \ln(x - y) = 1 + \ln(x - y)$	[[_homogeneous, 'class C', _exact, _dAlembert]]	✓
17900	$x^2 y^4 + x^6 - x^3 y^3 y' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
17904	$y' = \frac{x + 2y + 2}{y - 2x}$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
17910	$3x^2 y - y^3 - (3xy^2 - x^3) y' = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlem- bert]]	✓

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Table 2.14 first order ode dAlembert  
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#	ODE	CAS classification	Solved?
17912	$y' = \frac{-3x - 2y - 1}{2x + 3y - 1}$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
18178	$x' = \cos\left(\frac{x}{t}\right)$	[[_homogeneous, 'class A'], _dAlembert]	✓
18222	$2x^2y + y^3 - x^3y' = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
18223	$2ax + by + (2cy + bx + e)y' = g$	[[_homogeneous, 'class C'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
18235	$xy'^2 - y + 2y' = 0$	[_rational, _dAlembert]	✓
18279	$y - 2xy' - yy'^2 = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
18317	$5xyy' - y^2 - x^2 = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
18318	$(x^2 + 3xy - y^2)y' - 3y^2 = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
18323	$(3x + 2y - 7)y' = 2x - 3y + 6$	[[_homogeneous, 'class C'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
18326	$(x - 3y + 4)y' = 5x - 7y$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
18327	$(x - 3y + 4)y' = 2x - 6y + 7$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
18328	$(5x - 2y + 7)y' = 10x - 4y + 6$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
18329	$(2x - 2y + 5)y' = x - y + 3$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
18330	$(6x - 4y + 1)y' = 3x - 2y + 1$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
18383	$x = y + y'^2$	[[_homogeneous, 'class C'], _dAlembert]	✓
18407	$x^2 + y^2 - 2xyy' = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓

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Table 2.14 first order ode dAlembert  
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#	ODE	CAS classification	Solved?
18409	$x^2y - (x^3 + y^3)y' = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
18411	$3y - 7x + 7 + (7y - 3x + 3)y' = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
18413	$x^2 - 4xy - 2y^2 + (y^2 - 4xy - 2x^2)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlem- bert]	✓
18416	$2ax + by + g + (2cy + bx + e)y' = 0$	[[_homogeneous, 'class C', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
18429	$y^3 - 2x^2y + (2xy^2 - x^3)y' = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
18442	$(x + y)^2 y' = a^2$	[[_homogeneous, 'class C', _dAlembert]	✓
18443	$-y + xy' = \sqrt{y^2 + x^2}$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
18449	$2x - y + 1 + (2y - x - 1)y' = 0$	[[_homogeneous, 'class C', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
18454	$x^2y - (x^3 + y^3)y' = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
18469	$2xy + (y^2 - x^2)y' = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
18471	$3y + 2x + 4 - (4x + 6y + 5)y' = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
18476	$(x - y)^2 y' = a^2$	[[_homogeneous, 'class C', _dAlembert]	✓
18479	$y'^3(x + 2y) + 3(x + y)y'^2 + (2x + y)y' = 0$	[_quadrature]	✓
18483	$x - yy' = ay'^2$	unknown	✓
18486	$xy'^2 - 2yy' + ax = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
18492	$y = yy'^2 + 2xy'$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
18493	$y = (y' + 1)x + y'^2$	[[_1st_order, __with_lin- ear_symmetries], _dAlem- bert]	✓

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Table 2.14 first order ode dAlembert  
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#	ODE	CAS classification	Solved?
18496	$e^{4x}(y' - 1) + e^{2y}y'^2 = 0$	[[_homogeneous, 'class C', _dAlembert]	✓
18499	$x^2y'^2 - 2xyy' + 2y^2 - x^2 = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
18504	$ayy'^2 + (2x - b)y' - y = 0$	[[_homogeneous, 'class C', _rational, _dAlembert]	✓
18509	$(yy' + nx)^2 = (y^2 + nx^2)(1 + y'^2)$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
18510	$y^2(1 - y'^2) = b$	[_quadrature]	✓
18513	$\left(y'^2 - \frac{1}{a^2 - x^2}\right)\left(y' - \sqrt{\frac{y}{x}}\right) = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
18518	$y'^3 + my'^2 = a(y + mx)$	[[_homogeneous, 'class C', _dAlembert]	✓
18519	$e^{3x}(y' - 1) + y'^3e^{2y} = 0$	unknown	✓
18526	$y'\sqrt{x} = \sqrt{y}$	[_separable]	✓
18528	$(y' + 1)^3 = \frac{7(x + y)(1 - y')^3}{4a}$	[[_homogeneous, 'class C', _dAlembert]	✓
18529	$y^2(1 + y'^2) = r^2$	[_quadrature]	✓
18531	$y'^2 + 2xy' - y = 0$	[[_1st_order, __with_lin- ear_symmetries], _dAlem- bert]	✓
18533	$xy'^2 - 2yy' + ax = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
18540	$(8y'^3 - 27)x = 12yy'^2$	[[_1st_order, __with_lin- ear_symmetries], _dAlem- bert]	✓

## 2.3.13 first order ode isobaric

Table 2.15: first order ode isobaric

#	ODE	CAS classification	Solved?
27	$y' = 2y^2x^2$ i.c.	[_separable]	✓
42	$y' + 2xy^2 = 0$	[_separable]	✓
46	$y' = 3\sqrt{xy}$	[[_homogeneous, 'class G']]	✓
47	$y' = 64^{1/3}(xy)^{1/3}$	[[_homogeneous, 'class G']]	✓
51	$y' = xy^3$	[_separable]	✓
77	$xy' + 2y = 3x$ i.c.	[_linear]	✓
78	$xy' + 5y = 7x^2$ i.c.	[_linear]	✓
79	$2xy' + y = 10\sqrt{x}$	[_linear]	✓
80	$3xy' + y = 12x$	[_linear]	✓
82	$2xy' - 3y = 9x^3$	[_linear]	✓
84	$xy' + 3y = 2x^5$ i.c.	[_linear]	✓
98	$\frac{1 - 4xy^2}{x'} = y^3$	[_linear]	✓
105	$(x + y)y' = x - y$	[[_homogeneous, 'class A'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
106	$2xyy' = x^2 + 2y^2$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
107	$xy' = y + 2\sqrt{xy}$	[[_homogeneous, 'class A'], _dAlembert]	✓
108	$(x - y)y' = x + y$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
109	$x(x + y)y' = (x - y)y$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
110	$(x + 2y)y' = y$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
111	$xy^2y' = x^3 + y^3$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓

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Table 2.15 first order ode isobaric  
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#	ODE	CAS classification	Solved?
112	$x^2y' = xy + x^2e^{\frac{y}{x}}$	[[_homogeneous, 'class A', _dAlembert]	✓
113	$x^2y' = xy + y^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
114	$xyy' = x^2 + 3y^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
115	$(x^2 - y^2)y' = 2xy$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
116	$xyy' = y^2 + x\sqrt{4x^2 + y^2}$	[[_homogeneous, 'class A', _dAlembert]	✓
118	$yy' + x = \sqrt{y^2 + x^2}$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
119	$x(x + y)y' + y(3x + y) = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
123	$x^2y' + 2xy = 5y^3$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
126	$x^2y' + 2xy = 5y^4$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
127	$xy' + 6y = 3xy^{4/3}$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
131	$3xy^2y' = 3x^4 + y^3$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
135	$2x + 3y + (3x + 2y)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
136	$4x - y + (6y - x)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
137	$3x^2 + 2y^2 + (4xy + 6y^2)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlem- bert]	✓
166	$y' = -\frac{y(2x^3 - y^3)}{(2y^3 - x^3)x}$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
181	$xy + y^2 - x^2y' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
186	$x^2y' + 2xy = y^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓

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Table 2.15 first order ode isobaric  
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#	ODE	CAS classification	Solved?
187	$xy' + 2y = 6x^2\sqrt{y}$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
189	$x^2y' = xy + 3y^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
190	$6xy^3 + 2y^4 + (9y^2x^2 + 8xy^3)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class B']]	✓
192	$x^3y' = x^2y - y^3$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
196	$2x^2y - x^3y' = y^3$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
198	$xy' + 3y = \frac{3}{x^{3/2}}$	[_linear]	✓
200	$xy' = 6y + 12x^4y^{2/3}$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
204	$9\sqrt{x}y^{4/3} - 12x^{1/5}y^{3/2} + (8x^{3/2}y^{1/3} - 15x^{6/5}\sqrt{y})y' = 0$	[[_homogeneous, 'class G', _exact, _rational]	✓
205	$3y + x^3y^4 + 3xy' = 0$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
211	$y' = -\frac{3x^2 + 2y^2}{4xy}$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
212	$y' = \frac{3y + x}{y - 3x}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
669	$y' = 2y^2x^2$ i.c.	[_separable]	✓
678	$y' + 2xy^2 = 0$	[_separable]	✓
682	$y' = 3\sqrt{xy}$	[[_homogeneous, 'class G']]	✓
683	$y' = 4(xy)^{1/3}$	[[_homogeneous, 'class G']]	✓
687	$y' = xy^3$	[_separable]	✓
708	$xy' + 2y = 3x$ i.c.	[_linear]	✓
709	$2xy' + y = 10\sqrt{x}$ i.c.	[_linear]	✓
710	$2xy' + y = 10\sqrt{x}$	[_linear]	✓
711	$3xy' + y = 12x$	[_linear]	✓

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Table 2.15 first order ode isobaric  
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#	ODE	CAS classification	Solved?
713	$2xy' - 3y = 9x^3$	[_linear]	✓
715	$xy' + 3y = 2x^5$	[_linear]	✓
	<i>i.c.</i>		
729	$(x + y)y' = x - y$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
730	$2xyy' = y^2 + x^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
731	$xy' = y + 2\sqrt{xy}$	[[_homogeneous, 'class A', _dAlembert]]	✓
732	$(x - y)y' = x + y$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
733	$x(x + y)y' = (x - y)y$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
734	$(x + 2y)y' = y$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
735	$xy^2y' = x^3 + y^3$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
736	$x^2y' = xy + x^2e^{\frac{y}{x}}$	[[_homogeneous, 'class A', _dAlembert]]	✓
737	$x^2y' = xy + y^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
738	$xyy' = x^2 + 3y^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
739	$(x^2 - y^2)y' = 2xy$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
740	$xyy' = y^2 + x\sqrt{4x^2 + y^2}$	[[_homogeneous, 'class A', _dAlembert]]	✓
742	$yy' + x = \sqrt{y^2 + x^2}$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
743	$x(x + y)y' + y(3x + y) = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
747	$x^2y' + 2xy = 5y^3$	[[_homogeneous, 'class G', _rational, _Bernoulli]]	✓
750	$x^2y' + 2xy = 5y^4$	[[_homogeneous, 'class G', _rational, _Bernoulli]]	✓

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Table 2.15 first order ode isobaric  
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#	ODE	CAS classification	Solved?
751	$xy' + 6y = 3xy^{4/3}$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
755	$3xy^2y' = 3x^4 + y^3$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
759	$2x + 3y + (3x + 2y)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
760	$4x - y + (6y - x)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
761	$3x^2 + 2y^2 + (4xy + 6y^2)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]	✓
773	$xy + y^2 - x^2y' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
778	$x^2y' + 2xy = y^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
779	$xy' + 2y = 6x^2\sqrt{y}$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
781	$x^2y' = xy + 3y^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
782	$6xy^3 + 2y^4 + (9y^2x^2 + 8xy^3)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class B']]	✓
784	$x^3y' = x^2y - y^3$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
788	$2x^2y - x^3y' = y^3$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
790	$xy' + 3y = \frac{3}{x^{3/2}}$	[_linear]	✓
792	$xy' = 6y + 12x^4y^{2/3}$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
797	$3y + x^3y^4 + 3xy' = 0$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
803	$y' = \frac{-3x^2 - 2y^2}{4xy}$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
804	$y' = \frac{3y + x}{y - 3x}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓

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Table 2.15 first order ode isobaric  
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#	ODE	CAS classification	Solved?
1129	$y' = \frac{x^2}{y}$	[_separable]	✓
1134	$xy' = \sqrt{1 - y^2}$	[_separable]	✓
1140	$r' = \frac{r^2}{x}$ i.c.	[_separable]	✓
1158	$y' = \frac{y^2 + xy + x^2}{x^2}$	[[_homogeneous, 'class A'], _rational, _Riccati]	✓
1159	$y' = \frac{x^2 + 3y^2}{2xy}$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
1160	$y' = \frac{4y - 3x}{2x - y}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
1161	$y' = -\frac{4x + 3y}{2x + y}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
1162	$y' = \frac{3y + x}{x - y}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
1163	$x^2 + 3xy + y^2 - x^2y' = 0$	[[_homogeneous, 'class A'], _rational, _Riccati]	✓
1164	$y' = \frac{x^2 - 3y^2}{2xy}$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
1165	$y' = \frac{3y^2 - x^2}{2xy}$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
1174	$y' = -\frac{4t}{y}$	[_separable]	✓
1175	$y' = 2ty^2$	[_separable]	✓
1194	$2x + 4y + (2x - 2y)y' = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
1197	$y' = \frac{-ax - by}{bx + cy}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
1198	$y' = \frac{-ax + by}{bx - cy}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓

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Table 2.15 first order ode isobaric  
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#	ODE	CAS classification	Solved?
1204	$\frac{x}{(y^2 + x^2)^{3/2}} + \frac{yy'}{(y^2 + x^2)^{3/2}} = 0$	[_separable]	✓
1205	$2x - y + (2y - x)y' = 0$ i.c.	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
1217	$3xy + y^2 + (xy + x^2)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
1218	$y' = \frac{x^3 - 2y}{x}$	[_linear]	✓
1231	$x + y + (x + 2y)y' = 0$ i.c.	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
1243	$xy' = e^{\frac{y}{x}}x + y$	[[_homogeneous, 'class A', _dAlembert]]	✓
1245	$3t + 2y = -ty'$	[_linear]	✓
1246	$y' = \frac{x + y}{x - y}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
1247	$2xy + 3y^2 - (x^2 + 2xy)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
1248	$y' = \frac{-3x^2y - y^2}{2x^3 + 3xy}$ i.c.	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]]	✓
1520	$xy' + y = x^2$	[_linear]	✓
1533	$y' = -\frac{y(1 + y)}{x}$ i.c.	[_separable]	✓
1567	$xy' + 2y = 8x^2$ i.c.	[_linear]	✓
1573	$xy' - 2y = -1$ i.c.	[_separable]	✓
1580	$xy' + y^2 + y = 0$	[_separable]	✓
1597	$yy' + x = 0$ i.c.	[_separable]	✓
1615	$y' = \frac{2x + 3y}{x - 4y}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓

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Table 2.15 first order ode isobaric  
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#	ODE	CAS classification	Solved?
1626	$y' = \frac{y + x e^{-\frac{y}{x}}}{x}$	[[_homogeneous, 'class A', _dAlembert]	✓
1628	$x^2 y' = y^2 + xy - x^2$ i.c.	[[_homogeneous, 'class A', _rational, _Riccati]	✓
1643	$y' = \frac{y^2 + 2xy}{x^2}$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
1644	$xy^3 y' = y^4 + x^4$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
1645	$y' = \frac{y}{x} + \sec\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A', _dAlembert]	✓
1646	$x^2 y' = y^2 + xy + x^2$	[[_homogeneous, 'class A', _rational, _Riccati]	✓
1647	$xyy' = x^2 + 2y^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
1648	$y' = \frac{2y^2 + x^2 e^{-\frac{y^2}{x^2}}}{2xy}$	[[_homogeneous, 'class A']]	✓
1649	$y' = \frac{xy + y^2}{x^2}$ i.c.	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
1650	$y' = \frac{x^3 + y^3}{xy^2}$ i.c.	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
1651	$xyy' + x^2 + y^2 = 0$ i.c.	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
1652	$y' = \frac{y^2 - 3xy - 5x^2}{x^2}$ i.c.	[[_homogeneous, 'class A', _rational, _Riccati]	✓
1653	$x^2 y' = 2x^2 + y^2 + 4xy$ i.c.	[[_homogeneous, 'class A', _rational, _Riccati]	✓
1654	$xyy' = 3x^2 + 4y^2$ i.c.	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
1655	$y' = \frac{x + y}{x - y}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
1657	$y' = \frac{y^3 + 2xy^2 + x^2 y + x^3}{x(x + y)^2}$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
1658	$y' = \frac{x + 2y}{2x + y}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓

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Table 2.15 first order ode isobaric  
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#	ODE	CAS classification	Solved?
1659	$y' = \frac{y}{y - 2x}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
1660	$y' = \frac{xy^2 + 2y^3}{x^3 + x^2y + xy^2}$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
1661	$y' = \frac{x^3 + x^2y + 3y^3}{x^3 + 3xy^2}$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
1662	<i>i.c.</i> $x^2y' = y^2 + xy - 4x^2$	[[_homogeneous, 'class A', _rational, _Riccati]]	✓
1663	$xyy' = x^2 - xy + y^2$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
1664	$y' = \frac{2y^2 - xy + 2x^2}{xy + 2x^2}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
1665	$y' = \frac{y^2 + xy + x^2}{xy}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
1669	$3xy^2y' = x + y^3$	[[_homogeneous, 'class G', _rational, _Bernoulli]]	✓
1670	$xyy' = 3x^6 + 6y^2$	[[_homogeneous, 'class G', _rational, _Bernoulli]]	✓
1671	$x^3y' = 2y^2 + 2x^2y - 2x^4$	[[_homogeneous, 'class G', _rational, _Riccati]]	✓
1675	$2x(y + 2\sqrt{x})y' = (y + \sqrt{x})^2$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]]	✓
1677	<i>i.c.</i> $y' + \frac{2y}{x} = \frac{3y^2x^2 + 6xy + 2}{x^2(2xy + 3)}$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]]	✓
1678	<i>i.c.</i> $y' + \frac{3y}{x} = \frac{3x^4y^2 + 10x^2y + 6}{x^3(2x^2y + 5)}$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]]	✓
1685	$4x + 7y + (3x + 4y)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
1687	$2x + y + (2x + 2y)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓

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Table 2.15 first order ode isobaric  
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#	ODE	CAS classification	Solved?
1692	$\frac{x}{(y^2 + x^2)^{3/2}} + \frac{yy'}{(y^2 + x^2)^{3/2}} = 0$	[_separable]	✓
1702	$7x + 4y + (4x + 3y)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
1707	$x^2 + y^2 + 2xyy' = 0$	[[_homogeneous, 'class A'], _exact, _rational, _Bernoulli]	✓
1711	$y + \left(2x + \frac{1}{y}\right)y' = 0$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]]	✓
1712	$-y^2 + x^2y' = 0$	[_separable]	✓
1718	$27xy^2 + 8y^3 + (18x^2y + 12xy^2)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
1726	$y \sin(y) + x(\sin(y) - y \cos(y))y' = 0$	[_separable]	✓
1733	$x^4y^3 + y + (x^5y^2 - x)y' = 0$	[[_homogeneous, 'class G', _rational]	✓
1735	$12xy + 6y^3 + (9x^2 + 10xy^2)y' = 0$	[[_homogeneous, 'class G', _rational]	✓
1736	$3y^2x^2 + 2y + 2xyy' = 0$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
1804	$x^2(y' + y^2) - 7xy + 7 = 0$	[[_homogeneous, 'class G', _rational, _Riccati]	✓
2330	<i>i.c.</i> $ty' = y + \sqrt{t^2 + y^2}$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
2331	$2tyy' = 3y^2 - t^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
2332	$(t - \sqrt{ty})y' = y$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
2333	$y' = \frac{y+t}{t-y}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
2334	$e^{\frac{t}{y}}(-t+y)y' + y(1 + e^{\frac{t}{y}}) = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
2346	<i>i.c.</i> $3ty + y^2 + (t^2 + ty)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓

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Table 2.15 first order ode isobaric  
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#	ODE	CAS classification	Solved?
2501	$y' = \frac{2y}{t} + \frac{y^2}{t^2}$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
2502	$ty' = y + \sqrt{t^2 + y^2}$ i.c.	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
2503	$2tyy' = 3y^2 - t^2$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
2504	$(t - \sqrt{ty}) y' = y$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
2505	$y' = \frac{y+t}{t-y}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
2506	$e^{\frac{t}{y}}(-t+y)y' + y(1+e^{\frac{t}{y}}) = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓
2518	$3ty + y^2 + (t^2 + ty)y' = 0$ i.c.	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
2851	$y' = \frac{x}{y}$	[_separable]	✓
2853	$xy' + y = y^2$	[_separable]	✓
2864	$y^2 + x^2y' = 0$ i.c.	[_separable]	✓
2872	$(x+y)y' + x = y$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
2873	$-y + xy' = \sqrt{xy}$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
2874	$y' = \frac{2x-y}{4y+x}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
2876	$yy' + x = 2y$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
2877	$xy' - y + \sqrt{y^2 - x^2} = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓
2878	$y^2 + x^2 = xyy'$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
2879	$(xy - x^2)y' - y^2 = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓

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Table 2.15 first order ode isobaric  
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#	ODE	CAS classification	Solved?
2880	$xy' + y = 2\sqrt{xy}$	[[_homogeneous, 'class A', _dAlembert]	✓
2881	$x + y + (x - y)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
2882	$y(x^2 - xy + y^2) + xy'(y^2 + xy + x^2) = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
2883	$xy' - y - x \sin\left(\frac{y}{x}\right) = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
2884	$y' = \frac{y}{x} + \cosh\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A', _dAlembert]	✓
2885	<i>i.c.</i> $y^2 + x^2 = 2xyy'$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
2886	$\left(\frac{x}{y} + \frac{y}{x}\right)y' + 1 = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
2887	<i>i.c.</i> $e^{\frac{y}{x}}x + y = xy'$	[[_homogeneous, 'class A', _dAlembert]	✓
2888	<i>i.c.</i> $y' = \frac{x + y}{x - y}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
2889	<i>i.c.</i> $y' = \frac{y}{x} + \tan\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A', _dAlembert]	✓
2890	<i>i.c.</i> $(3xy - 2x^2)y' = 2y^2 - xy$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
2891	$y' = \frac{y}{x - k\sqrt{y^2 + x^2}}$	[[_homogeneous, 'class A', _dAlembert]	✓
2892	$y^2(yy' - x) + x^3 = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
2893	$y' = \frac{y}{x} + \tanh\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A', _dAlembert]	✓
2914	$x + y + (x - 2y)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
2915	$3x + y + (3y + x)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓

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Table 2.15 first order ode isobaric  
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#	ODE	CAS classification	Solved?
2919	$2xy - (y^2 + x^2)y' = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
2927	$\frac{y(2 + x^3y)}{x^3} = \frac{(1 - 2x^3y)y'}{x^2}$	[[_homogeneous, 'class G', _exact, _rational, [_Abel, '2nd type', 'class B']]	✓
2929	$\frac{2y}{x^3} + \frac{2x}{y^2} = \left(\frac{1}{x^2} + \frac{2x^2}{y^3}\right)y'$	[[_homogeneous, 'class G', _exact, _rational]	✓
2934	$\frac{x^2 + 3y^2}{x(3x^2 + 4y^2)} + \frac{(2x^2 + y^2)y'}{y(3x^2 + 4y^2)} = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]	✓
2935	$\frac{x^2 - y^2}{x(2x^2 + y^2)} + \frac{(x^2 + 2y^2)y'}{y(2x^2 + y^2)} = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]	✓
2938	$xy + (y + x^2)y' = 0$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class A']]	✓
2939	$(x - 2xy)y' + 2y = 0$	[_separable]	✓
2940	$x^2y + y^2 + x^3y' = 0$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
2941	$xy^3 - 1 + x^2y^2y' = 0$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
2942	$(x^3y^3 - 1)y' + x^2y^4 = 0$	[[_homogeneous, 'class G', _rational]	✓
2943	$y(y - x^2) + x^3y' = 0$	[[_homogeneous, 'class D', _rational, _Bernoulli]	✓
2944	$y + xy^2 + (x - x^2y)y' = 0$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]	✓
2946	$2xy + (y - x^2)y' = 0$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class A']]	✓
2947	$y = x(x^2y - 1)y'$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]	✓
2950	$(2x + 3x^2y)y' + y + 2xy^2 = 0$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]	✓
2952	<i>i.c.</i> $y(1 - x^4y^2) + xy' = 0$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓

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Table 2.15 first order ode isobaric  
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#	ODE	CAS classification	Solved?
2954	$y^2x^2 - y + (2x^3y + x)y' = 0$ i.c.	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]]	✓
2957	$y(x + y^2) + x(x - y^2)y' = 0$ i.c.	[[_homogeneous, 'class G', _rational]]	✓
2958	$xy' + 2y = x^2$	[_linear]	✓
2964	$y + (2x - 3y)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
2965	$xy' - 2x^4 - 2y = 0$	[_linear]	✓
2972	$2y = (y^4 + x)y'$	[[_homogeneous, 'class G', _rational]]	✓
2980	$y + 2(x - 2y^2)y' = 0$ i.c.	[[_homogeneous, 'class G', _rational]]	✓
2986	$xyy' = x^2 - y^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
2988	$tx' + x(1 - x^2t^4) = 0$	[[_homogeneous, 'class G', _rational, _Bernoulli]]	✓
2989	$y^2 + x^2y' = xy$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
2994	$xy' + 2y = 3x^3y^{4/3}$	[[_homogeneous, 'class G', _rational, _Bernoulli]]	✓
3001	$2y = (x^2y^4 + x)y'$ i.c.	[[_homogeneous, 'class G', _rational]]	✓
3005	$y^2 + (xy + x^2)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
3006	$2x + y - (x - 2y)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
3011	$2y + 6 = xyy'$	[_separable]	✓
3014	$x^2y - (x^3 + y^3)y' = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
3018	$2xy + y^4 + (xy^3 - 2x^2)y' = 0$	[[_homogeneous, 'class G', _rational]]	✓
3019	$y + (-2y + 3x)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓

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Table 2.15 first order ode isobaric  
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#	ODE	CAS classification	Solved?
3021	$(3x + 4y)y' + 2x + y = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
3026	$1 + e^{\frac{x}{y}} + e^{\frac{x}{y}} \left(1 - \frac{x}{y}\right) y' = 0$	[[_homogeneous, 'class A', _exact, _dAlembert]]	✓
3030	$2xy' - y + \frac{x^2}{y^2} = 0$	[[_homogeneous, 'class G', _rational, _Bernoulli]]	✓
3031	$xy' + y(1 + y^2) = 0$	[_separable]	✓
3032	$y\sqrt{y^2 + x^2} + xy = x^2y'$	[[_homogeneous, 'class A', _dAlembert]]	✓
3036	$y \cos\left(\frac{x}{y}\right) - \left(y + x \cos\left(\frac{x}{y}\right)\right) y' = 0$	[[_homogeneous, 'class A', _dAlembert]]	✓
3037	$y(3x^2 + y) - x(x^2 - y)y' = 0$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]]	✓
3039	$xy' - 5y - x\sqrt{y} = 0$	[[_homogeneous, 'class G', _rational, _Bernoulli]]	✓
3041	$xy - y^2 - x^2y' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
3044	$xy' - 2y - 2x^4y^3 = 0$	[[_homogeneous, 'class G', _rational, _Bernoulli]]	✓
3045	$(-2x^2 - 3xy)y' + y^2 = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
3047	$xy' + y = x^3y^6$	[[_homogeneous, 'class G', _rational, _Bernoulli]]	✓
3049	$y^2 + x^2 = 2xyy'$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
3050	$3xy + (3x^2 + y^2)y' = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
3054	$y^2 + (x^3 - 2xy)y' = 0$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]]	✓
3056	$y^3 + 2x^2y + (-3x^3 - 2xy^2)y' = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
3291	$y^2y'^2 + xyy' - 2x^2 = 0$	[_separable]	✓
3302	$2x^2y + y'^2 = x^3y'$	[[_1st_order, _with_lin- ear_symmetries]]	✓

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Table 2.15 first order ode isobaric  
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#	ODE	CAS classification	Solved?
3307	$x^2 - 3yy' + xy'^2 = 0$	[[_homogeneous, 'class G', _rational]	✓
3320	$y'^3 + xy' = 2y^2$	[[_1st_order, __with_lin- ear_symmetries]]	✓
3410	$y' = y^2 x^2$	[_separable]	✓
3413	$xy' = \sqrt{1 - y^2}$	[_separable]	✓
3432	$y' = -\frac{t}{y}$	[_separable]	✓
3449	$ty' = y + t^3$	[_linear]	✓
3452	$ty' = -y + t^3$	[_linear]	✓
3457	$y' - xy^3 = 0$	[_separable]	✓
3461	$2xy' + 3x + y = 0$	[_linear]	✓
3465	$(x + y^3)y' = y$	[[_homogeneous, 'class G', _rational]	✓
3467	$(y - x)y' + 2x + 3y = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
3471	$x(1 - 2x^2y)y' + y = 3y^2x^2$	[[_homogeneous, 'class G', _exact, _rational, [_Abel, '2nd type', 'class B']]	✓
3476	$y' - \frac{y^2}{x^2} = \frac{1}{4}$	[[_homogeneous, 'class A', _rational, _Riccati]	✓
3477	$y' - \frac{y^2}{x^2} = \frac{1}{4}$	[[_homogeneous, 'class A', _rational, _Riccati]	✓
3480	$xy' + y - \frac{y^2}{x^{3/2}} = 0$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
3544	$(3x - y)y' = 3y$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
3545	$y' = \frac{(x + y)^2}{2x^2}$	[[_homogeneous, 'class A', _rational, _Riccati]	✓
3546	$\sin\left(\frac{y}{x}\right)(-y + xy') = x \cos\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A', _dAlembert]	✓

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Table 2.15 first order ode isobaric  
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#	ODE	CAS classification	Solved?
3549	$x(x^2 - y^2) - x(y^2 + x^2)y' = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
3550	$xy' + y \ln(x) = y \ln(y)$	[[_homogeneous, 'class A', _dAlembert]	✓
3551	$y' = \frac{y^2 + 2xy - 2x^2}{x^2 - xy + y^2}$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
3552	$2xyy' - 2y^2 - x^2e^{-\frac{y^2}{x^2}} = 0$	[[_homogeneous, 'class A']]	✓
3553	$x^2y' = y^2 + 3xy + x^2$	[[_homogeneous, 'class A', _rational, _Riccati]	✓
3554	$yy' = \sqrt{y^2 + x^2} - x$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
3555	$2x(2x + y)y' = y(4x - y)$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
3556	$xy' = x \tan\left(\frac{y}{x}\right) + y$	[[_homogeneous, 'class A', _dAlembert]	✓
3557	$y' = \frac{x\sqrt{y^2 + x^2} + y^2}{xy}$	[[_homogeneous, 'class A', _dAlembert]	✓
3636	$y' = \frac{y^2 + xy + x^2}{x^2}$	[[_homogeneous, 'class A', _rational, _Riccati]	✓
3637	$(3x - y)y' = 3y$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
3638	$y' = \frac{(x + y)^2}{2x^2}$	[[_homogeneous, 'class A', _rational, _Riccati]	✓
3639	$\sin\left(\frac{y}{x}\right)(-y + xy') = x \cos\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A', _dAlembert]	✓
3643	$xy' + y \ln(x) = y \ln(y)$	[[_homogeneous, 'class A', _dAlembert]	✓
3644	$y' = \frac{y^2 + 2xy - 2x^2}{x^2 - xy + y^2}$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
3645	$2xyy' - 2y^2 - x^2e^{-\frac{y^2}{x^2}} = 0$	[[_homogeneous, 'class A']]	✓
3646	$x^2y' = y^2 + 3xy + x^2$	[[_homogeneous, 'class A', _rational, _Riccati]	✓
3647	$yy' = \sqrt{y^2 + x^2} - x$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓

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Table 2.15 first order ode isobaric  
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#	ODE	CAS classification	Solved?
3648	$2x(2x + y)y' = y(4x - y)$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
3649	$xy' = x \tan\left(\frac{y}{x}\right) + y$	[[_homogeneous, 'class A', _dAlembert]	✓
3650	$y' = \frac{x\sqrt{y^2 + x^2} + y^2}{xy}$	[[_homogeneous, 'class A', _dAlembert]	✓
3651 i.c.	$y' = \frac{4y - 2x}{x + y}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
3652 i.c.	$y' = \frac{2x - y}{4y + x}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
3653 i.c.	$y' = \frac{y - \sqrt{y^2 + x^2}}{x}$	[[_homogeneous, 'class A', _dAlembert]	✓
3655	$y' = \frac{x + ay}{ax - y}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
3656 i.c.	$y' = \frac{x + \frac{y}{2}}{\frac{x}{2} - y}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
3661	$y' + \frac{2y}{x} = 6x^4y^2$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
3662	$2x(y' + x^2y^3) + y = 0$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
3675	$y' = \frac{y(\ln(xy) - 1)}{x}$	[[_homogeneous, 'class G']]	✓
3679	$y' + \frac{2y}{x} - y^2 = -\frac{2}{x^2}$	[[_homogeneous, 'class G', _rational, _Riccati]	✓
3680	$y' + \frac{7y}{x} - 3y^2 = \frac{3}{x^2}$	[[_homogeneous, 'class G', _rational, _Riccati]	✓
3682 i.c.	$\frac{y'}{y} - \frac{2 \ln(y)}{x} = \frac{1 - 2 \ln(x)}{x}$	[[_homogeneous, 'class A', _dAlembert]	✓
4080	$4xy^2 + 6y + (5x^2y + 8x)y' = 0$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]	✓

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Table 2.15 first order ode isobaric  
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#	ODE	CAS classification	Solved?
4098	$x^3 + y^3 - xy^2y' = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
4103	$y' = \frac{y^2 + x^2}{2x^2}$	[[_homogeneous, 'class A'], _rational, _Riccati]	✓
4112	$y' = \frac{2x - y}{2x + y}$ i.c.	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
4190	$yy' = x$	[_separable]	✓
4196	$xy' + y = x$	[_linear]	✓
4197	$-y + xy' = x^3$	[_linear]	✓
4214	$y' = 6xy^2$	[_separable]	✓
4223	$-y^2 + x^2y' = 0$ i.c.	[_separable]	✓
4230	$x \cos(y) y' = 1 + \sin(y)$ i.c.	[_separable]	✓
4231	$xy' = 2y(y - 1)$ i.c.	[_separable]	✓
4232	$2xy' = 1 - y^2$ i.c.	[_separable]	✓
4238	$xyy' = \sqrt{y^2 - 9}$ i.c.	[_separable]	✓
4240	$xyy' = 2x^2 - y^2$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
4241	$x^2 - y^2 + xyy' = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
4242	$x^2y' - 2xy - 2y^2 = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
4243	$x^2y' = 3(y^2 + x^2) \arctan\left(\frac{y}{x}\right) + xy$	[[_homogeneous, 'class A'], _dAlembert]	✓
4244	$x \sin\left(\frac{y}{x}\right) y' = y \sin\left(\frac{y}{x}\right) + x$	[[_homogeneous, 'class A'], _dAlembert]	✓
4250	$\left(x + \frac{2}{y}\right) y' + y = 0$	[[_homogeneous, 'class G'], _exact, _rational, [_Abel, '2nd type', 'class B']]	✓
4261	$(3x^2 - y^2) y' - 2xy = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓

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Table 2.15 first order ode isobaric  
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#	ODE	CAS classification	Solved?
4263	$(x + 3x^3y^4)y' + y = 0$	[[_homogeneous, 'class G'], _rational]	✓
4265	$y - (x + xy^3)y' = 0$	[_separable]	✓
4267	$(x + y)y' = y - x$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
4269	$xy' - 3y = x^4$	[_linear]	✓
4274	$2y - x^3 = xy'$	[_linear]	✓
4275	$(1 - xy)y' = y^2$	[[_homogeneous, 'class G'], _rational, [_Abel, '2nd type', 'class B']]	✓
4277	$xy' = \sqrt{y^2 + x^2}$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
4278	$y^2 = (x^3 - xy)y'$	[[_homogeneous, 'class G'], _rational, [_Abel, '2nd type', 'class B']]	✓
4279	$x^2y^3 + y = (x^3y^2 - x)y'$	[[_homogeneous, 'class G'], _rational]	✓
4281	$(xy - x^2)y' = y^2$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
4283	$y + x^2 = xy'$	[_linear]	✓
4290	$y^2 - 3xy - 2x^2 = (x^2 - xy)y'$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
4300	<i>i.c.</i> $\frac{x}{y^2 + x^2} + \frac{y}{x^2} + \left(\frac{y}{y^2 + x^2} - \frac{1}{x}\right)y' = 0$	[[_homogeneous, 'class A'], _exact, _rational, _dAlembert]	✓
4314	$y' + \frac{x}{y} + 2 = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
4315	$-y + xy' = x \cot\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A'], _dAlembert]	✓
4316	$x \cos\left(\frac{y}{x}\right)^2 - y + xy' = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓
4317	$xy' = y(1 + \ln(y) - \ln(x))$	[[_homogeneous, 'class A'], _dAlembert]	✓

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Table 2.15 first order ode isobaric  
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#	ODE	CAS classification	Solved?
4318	$xy + (y^2 + x^2)y' = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
4319	$(1 - e^{-\frac{y}{x}})y' + 1 - \frac{y}{x} = 0$	[[_homogeneous, 'class A', _dAlembert]]	✓
4320	$x^2 - xy + y^2 - xyy' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
4333	$2xy + (x^2 + 2xy + y^2)y' = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
4347	$x - \sqrt{y^2 + x^2} + (y - \sqrt{y^2 + x^2})y' = 0$	[[_homogeneous, 'class G', _dAlembert]]	✓
4349	$y^2 - (xy + x^3)y' = 0$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]	✓
4351	$2y^2x^2 + y + (x^3y - x)y' = 0$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]	✓
4352	$y^2 + (xy + \tan(xy))y' = 0$	[[_homogeneous, 'class G']]	✓
4353	$2x^2y^4 - y + (4x^3y^3 - x)y' = 0$	[[_homogeneous, 'class G', _rational]]	✓
4357	$y^2x^2 - 2y + (x^3y - x)y' = 0$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]	✓
4358	$2x^3y + y^3 - (x^4 + 2xy^2)y' = 0$	[[_homogeneous, 'class G', _rational]]	✓
4363	$(y^3 + \frac{x}{y})y' = 1$	[[_homogeneous, 'class G', _rational]]	✓
4376	$y' = \frac{4x^3y^2}{x^4y + 2}$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]	✓
4382	$6y^2 - x(2x^3 + y)y' = 0$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]	✓
4389	$y = 2xy' + y^2y'^3$	[[_1st_order, __with_lin- ear_symmetries]]	✓
4390	$y'^3 + y^2 = xyy'$	[[_1st_order, __with_lin- ear_symmetries]]	✓
4392	$y = xy' - x^2y'^3$	[[_1st_order, __with_lin- ear_symmetries]]	✓

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Table 2.15 first order ode isobaric  
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#	ODE	CAS classification	Solved?
4393	$y(y - 2xy')^3 = y^2$	[[_homogeneous, 'class G']]	✓
4396	$xy^2(xy' + y) = 1$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
4397	$5y + y'^2 = x(x + y')$	[[_homogeneous, 'class G']]	✓
4399	$xy' = y - e^{\frac{y}{x}}x$	[[_homogeneous, 'class A'], _dAlembert]	✓
4401	$2\sqrt{xy} - y - xy' = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓
4402	$y' = e^{\frac{xy'}{y}}$	[[_homogeneous, 'class A'], _dAlembert]	✓
4405	$-y + xy' = x \tan\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A'], _dAlembert]	✓
4408	$2y - x(\ln(x^2y) - 1)y' = 0$	[[_homogeneous, 'class G']]	✓
4419	$y^3 + (3x^2 - 2xy^2)y' = 0$	[[_homogeneous, 'class G'], _rational]	✓
4421	$2x^3yy' + 3y^2x^2 + 7 = 0$	[[_homogeneous, 'class G'], _exact, _rational, _Bernoulli]	✓
4422	$x - y \cos\left(\frac{y}{x}\right) + x \cos\left(\frac{y}{x}\right)y' = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓
4424	$y^4 + xy + (xy^3 - x^2)y' = 0$	[[_homogeneous, 'class G'], _rational]	✓
4433	$2y' + x = 4\sqrt{y}$	[[_1st_order, _with_linear_symmetries], _Chini]	✓
4441	$x + \sin\left(\frac{y}{x}\right)^2(y - xy') = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓
4443	$xy^3 - 1 + x^2y^2y' = 0$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
4675	$y' = axy^2$	[_separable]	✓
4690	$y' = xy^3$	[_separable]	✓
4692	$y' = (a + bxy)y^2$	[[_homogeneous, 'class G'], _Abel]	✓
4702	$y' = ax + b\sqrt{y}$	[[_homogeneous, 'class G'], _Chini]	✓
4703	$y' + x^3 = x\sqrt{x^4 + 4y}$	[[_1st_order, _with_linear_symmetries]]	✓

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Table 2.15 first order ode isobaric  
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#	ODE	CAS classification	Solved?
4740	$2y' + ax = \sqrt{a^2x^2 - 4bx^2 - 4cy}$	[[_homogeneous, 'class G']]	✓
4741	$3y' = x + \sqrt{x^2 - 3y}$	[[_1st_order, __with_linear_symmetries], __dAlembert]	✓
4743	$xy' + x + y = 0$	[_linear]	✓
4744	$xy' + x^2 - y = 0$	[_linear]	✓
4745	$xy' = x^3 - y$	[_linear]	✓
4754	$xy' = ax + by$	[_linear]	✓
4755	$xy' = x^2a + by$	[_linear]	✓
4766	$xy' = a + by^2$	[_separable]	✓
4772	$xy' + (1 - xy)y = 0$	[[_homogeneous, 'class G'], __rational, __Bernoulli]	✓
4773	$xy' = (1 - xy)y$	[[_homogeneous, 'class D'], __rational, __Bernoulli]	✓
4774	$xy' = (xy + 1)y$	[[_homogeneous, 'class D'], __rational, __Bernoulli]	✓
4777	$xy' = y(1 + 2xy)$	[[_homogeneous, 'class D'], __rational, __Bernoulli]	✓
4787	$xy' = y(1 + y^2)$	[_separable]	✓
4788	$xy' + (1 - xy^2)y = 0$	[[_homogeneous, 'class G'], __rational, __Bernoulli]	✓
4792	$xy' = 4y - 4\sqrt{y}$	[_separable]	✓
4793	$xy' + 2y = \sqrt{1 + y^2}$	[_separable]	✓
4798	$xy' = y + a\sqrt{y^2 + b^2x^2}$	[[_homogeneous, 'class A'], __dAlembert]	✓
4800	$xy' + x - y + x \cos\left(\frac{y}{x}\right) = 0$	[[_homogeneous, 'class A'], __dAlembert]	✓
4801	$xy' = y - x \cos\left(\frac{y}{x}\right)^2$	[[_homogeneous, 'class A'], __dAlembert]	✓
4803	$xy' = y - \cot(y)^2$	[_separable]	✓
4805	$xy' - y + x \sec\left(\frac{y}{x}\right) = 0$	[[_homogeneous, 'class A'], __dAlembert]	✓
4806	$xy' = y + x \sec\left(\frac{y}{x}\right)^2$	[[_homogeneous, 'class A'], __dAlembert]	✓

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Table 2.15 first order ode isobaric  
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#	ODE	CAS classification	Solved?
4808	$xy' = y + x \sin\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A', _dAlembert]	✓
4809	$xy' + \tan(y) = 0$	[_separable]	✓
4811	$xy' = y - x \tan\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A', _dAlembert]	✓
4813	$xy' = e^{\frac{y}{x}}x + y$	[[_homogeneous, 'class A', _dAlembert]	✓
4814	$xy' = x + y + e^{\frac{y}{x}}x$	[[_homogeneous, 'class A', _dAlembert]	✓
4815	$xy' = y \ln(y)$	[_separable]	✓
4816	$xy' = (1 + \ln(x) - \ln(y))y$	[[_homogeneous, 'class A', _dAlembert]	✓
4817	$xy' + (1 - \ln(x) - \ln(y))y = 0$	[[_homogeneous, 'class G']]	✓
4818	$xy' = y - 2x \tanh\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A', _dAlembert]	✓
4836	$2xy' = 2x^3 - y$	[_linear]	✓
4838	$2xy' = y(1 + y^2)$	[_separable]	✓
4839	$2xy' + y(1 + y^2) = 0$	[_separable]	✓
4841	$2xy' + 4y + a + \sqrt{a^2 - 4b - 4cy} = 0$	[_separable]	✓
4847	$3xy' = (2 + xy^3)y$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
4853	$x^2y' = a + bxy$	[_linear]	✓
4857	$x^2y' + x^2 + xy + y^2 = 0$	[[_homogeneous, 'class A', _rational, _Riccati]	✓
4860	$x^2y' = (x + ay)y$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
4861	$x^2y' = (ax + by)y$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
4862	$x^2y' + x^2a + bxy + cy^2 = 0$	[[_homogeneous, 'class A', _rational, _Riccati]	✓
4864	$x^2y' + 2 + xy(4 + xy) = 0$	[[_homogeneous, 'class G', _rational, _Riccati]	✓
4866	$x^2y' = a + bx^2y^2$	[[_homogeneous, 'class G', _rational, [_Riccati, _spe- cial]]]	✓

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Table 2.15 first order ode isobaric  
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#	ODE	CAS classification	Solved?
4868	$x^2y' = a + bxy + cx^2y^2$	[[_homogeneous, 'class G'], _rational, _Riccati]	✓
4871	$x^2y' = 2y(x - y^2)$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
4874	$x^2y' = (ax + by^3)y$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
4875	$x^2y' + xy + \sqrt{y} = 0$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
4929	$2x^2y' + 1 + 2xy - y^2x^2 = 0$	[[_homogeneous, 'class G'], _rational, _Riccati]	✓
4938	$ax^2y' = x^2 + axy + b^2y^2$	[[_homogeneous, 'class A'], _rational, _Riccati]	✓
4943	$x^3y' = a + bx^2y$	[_linear]	✓
4945	$x^3y' = x^4 + y^2$	[[_homogeneous, 'class G'], _rational, _Riccati]	✓
4946	$x^3y' = y(y + x^2)$	[[_homogeneous, 'class D'], _rational, _Bernoulli]	✓
4949	$x^3y' + 20 + x^2y(1 - x^2y) = 0$	[[_homogeneous, 'class G'], _rational, _Riccati]	✓
4951	$x^3y' = (2x^2 + y^2)y$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
4965	$2x^3y' = (x^2 - y^2)y$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
4966	$2x^3y' = (3x^2 + y^2a)y$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
4969	$x^4y' = (x^3 + y)y$	[[_homogeneous, 'class D'], _rational, _Bernoulli]	✓
4978	$x^5y' = 1 - 3x^4y$	[_linear]	✓
5015	$yy' + x = 0$	[_separable]	✓
5018	$yy' + ax + by = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
5032	$(x + y)y' + y = 0$	[[_homogeneous, 'class A'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
5033	$(x - y)y' = y$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓

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Table 2.15 first order ode isobaric  
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#	ODE	CAS classification	Solved?
5034	$(x + y)y' + x - y = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
5035	$(x + y)y' = x - y$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
5039	$(x - y)y' = \left(e^{-\frac{x}{y}} + 1\right)y$	[[_homogeneous, 'class A', _dAlembert]]	✓
5044	$(2x + y)y' + x - 2y = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
5051	$(4x - y)y' + 2x - 5y = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
5056	$(x^2 - y)y' = 4xy$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class A']]]	✓
5060	$(x - 2y)y' = y$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
5061	$(x + 2y)y' + 2x - y = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
5062	$(x - 2y)y' + 2x + y = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
5081	$(4y + x)y' + 4x - y = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
5088	$(7x + 5y)y' + 10x + 8y = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
5097	$(ax + by)y' + x = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class C'], _dAlem- bert]]	✓
5098	$(ax + by)y' + y = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
5099	$(ax + by)y' + bx + ay = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓

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Table 2.15 first order ode isobaric  
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#	ODE	CAS classification	Solved?
5100	$(ax + by)y' = bx + ay$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
5101	$xyy' + 1 + y^2 = 0$	[_separable]	✓
5102	$xyy' = x + y^2$	[[_homogeneous, 'class D', _rational, _Bernoulli]]	✓
5103	$xyy' + x^2 + y^2 = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
5104	$xyy' + x^4 - y^2 = 0$	[[_homogeneous, 'class D', _rational, _Bernoulli]]	✓
5106	$xyy' = x^2 - xy + y^2$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
5107	$xyy' + 2x^2 - 2xy - y^2 = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
5108	$xyy' = a + by^2$	[_separable]	✓
5111	$xyy' + x^2 \operatorname{arccot}\left(\frac{y}{x}\right) - y^2 = 0$	[[_homogeneous, 'class A', _dAlembert]]	✓
5112	$xyy' + x^2 e^{-\frac{2y}{x}} - y^2 = 0$	[[_homogeneous, 'class A', _dAlembert]]	✓
5113	$(xy + 1)y' + y^2 = 0$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]]	✓
5122	$x(x + y)y' + y^2 = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
5123	$x(x - y)y' + y^2 = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
5124	$x(x + y)y' = y^2 + x^2$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
5125	$x(x - y)y' + 2x^2 + 3xy - y^2 = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
5126	$x(x + y)y' - y(x + y) + x\sqrt{x^2 - y^2} = 0$	[[_homogeneous, 'class A', _dAlembert]]	✓

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Table 2.15 first order ode isobaric  
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#	ODE	CAS classification	Solved?
5128	$x(2x + y)y' = x^2 + xy - y^2$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
5129	$x(4x - y)y' + 4x^2 - 6xy - y^2 = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
5130	$x(x^3 + y)y' = (x^3 - y)y$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]]	✓
5131	$x(2x^3 + y)y' = (2x^3 - y)y$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]]	✓
5132	$x(2x^3 + y)y' = 6y^2$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]]	✓
5136	$2xyy' + a + y^2 = 0$	[_separable]	✓
5137	$2xyy' = ax + y^2$	[[_homogeneous, 'class G', _rational, _Bernoulli]]	✓
5138	$x^2 + y^2 + 2xyy' = 0$	[[_homogeneous, 'class A', _exact, _rational, _Bernoulli]]	✓
5139	$2xyy' = y^2 + x^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
5143	$x(x - 2y)y' + y^2 = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
5144	$x(x + 2y)y' + (2x - y)y = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
5145	$x(x - 2y)y' + (2x - y)y = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class B']]]	✓
5148	$2x(2x^2 + y)y' + (12x^2 + y)y = 0$	[[_homogeneous, 'class G', _exact, _rational, [_Abel, '2nd type', 'class B']]]	✓
5150	$x(2x + 3y)y' = y^2$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
5151	$x(2x + 3y)y' + 3(x + y)^2 = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓

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Table 2.15 first order ode isobaric  
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#	ODE	CAS classification	Solved?
5154	$axy' = y^2 + x^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
5155	$axy' + x^2 - y^2 = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
5156	$x(a + by) y' = cy$	[_separable]	✓
5157	$x(x - ay) y' = y(y - ax)$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
5161	$x(1 - xy) y' + (xy + 1) y = 0$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]	✓
5163	$x(2 - xy) y' + 2y - xy^2(xy + 1) = 0$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class C']]	✓
5164	$x(3 - xy) y' = y(xy - 1)$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]	✓
5170	$x(1 - 2xy) y' + y(1 + 2xy) = 0$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]	✓
5171	$x(1 + 2xy) y' + (2 + 3xy) y = 0$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]	✓
5172	$x(1 + 2xy) y' + (1 + 2xy - y^2x^2) y = 0$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class C']]	✓
5173	$x^2(x - 2y) y' = 2x^3 - 4xy^2 + y^3$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class C'], _dAlem- bert]	✓
5175	$3x^2yy' + 1 + 2xy^2 = 0$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
5176	$x^2(4x - 3y) y' = (6x^3 - 3xy + 2y^2) y$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class C'], _dAlem- bert]	✓
5177	$(1 - x^3y) y' = y^2x^2$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]	✓

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Table 2.15 first order ode isobaric  
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#	ODE	CAS classification	Solved?
5178	$2x^3yy' + a + 3y^2x^2 = 0$	[[_homogeneous, 'class G'], _exact, _rational, _Bernoulli]	✓
5180	$x(3 + 2x^2y)y' + (4 + 3x^2y)y = 0$	[[_homogeneous, 'class G'], _rational, [_Abel, '2nd type', 'class B']]	✓
5181	$8x^3yy' + 3x^4 - 6y^2x^2 - y^4 = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
5183	$3x^4yy' = 1 - 2x^3y^2$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
5192	$xy + (y^2 + x^2)y' = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
5193	$(y^2 + x^2)y' = xy$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
5194	$(x^2 - y^2)y' = 2xy$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
5195	$(x^2 - y^2)y' + x(x + 2y) = 0$	[[_homogeneous, 'class A'], _exact, _rational, _dAlembert]	✓
5196	$(y^2 + x^2)y' + 2x(2x + y) = 0$	[[_homogeneous, 'class A'], _exact, _rational, _dAlembert]	✓
5201	$(3x^2 - y^2)y' = 2xy$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
5202	$(x^4 + y^2)y' = 4x^3y$	[[_homogeneous, 'class G'], _rational]	✓
5210	$(x^2 + 2xy - y^2)y' + x^2 - 2xy + y^2 = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
5211	$(x + y)^2y' = x^2 - 2xy + 5y^2$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
5213	$(2x^2 + 4xy - y^2)y' = x^2 - 4xy - 2y^2$	[[_homogeneous, 'class A'], _exact, _rational, _dAlembert]	✓
5214	$(3x + y)^2y' = 4(3x + 2y)y$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
5219	$(2x^2 + 3y^2)y' + x(3x + y) = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
5221	$(3x^2 + 2xy + 4y^2)y' + 2x^2 + 6xy + y^2 = 0$	[[_homogeneous, 'class A'], _exact, _rational, _dAlembert]	✓

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Table 2.15 first order ode isobaric  
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#	ODE	CAS classification	Solved?
5225	$(x^2 + y^2a) y' = xy$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5226	$(x^2 + xy + y^2a) y' = x^2a + xy + y^2$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5227	$(x^2a + 2xy - y^2a) y' + x^2 - 2axy - y^2 = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5228	$(x^2a + 2bxy + cy^2) y' + kx^2 + 2axy + by^2 = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]	✓
5230	$x(3x - y^2) y' + (5x - 2y^2) y = 0$	[[_homogeneous, 'class G', _rational]	✓
5234	$x(2x^2 + y^2) y' = (2x^2 + 3y^2) y$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5236	$x(a + y)^2 y' = by^2$	[_separable]	✓
5237	$x(x^2 - xy + y^2) y' + (y^2 + xy + x^2) y = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5238	$x(x^2 - xy - y^2) y' = (x^2 + xy - y^2) y$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5239	$x(x^2 + axy + y^2) y' = (x^2 + bxy + y^2) y$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5240	$x(x^2 - 2y^2) y' = (2x^2 - y^2) y$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5241	$x(x^2 + 2y^2) y' = (2x^2 + 3y^2) y$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5242	$2x(5x^2 + y^2) y' = x^2y - y^3$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5243	$x(x^2 + axy + 2y^2) y' = (ax + 2y) y^2$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5244	$3xy^2 y' = 2x - y^3$	[[_homogeneous, 'class G', _exact, _rational, _Bernoulli]	✓
5246	$x(x - 3y^2) y' + (2x - y^2) y = 0$	[[_homogeneous, 'class G', _exact, _rational]	✓
5249	$6xy^2 y' + x + 2y^3 = 0$	[[_homogeneous, 'class G', _exact, _rational, _Bernoulli]	✓
5250	$x(x + 6y^2) y' + xy - 3y^3 = 0$	[[_homogeneous, 'class G', _rational]	✓

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Table 2.15 first order ode isobaric  
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#	ODE	CAS classification	Solved?
5251	$x(x^2 - 6y^2)y' = 4(x^2 + 3y^2)y$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5252	$x(3x - 7y^2)y' + (5x - 3y^2)y = 0$	[[_homogeneous, 'class G', _rational]	✓
5254	$(1 - y^2x^2)y' = xy^3$	[[_homogeneous, 'class G', _rational]	✓
5255	$(1 - y^2x^2)y' = (xy + 1)y^2$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]	✓
5256	$x(1 + xy^2)y' + y = 0$	[[_homogeneous, 'class G', _rational]	✓
5257	$x(1 + xy^2)y' = (2 - 3xy^2)y$	[[_homogeneous, 'class G', _rational]	✓
5263	$x^3(1 + y^2)y' + 3x^2y = 0$	[_separable]	✓
5264	$x(1 - xy)^2y' + (1 + y^2x^2)y = 0$	[[_homogeneous, 'class G', _rational]	✓
5265	$(1 - x^4y^2)y' = x^3y^3$	[[_homogeneous, 'class G', _rational]	✓
5267	$(x^3 - y^3)y' + x^2y = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5268	$(x^3 + y^3)y' + x^2(ax + 3y) = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlem- bert]	✓
5272	$(3x^2 + y^2)yy' + x(x^2 + 3y^2) = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlem- bert]	✓
5274	$2y^3y' = x^3 - xy^2$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5276	$(3x^2 + 2y^2)yy' + x^3 = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5277	$(5x^2 + 2y^2)yy' + x(x^2 + 5y^2) = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlem- bert]	✓
5279	$(3x^3 + 6x^2y - 3xy^2 + 20y^3)y' + 4x^3 + 9x^2y + 6xy^2 - y^3 = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlem- bert]	✓
5280	$(x^3 + ay^3)y' = x^2y$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓

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Table 2.15 first order ode isobaric

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#	ODE	CAS classification	Solved?
5282	$x(x - y^3) y' = (3x + y^3) y$	[[_homogeneous, 'class G', _rational]	✓
5283	$x(2x^3 + y^3) y' = (2x^3 - x^2y + y^3) y$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5284	$x(2x^3 - y^3) y' = (x^3 - 2y^3) y$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5285	$x(x^3 + 3x^2y + y^3) y' = (3x^2 + y^2) y^2$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5286	$x(x^3 - 2y^3) y' = (2x^3 - y^3) y$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5287	$x(x^4 - 2y^3) y' + (2x^4 + y^3) y = 0$	[[_homogeneous, 'class G', _rational]	✓
5295	$x(1 - xy) (1 - y^2x^2) y' + (xy + 1) (1 + y^2x^2) y = 0$	[[_homogeneous, 'class G', _rational]	✓
5296	$(x^2 - y^4) y' = xy$	[[_homogeneous, 'class G', _rational]	✓
5297	$(x^3 - y^4) y' = 3x^2y$	[[_homogeneous, 'class G', _rational]	✓
5299	$2(x - y^4) y' = y$	[[_homogeneous, 'class G', _rational]	✓
5301	$(ax^3 + (ax + by)^3) yy' + x((ax + by)^3 + by^3) = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5303	$2x(x^3 + y^4) y' = (x^3 + 2y^4) y$	[[_homogeneous, 'class G', _rational]	✓
5304	$x(1 - x^2y^4) y' + y = 0$	[[_homogeneous, 'class G', _rational]	✓
5305	$(x^2 - y^5) y' = 2xy$	[[_homogeneous, 'class G', _rational]	✓
5306	$x(x^3 + y^5) y' = (x^3 - y^5) y$	[[_homogeneous, 'class G', _rational]	✓
5313	$y' \sqrt{y} = \sqrt{x}$	[_separable]	✓
5315	$y' \sqrt{xy} + x - y = \sqrt{xy}$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5316	$(x - 2\sqrt{xy}) y' = y$	[[_homogeneous, 'class A', _dAlembert]	✓
5319	$(x - \sqrt{y^2 + x^2}) y' = y$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓

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#	ODE	CAS classification	Solved?
5321	$x(x + \sqrt{y^2 + x^2})y' + y\sqrt{y^2 + x^2} = 0$	[[_homogeneous, 'class G', _dAlembert]	✓
5322	$xy(x + \sqrt{x^2 - y^2})y' = xy^2 - (x^2 - y^2)^{3/2}$	[[_1st_order, __with_lin- ear_symmetries], _dAlem- bert]	✓
5328	$x(x - y \tan(\frac{y}{x}))y' + (x + y \tan(\frac{y}{x}))y = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
5336	$y'^2 = y + x^2$	[[_homogeneous, 'class G']]	✓
5337	$y'^2 + x^2 = 4y$	[[_homogeneous, 'class G']]	✓
5338	$y'^2 + 3x^2 = 8y$	[[_homogeneous, 'class G']]	✓
5339	$y'^2 + x^2a + by = 0$	[[_homogeneous, 'class G']]	✓
5384	$y'^2 + axy' + bx^2 + cy = 0$	[[_homogeneous, 'class G']]	✓
5387	$y'^2 + ax^3y' - 2ax^2y = 0$	[[_1st_order, __with_lin- ear_symmetries]]	✓
5388	$y'^2 - 2ax^3y' + 4ax^2y = 0$	[[_1st_order, __with_lin- ear_symmetries]]	✓
5389	$y'^2 + 4x^5y' - 12x^4y = 0$	[[_1st_order, __with_lin- ear_symmetries]]	✓
5407	$y'^2 + xy^2y' + y^3 = 0$	[[_homogeneous, 'class G']]	✓
5408	$y'^2 - 2x^3y^2y' - 4x^2y^3 = 0$	[[_1st_order, __with_lin- ear_symmetries]]	✓
5409	$y'^2 - xy(y^2 + x^2)y' + x^4y^4 = 0$	[_separable]	✓
5412	$y'^2 - 3xy^{2/3}y' + 9y^{5/3} = 0$	[[_1st_order, __with_lin- ear_symmetries]]	✓
5416	$2y'^2 - 2x^2y' + 3xy = 0$	[[_homogeneous, 'class G']]	✓
5419	$3y'^2 + 4xy' + x^2 - y = 0$	[[_homogeneous, 'class G']]	✓
5425	$9y'^2 + 3xy^4y' + y^5 = 0$	[[_1st_order, __with_lin- ear_symmetries]]	✓
5439	$xy'^2 + yy' + x^3 = 0$	[[_homogeneous, 'class G']]	✓
5441	$xy'^2 + yy' - y^4 = 0$	[[_homogeneous, 'class G']]	✓
5450	$xy'^2 - 3yy' + 9x^2 = 0$	[[_homogeneous, 'class G']]	✓
5468	$4xy'^2 + 4yy' - y^4 = 0$	[[_homogeneous, 'class G']]	✓
5470	$16xy'^2 + 8yy' + y^6 = 0$	[[_homogeneous, 'class G']]	✓

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#	ODE	CAS classification	Solved?
5474	$x^2y'^2 = (x - y)^2$	[_linear]	✓
5476	$x^2y'^2 - xy' + y(1 - y) = 0$	[_separable]	✓
5484	$x^2y'^2 + x(x^3 - 2y)y' - (2x^3 - y)y = 0$	[[_homogeneous, 'class G', _rational]	✓
5486	$x^2y'^2 - 3xyy' + x^3 + 2y^2 = 0$	[[_homogeneous, 'class G', _rational]	✓
5508	$x^3y'^2 + x^2yy' + a = 0$	[[_homogeneous, 'class G', _rational]	✓
5511	$x^4y'^2 - xy' - y = 0$	[[_homogeneous, 'class G', _rational]	✓
5513	$x^4y'^2 + xy^2y' - y^3 = 0$	[[_homogeneous, 'class G']]	✓
5516	$4x^5y'^2 + 12x^4yy' + 9 = 0$	[[_homogeneous, 'class G']]	✓
5517	$x^6y'^2 - 2xy' - 4y = 0$	[[_homogeneous, 'class G', _rational]	✓
5518	$x^8y'^2 + 3xy' + 9y = 0$	[[_homogeneous, 'class G']]	✓
5526	$yy'^2 + x^3y' - x^2y = 0$	[[_1st_order, __with_lin- ear_symmetries]]	✓
5527	$yy'^2 + (x - y)y' - x = 0$	[_quadrature]	✓
5530	$yy'^2 + (x - y^2)y' - xy = 0$	[_quadrature]	✓
5535	$9yy'^2 + 4x^3y' - 4x^2y = 0$	[[_1st_order, __with_lin- ear_symmetries]]	✓
5537	$(x^2 - ay)y'^2 - 2xyy' = 0$	[_quadrature]	✓
5539	$xyy'^2 + (y^2 + x^2)y' + xy = 0$	[_separable]	✓
5540	$xyy'^2 + (x^2 - y^2)y' - xy = 0$	[_separable]	✓
5541	$xyy'^2 - (x^2 - y^2)y' - xy = 0$	[_separable]	✓
5544	$xyy'^2 + (3x^2 - 2y^2)y' - 6xy = 0$	[_separable]	✓
5549	$y^2y'^2 - 3xy' + y = 0$	[[_1st_order, __with_lin- ear_symmetries], _rational]	✓
5550	$y^2y'^2 - 6x^3y' + 4x^2y = 0$	[[_1st_order, __with_lin- ear_symmetries]]	✓
5552	$y^2y'^2 - (x + 1)yy' + x = 0$	[_quadrature]	✓

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Table 2.15 first order ode isobaric  
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#	ODE	CAS classification	Solved?
5564	$(x + y)^2 y' = y^2$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
5565	$(x + y)^2 y' - (x^2 - xy - 2y^2) y' - (x - y)y = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
5569	$4y^2 y' + 2(3x + 1)xyy' + 3x^3 = 0$	[_separable]	✓
5570	$(x^2 - 4y^2) y' + 6xyy' - 4x^2 + y^2 = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
5571	$9y^2 y' - 3xy' + y = 0$	[[_1st_order, __with_lin- ear_symmetries], _rational]	✓
5576	$xy^2 y' - y^3 y' + a^2 x = 0$	[[_homogeneous, 'class G', _rational]	✓
5578	$2xy^2 y' - y^3 y' - a = 0$	[[_homogeneous, 'class G', _rational]	✓
5579	$4x^2 y^2 y' = (y^2 + x^2)^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
5580	$4y^3 y' - 4xy' + y = 0$	[[_1st_order, __with_lin- ear_symmetries], _rational]	✓
5581	$3xy^4 y' - y^5 y' + 1 = 0$	[[_homogeneous, 'class G', _rational]	✓
5582	$9xy^4 y' - 3y^5 y' - a = 0$	[[_homogeneous, 'class G', _rational]	✓
5602	$y'^3 - axyy' + 2y^2 a = 0$	[[_1st_order, __with_lin- ear_symmetries]]	✓
5603	$y'^3 - xy^4 y' - y^5 = 0$	[[_1st_order, __with_lin- ear_symmetries]]	✓
5617	$y'^3 - (x^2 + xy^2 + y^4) y'^2$ $+ xy^2(x^2 + xy^2 + y^4) y' - x^3 y^6 = 0$	[_quadrature]	✓
5620	$3y'^3 - x^4 y' + 2x^3 y = 0$	[[_1st_order, __with_lin- ear_symmetries]]	✓
5625	$xy'^3 - 2yy'^2 + 4x^2 = 0$	[[_1st_order, __with_lin- ear_symmetries]]	✓
5632	$2x^3 y'^3 + 6x^2 yy'^2 - (1 - 6xy) yy' + 2y^3 = 0$	[[_homogeneous, 'class G']]]	✓
5633	$x^4 y'^3 - x^3 yy'^2 - x^2 y^2 y' + xy^3 = 1$	[[_1st_order, __with_lin- ear_symmetries]]	✓

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Table 2.15 first order ode isobaric  
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#	ODE	CAS classification	Solved?
5634	$x^6 y'^3 - xy' - y = 0$	[[_1st_order, __with_linear_symmetries]]	✓
5637	$(x + 2y) y'^3 + 3(x + y) y'^2 + (2x + y) y' = 0$	[_quadrature]	✓
5638	$y^2 y'^3 - xy' + y = 0$	[[_1st_order, __with_linear_symmetries]]	✓
5639	$y^2 y'^3 + 2xy' - y = 0$	[[_1st_order, __with_linear_symmetries]]	✓
5640	$4y^2 y'^3 - 2xy' + y = 0$	[[_1st_order, __with_linear_symmetries]]	✓
5641	$16y^2 y'^3 + 2xy' - y = 0$	[[_1st_order, __with_linear_symmetries]]	✓
5644	$y^4 y'^3 - 6xy' + 2y = 0$	[[_1st_order, __with_linear_symmetries]]	✓
5662	$2(1 + y)^{3/2} + 3xy' - 3y = 0$	[_separable]	✓
5689	$y' = \frac{xy}{x^2 - y^2}$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
5694	$\frac{2x}{y^3} + \frac{(y^2 - 3x^2) y'}{y^4} = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]]	✓
5695	$y + xy^2 - xy' = 0$	[[_homogeneous, 'class D', _rational, _Bernoulli]]	✓
5705	$(y - x) y' + y = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
5706	$(2\sqrt{xy} - x) y' + y = 0$	[[_homogeneous, 'class A', _dAlembert]]	✓
5708	$x - y \cos\left(\frac{y}{x}\right) + x \cos\left(\frac{y}{x}\right) y' = 0$	[[_homogeneous, 'class A', _dAlembert]]	✓
5709	$(7x + 5y) y' + 10x + 8y = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
5734	$(7x + 5y) y' + 10x + 8y = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
5735	$x^2 + 2xy - y^2 + (y^2 + 2xy - x^2) y' = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓

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Table 2.15 first order ode isobaric  
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#	ODE	CAS classification	Solved?
5736	$y^2 + (xy + x^2)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
5738	$(y^2x^2 + xy)y + (y^2x^2 - 1)xy' = 0$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]]	✓
5739	$(x^3y^3 + y^2x^2 + xy + 1)y$ $+ (x^3y^3 - y^2x^2 - xy + 1)xy' = 0$	[[_homogeneous, 'class G', _rational]]	✓
5763	$y = xy' + x\sqrt{1 + y'^2}$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
5771	$2xy + (y^2 + x^2)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlem- bert]]	✓
5772	$(x + \sqrt{y^2 - xy})y' - y = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
5773	$x + y - (x - y)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
5774	$xy' - y - x \sin\left(\frac{y}{x}\right) = 0$	[[_homogeneous, 'class A', _dAlembert]]	✓
5775	$2x^2y + y^3 + (xy^2 - 2x^3)y' = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
5776	$y^2 + (x\sqrt{y^2 - x^2} - xy)y' = 0$	[[_homogeneous, 'class G', _dAlembert]]	✓
5777	$\frac{y \cos\left(\frac{y}{x}\right)}{x} - \left(\frac{x \sin\left(\frac{y}{x}\right)}{y} + \cos\left(\frac{y}{x}\right)\right)y' = 0$	[[_homogeneous, 'class A', _dAlembert]]	✓
5778	$y + x \ln\left(\frac{y}{x}\right)y' - 2xy' = 0$	[[_homogeneous, 'class A', _dAlembert]]	✓
5779	$2ye^{\frac{x}{y}} + (y - 2xe^{\frac{x}{y}})y' = 0$	[[_homogeneous, 'class A', _dAlembert]]	✓
5780	$e^{\frac{y}{x}}x - y \sin\left(\frac{y}{x}\right) + x \sin\left(\frac{y}{x}\right)y' = 0$	[[_homogeneous, 'class A', _dAlembert]]	✓
5781	$y^2 + x^2 = 2xyy'$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
5782	$e^{\frac{y}{x}}x + y = xy'$	[[_homogeneous, 'class A', _dAlembert]]	✓

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Table 2.15 first order ode isobaric  
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#	ODE	CAS classification	Solved?
5783	$y' - \frac{y}{x} + \csc\left(\frac{y}{x}\right) = 0$ i.c.	[[_homogeneous, 'class A', _dAlembert]	✓
5784	$xy - y^2 - x^2y' = 0$ i.c.	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
5819	$y(2x^2y^3 + 3) + x(x^2y^3 - 1)y' = 0$	[[_homogeneous, 'class G', _rational]	✓
5839	$xy' + y = x^3$	[_linear]	✓
5855	$xy' + xy^2 - y = 0$	[[_homogeneous, 'class D', _rational, _Bernoulli]	✓
5859	$y' + \frac{y}{x} = \frac{y^2}{x}$ i.c.	[_separable]	✓
5864	$y' = \frac{1}{x^2} - \frac{y}{x} - y^2$	[[_homogeneous, 'class G', _rational, _Riccati]	✓
5865	$y' = 1 + \frac{y}{x} - \frac{y^2}{x^2}$	[[_homogeneous, 'class A', _rational, _Riccati]	✓
5874	$(x^2 - y^2)y' = 2xy$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5876	$x^2y + y^2 + x^3y' = 0$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
5886	$xy' - y^2 + 1 = 0$	[_separable]	✓
5888	$xy' = e^{\frac{y}{x}}x + x + y$	[[_homogeneous, 'class A', _dAlembert]	✓
5890	$xy' - y(\ln(xy) - 1) = 0$	[[_homogeneous, 'class G']]	✓
5891	$x^3y' - y^2 - x^2y = 0$	[[_homogeneous, 'class D', _rational, _Bernoulli]	✓
5893	$xy' - y - x \sin\left(\frac{y}{x}\right) = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
5894	$(xy - x^2)y' + y^2 - 3xy - 2x^2 = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
5896	$x^2y' + x^2 + xy + y^2 = 0$	[[_homogeneous, 'class A', _rational, _Riccati]	✓
5903	$(2xy + 4x^3)y' + y^2 + 12x^2y = 0$	[[_homogeneous, 'class G', _exact, _rational, [_Abel, '2nd type', 'class B']]	✓

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Table 2.15 first order ode isobaric  
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#	ODE	CAS classification	Solved?
5905	$(x^2 - y)y' - 4xy = 0$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class A']]]	✓
5906	$xyy' + x^2 + y^2 = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
5907	$2xyy' + 3x^2 - y^2 = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
5908	$(2xy^3 - x^4)y' + 2x^3y - y^4 = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
5909	$(xy - 1)^2 xy' + (1 + y^2 x^2)y = 0$	[[_homogeneous, 'class G', _rational]]	✓
5910	$(y^2 + x^2)y' + 2x(2x + y) = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlem- bert]]	✓
5911	$3xy^2y' + y^3 - 2x = 0$	[[_homogeneous, 'class G', _exact, _rational, _Bernoulli]]	✓
5912	$2y^3y' + xy^2 - x^3 = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
6019	$-ay^3 - \frac{b}{x^{3/2}} + y' = 0$	[[_homogeneous, 'class G', _rational, _Abel]]	✓
6020	$axy^3 + by^2 + y' = 0$	[[_homogeneous, 'class G', _Abel]]	✓
6032	$y' = axy^2$	[_separable]	✓
6039	$axy' + 2y = xyy'$	[_separable]	✓
6096	$xyy' + 1 + y^2 = 0$	[_separable]	✓
6100	$y' + 2xy^2 = 0$	[_separable]	✓
6104	$(x + xy)y' + y = 0$	[_separable]	✓
6120	$y' + \frac{y}{x} = 2x^{3/2}\sqrt{y}$	[[_homogeneous, 'class G', _rational, _Bernoulli]]	✓
6121	$3xy^2y' + 3y^3 = 1$	[_separable]	✓
6125	$x^2y' + y^2 - xy = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
6126	$yy' = -x + \sqrt{y^2 + x^2}$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓

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#	ODE	CAS classification	Solved?
6127	$xy + (y^2 - x^2)y' = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
6128	$y^2 - xy + (xy + x^2)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
6130	$y' = \frac{y}{x} - \tan\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A', _dAlembert]]	✓
6132	$y' = xy^2 - \frac{2y}{x} - \frac{1}{x^3}$	[[_homogeneous, 'class G', _rational, _Riccati]]	✓
6208	$x^2y' - xy = \frac{1}{x}$	[_linear]	✓
6214	$3x^3y^2y' - x^2y^3 = 1$	[[_homogeneous, 'class G', _rational, _Bernoulli]]	✓
6224	$(2x + y)y' - x + 2y = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
6233 i.c.	$-y + xy' = x^2$	[_linear]	✓
6262	$xy' = \frac{1}{y^3}$	[_separable]	✓
6266	$xv' = \frac{1 - 4v^2}{3v}$	[_separable]	✓
6277 i.c.	$x^2 + 2yy' = 0$	[_separable]	✓
6289	$y' = xy^3$	[_separable]	✓
6290 i.c.	$y' = xy^3$	[_separable]	✓
6291 i.c.	$y' = xy^3$	[_separable]	✓
6292 i.c.	$y' = xy^3$	[_separable]	✓
6303	$xy' + 2y = \frac{1}{x^3}$	[_linear]	✓
6306	$yx' + 2x = 5y^3$	[_linear]	✓
6319	$y' + \frac{3y}{x} = x^2$	[_linear]	✓
6323	$x^{10/3} - 2y + xy' = 0$	[_linear]	✓
6345	$y^2t^3 + \frac{t^4y'}{y^6} = 0$	[_separable]	✓

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#	ODE	CAS classification	Solved?
6407	$3xy' + y + x^2y^4 = 0$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
6416	$y' - \frac{2y}{x} - x^2 = 0$	[_linear]	✓
6417	$y' + \frac{2y}{x} - x^3 = 0$	[_linear]	✓
6422	$-y + xy' = x^2$	[_linear]	✓
6424	$x \cos(y) y' - \sin(y) = 0$	[_separable]	✓
6425	$(x^3 + xy^2) y' = 2y^3$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
6429	$y' + \frac{y}{x} = y^3$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
6430	$xy' + 3y = y^2x^2$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
6431	$x(-3 + y) y' = 4y$	[_separable]	✓
6436	$(2y - x) y' = 2x + y$	[[_homogeneous, 'class A'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
6437	$xy + y^2 + (x^2 - xy) y' = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
6438	$x^3 + y^3 = 3xy^2y'$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
6439	$y - 3x + (3x + 4y) y' = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
6440	$(x^3 + 3xy^2) y' = y^3 + 3x^2y$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
6450	$y(xy + 1) + x(1 + xy + y^2x^2) y' = 0$	[[_homogeneous, 'class G'], _rational]	✓
6458	$x^2 - 2xy + 5y^2 = (x^2 + 2xy + y^2) y'$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
6462	$y' = \frac{2xy + y^2}{x^2 + 2xy}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
6465	$x^2y' = y^2 - xyy'$ <i>i.c.</i>	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓

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#	ODE	CAS classification	Solved?
6468	$y^2 + x^2y' = xyy'$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
6469	$2xyy' = x^2 - y^2$	[[_homogeneous, 'class A'], _exact, _rational, _Bernoulli]	✓
6479	$y' + \frac{y}{x} = xy^2$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
6534	$y' + \frac{4y}{x} = x^4$	[_linear]	✓
6543	$y' - \frac{y}{x} = x^2$	[_linear]	✓
6571	$yy' + x = 0$	[_separable]	✓
6573	$2x^3y' = y(3x^2 + y^2)$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
6582	$y^2 - x^2y' = 0$	[_separable]	✓
6584	$xy^2 + y + (x^2y - x)y' = 0$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]]	✓
6585	$x \sin\left(\frac{y}{x}\right) - y \cos\left(\frac{y}{x}\right) + x \cos\left(\frac{y}{x}\right)y' = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
6587	$y\sqrt{y^2 + x^2} - x(x + \sqrt{y^2 + x^2})y' = 0$	[[_homogeneous, 'class G', _dAlembert]	✓
6591	$x + 2y + (2x + 3y)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
6595	$y^2 - x^2 + xyy' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
6596	$y(1 + 2xy) + x(1 - xy)y' = 0$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]]	✓
6598	$x^3 + y^3 + 3xy^2y' = 0$	[[_homogeneous, 'class A'], _exact, _rational, _Bernoulli]	✓
6601	$xyy' + x^2 + y^2 = 0$ <i>i.c.</i>	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
6616	$y(x - 2y) - x^2y' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
6617	$xyy' + x^2 + y^2 = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓

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Table 2.15 first order ode isobaric  
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#	ODE	CAS classification	Solved?
6618	$x^2 + y^2 + 2xyy' = 0$	[[_homogeneous, 'class A', _exact, _rational, _Bernoulli]	✓
6649	$xy' + y - x^3y^6 = 0$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
6658	$2y^5x - y + 2xy' = 0$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
6668	$xy'^2 + (y - 1 - x^2)y' - x(y - 1) = 0$	[_quadrature]	✓
6670	$3x^4y'^2 - xy' - y = 0$	[[_homogeneous, 'class G', _rational]	✓
6672	$y^2y'^2 + 3xy' - y = 0$	[[_1st_order, _with_linear_symmetries], _rational]	✓
6674	$16y^3y'^2 - 4xy' + y = 0$	[[_1st_order, _with_linear_symmetries], _rational]	✓
6677	$y = 2xy' + y^2y'^3$	[[_1st_order, _with_linear_symmetries]]	✓
6683	$y^2y'^2 + 3xy' - y = 0$	[[_1st_order, _with_linear_symmetries], _rational]	✓
6687	$y = -xy' + x^4y'^2$	[[_homogeneous, 'class G', _rational]	✓
6690	$y'^3 - 4x^4y' + 8x^3y = 0$	[[_1st_order, _with_linear_symmetries]]	✓
7058	$y' = \frac{x^2}{y}$	[_separable]	✓
7061	$xy' = \sqrt{1 - y^2}$	[_separable]	✓
7063	$xyy' = \sqrt{1 + y^2}$	[_separable]	✓
7066	$xy' + y = y^2$	[_separable]	✓
	<i>i.c.</i>		
7074	$\frac{1}{\sqrt{x}} + \frac{y'}{\sqrt{y}} = 0$	[_separable]	✓
7079	$y' = \frac{\sqrt{y}}{\sqrt{x}}$	[_separable]	✓
7080	$y' = \frac{\sqrt{y}}{x}$	[_separable]	✓
7093	$(x + y)y' + x - y = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓

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Table 2.15 first order ode isobaric  
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#	ODE	CAS classification	Solved?
7096	$y^2 + x^2y' = xyy'$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
7097	$(y^2 + x^2)y' = 2xy$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
7098	$-y + xy' = x \tan\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A', _dAlembert]]	✓
7099	$xy' = y - e^{\frac{y}{x}}x$	[[_homogeneous, 'class A', _dAlembert]]	✓
7100	$-y + xy' = (x + y) \ln\left(\frac{x + y}{x}\right)$	[[_homogeneous, 'class A', _dAlembert]]	✓
7101	$xy' = y \cos\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A', _dAlembert]]	✓
7102	$y + \sqrt{xy} - xy' = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
7104	$x + y - (x - y)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
7105	$x^2 + 2xy - y^2 + (y^2 + 2xy - x^2)y' = 0$ i.c.	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
7106	$-y + xy' = yy'$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
7107	$y^2 + (x^2 - xy)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
7108	$y^2 + xy + x^2 = x^2y'$	[[_homogeneous, 'class A', _rational, _Riccati]]	✓
7109	$\frac{1}{x^2 - xy + y^2} = \frac{y'}{2y^2 - xy}$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
7110	$y' = \frac{2xy}{3x^2 - y^2}$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
7111	$y' = \frac{x}{y} + \frac{y}{x}$ i.c.	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
7112	$xy' = y + \sqrt{y^2 - x^2}$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
7113	$(2\sqrt{xy} - x)y' + y = 0$	[[_homogeneous, 'class A', _dAlembert]]	✓

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Table 2.15 first order ode isobaric  
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#	ODE	CAS classification	Solved?
7114	$xy' = y \ln\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A', _dAlembert]	✓
7120	$y' + \frac{x+2y}{x} = 0$	[_linear]	✓
7121	$y' = \frac{y}{x+y}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
7122	$xy' = x + \frac{y}{2}$ i.c.	[_linear]	✓
7136	$2xy' + (x^2y^4 + 1)y = 0$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
7137	$2x(x - y^2)y' + y^3 = 0$	[[_homogeneous, 'class G', _rational]	✓
7138	$x^3(y' - x) = y^2$	[[_homogeneous, 'class G', _rational, _Riccati]	✓
7139	$2x^2y' = y^3 + xy$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
7140	$y + x(1 + 2xy)y' = 0$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]	✓
7141	$2y' + x = 4\sqrt{y}$	[[_1st_order, __with_lin- ear_symmetries], _Chini]	✓
7142	$y' = y^2 - \frac{2}{x^2}$	[[_homogeneous, 'class G', _rational, [_Riccati, _spe- cial]]]	✓
7143	$2xy' + y = y^2\sqrt{x - y^2x^2}$	[[_homogeneous, 'class G']]	✓
7144	$\frac{2xyy'}{3} = \sqrt{x^6 - y^4} + y^2$	[[_homogeneous, 'class G']]	✓
7145	$2y + (x^2y + 1)xy' = 0$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]	✓
7146	$y(xy + 1) + x(1 - xy)y' = 0$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]	✓
7147	$(1 + y^2x^2)y + (y^2x^2 - 1)xy' = 0$	[[_homogeneous, 'class G', _rational]	✓
7148	$(x^2 - y^4)y' - xy = 0$	[[_homogeneous, 'class G', _rational]	✓

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Table 2.15 first order ode isobaric  
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#	ODE	CAS classification	Solved?
7149	$y(1 + \sqrt{x^2y^4 - 1}) + 2xy' = 0$	[[_homogeneous, 'class G']]	✓
7153	$2x + 4y + (2x - 2y)y' = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
7181	$xy' - 2\sqrt{xy} = y$	[[_homogeneous, 'class A'], _dAlembert]	✓
7185	$x^2y' + y^2 - xy = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
7186	$x + y - (x - y)y' = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
7187	$y' = \frac{y}{2x} + \frac{x^2}{2y}$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
7188	$y' = -\frac{2}{t} + \frac{y}{t} + \frac{y^2}{t}$	[_separable]	✓
7223	$(1 + y^2x^2)y + (y^2x^2 - 1)xy' = 0$	[[_homogeneous, 'class G'], _rational]	✓
7236	$x^2 + y^2 - 2xyy' = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
7237	$x^2 - y^2 + 2xyy' = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
7240	$x + yy' + y - xy' = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
7283	$x^2y' + 2xy = 1$	[_linear]	✓
7408	$yy' = x$	[_separable]	✓
7415	$y' = \frac{x + y}{x - y}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
7416	$y' = \frac{y^2}{xy + x^2}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
7417	$y' = \frac{y^2 + xy + x^2}{x^2}$	[[_homogeneous, 'class A'], _rational, _Riccati]	✓
7418	$y' = \frac{y + xe^{-\frac{2y}{x}}}{x}$	[[_homogeneous, 'class A'], _dAlembert]	✓

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Table 2.15 first order ode isobaric  
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#	ODE	CAS classification	Solved?
7457	$y' = \frac{xy}{y^2 + x^2}$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
7458	$2xyy' = y^2 + x^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
7459	$xy' + y = x^4y^2$	[[_homogeneous, 'class G', _rational]	✓
7460	$y' = \frac{y^2}{xy - x^2}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
7481	$y' = \frac{2xy^2}{1 - x^2y}$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]	✓
7483	$x^5y' + y^5 = 0$	[_separable]	✓
7487	$y \ln(y) - xy' = 0$	[_separable]	✓
7491	$xyy' = y - 1$	[_separable]	✓
7492	$xy^2 - x^2y' = 0$	[_separable]	✓
7497	$y' = y^2x^2$ i.c.	[_separable]	✓
7517	$xy' + y = x^4y^3$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
7519	$xy' + y = xy^2$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
7526	$\left(x + \frac{2}{y}\right)y' + y = 0$	[[_homogeneous, 'class G', _exact, _rational, [_Abel, '2nd type', 'class B']]	✓
7547	$x^2 - 2y^2 + xyy' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
7548	$x^2y' - 3xy - 2y^2 = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
7549	$x^2y' = 3(y^2 + x^2) \arctan\left(\frac{y}{x}\right) + xy$	[[_homogeneous, 'class A', _dAlembert]	✓
7550	$x \sin\left(\frac{y}{x}\right)y' = y \sin\left(\frac{y}{x}\right) + x$	[[_homogeneous, 'class A', _dAlembert]	✓
7551	$xy' = y + 2x e^{-\frac{y}{x}}$	[[_homogeneous, 'class A', _dAlembert]	✓

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#	ODE	CAS classification	Solved?
7552	$x - y - (x + y)y' = 0$	[[_homogeneous, 'class A'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
7553	$xy' = 2x - 6y$	[_linear]	✓
7554	$xy' = \sqrt{y^2 + x^2}$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
7555	$x^2y' = 2xy + y^2$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
7556	$x^3 + y^3 - xy^2y' = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
7562	$y' = \frac{1 - xy^2}{2x^2y}$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
7563	$y' = \frac{2 + 3xy^2}{4x^2y}$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
7564	$y' = \frac{y - xy^2}{x + x^2y}$	[[_homogeneous, 'class G'], _rational, [_Abel, '2nd type', 'class B']]	✓
7565	$y' = \sin\left(\frac{y}{x}\right) - \cos\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A'], _dAlembert]	✓
7566	$e^{\frac{x}{y}} - \frac{yy'}{x} = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓
7567	$y' = \frac{x^2 - xy}{y^2 \cos\left(\frac{x}{y}\right)}$	[[_homogeneous, 'class A'], _dAlembert]	✓
7568	$y' = \frac{y \tan\left(\frac{y}{x}\right)}{x}$	[[_homogeneous, 'class A'], _dAlembert]	✓
7580	$y' = \frac{2y}{x} + \frac{x^3}{y} + x \tan\left(\frac{y}{x^2}\right)$	[[_homogeneous, 'class G']]	✓
7593	$xy' + y = x$	[_linear]	✓
7597	$y' = \frac{y^2 + x^2}{x^2 - y^2}$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
7598	$y' = \frac{x + 2y}{2x - y}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
7603	$y^2y' = x$ <i>i.c.</i>	[_separable]	✓

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Table 2.15 first order ode isobaric  
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#	ODE	CAS classification	Solved?
7605	$y' = \frac{x+y}{x-y}$ i.c.	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
7606	$y' = \frac{x^2 + 2y^2}{x^2 - 2y^2}$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
7607	$2x \cos(y) - x^2 \sin(y) y' = 0$ i.c.	[_separable]	✓
7765	$y' - \frac{y}{x} = x^2$	[_linear]	✓
7766	$y' + \frac{y}{x} = x$	[_linear]	✓
8114	$x^2 y'^2 + xy' - y^2 - y = 0$	[_separable]	✓
8119	$(x+y)^2 y'^2 = y^2$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
8120	$yy'^2 + (x - y^2) y' - xy = 0$	[_quadrature]	✓
8121	$y'^2 - xy(x+y) y' + x^3 y^3 = 0$	[_separable]	✓
8122	$(4x - y) y'^2 + 6(x - y) y' + 2x - 5y = 0$	[_quadrature]	✓
8123	$(x - y)^2 y'^2 = y^2$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
8124	$xyy'^2 + (-1 + xy^2) y' - y = 0$	[_quadrature]	✓
8125	$(y^2 + x^2)^2 y'^2 = 4y^2 x^2$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
8126	$(x+y)^2 y'^2 + (2y^2 + xy - x^2) y' + (y-x)y = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
8127	$xy(y^2 + x^2) (-1 + y'^2) = y'(x^4 + y^2 x^2 + y^4)$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
8131	$3x^4 y'^2 - xy' - y = 0$	[[_homogeneous, 'class G'], _rational]	✓
8134	$y'^2 + 4x^5 y' - 12x^4 y = 0$	[[_1st_order, _with_lin- ear_symmetries]]	✓
8135	$4y^3 y'^2 - 4xy' + y = 0$	[[_1st_order, _with_lin- ear_symmetries], _rational]	✓
8136	$4y^3 y'^2 + 4xy' + y = 0$	[[_1st_order, _with_lin- ear_symmetries], _rational]	✓

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Table 2.15 first order ode isobaric  
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#	ODE	CAS classification	Solved?
8138	$y^4 y' - 6xy' + 2y = 0$	[[_1st_order, __with_linear_symmetries]]	✓
8139	$y'^2 + x^3 y' - 2x^2 y = 0$	[[_1st_order, __with_linear_symmetries]]	✓
8140	$y'^2 + 4x^5 y' - 12x^4 y = 0$	[[_1st_order, __with_linear_symmetries]]	✓
8141	$2xy'^3 - 6yy'^2 + x^4 = 0$	[[_1st_order, __with_linear_symmetries]]	✓
8144	$x^8 y'^2 + 3xy' + 9y = 0$	[[_homogeneous, 'class G']]	✓
8147	$3x^4 y'^2 - xy' - y = 0$	[[_homogeneous, 'class G'], _rational]	✓
8150	$x^6 y'^3 - 3xy' - 3y = 0$	[[_1st_order, __with_linear_symmetries]]	✓
8151	$y = x^6 y'^3 - xy'$	[[_1st_order, __with_linear_symmetries]]	✓
8209	$x^3 y'^2 + x^2 yy' + 4 = 0$	[[_homogeneous, 'class G']]	✓
8211	$9y'^2 + 3xy^4 y' + y^5 = 0$	[[_1st_order, __with_linear_symmetries]]	✓
8212	$4y^3 y'^2 - 4xy' + y = 0$	[[_1st_order, __with_linear_symmetries], _rational]	✓
8213	$x^6 y'^2 - 2xy' - 4y = 0$	[[_homogeneous, 'class G'], _rational]	✓
8215	$y^2 y'^2 - (x+1)yy' + x = 0$	[_quadrature]	✓
8216	$4x^5 y'^2 + 12x^4 yy' + 9 = 0$	[[_homogeneous, 'class G']]	✓
8217	$4y^2 y'^3 - 2xy' + y = 0$	[[_1st_order, __with_linear_symmetries]]	✓
8220	$16xy'^2 + 8yy' + y^6 = 0$	[[_homogeneous, 'class G']]	✓
8223	$9xy^4 y'^2 - 3y^5 y' - 1 = 0$	[[_homogeneous, 'class G'], _rational]	✓
8225	$x^6 y'^2 = 8xy' + 16y$	[[_homogeneous, 'class G']]	✓
8226	$x^2 y'^2 = (x-y)^2$	[_linear]	✓
8232	$xy'^3 - 2yy'^2 + 4x^2 = 0$	[[_1st_order, __with_linear_symmetries]]	✓
8375	$y' + \frac{2y}{x} = 5x^2$	[_linear]	✓

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Table 2.15 first order ode isobaric  
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#	ODE	CAS classification	Solved?
8377	$y' = \frac{2x - y}{4y + x}$ i.c.	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
8378	$y' + \frac{2y}{x} = 6x^4y^2$	[[_homogeneous, 'class G', _rational, _Bernoulli]]	✓
8404	$y' = \frac{-xy - 1}{4x^3y - 2x^2}$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]]	✓
8409	$y' = \sqrt{y} + x$	[[_1st_order, _with_lin- ear_symmetries], _Chini]	✓
8410	$y^2 + x^2y' = xyy'$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
8418	$y' = \frac{5x^2 - xy + y^2}{x^2}$	[[_homogeneous, 'class A', _rational, _Riccati]]	✓
8422	$y^2 + \frac{2}{x} + 2xyy' = 0$	[[_homogeneous, 'class G', _exact, _rational, _Bernoulli]]	✓
8427	$yy' - y = x$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
8562	$y' = e^{-\frac{y}{x}}$	[[_homogeneous, 'class A', _dAlembert]]	✓
9728	$y' - ay^3 - \frac{b}{x^{3/2}} = 0$	[[_homogeneous, 'class G', _rational, _Abel]]	✓
9731	$y' + axy^3 + by^2 = 0$	[[_homogeneous, 'class G', _Abel]]	✓
9748	$y' - a\sqrt{y} - bx = 0$	[[_homogeneous, 'class G', _Chini]]	✓
9786	$xy' - y^2 + 1 = 0$	[_separable]	✓
9791	$xy' + xy^2 - y = 0$	[[_homogeneous, 'class D', _rational, _Bernoulli]]	✓
9803	$xy' + a\sqrt{y^2 + x^2} - y = 0$	[[_homogeneous, 'class A', _dAlembert]]	✓
9806	$xy' - e^{\frac{y}{x}}x - y - x = 0$	[[_homogeneous, 'class A', _dAlembert]]	✓
9807	$xy' - y \ln(y) = 0$	[_separable]	✓

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Table 2.15 first order ode isobaric  
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#	ODE	CAS classification	Solved?
9808	$xy' - y(\ln(xy) - 1) = 0$	[[_homogeneous, 'class G']]	✓
9812	$xy' - x \sin\left(\frac{y}{x}\right) - y = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
9813	$xy' + x - y + x \cos\left(\frac{y}{x}\right) = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
9814	$xy' + x \tan\left(\frac{y}{x}\right) - y = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
9815	$xy' - yf(xy) = 0$	[[_homogeneous, 'class G']]	✓
9819	$2xy' - y - 2x^3 = 0$	[_linear]	✓
9825	$x^2y' + x^2 + xy + y^2 = 0$	[[_homogeneous, 'class A', _rational, _Riccati]	✓
9826	$x^2y' - y^2 - xy = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
9827	$x^2y' - y^2 - xy - x^2 = 0$	[[_homogeneous, 'class A', _rational, _Riccati]	✓
9829	$x^2(y' + y^2) + 4xy + 2 = 0$	[[_homogeneous, 'class G', _rational, _Riccati]	✓
9830	$x^2(y' + y^2) + axy + b = 0$	[[_homogeneous, 'class G', _rational, _Riccati]	✓
9832	$x^2(y' + y^2a) - b = 0$	[[_homogeneous, 'class G', _rational, [_Riccati, _special]]]	✓
9856	$3x^2y' - 7y^2 - 3xy - x^2 = 0$	[[_homogeneous, 'class A', _rational, _Riccati]	✓
9859	$x^3y' - y^2 - x^4 = 0$	[[_homogeneous, 'class G', _rational, _Riccati]	✓
9860	$x^3y' - y^2 - x^2y = 0$	[[_homogeneous, 'class D', _rational, _Bernoulli]	✓
9861	$x^3y' - x^4y^2 + x^2y + 20 = 0$	[[_homogeneous, 'class G', _rational, _Riccati]	✓
9893	$yy' + ay + x = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
9900	$yy' - x e^{\frac{x}{y}} = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
9907	$(y - x^2)y' + 4xy = 0$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class A']]	✓

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Table 2.15 first order ode isobaric  
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#	ODE	CAS classification	Solved?
9912	$(2y - x)y' - y - 2x = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
9921	$xyy' + x^2 + y^2 = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
9928	$(xy - x^2)y' + y^2 - 3xy - 2x^2 = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
9929	$2xyy' - y^2 + ax = 0$	[[_homogeneous, 'class G', _rational, _Bernoulli]]	✓
9930	$2xyy' - y^2 + x^2a = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
9931	$2xyy' + 2y^2 + 1 = 0$	[_separable]	✓
9934	$(2xy + 4x^3)y' + y^2 + 112x^2y = 0$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]]	✓
9935	$x(2x + 3y)y' + 3(x + y)^2 = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
9943	$x(xy - 2)y' + x^2y^3 + xy^2 - 2y = 0$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class C']]]	✓
9944	$x(xy - 3)y' + xy^2 - y = 0$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]]	✓
9949	$(2x^2y + x)y' - x^2y^3 + 2xy^2 + y = 0$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class C']]]	✓
9950	$(2x^2y - x)y' - 2xy^2 - y = 0$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]]	✓
9951	$(2x^2y - x^3)y' + y^3 - 4xy^2 + 2x^3 = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class C'], _dAlem- bert]]	✓
9953	$2x(x^3y + 1)y' + (3x^3y - 1)y = 0$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]]	✓
9960	$(y^2 + x^2)y' + 2x(2x + y) = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlem- bert]]	✓

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Table 2.15 first order ode isobaric  
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#	ODE	CAS classification	Solved?
9961	$(y^2 + x^2)y' - y^2 = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
9965	$(y^2 - x^2)y' + 2xy = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
9966	$(x^4 + y^2)y' - 4x^3y = 0$	[[_homogeneous, 'class G', _rational]	✓
9970	$x^2 + 2xy - y^2 + (y^2 + 2xy - x^2)y' = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
9973	$(4y^2 + x^2)y' - xy = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
9974	$(4y^2 + 2xy + 3x^2)y' + y^2 + 6xy + 2x^2 = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]	✓
9979	$(y^2a + 2bxy + cx^2)y' + by^2 + 2cxy + dx^2 = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]	✓
9982	$x(y^2 - 3x)y' + 2y^3 - 5xy = 0$	[[_homogeneous, 'class G', _rational]	✓
9984	$x(y^2 + xy - x^2)y' - y^3 + xy^2 + x^2y = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
9986	$2x(5x^2 + y^2)y' + y^3 - x^2y = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
9987	$3xy^2y' + y^3 - 2x = 0$	[[_homogeneous, 'class G', _exact, _rational, _Bernoulli]	✓
9988	$(3xy^2 - x^2)y' + y^3 - 2xy = 0$	[[_homogeneous, 'class G', _exact, _rational]	✓
9989	$6xy^2y' + 2y^3 + x = 0$	[[_homogeneous, 'class G', _exact, _rational, _Bernoulli]	✓
9990	$(6xy^2 + x^2)y' - y(3y^2 - x) = 0$	[[_homogeneous, 'class G', _rational]	✓
9991	$(y^2x^2 + x)y' + y = 0$	[[_homogeneous, 'class G', _rational]	✓
9992	$(xy - 1)^2xy' + (1 + y^2x^2)y = 0$	[[_homogeneous, 'class G', _rational]	✓
9993	$(10x^3y^2 + x^2y + 2x)y' + 5x^2y^3 + xy^2 = 0$	[[_homogeneous, 'class G', _rational]	✓

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#	ODE	CAS classification	Solved?
9995	$(y^3 - x^3) y' - x^2 y = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
9997	$2y^3 y' + xy^2 = 0$	[_separable]	✓
9999	$(2y^3 + 5x^2 y) y' + 5xy^2 + x^3 = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]	✓
10000	$(3x^3 + 6x^2 y - 3xy^2 + 20y^3) y' + 4x^3 + 9x^2 y + 6xy^2 - y^3 = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]	✓
10004	$(2xy^3 - x^4) y' + 2x^3 y - y^4 = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
10014	$y(y^3 - 2x^3) y' + (2y^3 - x^3) x = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
10015	$y((bx + ay)^3 + bx^3) y' + x((bx + ay)^3 + ay^3) = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
10021	$(\sqrt{xy} - 1) xy' - (\sqrt{xy} + 1) y = 0$	[[_homogeneous, 'class G']]	✓
10022	$(2x^{5/2} y^{3/2} + x^2 y - x) y' - x^{3/2} y^{5/2} + xy^2 - y = 0$	[[_homogeneous, 'class G', _rational]	✓
10026	$(x + \sqrt{y^2 + x^2}) y' - y = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
10027	$(y\sqrt{y^2 + x^2} + (y^2 - x^2) \sin(\alpha) - 2xy \cos(\alpha)) y' + x\sqrt{y^2 + x^2} + 2xy \sin(\alpha) + (y^2 - x^2) \cos(\alpha) = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
10031	$x(3e^{xy} + 2e^{-xy})(xy' + y) + 1 = 0$	[[_homogeneous, 'class G']]	✓
10038	$xy' \cot\left(\frac{y}{x}\right) + 2x \sin\left(\frac{y}{x}\right) - y \cot\left(\frac{y}{x}\right) = 0$	[[_homogeneous, 'class A']]	✓
10042	$x \cos(y) y' + \sin(y) = 0$	[_separable]	✓
10051	$(x^2 y \sin(xy) - 4x) y' + xy^2 \sin(xy) - y = 0$	[[_homogeneous, 'class G']]	✓
10052	$(-y + xy') \cos\left(\frac{y}{x}\right)^2 + x = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
10053	$(y \sin\left(\frac{y}{x}\right) - x \cos\left(\frac{y}{x}\right)) xy' - (x \cos\left(\frac{y}{x}\right) + y \sin\left(\frac{y}{x}\right)) y = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
10057	$y'^2 + ay + bx^2 = 0$	[[_homogeneous, 'class G']]	✓
10072	$y'^2 + axy' + by + cx^2 = 0$	[[_homogeneous, 'class G']]	✓

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Table 2.15 first order ode isobaric  
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#	ODE	CAS classification	Solved?
10074	$y'^2 - 2x^2y' + 2xy = 0$	[[_homogeneous, 'class G']]	✓
10075	$y'^2 + ax^3y' - 2ax^2y = 0$	[[_1st_order, __with_linear_symmetries]]	✓
10085	$y'^2 - 2x^3y^2y' - 4x^2y^3 = 0$	[[_1st_order, __with_linear_symmetries]]	✓
10086	$y'^2 - 3xy^{2/3}y' + 9y^{5/3} = 0$	[[_1st_order, __with_linear_symmetries]]	✓
10088	$2y'^2 - 2x^2y' + 3xy = 0$	[[_homogeneous, 'class G']]	✓
10090	$3y'^2 + 4xy' - y + x^2 = 0$	[[_homogeneous, 'class G']]	✓
10092	$ay'^2 + bx^2y' + cxy = 0$	[[_homogeneous, 'class G']]	✓
10101	$xy'^2 + yy' - x^2 = 0$	[[_homogeneous, 'class G'], _rational]	✓
10102	$xy'^2 + yy' + x^3 = 0$	[[_homogeneous, 'class G']]	✓
10103	$xy'^2 + yy' - y^4 = 0$	[[_homogeneous, 'class G']]	✓
10130	$x^2y'^2 + (x^2y - 2xy + x^3)y' + (y^2 - x^2y)(1 - x) = 0$	[_linear]	✓
10142	$x^3y'^2 + x^2yy' + a = 0$	[[_homogeneous, 'class G']]	✓
10144	$x^4y'^2 - xy' - y = 0$	[[_homogeneous, 'class G'], _rational]	✓
10157	$yy'^2 + x^3y' - x^2y = 0$	[[_1st_order, __with_linear_symmetries]]	✓
10158	$yy'^2 - (y - x)y' - x = 0$	[_quadrature]	✓
10163	$9yy'^2 + 4x^3y' - 4x^2y = 0$	[[_1st_order, __with_linear_symmetries]]	✓
10168	$xyy'^2 + (y^2 + x^2)y' + xy = 0$	[_separable]	✓
10174	$y^2y'^2 - 6x^3y' + 4x^2y = 0$	[[_1st_order, __with_linear_symmetries]]	✓
10192	$xy^2y'^2 - 2y^3y' + 2xy^2 - x^3 = 0$	[_separable]	✓
10214	$y'^3 - xy^4y' - y^5 = 0$	[[_1st_order, __with_linear_symmetries]]	✓
10224	$x^3y'^3 - 3x^2yy'^2 + (3xy^2 + x^6)y' - y^3 - 2x^5y = 0$	[[_1st_order, __with_linear_symmetries]]	✓
10225	$2(xy' + y)^3 - yy' = 0$	[[_homogeneous, 'class G']]	✓

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#	ODE	CAS classification	Solved?
10228	$y^2 y' + 2xy' - y = 0$	[[_1st_order, __with_linear_symmetries]]	✓
10229	$16y^2 y' + 2xy' - y = 0$	[[_1st_order, __with_linear_symmetries]]	✓
10231	$x^7 y^2 y' - (3x^6 y^3 - 1) y'^2 + 3x^5 y^4 y' - x^4 y^5 = 0$	[[_homogeneous, 'class G']]	✓
10244	$x \left( \sqrt{1 + y'^2} + y' \right) - y = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
10308	$y' = \frac{1}{y + \sqrt{x}}$	[[_homogeneous, 'class G'], [_Abel, '2nd type', 'class C']]	✓
10310	$y' = \frac{x^2}{y + x^{3/2}}$	[[_1st_order, __with_linear_symmetries], _rational, [_Abel, '2nd type', 'class C']]	✓
10311	$y' = \frac{x^{5/3}}{y + x^{4/3}}$	[[_homogeneous, 'class G'], _rational, [_Abel, '2nd type', 'class C']]	✓
11682	$y' = f\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A'], _dAlembert]	✓
11695	$x^2 y' = a x^2 y^2 + b$	[[_homogeneous, 'class G'], _rational, [_Riccati, _special]]	✓
11731	$x^2 y' = a x^2 y^2 + bxy + c$	[[_homogeneous, 'class G'], _rational, _Riccati]	✓
12475	$\frac{y^2 - 2x^2}{xy^2 - x^3} + \frac{(2y^2 - x^2) y'}{y^3 - x^2 y} = 0$	[[_homogeneous, 'class A'], _exact, _rational, _dAlembert]	✓
12476	$\frac{1}{\sqrt{y^2 + x^2}} + \left( \frac{1}{y} - \frac{x}{y\sqrt{y^2 + x^2}} \right) y' = 0$	[[_homogeneous, 'class A'], _exact, _rational, _dAlembert]	✓
12477	$xy' + x + y = 0$	[_linear]	✓
12483	$e^{\frac{y}{x}} x + y - xy' = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓
12484	$2x^2 y + 3y^3 - (x^3 + 2xy^2) y' = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
12485	$x^2 y' + y^2 - xy = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓

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#	ODE	CAS classification	Solved?
12486	$2x^2y + y^3 - x^3y' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
12487	$y^3 + x^3y' = 0$	[_separable]	✓
12488	$x + y \cos\left(\frac{y}{x}\right) - x \cos\left(\frac{y}{x}\right) y' = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
12492	$y + 2xy^2 - x^2y^3 + 2x^2yy' = 0$	[[_homogeneous, 'class G', _rational, _Riccati]	✓
12493	$2y + 3xy^2 + (2x^2y + x) y' = 0$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]	✓
12494	$y + xy^2 + (x - x^2y) y' = 0$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]	✓
12505	$x^4y(3y + 2xy') + x^2(4y + 3xy') = 0$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]	✓
12507	$2x^3y - y^2 - (2x^4 + xy) y' = 0$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]	✓
12508	$x^2y' + y^2 - xy = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
12510	$x + y - (x - y) y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
12511	$x^2 + y^2 - 2xyy' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
12512	$x - y^2 + 2xyy' = 0$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
12514	$3x^2 + 6xy + 3y^2 + (2x^2 + 3xy) y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
12518	$y^2 - x^2 + 2myx + (my^2 - mx^2 - 2xy) y' = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
12521	$x + yy' + y - xy' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
12529	$(y - x) y' + y = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓

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#	ODE	CAS classification	Solved?
12532	$x \sin\left(\frac{y}{x}\right) - y \cos\left(\frac{y}{x}\right) + x \cos\left(\frac{y}{x}\right) y' = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
12536	$xy^2(xy' + 3y) - 2y + xy' = 0$	[[_homogeneous, 'class G', _rational]	✓
12538	$5xy - 3y^3 + (3x^2 - 7xy^2) y' = 0$	[[_homogeneous, 'class G', _rational]	✓
12540	$xy^2 + y - xy' = 0$	[[_homogeneous, 'class D', _rational, _Bernoulli]	✓
12542	$3x^2y + (x^3 + x^3y^2) y' = 0$	[_separable]	✓
12545	$y^3 - 2x^2y + (2xy^2 - x^3) y' = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
12548	$1 + e^{\frac{y}{x}} + e^{\frac{x}{y}} \left(1 - \frac{x}{y}\right) y' = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
12551	$(2\sqrt{xy} - x) y' + y = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
12562	$y = -xy' + x^4y'^2$	[[_homogeneous, 'class G', _rational]	✓
12567	$y'^3 - 4xyy' + 8y^2 = 0$	[[_1st_order, __with_lin- ear_symmetries]]	✓
12572	$xy^2y'^2 - y^3y' + x = 0$	[[_homogeneous, 'class G', _rational]	✓
12574	$y = 2xy' + y^2y'^3$	[[_1st_order, __with_lin- ear_symmetries]]	✓
12579	$x^3y'^2 + x^2yy' + 1 = 0$	[[_homogeneous, 'class G']]	✓
12586	$y = xy' + \frac{yy'^2}{x^2}$	[[_1st_order, __with_lin- ear_symmetries]]	✓
12702	$x' = -\frac{t}{x}$	[_separable]	✓
12736	$x' = 2tx^2$ i.c.	[_separable]	✓
12746	$x' = \frac{4t^2 + 3x^2}{2xt}$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
12749	$y' = \frac{y^2 + 2ty}{t^2}$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
12757	$x' = -\frac{2x}{t} + t$	[_linear]	✓
12760	$tx' = -x + t^2$	[_linear]	✓

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#	ODE	CAS classification	Solved?
12776	$x' = \frac{2x}{3t} + \frac{2t}{x}$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
12778	$x' = -\frac{x}{t} + \frac{1}{tx^2}$	[_separable]	✓
12779	$t^2y' + 2ty - y^2 = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
12785	$x + 3tx^2x' = 0$	[_separable]	✓
12786	$x^2 - t^2x' = 0$	[_separable]	✓
12787	$t \cot(x) x' = -2$	[_separable]	✓
12926	$x^2 + y^2 + 2xyy' = 0$	[[_homogeneous, 'class A'], _exact, _rational, _Bernoulli]	✓
12927	$xy' + y = x^3y^3$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
12948	$3x + 2y + (2x + y)y' = 0$	[[_homogeneous, 'class A'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
12955	$\frac{(2s-1)s'}{t} + \frac{s-s^2}{t^2} = 0$	[_separable]	✓
12962	$\frac{1+8xy^{2/3}}{x^{2/3}y^{1/3}} + \frac{(2x^{4/3}y^{2/3} - x^{1/3})y'}{y^{4/3}} = 0$ i.c.	[[_homogeneous, 'class G'], _exact, _rational]	✓
12963	$4x + 3y^2 + 2xyy' = 0$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
12964	$y^2 + 2xy - x^2y' = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
12970	$\tan(\theta) + 2r\theta' = 0$	[_separable]	✓
12974	$2xy + 3y^2 - (x^2 + 2xy)y' = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
12975	$v^3 + (u^3 - uv^2)v' = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
12976	$x \tan\left(\frac{y}{x}\right) + y - xy' = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓
12977	$(2s^2 + 2st + t^2)s' + s^2 + 2st - t^2 = 0$	[[_homogeneous, 'class A'], _exact, _rational, _dAlem- bert]	✓
12978	$x^3 + y^2\sqrt{y^2 + x^2} - xy\sqrt{y^2 + x^2}y' = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓

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#	ODE	CAS classification	Solved?
12979	$\sqrt{x+y} + \sqrt{x-y} + (\sqrt{x-y} - \sqrt{x+y}) y' = 0$	[[_homogeneous, 'class C', _dAlembert]	✓
12983 i.c.	$x^2 + 3y^2 - 2xyy' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
12984 i.c.	$2x - 5y + (4x - y) y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
12985 i.c.	$3x^2 + 9xy + 5y^2 - (6x^2 + 4xy) y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
12986	$x + 2y + (2x - y) y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
12987	$3x - y - (x + y) y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
12988	$x^2 + 2y^2 + (4xy - y^2) y' = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlem- bert]	✓
12989	$2x^2 + 2xy + y^2 + (x^2 + 2xy) y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class B']]	✓
12990	$y' + \frac{3y}{x} = 6x^2$	[_linear]	✓
12991	$x^4 y' + 2x^3 y = 1$	[_linear]	✓
13004	$y' - \frac{y}{x} = -\frac{y^2}{x}$	[_separable]	✓
13005	$xy' + y = -2x^6 y^4$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
13008 i.c.	$xy' - 2y = 2x^4$	[_linear]	✓
13014 i.c.	$y' + \frac{y}{2x} = \frac{x}{y^3}$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
13028	$(3y^2 x^2 - x) y' + 2xy^3 - y = 0$	[[_homogeneous, 'class G', _exact, _rational]	✓
13031	$3x - 5y + (x + y) y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
13034	$2x^2 + xy + y^2 + 2x^2 y' = 0$	[[_homogeneous, 'class A', _rational, _Riccati]	✓

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Table 2.15 first order ode isobaric  
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#	ODE	CAS classification	Solved?
13035	$y' = \frac{4x^3y^2 - 3x^2y}{x^3 - 2x^4y}$	[[_homogeneous, 'class G'], _rational, [_Abel, '2nd type', 'class B']]	✓
13037	$y' = \frac{2x - 7y}{3y - 8x}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
13038	$x^2y' + xy = xy^3$	[_separable]	✓
13040	$y' = \frac{2x^2 + y^2}{2xy - x^2}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
13041	$x^2 + y^2 - 2xyy' = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
13045	$4xyy' = 1 + y^2$	[_separable]	✓
13046	$y' = \frac{2x + 7y}{2x - 2y}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
13050	$x^2y' + xy = \frac{y^3}{x}$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
13055	$4xy^2 + 6y + (5x^2y + 8x)y' = 0$	[[_homogeneous, 'class G'], _rational, [_Abel, '2nd type', 'class B']]	✓
13056	$8x^2y^3 - 2y^4 + (5x^3y^2 - 8xy^3)y' = 0$	[[_homogeneous, 'class G'], _rational, [_Abel, '2nd type', 'class B']]	✓
13407	$y' + \frac{y}{x} = x^2$	[_linear]	✓
13423	$xy + y^2 + x^2 - x^2y' = 0$	[[_homogeneous, 'class A'], _rational, _Riccati]	✓
13424	$x' = \frac{x^2 + t\sqrt{x^2 + t^2}}{xt}$	[[_homogeneous, 'class A'], _dAlembert]	✓
13527	$xy' + y = x^3$	[_linear]	✓
13528	$y - xy' = x^2yy'$	[[_homogeneous, 'class G'], _rational, [_Abel, '2nd type', 'class B']]	✓
13533	$x(\ln(x) - \ln(y))y' - y = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓
13534	$xyy'^2 - (y^2 + x^2)y' + xy = 0$	[_separable]	✓

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#	ODE	CAS classification	Solved?
13536	$x' = e^{\frac{x}{t}} + \frac{x}{t}$	[[_homogeneous, 'class A', _dAlembert]	✓
13538	$y = xy' + \frac{1}{y}$	[_separable]	✓
13540	$y' = \frac{y}{x + y^3}$	[[_homogeneous, 'class G', _rational]	✓
13553	$(x - y)y - x^2y' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
13555	$x' = \frac{x}{t} + \frac{x^2}{t^3}$ i.c.	[[_homogeneous, 'class D', _rational, _Bernoulli]	✓
13560	$y = x^2 + 2xy' + \frac{y'^2}{2}$	[[_homogeneous, 'class G']]	✓
13561	$y' - \frac{3y}{x} + x^3y^2 = 0$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
13564	$3y^2 - x + 2y(y^2 - 3x)y' = 0$	[[_homogeneous, 'class G', _rational]	✓
13565	$(x - y)y - x^2y' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
13571	$(y^2 - x^2)y' + 2xy = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
13572	$3xy^2y' + y^3 - 2x = 0$	[[_homogeneous, 'class G', _exact, _rational, _Bernoulli]	✓
13629	$xy' + y = xy^2$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
13851	$y - x + (x + y)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
13852	$xy' + x + y = 0$	[_linear]	✓
13853	$x + y + (y - x)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
13855	$(7x + 5y)y' + 10x + 8y = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
13856	$2\sqrt{st} - s + ts' = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
13858	$xy^2y' = x^3 + y^3$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓

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Table 2.15 first order ode isobaric  
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#	ODE	CAS classification	Solved?
13859	$x \cos\left(\frac{y}{x}\right) (xy' + y) = y \sin\left(\frac{y}{x}\right) (-y + xy')$	[[_homogeneous, 'class A', _dAlembert]	✓
13863	$\frac{y - xy'}{\sqrt{y^2 + x^2}} = m$	[[_homogeneous, 'class A', _dAlembert]	✓
13864	$\frac{x + yy'}{\sqrt{y^2 + x^2}} = m$	[[_homogeneous, 'class A', _exact, _dAlembert]	✓
13865	$y + \frac{x}{y'} = \sqrt{y^2 + x^2}$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
13866	$yy' = -x + \sqrt{y^2 + x^2}$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
13884	$(y^3 - x) y' = y$	[[_homogeneous, 'class G', _exact, _rational]	✓
13887	$\frac{x}{(x+y)^2} + \frac{(2x+y)y'}{(x+y)^2} = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class C'], _dAlembert]	✓
13888	$\frac{1}{x^2} + \frac{3y^2}{x^4} = \frac{2yy'}{x^3}$	[[_homogeneous, 'class A', _exact, _rational, _Bernoulli]	✓
13889	$\frac{x^2 y'}{(x-y)^2} - \frac{y^2}{(x-y)^2} = 0$	[_separable]	✓
13900	$y' = \frac{2y}{x} - \sqrt{3}$	[_linear]	✓
13952	$\frac{x^2 y'}{(x-y)^2} - \frac{y^2}{(x-y)^2} = 0$	[_separable]	✓
13956	$x \cos\left(\frac{y}{x}\right) y' = y \cos\left(\frac{y}{x}\right) - x$	[[_homogeneous, 'class A', _dAlembert]	✓
14012	$y' = x\sqrt{y}$	[_separable]	✓
14039	$y' = \frac{x}{y}$	[_separable]	✓
14047	$y' = \frac{2x - y}{3y + x}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
14050	$y' = \frac{xy}{y^2 + x^2}$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
14051	$y' = \frac{1}{xy}$	[_separable]	✓

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Table 2.15 first order ode isobaric  
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#	ODE	CAS classification	Solved?
14054	$y' = \frac{y}{y-x}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
14055	$y' = \frac{x}{y^2}$	[_separable]	✓
14056	$y' = \frac{\sqrt{y}}{x}$	[_separable]	✓
14058	$y' = (xy)^{1/3}$	[[_homogeneous, 'class G']]	✓
14060	$y' = -\frac{y}{x} + y^{1/4}$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
14072 i.c.	$y' = -\frac{x}{2} + \frac{\sqrt{x^2 + 4y}}{2}$	[[_1st_order, _with_lin- ear_symmetries], _Clairaut]	✓
14088 i.c.	$y' = \frac{2x}{y}$	[_separable]	✓
14094	$2xyy' + y^2 = -1$	[_separable]	✓
14096	$y' = -\frac{y(2x+y)}{x(x+2y)}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
14097	$y' = \frac{y^2}{1-xy}$	[[_homogeneous, 'class G'], _rational, [_Abel, '2nd type', 'class B']]	✓
14105	$x - yy' = 0$	[_separable]	✓
14107	$x^2 - y + xy' = 0$	[_linear]	✓
14124 i.c.	$y' = -\frac{3x^2}{2y}$	[_separable]	✓
14125 i.c.	$y' = -\frac{3x^2}{2y}$	[_separable]	✓
14126 i.c.	$y' = -\frac{3x^2}{2y}$	[_separable]	✓
14127 i.c.	$y' = -\frac{3x^2}{2y}$	[_separable]	✓
14128 i.c.	$y' = \frac{\sqrt{y}}{x}$	[_separable]	✓

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Table 2.15 first order ode isobaric  
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#	ODE	CAS classification	Solved?
14129	$y' = \frac{\sqrt{y}}{x}$ i.c.	[_separable]	✓
14130	$y' = \frac{\sqrt{y}}{x}$ i.c.	[_separable]	✓
14131	$y' = \frac{\sqrt{y}}{x}$ i.c.	[_separable]	✓
14132	$y' = 3xy^{1/3}$ i.c.	[_separable]	✓
14133	$y' = 3xy^{1/3}$ i.c.	[_separable]	✓
14134	$y' = 3xy^{1/3}$ i.c.	[_separable]	✓
14135	$y' = 3xy^{1/3}$ i.c.	[_separable]	✓
14140	$y' = \frac{y}{y-x}$ i.c.	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
14141	$y' = \frac{y}{y-x}$ i.c.	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
14142	$y' = \frac{y}{y-x}$ i.c.	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
14143	$y' = \frac{y}{y-x}$ i.c.	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
14145	$y' = \frac{xy}{y^2 + x^2}$ i.c.	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
14151	$y' = -\frac{x}{2} + \frac{\sqrt{x^2 + 4y}}{2}$ i.c.	[[_1st_order, _with_lin- ear_symmetries], _Clairaut]	✓
14152	$y' = -\frac{x}{2} + \frac{\sqrt{x^2 + 4y}}{2}$ i.c.	[[_1st_order, _with_lin- ear_symmetries], _Clairaut]	✓
14153	$y' = -\frac{x}{2} + \frac{\sqrt{x^2 + 4y}}{2}$ i.c.	[[_1st_order, _with_lin- ear_symmetries], _Clairaut]	✓

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Table 2.15 first order ode isobaric  
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#	ODE	CAS classification	Solved?
14154	$y' = -\frac{x}{2} + \frac{\sqrt{x^2 + 4y}}{2}$ i.c.	[[_1st_order, __with_linear_symmetries], _Clairaut]	✓
14155	$y' = -\frac{x}{2} + \frac{\sqrt{x^2 + 4y}}{2}$ i.c.	[[_1st_order, __with_linear_symmetries], _Clairaut]	✓
14278	$y' = t^2 y^2$	[_separable]	✓
14285	$y' = \frac{t}{y}$	[_separable]	✓
14287	$y' = ty^{1/3}$	[_separable]	✓
14289	$y' = \frac{2y + 1}{t}$	[_separable]	✓
14418	$y' = -\frac{y}{t} + 2$	[_linear]	✓
14419	$y' = \frac{3y}{t} + t^5$	[_linear]	✓
14426	$y' = -\frac{y}{t} + 2$ i.c.	[_linear]	✓
14428	$y' - \frac{2y}{t} = 2t^2$ i.c.	[_linear]	✓
14471	$y' = \frac{2y + 1}{t}$	[_separable]	✓
14659	$yy' = 2x$	[_separable]	✓
14703	$x^2 y' + xy^2 = x$	[_separable]	✓
14721	$y' = \frac{x}{y}$	[_separable]	✓
14723	$xyy' = y^2 + 9$	[_separable]	✓
14727	$y' = \frac{x}{y}$ i.c.	[_separable]	✓
14747	$y' = 3xy^3$	[_separable]	✓
14755	$xy' = y^2 - y$ i.c.	[_separable]	✓
14756	$xy' = y^2 - y$ i.c.	[_separable]	✓
14757	$y' = \frac{y^2 - 1}{xy}$ i.c.	[_separable]	✓

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Table 2.15 first order ode isobaric  
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#	ODE	CAS classification	Solved?
14773	$xy' + 3y - 10x^2 = 0$	[_linear]	✓
14775	$xy' = \sqrt{x} + 3y$	[_linear]	✓
14782	$xy' + 3y = 20x^2$	[_linear]	✓
	<i>i.c.</i>		
14792	$x^2y' - xy = y^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
14793	$y' = \frac{x}{y} + \frac{y}{x}$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
14794	$\cos\left(\frac{y}{x}\right)\left(y' - \frac{y}{x}\right) = 1 + \sin\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A', _dAlembert]	✓
14795	$y' = \frac{x-y}{x+y}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
	<i>i.c.</i>		
14797	$y' - \frac{3y}{x} = \frac{y^2}{x^2}$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
14799	$y' - \frac{y}{x} = \frac{1}{y}$	[[_homogeneous, 'class D', _rational, _Bernoulli]	✓
	<i>i.c.</i>		
14800	$y' = \frac{y}{x} + \frac{x^2}{y^2}$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
14802	$3y' + \frac{2y}{x} = 4\sqrt{y}$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
14805	$(x+y)y' = y$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
14806	$(2xy + 2x^2)y' = x^2 + 2xy + 2y^2$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
14807	$y' + \frac{y}{x} = x^2y^3$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
14810	$-y + xy' = \sqrt{xy + x^2}$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
14813	$y' + 2x = 2\sqrt{y + x^2}$	[[_1st_order, __with_lin- ear_symmetries], _Clairaut]	✓
14815	$y' = x\left(1 + \frac{2y}{x^2} + \frac{y^2}{x^4}\right)$	[[_homogeneous, 'class G', _rational, _Riccati]	✓

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Table 2.15 first order ode isobaric  
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#	ODE	CAS classification	Solved?
14816	$y' = \frac{1}{y} - \frac{y}{2x}$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
14817	$e^{xy^2-x^2}(y^2-2x) + 2e^{xy^2-x^2}xyy' = 0$	[[_homogeneous, 'class G', _exact, _rational, _Bernoulli]	✓
14818	$2xy + y^2 + (x^2 + 2xy)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class B']]	✓
14819	$2xy^3 + 4x^3 + 3x^2y^2y' = 0$	[[_homogeneous, 'class G', _exact, _rational, _Bernoulli]	✓
14822	$4x^3y + (x^4 - y^4)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlem- bert]	✓
14823	$1 + \ln(xy) + \frac{xy'}{y} = 0$	[[_homogeneous, 'class G', _exact]	✓
14824	$1 + e^y + xe^yy' = 0$	[_separable]	✓
14826	$1 + y^4 + xy^3y' = 0$	[_separable]	✓
14827	$y + (y^4 - 3x)y' = 0$	[[_homogeneous, 'class G', _rational]	✓
14828	$\frac{2y}{x} + (4x^2y - 3)y' = 0$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]	✓
14830	$3y + 3y^2 + (2x + 4xy)y' = 0$	[_separable]	✓
14832	$2y^3 + (4x^3y^3 - 3xy^2)y' = 0$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]	✓
14833	$4xy + (3x^2 + 5y)y' = 0$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class A']]	✓
14834	$6 + 12y^2x^2 + \left(7x^3y + \frac{x}{y}\right)y' = 0$	[[_homogeneous, 'class G', _rational]	✓
14835	$xy' = 2y - 6x^3$	[_linear]	✓
14836	$xy' = 2y^2 - 6y$	[_separable]	✓
14840	$xyy' - y^2 = \sqrt{x^4 + y^2x^2}$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
14842	$4xy - 6 + x^2y' = 0$	[_linear]	✓

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Table 2.15 first order ode isobaric  
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#	ODE	CAS classification	Solved?
14843	$xy^2 - 6 + x^2yy' = 0$	[[_homogeneous, 'class G'], _exact, _rational, _Bernoulli]	✓
14844	$x^3 + y^3 + xy^2y' = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
14845	$3y - x^3 + xy' = 0$	[_linear]	✓
14847	$3xy^3 - y + xy' = 0$	[[_homogeneous, 'class D'], _rational, _Bernoulli]	✓
14851	$y' = \frac{1}{xy - 3x}$	[_separable]	✓
14856	$xyy' = 2y^2 + 2x^2$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
14858	$y' = \frac{x + 2y}{2x - y}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
14859	$y' = \frac{y}{x} + \tan\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A'], _dAlembert]	✓
14865	$xyy' = y^2 + xy + x^2$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
14867	$xy^3y' = y^4 - x^2$	[[_homogeneous, 'class D'], _rational, _Bernoulli]	✓
14870	$xy^2 + (x^2y + 10y^4)y' = 0$	[[_homogeneous, 'class G'], _exact, _rational]	✓
15465	$2x - y - yy' = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
15478	$y' = -\frac{x}{y}$	[_separable]	✓
15479	$3y(t^2 + y) + t(t^2 + 6y)y' = 0$	[[_homogeneous, 'class G'], _exact, _rational, [_Abel, '2nd type', 'class B']]	✓
15480	$y' = -\frac{2y}{x} - 3$	[_linear]	✓
15509	$y' = \frac{2xy + y^2}{x^2}$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
15526	$2x - 3y + (2y - 3x)y' = 0$	[[_homogeneous, 'class A'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓

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Table 2.15 first order ode isobaric  
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#	ODE	CAS classification	Solved?
15541	$\frac{y'}{t} = \sqrt{y}$ i.c.	[_separable]	✓
15556	$ty' + y = t^3$ i.c.	[_linear]	✓
15567	$y' = ty^2$ i.c.	[_separable]	✓
15568	$y' = -\frac{t}{y}$ i.c.	[_separable]	✓
15570	$y' = \frac{x}{y^2}$	[_separable]	✓
15571	$\frac{1}{2\sqrt{t}} + y^2y' = 0$	[_separable]	✓
15572	$y' = \frac{\sqrt{y}}{x^2}$	[_separable]	✓
15614	$y' = \frac{\sqrt{t}}{y}$ i.c.	[_separable]	✓
15615	$y' = \sqrt{\frac{y}{t}}$ i.c.	[[_homogeneous, 'class A', _dAlembert]	✓
15646	$ty' + y = t^2$	[_linear]	✓
15647	$ty' + y = t$	[_linear]	✓
15662	$y - (x + 3y^2)y' = 0$	[[_homogeneous, 'class G', _rational]	✓
15664	$p' = t^3 + \frac{p}{t}$	[_linear]	✓
15701	$\frac{t}{\sqrt{t^2 + y^2}} + \frac{yy'}{\sqrt{t^2 + y^2}} = 0$	[_separable]	✓
15704	$3ty^2 + y^3y' = 0$	[_separable]	✓
15707	$\ln(ty) + \frac{ty'}{y} = 0$	[[_homogeneous, 'class G', _exact]	✓
15714	$-\frac{1}{y} + \left(\frac{t}{y^2} + 3y^2\right)y' = 0$	[[_homogeneous, 'class G', _exact, _rational]	✓
15715	$2ty + (t^2 + y^2)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]	✓
15716	$2ty^3 + (1 + 3t^2y^2)y' = 0$	[[_homogeneous, 'class G', _exact, _rational]	✓

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Table 2.15 first order ode isobaric  
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#	ODE	CAS classification	Solved?
15717	$\sin(y)^2 + t \sin(2y) y' = 0$	[_separable]	✓
15718	$3t^2 + 3y^2 + 6tyy' = 0$	[[_homogeneous, 'class A'], _exact, _rational, _Bernoulli]	✓
15727	$-\frac{y^2 e^{\frac{y}{t}}}{t^2} + 1 + e^{\frac{y}{t}} \left(1 + \frac{y}{t}\right) y' = 0$	[[_homogeneous, 'class A'], _exact, _dAlembert]	✓
15728	$2t \sin\left(\frac{y}{t}\right) - y \cos\left(\frac{y}{t}\right) + t \cos\left(\frac{y}{t}\right) y' = 0$	[[_homogeneous, 'class A'], _exact, _dAlembert]	✓
15730	$1 + \frac{y}{t^2} - \frac{y'}{t} = 0$ i.c.	[_linear]	✓
15744	$2ty + y^2 - t^2 y' = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
15752	$\frac{9t}{5} + 2y + (2t + 2y) y' = 0$	[[_homogeneous, 'class A'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
15753	$2t + \frac{19y}{10} + \left(\frac{19t}{10} + 2y\right) y' = 0$	[[_homogeneous, 'class A'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
15760	$y' - \frac{y}{t} = ty^2$	[[_homogeneous, 'class D'], _rational, _Bernoulli]	✓
15761	$y' - \frac{y}{t} = \frac{y^2}{t^2}$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
15762	$y' - \frac{y}{t} = \frac{y^2}{t}$	[_separable]	✓
15763	$y' - \frac{y}{t} = t^2 y^{3/2}$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
15764	$\cos\left(\frac{t}{y+t}\right) + e^{\frac{2y}{t}} y' = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓
15765	$y \ln\left(\frac{t}{y}\right) + \frac{t^2 y'}{y+t} = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓
15767	$\frac{2}{t} + \frac{1}{y} + \frac{ty'}{y^2} = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
15770	$2t + (y - 3t) y' = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class C'], _dAlembert]	✓

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Table 2.15 first order ode isobaric  
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#	ODE	CAS classification	Solved?
15771	$2y - 3t + ty' = 0$	[_linear]	✓
15772	$ty - y^2 + t(t - 3y)y' = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
15773	$t^2 + ty + y^2 - tyy' = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
15774	$t^3 + y^3 - ty^2y' = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
15775	$y' = \frac{t + 4y}{4t + y}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
15777	$y + (y + t)y' = 0$	[[_homogeneous, 'class A'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
15778	$2t^2 - 7ty + 5y^2 + tyy' = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
15780	$y^2 = (ty - 4t^2)y'$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
15781	$y - (3\sqrt{ty} + t)y' = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓
15782	$(t^2 - y^2)y' + y^2 + ty = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
15783	$tyy' - t^2e^{-\frac{y}{t}} - y^2 = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓
15784	$y' = \frac{1}{\frac{2ye^{-\frac{t}{y}}}{t} + \frac{t}{y}}$	[[_homogeneous, 'class A'], _dAlembert]	✓
15785	$t(\ln(t) - \ln(y))y' = y$	[[_homogeneous, 'class A'], _dAlembert]	✓
15788	$y' = \frac{4y^2 - t^2}{2ty}$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
15790	$ty' - y - \sqrt{t^2 + y^2} = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
15791	$t^3 + y^2\sqrt{t^2 + y^2} - ty\sqrt{t^2 + y^2}y' = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓

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Table 2.15 first order ode isobaric  
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#	ODE	CAS classification	Solved?
15792	$y^3 - t^3 - ty^2y' = 0$ i.c.	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
15793	$ty^3 - (t^4 + y^4)y' = 0$ i.c.	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
15810	$t^{1/3}y^{2/3} + t + (t^{2/3}y^{1/3} + y)y' = 0$	[[_homogeneous, 'class G'], _rational]	✓
15811	$y' = \frac{y^2 - t^2}{ty}$ i.c.	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
15812	$y \sin\left(\frac{t}{y}\right) - \left(t + t \sin\left(\frac{t}{y}\right)\right)y' = 0$ i.c.	[[_homogeneous, 'class A'], _dAlembert]	✓
15813	$y' = \frac{2t^5}{5y^2}$	[_separable]	✓
15815	$y' - \frac{y}{t} = \frac{y^2}{t}$	[_separable]	✓
15816	$y' = \frac{e^{8y}}{t}$	[_separable]	✓
15822	$3t + (t - 4y)y' = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class C'], _dAlem- bert]	✓
15823	$y - t + (y + t)y' = 0$	[[_homogeneous, 'class A'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
15825	$y^2 + (ty + t^2)y' = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
15826	$r' = \frac{r^2 + t^2}{rt}$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
15827	$x' = \frac{5tx}{x^2 + t^2}$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
15834	$x' + \frac{x}{y} = y^2$	[_linear]	✓
15850	$y' = ty^3$ i.c.	[_separable]	✓
15851	$y' = \frac{t}{y^3}$ i.c.	[_separable]	✓
16341	$y' = \frac{x}{y}$	[_separable]	✓

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Table 2.15 first order ode isobaric  
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#	ODE	CAS classification	Solved?
16344	$y' = \sqrt{x^2 - y} - x$	[[_1st_order, __with_linear_symmetries], _dAlembert]	✓
16365	$y' = \frac{x+y}{x-y}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
16378	$xy' = 2x - y$ i.c.	[_linear]	✓
16380	$xyy' + 1 + y^2 = 0$	[_separable]	✓
16382	$1 + y^2 = xy'$	[_separable]	✓
16386	$y \ln(y) + xy' = 1$ i.c.	[_separable]	✓
16413	$xy' = y + x \cos\left(\frac{y}{x}\right)^2$	[[_homogeneous, 'class A'], _dAlembert]	✓
16415	$xy' = y(\ln(y) - \ln(x))$	[[_homogeneous, 'class A'], _dAlembert]	✓
16416	$x^2y' = x^2 - xy + y^2$	[[_homogeneous, 'class A'], _rational, _Riccati]	✓
16417	$xy' = y + \sqrt{y^2 - x^2}$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
16418	$2x^2y' = y^2 + x^2$	[[_homogeneous, 'class A'], _rational, _Riccati]	✓
16419	$4x - 3y + (2y - 3x)y' = 0$	[[_homogeneous, 'class A'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
16420	$y - x + (x + y)y' = 0$	[[_homogeneous, 'class A'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
16429	$2x(x - y^2)y' + y^3 = 0$	[[_homogeneous, 'class G'], _rational]	✓
16430	$4y^6 + x^3 = 6xy^5y'$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
16431	$y(1 + \sqrt{x^2y^4 + 1}) + 2xy' = 0$	[[_homogeneous, 'class G']]	✓
16432	$x + y^3 + 3(y^3 - x)y^2y' = 0$	[[_homogeneous, 'class G'], _rational]	✓
16434	$x^2 - xy' = y$ i.c.	[_linear]	✓

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Table 2.15 first order ode isobaric  
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#	ODE	CAS classification	Solved?
16441	$(2x - y^2) y' = 2y$	[[_homogeneous, 'class G', _rational]	✓
16453	$xy' + y = 2x$	[_linear]	✓
16457	$3xy^2y' - 2y^3 = x^3$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
16470	$x(2x^2 + y^2) + y(x^2 + 2y^2) y' = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlem- bert]	✓
16480	$\frac{2x}{y^3} + \frac{(y^2 - 3x^2) y'}{y^4} = 0$ i.c.	[[_homogeneous, 'class A', _exact, _rational, _dAlem- bert]	✓
16482	$3x^2y + y^3 + (x^3 + 3xy^2) y' = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlem- bert]	✓
16484	$x^2 + y - xy' = 0$	[_linear]	✓
16485	$x + y^2 - 2xyy' = 0$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
16490	$3y^2 - x + (2y^3 - 6xy) y' = 0$	[[_homogeneous, 'class G', _rational]	✓
16501	$y'^2 - 4xy' + 2y + 2x^2 = 0$	[[_homogeneous, 'class G']]	✓
16527	$x^2y' = 1 + xy + y^2x^2$	[[_homogeneous, 'class G', _rational, _Riccati]	✓
16530	$y'^3 - 4xyy' + 8y^2 = 0$	[[_1st_order, __with_lin- ear_symmetries]]	✓
16533	$(xy' + y)^2 + 3x^5(xy' - 2y) = 0$	[[_homogeneous, 'class G']]	✓
16534	$y(y - 2xy')^2 = 2y'$	[[_homogeneous, 'class G', _rational]	✓
16546	$x^3 - 3xy^2 + (y^3 - 3x^2y) y' = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlem- bert]	✓
16547	$5xy - 4y^2 - 6x^2 + \left(y^2 - 8xy + \frac{5x^2}{2}\right) y' = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlem- bert]	✓
16553	$xyy' - y^2 = x^4$	[[_homogeneous, 'class D', _rational, _Bernoulli]	✓
16554	$\frac{1}{x^2 - xy + y^2} = \frac{y'}{2y^2 - xy}$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓

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Table 2.15 first order ode isobaric  
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#	ODE	CAS classification	Solved?
16559	$xy^2y' - y^3 = \frac{x^4}{3}$	[[_homogeneous, 'class D', _rational, _Bernoulli]	✓
16560 i.c.	$1 + e^{\frac{x}{y}} + e^{\frac{x}{y}} \left(1 - \frac{x}{y}\right) y' = 0$	[[_homogeneous, 'class A', _exact, _dAlembert]	✓
16561	$x^2 + y^2 - xyy' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
16563	$xy^2 + y - xy' = 0$	[[_homogeneous, 'class D', _rational, _Bernoulli]	✓
16569	$2x^5 + 4x^3y - 2xy^2 + (y^2 + 2x^2y - x^4) y' = 0$	[[_homogeneous, 'class G', _rational]	✓
16572	$x - y^2 + 2xyy' = 0$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
16578	$y^3 + 2(x^2 - xy^2) y' = 0$	[[_homogeneous, 'class G', _rational]	✓
16976	$y' = \frac{x^4}{y}$	[_separable]	✓
16981	$xy' = \sqrt{1 - y^2}$	[_separable]	✓
16986	$y' = 4\sqrt{xy}$	[[_homogeneous, 'class G']]	✓
16991 i.c.	$r' = \frac{r^2}{\theta}$	[_separable]	✓
17054	$y' = \frac{t - y}{2t + 5y}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
17061 i.c.	$y' = -\frac{t}{2} + \frac{\sqrt{t^2 + 4y}}{2}$	[[_1st_order, __with_lin- ear_symmetries], _Clairaut]	✓
17062 i.c.	$y' = -\frac{4t}{y}$	[_separable]	✓
17063 i.c.	$y' = 2ty^2$	[_separable]	✓
17072	$2x + 4y + (2x - 2y) y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
17075	$y' = -\frac{4x + 2y}{2x + 3y}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓

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Table 2.15 first order ode isobaric  
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#	ODE	CAS classification	Solved?
17076	$y' = -\frac{4x-2y}{2x-3y}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
17082	$\frac{x}{(y^2+x^2)^{3/2}} + \frac{yy'}{(y^2+x^2)^{3/2}} = 0$	[_separable]	✓
17083	$2x - y + (2y - x)y' = 0$ i.c.	[[_homogeneous, 'class A'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
17096	$3xy + y^2 + (xy + x^2)y' = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
17099	$\frac{(3x^3 - xy^2)y'}{y^3 + 3x^2y} = 1$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
17102	$xyy' = (x + y)^2$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
17103	$y' = \frac{4y-7x}{5x-y}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
17104	$xy' - 4\sqrt{y^2 - x^2} = y$	[[_homogeneous, 'class A'], _dAlembert]	✓
17105	$y' = \frac{y^4 + 2xy^3 - 3y^2x^2 - 2x^3y}{2y^2x^2 - 2x^3y - 2x^4}$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
17106	$(y + xe^{\frac{x}{y}})y' = ye^{\frac{x}{y}}$	[[_homogeneous, 'class A'], _dAlembert]	✓
17107	$xyy' = y^2 + x^2$ i.c.	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
17108	$y' = \frac{x+y}{x-y}$ i.c.	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
17109	$ty' + y = t^2y^2$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
17111	$y' + \frac{3y}{t} = t^2y^2$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
17112	$t^2y' + 2ty - y^3 = 0$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓

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#	ODE	CAS classification	Solved?
17119	$(3x - y)x' + 9y - 2x = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
17129	$x' = \frac{2xy + x^2}{3y^2 + 2xy}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
17130	$4xyy' = 8x^2 + 5y^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
17573	$y' = \frac{2xy}{y^2 + x^2}$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
17574	$y' = \frac{y(1 + \ln(y) - \ln(x))}{x}$	[[_homogeneous, 'class A', _dAlembert]]	✓
17575	$y^2 + x^2y' = xyy'$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
17576	$(x + y)y' = y - x$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
17577	$x - y \cos\left(\frac{y}{x}\right) + x \cos\left(\frac{y}{x}\right)y' = 0$	[[_homogeneous, 'class A', _dAlembert]]	✓
17582	$xy' - 4y = x^2\sqrt{y}$	[[_homogeneous, 'class G', _rational, _Bernoulli]]	✓
17590	$x - y^2 + 2xyy' = 0$	[[_homogeneous, 'class G', _rational, _Bernoulli]]	✓
17591	$y' = \frac{y^2}{3} + \frac{2}{3x^2}$	[[_homogeneous, 'class G', _rational, [_Riccati, _spe- cial]]]	✓
17592	$y' + y^2 + \frac{y}{x} - \frac{4}{x^2} = 0$	[[_homogeneous, 'class G', _rational, _Riccati]]	✓
17597	$y' = \frac{x - y^2}{2y(x + y^2)}$	[[_homogeneous, 'class G', _rational]]	✓
17602	$\frac{2x}{y^3} + \frac{(y^2 - 3x^2)y'}{y^4} = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlem- bert]]	✓
17605	$y^3 + 2(x^2 - xy^2)y' = 0$	[[_homogeneous, 'class G', _rational]]	✓
17606	$(y^2x^2 - 1)y' + 2xy^3 = 0$	[[_homogeneous, 'class G', _rational]]	✓

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#	ODE	CAS classification	Solved?
17612	$yy'^2 + (x - y)y' - x = 0$	[_quadrature]	✓
17623	$y = 2xy' + \frac{x^2}{2} + y'^2$	[[_homogeneous, 'class G']]	✓
17628	$y = 2xy' + y^2y'^3$	[[_1st_order, __with_linear_symmetries]]	✓
17636	$y' = -x + \sqrt{x^2 + 2y}$	[[_1st_order, __with_linear_symmetries], _Clairaut]	✓
17637	$y' = -x - \sqrt{x^2 + 2y}$	[[_1st_order, __with_linear_symmetries], _Clairaut]	✓
17644	$y = 2xy' + \frac{x^2}{2} + y'^2$	[[_homogeneous, 'class G']]	✓
17740	$y' = \frac{xy}{y^2 + x^2}$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
17741	$2xyy' = y^2 + x^2$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
17742	$xy' + y = x^4y'^2$	[[_homogeneous, 'class G'], _rational]	✓
17743	$y' = \frac{y^2}{xy - x^2}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
17754	$xyy' = y - 1$	[_separable]	✓
17755	$x^5y' + y^5 = 0$	[_separable]	✓
17763	$y \ln(y) - xy' = 0$	[_separable]	✓
17780	$x^2 - 2y^2 + xyy' = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
17781	$x^2y' - 3xy - 2y^2 = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
17782	$x^2y' = 3(y^2 + x^2) \arctan\left(\frac{y}{x}\right) + xy$	[[_homogeneous, 'class A'], _dAlembert]	✓
17783	$x \sin\left(\frac{y}{x}\right) y' = y \sin\left(\frac{y}{x}\right) + x$	[[_homogeneous, 'class A'], _dAlembert]	✓
17784	$xy' = y + 2x e^{-\frac{y}{x}}$	[[_homogeneous, 'class A'], _dAlembert]	✓
17785	$x - y - (x + y)y' = 0$	[[_homogeneous, 'class A'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓

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Table 2.15 first order ode isobaric  
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#	ODE	CAS classification	Solved?
17786	$xy' = 2x + 3y$	[_linear]	✓
17787	$xy' = \sqrt{y^2 + x^2}$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
17788	$x^2y' = 2xy + y^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
17789	$x^3 + y^3 - xy^2y' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
17797	$y' = \frac{1 - xy^2}{2x^2y}$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
17798	$y' = \frac{2 + 3xy^2}{4x^2y}$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
17799	$y' = \frac{y - xy^2}{x + x^2y}$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]	✓
17800	$\left(x + \frac{2}{y}\right)y' + y = 0$	[[_homogeneous, 'class G', _exact, _rational, [_Abel, '2nd type', 'class B']]	✓
17816	$\frac{x}{(y^2 + x^2)^{3/2}} + \frac{yy'}{(y^2 + x^2)^{3/2}} = 0$	[_separable]	✓
17819	$\frac{4y^2 - 2x^2}{4xy^2 - x^3} + \frac{(8y^2 - x^2)y'}{4y^3 - x^2y} = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]	✓
17820	$(3x^2 - y^2)y' - 2xy = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
17822	$xy' + y + 3x^3y^4y' = 0$	[[_homogeneous, 'class G', _rational]	✓
17825	$y + (x - 2x^2y^3)y' = 0$	[[_homogeneous, 'class G', _rational]	✓
17826	$x + 3y^2 + 2xyy' = 0$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
17832	$y - xy' = xy^3y'$	[_separable]	✓
17834	$(x + y)y' = y - x$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
17836	$y^2 - y + xy' = 0$	[_separable]	✓
17838	$xy' + y = \sqrt{xy}y'$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓

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Table 2.15 first order ode isobaric  
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#	ODE	CAS classification	Solved?
17840	$-y + xy' = x^2y^4(xy' + y)$	[[_homogeneous, 'class G', _rational]	✓
17841	$xy' + y + x^2y^5y' = 0$	[[_homogeneous, 'class G', _rational]	✓
17842	$2xy^2 - y + xy' = 0$	[[_homogeneous, 'class D', _rational, _Bernoulli]	✓
17844	$y' = \frac{2y}{x} + \frac{x^3}{y} + x \tan\left(\frac{y}{x^2}\right)$	[[_homogeneous, 'class G']]	✓
17845	$xy' - 3y = x^4$	[_linear]	✓
17850	$2y - x^3 = xy'$	[_linear]	✓
17855	$xy' + y = x^4y^3$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
17857	$xy' + y = xy^2$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
17876	$(1 - xy)y' = y^2$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]	✓
17878	$xy' = \sqrt{y^2 + x^2}$		✓
17879	$y^2 = (x^3 - xy)y'$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]	✓
17880	$x^2y^3 + y = (x^3y^2 - x)y'$	[[_homogeneous, 'class G', _rational]	✓
17883	$xyy' = y^2 + x^2y'$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
17886	$y + x^2 = xy'$	[_linear]	✓
17894	$y^2 - 3xy - 2x^2 = (x^2 - xy)y'$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
17900	$x^2y^4 + x^6 - x^3y^3y' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
17902	$y' = 1 + \frac{y}{x} - \frac{y^2}{x^2}$	[[_homogeneous, 'class A', _rational, _Riccati]	✓
17903	$y' = \frac{2xy e^{\frac{x^2}{y^2}}}{y^2 + y^2 e^{\frac{x^2}{y^2}} + 2x^2 e^{\frac{x^2}{y^2}}}$	[[_homogeneous, 'class A', _dAlembert]	✓

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#	ODE	CAS classification	Solved?
17905	$3x^2 \ln(y) + \frac{x^3 y'}{y} = 0$	[_separable]	✓
17907	$\frac{y-x}{(x+y)^3} - \frac{2xy'}{(x+y)^3} = 0$	[_linear]	✓
17908	$xy^2 + y + xy' = 0$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
17910	$3x^2y - y^3 - (3xy^2 - x^3)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]	✓
17916	$3xy + y^2 + (3xy + x^2)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
17917	$x^2y' = y^2 + xy + x^2$	[[_homogeneous, 'class A', _rational, _Riccati]	✓
17922	$x^2y' - y^2 = 2xy$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
18178	$x' = \cos\left(\frac{x}{t}\right)$	[[_homogeneous, 'class A', _dAlembert]	✓
18179	$(t^2 - x^2)x' = xt$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
18211	$y' = \frac{\sqrt{1-y^2} \arcsin(y)}{x}$	[_separable]	✓
18215	$v' + \frac{2v}{u} = 3$	[_linear]	✓
18221	$y^2 = x(y-x)y'$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
18222	$2x^2y + y^3 - x^3y' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
18225	$x + yy' = my$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
18226	$\frac{2x}{y^3} + \left(\frac{1}{y^2} - \frac{3x^2}{y^4}\right)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]	✓
18238	$\sqrt{t^2 + T} = T'$	[[_homogeneous, 'class G']]	✓
18251	$y' = 1 + \frac{2y}{x-y}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓

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Table 2.15 first order ode isobaric  
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#	ODE	CAS classification	Solved?
18255	$4yy'^3 - 2x^2y'^2 + 4xyy' + x^3 = 16y^2$	[[_1st_order, __with_linear_symmetries]]	✓
18316	$x(x - 2y)y' + x^2 + 2y^2 = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
18317	$5xyy' - y^2 - x^2 = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
18318	$(x^2 + 3xy - y^2)y' - 3y^2 = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
18319	$(x^2 + 2xy)y' - 3x^2 + 2xy - y^2 = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
18320	$5xyy' - 4x^2 - y^2 = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
18322	$3x^2y' + 2x^2 - 3y^2 = 0$	[[_homogeneous, 'class A', _rational, _Riccati]]	✓
18407	$x^2 + y^2 - 2xyy' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
18408	$y^2 + (xy + x^2)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
18409	$x^2y - (x^3 + y^3)y' = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
18410	$(3x + 4y)y' + y - 2x = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
18413	$x^2 - 4xy - 2y^2 + (y^2 - 4xy - 2x^2)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]]	✓
18419	$(xy + 1)y - x(1 - xy)y' = 0$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]]	✓
18420	$a(xy' + 2y) = xyy'$	[_separable]	✓
18423	$x^2y - 2xy^2 - (x^3 - 3x^2y)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
18424	$y(xy + 2y^2x^2) + x(xy - y^2x^2)y' = 0$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]]	✓

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Table 2.15 first order ode isobaric  
Continued from previous page

#	ODE	CAS classification	Solved?
18427	$3x^2y^4 + 2xy + (2x^3y^3 - x^2)y' = 0$	[[_homogeneous, 'class G', _rational]	✓
18429	$y^3 - 2x^2y + (2xy^2 - x^3)y' = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
18430	$2x^2y - 3y^4 + (3x^3 + 2xy^3)y' = 0$	[[_homogeneous, 'class G', _rational]	✓
18431	$y^2 + 2x^2y + (2x^3 - xy)y' = 0$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]	✓
18437	$y' + \frac{y}{x} = x^2y^6$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
18439	$y' + \frac{2y}{x} = 3x^2y^{1/3}$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
18443	$-y + xy' = \sqrt{y^2 + x^2}$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
18451	$xy' + \frac{y^2}{x} = y$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
18454	$x^2y - (x^3 + y^3)y' = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
18457	$x + yy' = m(-y + xy')$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
18465	$yy' = ax$	[_separable]	✓
18467	$(x + y)y' + x - y = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
18469	$2xy + (y^2 - x^2)y' = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
18472	$(x^3y^3 + y^2x^2 + xy + 1)y$ $+ (x^3y^3 - y^2x^2 - xy + 1)xy' = 0$	[[_homogeneous, 'class G', _rational]	✓
18473	$2y^2x^2 + y - (x^3y - 3x)y' = 0$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]	✓
18474	$y^2 + x^2y' = xyy'$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
18479	$y'^3(x + 2y) + 3y'^2(x + y) + (2x + y)y' = 0$	[_quadrature]	✓
18481	$4y^2y'^2 + 2y'xy(3x + 1) + 3x^3 = 0$	[_separable]	✓

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Table 2.15 first order ode isobaric  
 Continued from previous page

#	ODE	CAS classification	Solved?
18485	$4y = x^2 + y'^2$	[[_homogeneous, 'class G']]	✓
18494	$x^2(y - xy') = yy'^2$	[[_1st_order, __with_linear_symmetries]]	✓
18501	$xy^2(y'^2 + 2) = 2y^3y' + x^3$	[_separable]	✓
18502	$y = -xy' + x^4y'^2$	[[_homogeneous, 'class G'], _rational]	✓
18513	$\left(y'^2 - \frac{1}{a^2 - x^2}\right) \left(y' - \sqrt{\frac{y}{x}}\right) = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓
18515	$xyy'^2 + y'(3x^2 - 2y^2) - 6xy = 0$	[_separable]	✓
18516	$y'^3 - 4xyy' + 8y^2 = 0$	[[_1st_order, __with_linear_symmetries]]	✓
18523	$y = 2xy' + y^2y'^3$	[[_1st_order, __with_linear_symmetries]]	✓
18526	$y'\sqrt{x} = \sqrt{y}$	[_separable]	✓
18527	$x^2y'^2 - 3xyy' + x^3 + 2y^2 = 0$	[[_homogeneous, 'class G'], _rational]	✓
18534	$x^3y'^2 + x^2yy' + a^3 = 0$	[[_homogeneous, 'class G']]	✓

2.3.14 first order ode abel

Table 2.16: first order ode abel

#	ODE	CAS classification	Solved?
1183	$y' = y(-2 + y)(-1 + y)$	[_quadrature]	✓
1590	$y' + \frac{(1 + y)(y - 1)(y - 2)}{x + 1} = 0$ i.c.	[_separable]	✓
1594	$y' = -2x(y^3 - 3y + 2)$ i.c.	[_separable]	✓
1598	$y' + x^2(1 + y)(y - 2)^2 = 0$	[_separable]	✓
2868	$x^2 + 3xy' = y^3 + 2y$ i.c.	[_rational, _Abel]	✓
4692	$y' = (a + bxy)y^2$	[[_homogeneous, 'class G', _Abel]	✓
6019	$-ay^3 - \frac{b}{x^{3/2}} + y' = 0$	[[_homogeneous, 'class G', _rational, _Abel]	✓
6020	$y' + axy^3 + by^2 = 0$	[[_homogeneous, 'class G', _Abel]	✓
6021	$y' - x^a y^3 + 3y^2 - x^{-a}y - x^{-2a} + ax^{-a-1} = 0$	[_Abel]	✓
6665	$y' + x(x + y) = x^3(x + y)^3 - 1$	[_Abel]	✓
9728	$-ay^3 - \frac{b}{x^{3/2}} + y' = 0$	[[_homogeneous, 'class G', _rational, _Abel]	✓
9731	$y' + axy^3 + by^2 = 0$	[[_homogeneous, 'class G', _Abel]	✓
9736	$y' - x^a y^3 + 3y^2 - x^{-a}y - x^{-2a} + ax^{-a-1} = 0$	[_Abel]	✓
9877	$x^{2n+1}y' - ay^3 - bx^{3n} = 0$	[[_homogeneous, 'class G', _Abel]	✓
10380	$y' = (1 + y^2e^{-2bx} + y^3e^{-3bx})e^{bx}$	[[_1st_order, _with_linear_symmetries], _Abel]	✓
10384	$y' = (1 + y^2e^{-\frac{4x}{3}} + y^3e^{-2x})e^{\frac{2x}{3}}$	[[_1st_order, _with_linear_symmetries], _Abel]	✓
10385	$y' = (1 + y^2e^{-2x} + y^3e^{-3x})e^x$	[[_1st_order, _with_linear_symmetries], _Abel]	✓
10405	$y' = (1 + y^2e^{2x^2} + y^3e^{3x^2})e^{-x^2}$	[_Abel]	✓
10560	$y' = \frac{(-256x^2a + 512 + 512y^2 + 128ya x^4 + 8a^2x^8 + 512y^3 + 192x^2ay^2 + 24ya^2x^6 + a^3x^2)}{512}$	[[_1st_order, 'with symmetry [F(x),G(x)]', _Abel]	✓

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Table 2.16 first order ode abel  
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#	ODE	CAS classification	Solved?
10568	$y' = \frac{(-108x^{3/2} - 216 - 216y^2 + 72x^3y - 6x^6 - 216y^4 + 108x^3y^2 - 18yx^6 + x^9)\sqrt{x}}{216}$	[[_1st_order, 'with_symmetry_[F(x),G(x)]'], _Abel]	✓
10585	$y' = \frac{32x^5 + 64x^6 + 64y^2x^6 + 32x^4y + 4x^2 + 64x^6y^3 + 48x^4y^2 + 12x^2y + 1}{64x^8}$	[_rational, [_1st_order, 'with_symmetry_[F(x),G(x)]'], _Abel]	✓
10613	$y' = \frac{(-8e^{-x^2} + 8x^2e^{-x^2} - 8 - 8y^2 + 8x^2e^{-x^2}y - 2x^4e^{-2x^2} - 8y^3 + 12x^2e^{-x^2}y^2 - 6yx^4e^{-2x^2} + x^6e^{-3x^2})x}{8}$	[[_1st_order, 'with_symmetry_[F(x),G(x)]'], _Abel]	✓
10624	$y' = \frac{-x^2 + x + 1 + y^2 + 5x^2y - 2xy + 4x^4 - 3x^3 + y^3}{x}$	[_rational, [_1st_order, 'with_symmetry_[F(x),G(x)]'], _Abel]	✓
10640	$y' = \frac{150x^3 + 125\sqrt{x} + 125 + 125y^2 - 100x^3y - 500\sqrt{x}y + 20x^5 + 200x^{7/2} + 500x + 125y^3 - 150x^3y^2 - 750y^2\sqrt{x}}{125x}$	[_rational, Abel]	✓
10649	$y' = \frac{-4 \cos(x)x + 4 \sin(x)x^2 + 4x + 4 + 4y^2 + 8y \cos(x)x - 8xy + 2x^2 \cos(2x) + 6x^2 - 8x^2 \cos(x) + 4y^3 + 12y^2}{4x}$	[[_1st_order, 'with_symmetry_[F(x),G(x)]'], _Abel]	✓
10653	$y' = \frac{x(-513 - 432x - 456x^6 - 576x^5 - 756x^3 - 648x^2y + 864xy^2 - 864x^4 - 144x^3y^2 + 1296y^2x^2 - 216x^4y - 216x^3y^2)}{144x^2}$	[_rational, [_1st_order, 'with_symmetry_[F(x),G(x)]'], _Abel]	✓
10659	$y' = y(y^2 + ye^{bx} + e^{2bx})e^{-2bx}$	[[_1st_order, 'with_linear_symmetries'], _Abel]	✓
10660	$y' = y^3 - 3y^2x^2 + 3x^4y - x^6 + 2x$	[[_1st_order, 'with_linear_symmetries'], _Abel]	✓
10661	$y' = y^3 + y^2x^2 + \frac{x^4y}{3} + \frac{x^6}{27} - \frac{2x}{3}$	[[_1st_order, 'with_linear_symmetries'], _Abel]	✓
10663	$y' = y(y^2 + e^{-x^2}y + e^{-2x^2})e^{2x^2}x$	[[_1st_order, 'with_symmetry_[F(x),G(y)]'], _Abel]	✓
10665	$y' = \frac{y^3 - 3xy^2 + 3x^2y - x^3 + x}{x}$	[[_1st_order, 'with_linear_symmetries'], _rational, _Abel]	✓
10666	$y' = \frac{x^3y^3 + 6y^2x^2 + 12xy + 8 + 2x}{x^3}$	[_rational, [_1st_order, 'with_symmetry_[F(x),G(x)]'], _Abel]	✓
10667	$y' = \frac{y^3a^3x^3 + 3y^2a^2x^2 + 3axy + 1 + a^2x}{x^3a^3}$	[_rational, [_1st_order, 'with_symmetry_[F(x),G(x)]'], _Abel]	✓

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Table 2.16 first order ode abel

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#	ODE	CAS classification	Solved?
10671	$y' = \frac{(xy + 1)(y^2x^2 + x^2y + 2xy + 1 + x + x^2)}{x^5}$	[_rational, [_1st_order, [_with_symmetry_[F(x),G(x)]'], _Abel]	✓
10672	$y' = \frac{y^3 - 3xy^2 \ln(x) + 3x^2 \ln(x)^2 y - x^3 \ln(x)^3 + x^2}{x^2}$	[_Abel]	✓
13393	$x' = -x(-x + 1)(2 - x)$	[_quadrature]	✓
14702	$y' - y^3 = 8$	[_quadrature]	✓
15604	$y' = y^3 + 1$	[_quadrature]	✓
15605	$y' = y^3 - 1$	[_quadrature]	✓

## 2.3.15 first order ode quadrature

Table 2.17: first order ode quadrature

#	ODE	CAS classification	Solved?
1	<i>i.c.</i> $y' = 2x + 1$	[_quadrature]	✓
2	<i>i.c.</i> $y' = (-2 + x)^2$	[_quadrature]	✓
3	<i>i.c.</i> $y' = \sqrt{x}$	[_quadrature]	✓
4	<i>i.c.</i> $y' = \frac{1}{x^2}$	[_quadrature]	✓
5	<i>i.c.</i> $y' = \frac{1}{\sqrt{x+2}}$	[_quadrature]	✓
6	<i>i.c.</i> $y' = x\sqrt{x^2+9}$	[_quadrature]	✓
7	<i>i.c.</i> $y' = \frac{10}{x^2+1}$	[_quadrature]	✓
8	<i>i.c.</i> $y' = \cos(2x)$	[_quadrature]	✓
9	<i>i.c.</i> $y' = \frac{1}{\sqrt{-x^2+1}}$	[_quadrature]	✓
10	<i>i.c.</i> $y' = xe^{-x}$	[_quadrature]	✓
651	<i>i.c.</i> $y' = 2x + 1$	[_quadrature]	✓
652	<i>i.c.</i> $y' = (-2 + x)^2$	[_quadrature]	✓
653	<i>i.c.</i> $y' = \sqrt{x}$	[_quadrature]	✓
654	<i>i.c.</i> $y' = \frac{1}{x^2}$	[_quadrature]	✓
655	<i>i.c.</i> $y' = \frac{1}{\sqrt{x+2}}$	[_quadrature]	✓
656	<i>i.c.</i> $y' = x\sqrt{x^2+9}$	[_quadrature]	✓
657	<i>i.c.</i> $y' = \frac{10}{x^2+1}$	[_quadrature]	✓

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Table 2.17 first order ode quadrature  
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#	ODE	CAS classification	Solved?
658	$y' = \cos(2x)$ i.c.	[_quadrature]	✓
659	$y' = \frac{1}{\sqrt{-x^2 + 1}}$ i.c.	[_quadrature]	✓
660	$y' = x e^{-x}$ i.c.	[_quadrature]	✓
746	$(x + y)y' = 0$	[_quadrature]	✓
1524	$y' = -x$	[_quadrature]	✓
1525	$y' = -x \sin(x)$	[_quadrature]	✓
1526	$y' = x \ln(x)$	[_quadrature]	✓
1527	$y' = -x e^x$ i.c.	[_quadrature]	✓
1528	$y' = x \sin(x^2)$ i.c.	[_quadrature]	✓
1529	$y' = \tan(x)$ i.c.	[_quadrature]	✓
1684	$(x + y)^2 + (x + y)^2 y' = 0$	[_quadrature]	✓
2852	$x' = 1 - \sin(2t)$	[_quadrature]	✓
3286	$xyy'^2 + (x + y)y' + 1 = 0$	[_quadrature]	✓
3293	$y'^3 + (x + y - 2xy)y'^2 - 2y'xy(x + y) = 0$	[_quadrature]	✓
3309	$x = y'^2 + y'$	[_quadrature]	✓
3403	$y' = 2$	[_quadrature]	✓
3404	$y' = 2 e^{3x}$	[_quadrature]	✓
3405	$y' = \frac{2}{\sqrt{-x^2 + 1}}$	[_quadrature]	✓
3406	$y' = e^{x^2}$	[_quadrature]	✓
3407	$y' = x e^{x^2}$	[_quadrature]	✓
3408	$y' = \arcsin(x)$	[_quadrature]	✓
3415	$y'^2 - 3y' + 2 = 0$	[_quadrature]	✓
3416	$(x^2 + 1)y' = 1$	[_quadrature]	✓
3417	$y' \sin(x) = 1$	[_quadrature]	✓
3418	$y' = t^2 + 3$	[_quadrature]	✓

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Table 2.17 first order ode quadrature  
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#	ODE	CAS classification	Solved?
3419	$y' = t e^{2t}$	[_quadrature]	✓
3420	$y' = \sin(3t)$	[_quadrature]	✓
3421	$y' = \sin(t)^2$	[_quadrature]	✓
3422	$y' = \frac{t}{t^2 + 4}$	[_quadrature]	✓
3423	$y' = \ln(t)$	[_quadrature]	✓
3424	$y' = \frac{t}{\sqrt{t} + 1}$	[_quadrature]	✓
3428	$y' = t e^{2t}$	[_quadrature]	✓
	<i>i.c.</i>		
3429	$y' = \sin(t)^2$	[_quadrature]	✓
	<i>i.c.</i>		
3430	$y' = 8e^{4t} + t$	[_quadrature]	✓
	<i>i.c.</i>		
3543	$y' + \frac{m}{x} = \ln(x)$	[_quadrature]	✓
3582	$y' = \sin(x)$	[_quadrature]	✓
3583	$y' = \frac{1}{x^{2/3}}$	[_quadrature]	✓
3586	$y' = x^2 \ln(x)$	[_quadrature]	✓
	<i>i.c.</i>		
4091	$y' = e^{-x}$	[_quadrature]	✓
4092	$y' = 1 - x^5 + \sqrt{x}$	[_quadrature]	✓
4106	$y' = e^x \sin(x)$	[_quadrature]	✓
	<i>i.c.</i>		
4108	$y' = x + \frac{1}{x}$	[_quadrature]	✓
	<i>i.c.</i>		
4115	$x + (2 - x + 2y)y' = xy(y' - 1)$	[_quadrature]	✓
4229	$(x^3 + 1)y' = 3x^2 \tan(x)$	[_quadrature]	✓
	<i>i.c.</i>		
4360	$(\sin(y)^2 + x \cot(y))y' = 0$	[_quadrature]	✓
4385	$x(y'^2 - 1) = 2y'$	[_quadrature]	✓
4387	$x = y' \sqrt{1 + y'^2}$	[_quadrature]	✓
4439	$y'(x - \ln(y')) = 1$	[_quadrature]	✓

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Table 2.17 first order ode quadrature  
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#	ODE	CAS classification	Solved?
4608	$y' = af(x)$	[_quadrature]	✓
4708	$y' = \sqrt{XY}$	[_quadrature]	✓
4742	$xy' = \sqrt{a^2 - x^2}$	[_quadrature]	✓
4828	$(x + a)y' = bx$	[_quadrature]	✓
4995	$y'\sqrt{X} + \sqrt{Y} = 0$	[_quadrature]	✓
4996	$y'\sqrt{X} = \sqrt{Y}$	[_quadrature]	✓
5002	$y'\sqrt{X} = 0$	[_quadrature]	✓
5003	$y'\sqrt{X} + \sqrt{Y} = 0$	[_quadrature]	✓
5004	$y'\sqrt{X} = \sqrt{Y}$	[_quadrature]	✓
5007	$X^{2/3}y' = Y^{2/3}$	[_quadrature]	✓
5333	$y'^2 = ax^n$	[_quadrature]	✓
5356	$y'^2 + 2y' + x = 0$	[_quadrature]	✓
5359	$y'^2 - 5y' + 6 = 0$	[_quadrature]	✓
5360	$y'^2 - 7y' + 12 = 0$	[_quadrature]	✓
5361	$y'^2 + ay' + b = 0$	[_quadrature]	✓
5362	$y'^2 + ay' + bx = 0$	[_quadrature]	✓
5364	$y'^2 + xy' + 1 = 0$	[_quadrature]	✓
5373	$y'^2 - 2xy' + 1 = 0$	[_quadrature]	✓
5374	$y'^2 + 2xy' - 3x^2 = 0$	[_quadrature]	✓
5378	$y'^2 - (2x + 1)y' - x(1 - x) = 0$	[_quadrature]	✓
5382	$y'^2 + axy' = bcx^2$	[_quadrature]	✓
5386	$y'^2 - 2x^2y' + 2xy' = 0$	[_quadrature]	✓
5390	$y'^2 - 2y' \cosh(x) + 1 = 0$	[_quadrature]	✓
5391	$y'^2 + yy' = x(x + y)$	[_quadrature]	✓
5393	$y'^2 + (x + y)y' + xy = 0$	[_quadrature]	✓
5396	$y'^2 - 2(x - y)y' - 4xy = 0$	[_quadrature]	✓
5402	$y'^2 + (ax + by)y' + abxy = 0$	[_quadrature]	✓

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Table 2.17 first order ode quadrature  
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#	ODE	CAS classification	Solved?
5404	$y'^2 - (1 + 2xy)y' + 2xy = 0$	[_quadrature]	✓
5420	$4y'^2 = 9x$	[_quadrature]	✓
5426	$xy'^2 = a$	[_quadrature]	✓
5427	$xy'^2 = -x^2 + a$	[_quadrature]	✓
5435	$xy'^2 - (x^2 + 1)y' + x = 0$	[_quadrature]	✓
5451	$xy'^2 - (2x + 3y)y' + 6y = 0$	[_quadrature]	✓
5454	$xy'^2 - (xy + 1)y' + y = 0$	[_quadrature]	✓
5456	$xy'^2 + (1 - x^2y)y' - xy = 0$	[_quadrature]	✓
5464	$4xy'^2 = (a - 3x)^2$	[_quadrature]	✓
5469	$4(2 - x)y'^2 + 1 = 0$	[_quadrature]	✓
5471	$x^2y'^2 = a^2$	[_quadrature]	✓
5493	$x^2y'^2 + (a + bx^2y^3)y' + aby^3 = 0$	[_quadrature]	✓
5496	$(a^2 + x^2)y'^2 = b^2$	[_quadrature]	✓
5497	$(a^2 - x^2)y'^2 + b^2 = 0$	[_quadrature]	✓
5498	$(a^2 - x^2)y'^2 = b^2$	[_quadrature]	✓
5499	$(a^2 - x^2)y'^2 = x^2$	[_quadrature]	✓
5506	$x^3y'^2 = a$	[_quadrature]	✓
5510	$4x(-x + a)(b - x)y'^2 = (ab - 2x(a + b) + 2x^2)^2$	[_quadrature]	✓
5514	$x^2(a^2 - x^2)y'^2 + 1 = 0$	[_quadrature]	✓
5527	$yy'^2 + (x - y)y' - x = 0$	[_quadrature]	✓
5529	$yy'^2 - (xy + 1)y' + x = 0$	[_quadrature]	✓
5537	$(x^2 - ay)y'^2 - 2xyy' = 0$	[_quadrature]	✓
5538	$xyy'^2 + (x + y)y' + 1 = 0$	[_quadrature]	✓
5584	$y'^3 = bx + a$	[_quadrature]	✓
5585	$y'^3 = ax^n$	[_quadrature]	✓
5591	$y'^3 + y' + a - bx = 0$	[_quadrature]	✓
5594	$y'^3 - 7y' + 6 = 0$	[_quadrature]	✓

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Table 2.17 first order ode quadrature  
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#	ODE	CAS classification	Solved?
5598	$y'^3 - axy' + x^3 = 0$	[_quadrature]	✓
5611	$y'^3 + (1 - 3x)y'^2 - x(1 - 3x)y' - 1 - x^3 = 0$	[_quadrature]	✓
5613	$y'^3 + (\cos(x) \cot(x) - y)y'^2 - (1 + y \cos(x) \cot(x))y' + y = 0$	[_quadrature]	✓
5614	$y'^3 + (2x - y^2)y'^2 - 2xy^2y' = 0$	[_quadrature]	✓
5616	$y'^3 - (y^2 + xy + x^2)y'^2 + xy(y^2 + xy + x^2)y' - x^3y^3 = 0$	[_quadrature]	✓
5617	$y'^3 - (x^2 + xy^2 + y^4)y'^2 + xy^2(x^2 + xy^2 + y^4)y' - x^3y^6 = 0$	[_quadrature]	✓
5621	$4y'^3 + 4y' = x$	[_quadrature]	✓
5624	$xy'^3 - (x + x^2 + y)y'^2 + (x^2 + y + xy)y' - xy = 0$	[_quadrature]	✓
5630	$(a^2 - x^2)y'^3 + bx(a^2 - x^2)y'^2 - y' - bx = 0$	[_quadrature]	✓
5637	$y'^3(x + 2y) + 3y'^2(x + y) + (2x + y)y' = 0$	[_quadrature]	✓
5663	$\sqrt{1 + y'^2} + ay' = x$	[_quadrature]	✓
5665	$\sqrt{1 + y'^2} = xy'$	[_quadrature]	✓
5672	$a \cos(y') + by' + x = 0$	[_quadrature]	✓
5673	$\sin(y') + y' = x$	[_quadrature]	✓
5679	$\ln(y') + xy' + a = 0$	[_quadrature]	✓
5750	$y'^2 - 5y' + 6 = 0$	[_quadrature]	✓
5751	$y'^2 - \frac{a^2}{x^2} = 0$	[_quadrature]	✓
5752	$y'^2 = \frac{1 - x}{x}$	[_quadrature]	✓
5755	$x = ay' + by'^2$	[_quadrature]	✓
5757	$x = \sqrt{1 + y'^2} + ay'$	[_quadrature]	✓
5758	$y' - \frac{\sqrt{1 + y'^2}}{x} = 0$	[_quadrature]	✓
5759	$x^2(1 + y'^2)^3 - a^2 = 0$	[_quadrature]	✓
5760	$1 + y'^2 = \frac{(x + a)^2}{2ax + x^2}$	[_quadrature]	✓

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Table 2.17 first order ode quadrature  
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#	ODE	CAS classification	Solved?
5787	$x + y + 1 + (2x + 2y + 2)y' = 0$	[_quadrature]	✓
6028	$y'^2(-x^2 + 1) + 1 = 0$	[_quadrature]	✓
6097	$xyy' - xy = y$ i.c.	[_quadrature]	✓
6282	$y' = e^{x^2}$ i.c.	[_quadrature]	✓
6419	$xy' = x^2 + 2x - 3$	[_quadrature]	✓
6423	$x^2y' = x^3 \sin(3x) + 4$	[_quadrature]	✓
6619	$1 - \sqrt{a^2 - x^2}y' = 0$	[_quadrature]	✓
6668	$xy'^2 + (y - 1 - x^2)y' - x(y - 1) = 0$	[_quadrature]	✓
7082	$x' + t = 1$	[_quadrature]	✓
7115	$y'(y' + y) = x(x + y)$ i.c.	[_quadrature]	✓
7192	$y'^2 = 4x^2$	[_quadrature]	✓
7256	$y' = e^{3x} + \sin(x)$	[_quadrature]	✓
7449	$y' = 2x$	[_quadrature]	✓
7463	$y' = e^{3x} - x$	[_quadrature]	✓
7464	$y' = xe^{x^2}$	[_quadrature]	✓
7465	$(x + 1)y' = x$	[_quadrature]	✓
7466	$(x^2 + 1)y' = x$	[_quadrature]	✓
7467	$(x^2 + 1)y' = \arctan(x)$	[_quadrature]	✓
7468	$xy' = 1$	[_quadrature]	✓
7469	$y' = \arcsin(x)$	[_quadrature]	✓
7470	$y' \sin(x) = 1$	[_quadrature]	✓
7471	$(x^3 + 1)y' = x$	[_quadrature]	✓
7472	$(x^2 - 3x + 2)y' = x$	[_quadrature]	✓
7473	$y' = xe^x$ i.c.	[_quadrature]	✓
7474	$y' = 2 \sin(x) \cos(x)$ i.c.	[_quadrature]	✓

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Table 2.17 first order ode quadrature  
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#	ODE	CAS classification	Solved?
7475	$y' = \ln(x)$ i.c.	[_quadrature]	✓
7476	$(x^2 - 1)y' = 1$ i.c.	[_quadrature]	✓
7477	$x(x^2 - 4)y' = 1$ i.c.	[_quadrature]	✓
7478	$(x + 1)(x^2 + 1)y' = 2x^2 + x$ i.c.	[_quadrature]	✓
8112	$xy'^2 - (2x + 3y)y' + 6y = 0$	[_quadrature]	✓
8115	$xy'^2 + (1 - x^2y)y' - xy = 0$	[_quadrature]	✓
8116	$y'^2 - (x^2y + 3)y' + 3x^2y = 0$	[_quadrature]	✓
8117	$xy'^2 - (xy + 1)y' + y = 0$	[_quadrature]	✓
8122	$(4x - y)y'^2 + 6(x - y)y' + 2x - 5y = 0$	[_quadrature]	✓
8128	$xy'^3 - (x + x^2 + y)y'^2 + (x^2 + y + xy)y' - xy = 0$	[_quadrature]	✓
8129	$xyy'^2 + (x + y)y' + 1 = 0$	[_quadrature]	✓
8210	$6xy'^2 - (3x + 2y)y' + y = 0$	[_quadrature]	✓
8221	$xy'^2 - (x^2 + 1)y' + x = 0$	[_quadrature]	✓
8394	$y' = x + 1$	[_quadrature]	✓
8395	$y' = x$	[_quadrature]	✓
8397	$y' = 0$	[_quadrature]	✓
8398	$y' = 1 + \frac{\sec(x)}{x}$	[_quadrature]	✓
8403	$y' = \frac{1}{x}$	[_quadrature]	✓
8412	$(x + y)y' = 0$	[_quadrature]	✓
8413	$xy' = 0$	[_quadrature]	✓
8414	$\frac{y'}{x + y} = 0$	[_quadrature]	✓
8415	$\frac{y'}{x} = 0$	[_quadrature]	✓
8416	$y' = 0$	[_quadrature]	✓
8661	$y' = 0$	[_quadrature]	✓
8662	$y' = a$	[_quadrature]	✓

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Table 2.17 first order ode quadrature  
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#	ODE	CAS classification	Solved?
8663	$y' = x$	[_quadrature]	✓
8664	$y' = 1$	[_quadrature]	✓
8665	$y' = ax$	[_quadrature]	✓
8672	$cy' = 0$	[_quadrature]	✓
8673	$cy' = a$	[_quadrature]	✓
8674	$cy' = ax$	[_quadrature]	✓
8684	$a \sin(x) yxy' = 0$	[_quadrature]	✓
8685	$f(x) \sin(x) yxy' \pi = 0$	[_quadrature]	✓
8691	$xy' = 0$	[_quadrature]	✓
8692	$5y' = 0$	[_quadrature]	✓
8693	$ey' = 0$	[_quadrature]	✓
8694	$\pi y' = 0$	[_quadrature]	✓
8695	$y' \sin(x) = 0$	[_quadrature]	✓
8696	$f(x) y' = 0$	[_quadrature]	✓
8697	$xy' = 1$	[_quadrature]	✓
8698	$xy' = \sin(x)$	[_quadrature]	✓
8699	$(x - 1) y' = 0$	[_quadrature]	✓
8700	$yy' = 0$	[_quadrature]	✓
8701	$xyy' = 0$	[_quadrature]	✓
8702	$xy \sin(x) y' = 0$	[_quadrature]	✓
8703	$\pi y \sin(x) y' = 0$	[_quadrature]	✓
8704	$x \sin(x) y' = 0$	[_quadrature]	✓
8705	$x \sin(x) y'^2 = 0$	[_quadrature]	✓
8706	$yy'^2 = 0$	[_quadrature]	✓
8707	$y'^n = 0$	[_quadrature]	✓
8708	$xy'^n = 0$	[_quadrature]	✓
8709	$y'^2 = x$	[_quadrature]	✓
8796	$y^3 y''^2 + yy' = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓

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Table 2.17 first order ode quadrature  
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#	ODE	CAS classification	Solved?
8798	$yy'^3 + y^3y' = 0$	[[_2nd_order, _missing_x]]	✓
8799	$yy''^3 + y^3y'^5 = 0$	[[_2nd_order, _missing_x]]	✓
9691	$y' - \frac{1}{\sqrt{a_4x^4 + a_3x^3 + a_2x^2 + a_1x + a_0}} = 0$	[_quadrature]	✓
9779	$xy' - \sqrt{a^2 - x^2} = 0$	[_quadrature]	✓
10064	$y'^2 + ay' + bx = 0$	[_quadrature]	✓
10071	$y'^2 + axy' - bx^2 - c = 0$	[_quadrature]	✓
10080	$y'^2 + (bx + ay)y' + abxy = 0$	[_quadrature]	✓
10122	$y' - 1 = 0$	[_quadrature]	✓
10132	$x^2y'^2 + (ax^2y^3 + b)y' + aby^3 = 0$	[_quadrature]	✓
10134	$(x^2 - 1)y'^2 - 1 = 0$	[_quadrature]	✓
10145	$x^2(-a^2 + x^2)y'^2 - 1 = 0$	[_quadrature]	✓
10158	$yy'^2 - (y - x)y' - x = 0$	[_quadrature]	✓
10210	$y'^3 - axy' + x^3 = 0$	[_quadrature]	✓
10213	$y'^3 - (y^2 + xy + x^2)y'^2 + (xy^3 + y^2x^2 + x^3y)y' - x^3y^3 = 0$	[_quadrature]	✓
10223	$(-a^2 + x^2)y'^3 + bx(-a^2 + x^2)y'^2 + y' + bx = 0$	[_quadrature]	✓
10226	$y'^3 \sin(x) - (y \sin(x) - \cos(x)^2)y'^2 - (y \cos(x)^2 + \sin(x))y' + y \sin(x) = 0$	[_quadrature]	✓
10227	$2yy'^3 - yy'^2 + 2xy' - x = 0$	[_quadrature]	✓
10236	$x^2(1 + y'^2)^3 - a^2 = 0$	[_quadrature]	✓
10253	$\sin(y') + y' - x = 0$	[_quadrature]	✓
10254	$a \cos(y') + by' + x = 0$	[_quadrature]	✓
11260	$x(ay' + by'' + cy''' + ey'''' )y = 0$	[[_high_order, _missing_x]]	✓
11521	$2y'y''' - 3y'^2 = 0$	[[_3rd_order, _missing_x]]	✓
11677	$y' = f(x)$	[_quadrature]	✓
12552	$y'^2 + (x + y)y' + xy = 0$	[_quadrature]	✓
12556	$(x^2 + 1)y'^2 = 1$	[_quadrature]	✓

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Table 2.17 first order ode quadrature  
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#	ODE	CAS classification	Solved?
12591	$x^2 y'^2 - (x-1)^2 = 0$	[_quadrature]	✓
12593	$4y'^2 = 9x$	[_quadrature]	✓
12712	$x' = t \cos(t^2)$ i.c.	[_quadrature]	✓
12713	$x' = \frac{t+1}{\sqrt{t}}$ i.c.	[_quadrature]	✓
12715	$x' = t e^{-2t}$	[_quadrature]	✓
12716	$x' = \frac{1}{t \ln(t)}$	[_quadrature]	✓
12717	$\sqrt{t} x' = \cos(\sqrt{t})$	[_quadrature]	✓
12718	$x' = \frac{e^{-t}}{\sqrt{t}}$ i.c.	[_quadrature]	✓
13380	$x' = \sin(t) + \cos(t)$	[_quadrature]	✓
13381	$y' = \frac{1}{x^2 - 1}$	[_quadrature]	✓
13382	$u' = 4t \ln(t)$	[_quadrature]	✓
13383	$z' = x e^{-2x}$	[_quadrature]	✓
13384	$T' = e^{-t} \sin(2t)$	[_quadrature]	✓
13385	$x' = \sec(t)^2$ i.c.	[_quadrature]	✓
13386	$y' = x - \frac{1}{3}x^3$ i.c.	[_quadrature]	✓
13387	$x' = 2 \sin(t)^2$ i.c.	[_quadrature]	✓
13388	$xV' = x^2 + 1$ i.c.	[_quadrature]	✓
13537	$x^2 + y'^2 = 1$	[_quadrature]	✓
13539	$x = y'^3 - y' + 2$	[_quadrature]	✓
13549	$y'^3 - y' e^{2x} = 0$	[_quadrature]	✓
13895	$y = yy' + y' - y'^2$	[_quadrature]	✓
13997	$xy' - \sin(x) = 0$	[_quadrature]	✓
14008	$y'^2 = x^6$	[_quadrature]	✓

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Table 2.17 first order ode quadrature  
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#	ODE	CAS classification	Solved?
14027	$y' = 1 - x$	[_quadrature]	✓
14028	$y' = x - 1$	[_quadrature]	✓
14064	$y' = x^2 + e^x - \sin(x)$	[_quadrature]	✓
14073	$y' = 3x + 1$	[_quadrature]	✓
14074	$y' = x + \frac{1}{x}$	[_quadrature]	✓
14075	$y' = 2 \sin(x)$	[_quadrature]	✓
14076	$y' = x \sin(x)$	[_quadrature]	✓
14077	$y' = \frac{1}{x - 1}$	[_quadrature]	✓
14078	$y' = \frac{1}{x - 1}$	[_quadrature]	✓
14079	$y' = \frac{1}{x^2 - 1}$	[_quadrature]	✓
14080	$y' = \frac{1}{x^2 - 1}$	[_quadrature]	✓
14081	$y' = \tan(x)$	[_quadrature]	✓
14082	$y' = \tan(x)$	[_quadrature]	✓
14111	$y' = \frac{1}{x - 1}$	[_quadrature]	✓
14312	$y' = t^2 + t$	[_quadrature]	✓
14313	$y' = t^2 + 1$	[_quadrature]	✓
14330	$y' = -t^2 + 2$	[_quadrature]	✓
14334	$y' = t^2 - 2$	[_quadrature]	✓
14336	$\theta' = 2$	[_quadrature]	✓
14442	$y' = t^2(t^2 + 1)$	[_quadrature]	✓
14655	$y' = 3 - \sin(x)$	[_quadrature]	✓

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Table 2.17 first order ode quadrature  
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#	ODE	CAS classification	Solved?
14658	$xy' = \arcsin(x^2)$	[_quadrature]	✓
14665	$y' = 4x^3$	[_quadrature]	✓
14666	$y' = 20e^{-4x}$	[_quadrature]	✓
14667	$xy' + \sqrt{x} = 2$	[_quadrature]	✓
14668	$\sqrt{4+x}y' = 1$	[_quadrature]	✓
14669	$y' = x \cos(x^2)$	[_quadrature]	✓
14670	$y' = \cos(x)x$	[_quadrature]	✓
14671	$x = (x^2 - 9)y'$	[_quadrature]	✓
14672	$1 = (x^2 - 9)y'$	[_quadrature]	✓
14673	$1 = x^2 - 9y'$	[_quadrature]	✓
14677	$y' = 40xe^{2x}$	[_quadrature]	✓
i.c.			
14678	$(x+6)^{1/3}y' = 1$	[_quadrature]	✓
i.c.			
14679	$y' = \frac{x-1}{x+1}$	[_quadrature]	✓
i.c.			
14680	$xy' + 2 = \sqrt{x}$	[_quadrature]	✓
i.c.			
14681	$\cos(x)y' - \sin(x) = 0$	[_quadrature]	✓
i.c.			
14682	$(x^2 + 1)y' = 1$	[_quadrature]	✓
i.c.			
14684	$y' = \sin\left(\frac{x}{2}\right)$	[_quadrature]	✓
14685	$y' = \sin\left(\frac{x}{2}\right)$	[_quadrature]	✓
i.c.			
14686	$y' = \sin\left(\frac{x}{2}\right)$	[_quadrature]	✓
i.c.			
14687	$y' = 3\sqrt{x+3}$	[_quadrature]	✓
14688	$y' = 3\sqrt{x+3}$	[_quadrature]	✓
i.c.			
14689	$y' = 3\sqrt{x+3}$	[_quadrature]	✓
i.c.			

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Table 2.17 first order ode quadrature  
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#	ODE	CAS classification	Solved?
14690	$y' = 3\sqrt{x+3}$ i.c.	[_quadrature]	✓
14691	$y' = x e^{-x^2}$ i.c.	[_quadrature]	✓
14692	$y' = \frac{x}{\sqrt{x^2+5}}$ i.c.	[_quadrature]	✓
14693	$y' = \frac{1}{x^2+1}$ i.c.	[_quadrature]	✓
14694	$y' = e^{-9x^2}$ i.c.	[_quadrature]	✓
14695	$xy' = \sin(x)$ i.c.	[_quadrature]	✓
14696	$xy' = \sin(x^2)$ i.c.	[_quadrature]	✓
14697	$y' = \begin{cases} 0 & x < 0 \\ 1 & 0 \leq x \end{cases}$ i.c.	[_quadrature]	✓
14698	$y' = \begin{cases} 0 & x < 1 \\ 1 & 1 \leq x \end{cases}$ i.c.	[_quadrature]	✓
14699	$y' = \begin{cases} 0 & x < 1 \\ 1 & 1 \leq x < 2 \\ 0 & 2 \leq x \end{cases}$ i.c.	[_quadrature]	✓
14714	$y' = \sqrt{x^2+1}$	[_quadrature]	✓
14765	$y' - e^{2x} = 0$	[_quadrature]	✓
14839	$x^2y' - \sqrt{x} = 3$	[_quadrature]	✓
14850	$(x^2 - 4)y' = x$	[_quadrature]	✓
14855	$\sin(x) + 2\cos(x)y' = 0$	[_quadrature]	✓
14866	$(x+2)y' - x^3 = 0$	[_quadrature]	✓
14876	$y' + 2x = \sin(x)$	[_quadrature]	✓
15464	$2x - 1 - y' = 0$	[_quadrature]	✓
15483	$y' = (x^2 - 1)(x^3 - 3x)^3$	[_quadrature]	✓
15484	$y' = x \sin(x^2)$	[_quadrature]	✓

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Table 2.17 first order ode quadrature  
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#	ODE	CAS classification	Solved?
15485	$y' = \frac{x}{\sqrt{x^2 - 16}}$	[_quadrature]	✓
15486	$y' = \frac{1}{x \ln(x)}$	[_quadrature]	✓
15487	$y' = x \ln(x)$	[_quadrature]	✓
15488	$y' = x e^{-x}$	[_quadrature]	✓
15489	$y' = \frac{-2x - 10}{(x + 2)(x - 4)}$	[_quadrature]	✓
15490	$y' = \frac{-x^2 + x}{(x + 1)(x^2 + 1)}$	[_quadrature]	✓
15491	$y' = \frac{\sqrt{x^2 - 16}}{x}$	[_quadrature]	✓
15492	$y' = (-x^2 + 4)^{3/2}$	[_quadrature]	✓
15493	$y' = \frac{1}{x^2 - 16}$	[_quadrature]	✓
15494	$y' = \cos(x) \cot(x)$	[_quadrature]	✓
15495	$y' = \sin(x)^3 \tan(x)$	[_quadrature]	✓
15504	$y' = 4x^3 - x + 2$	[_quadrature]	✓
	i.c.		
15505	$y' = \sin(2t) - \cos(2t)$	[_quadrature]	✓
	i.c.		
15506	$y' = \frac{\cos(\frac{1}{x})}{x^2}$	[_quadrature]	✓
	i.c.		
15507	$y' = \frac{\ln(x)}{x}$	[_quadrature]	✓
	i.c.		
15514	$y' = \sin(x)^4$	[_quadrature]	✓
	i.c.		
15528	$y' = x e^{-x^2}$	[_quadrature]	✓
15529	$y' = \sin(x) x^2$	[_quadrature]	✓
15530	$y' = \frac{2x^2 - x + 1}{(x - 1)(x^2 + 1)}$	[_quadrature]	✓
15531	$y' = \frac{x^2}{\sqrt{x^2 - 1}}$	[_quadrature]	✓
15535	$y' = \cos(x)^2 \sin(x)$	[_quadrature]	✓
	i.c.		

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Table 2.17 first order ode quadrature  
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#	ODE	CAS classification	Solved?
15536	$y' = \frac{4x - 9}{3(x - 3)^{2/3}}$ i.c.	[_quadrature]	✓
15547	$y' = \frac{1}{t^2 + 1}$ i.c.	[_quadrature]	✓
15610	$y' = x^3$ i.c.	[_quadrature]	✓
15611	$y' = \cos(t)$ i.c.	[_quadrature]	✓
15613	$\sin(y)^2 = x'$ i.c.	[_quadrature]	✓
15619	$y' = t \sin(t^2)$ i.c.	[_quadrature]	✓
15620	$y' = \frac{1}{x^2 + 1}$ i.c.	[_quadrature]	✓
15709	$3t^2 - y' = 0$	[_quadrature]	✓
15751	$2t + 2y + (2t + 2y)y' = 0$	[_quadrature]	✓
16354	$y' = x + 1$	[_quadrature]	✓
16366	$y' = 1 - x$	[_quadrature]	✓
16370	$y' = 1$	[_quadrature]	✓
16371	$y' = \frac{1}{x}$	[_quadrature]	✓
16398	$\cos(y') = 0$	[_quadrature]	✓
16399	$e^{y'} = 1$	[_quadrature]	✓
16400	$\sin(y') = x$	[_quadrature]	✓
16401	$\ln(y') = x$	[_quadrature]	✓
16402	$\tan(y') = 0$	[_quadrature]	✓
16403	$e^{y'} = x$	[_quadrature]	✓
16404	$\tan(y') = x$	[_quadrature]	✓
16493	$4y'^2 - 9x = 0$	[_quadrature]	✓
16495	$y'^2 - 2xy' - 8x^2 = 0$	[_quadrature]	✓
16497	$y'^2 - (2x + y)y' + x^2 + xy = 0$	[_quadrature]	✓
16499	$y'^3 = yy'^2 - x^2y' + x^2y$	[_quadrature]	✓

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Table 2.17 first order ode quadrature  
Continued from previous page

#	ODE	CAS classification	Solved?
16505	$x = y'^2 - 2y' + 2$	[_quadrature]	✓
16508	$xy'^2 = e^{\frac{1}{y}}$	[_quadrature]	✓
16509	$x(1 + y'^2)^{3/2} = a$	[_quadrature]	✓
16511	$x = \sin(y') + y'$	[_quadrature]	✓
16552	$x^2 + xy' = 3x + y'$	[_quadrature]	✓
16586	$y'^4 = 1$	[_quadrature]	✓
17091	$\frac{y'}{\frac{x}{y} - \sin(y)} = 0$	[_quadrature]	✓
17128	$xy' = -\frac{1}{\ln(x)}$	[_quadrature]	✓
17567	$y' = 2$	[_quadrature]	✓
17568	$y' = -x^3$	[_quadrature]	✓
17612	$yy'^2 + (x - y)y' - x = 0$	[_quadrature]	✓
17614	$y'^3 - (y^2 + xy + x^2)y'^2 + (xy^3 + y^2x^2 + x^3y)y' - x^3y^3 = 0$	[_quadrature]	✓
17616	$xy'^3 = 1 + y'$	[_quadrature]	✓
17617	$y'^3 - x^3(1 - y') = 0$	[_quadrature]	✓
17732	$y' = 2x$	[_quadrature]	✓
17746	$y' = e^{3x} - x$	[_quadrature]	✓
17747	$xy' = 1$	[_quadrature]	✓
17748	$y' = xe^{x^2}$	[_quadrature]	✓
17749	$y' = \arcsin(x)$	[_quadrature]	✓
17750	$(x + 1)y' = x$	[_quadrature]	✓
17751	$(x^2 + 1)y' = x$	[_quadrature]	✓
17752	$(x^3 + 1)y' = x$	[_quadrature]	✓
17753	$(x^2 + 1)y' = \arctan(x)$	[_quadrature]	✓
17759	$y' \sin(x) = 1$	[_quadrature]	✓
17764	$y' = xe^x$	[_quadrature]	✓
	<i>i.c.</i>		

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Table 2.17 first order ode quadrature  
Continued from previous page

#	ODE	CAS classification	Solved?
17765	$y' = 2 \sin(x) \cos(x)$ i.c.	[_quadrature]	✓
17766	$y' = \ln(x)$ i.c.	[_quadrature]	✓
17767	$(x^2 - 1)y' = 1$ i.c.	[_quadrature]	✓
17768	$x(x^2 - 4)y' = 1$ i.c.	[_quadrature]	✓
17769	$(x + 1)(x^2 + 1)y' = 2x^2 + x$ i.c.	[_quadrature]	✓
17771	$xy' = 2x^2 + 1$ i.c.	[_quadrature]	✓
17774	$y' = e^x \cos(x)$ i.c.	[_quadrature]	✓
18164	$x' = 3t^2 + 4t$ i.c.	[_quadrature]	✓
18165	$x' = be^t$ i.c.	[_quadrature]	✓
18166	$x' = \frac{1}{t^2 + 1}$ i.c.	[_quadrature]	✓
18167	$x' = \frac{1}{\sqrt{t^2 + 1}}$ i.c.	[_quadrature]	✓
18168	$x' = \cos(t)$ i.c.	[_quadrature]	✓
18169	$x' = \frac{\cos(t)}{\sin(t)}$ i.c.	[_quadrature]	✓
18237	$y' = e^{z-y'}$	[_quadrature]	✓
18239	$(x^2 - 1)y'^2 = 1$	[_quadrature]	✓
18242	$\sec(\theta)^2 = \frac{ms'}{k}$	[_quadrature]	✓
18249	$\sqrt{1+v'} = \frac{e^u}{2}$	[_quadrature]	✓
18477	$y'^3 + 2xy'^2 - y^2y'^2 - 2xy^2y' = 0$	[_quadrature]	✓
18478	$y'^2 - ax^3 = 0$	[_quadrature]	✓
18479	$y'^3(x + 2y) + 3y'^2(x + y) + (2x + y)y' = 0$	[_quadrature]	✓

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Table 2.17 first order ode quadrature  
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#	ODE	CAS classification	Solved?
18480	$y'^3 = a x^4$	[_quadrature]	✓
18482	$y'^2 - 7y' + 12 = 0$	[_quadrature]	✓
18488	$x(1 + y'^2) = 1$	[_quadrature]	✓
18489	$x^2 = a^2(1 + y'^2)$	[_quadrature]	✓
18503	$y'^2 - 9y' + 18 = 0$	[_quadrature]	✓
18513	$\left(y'^2 - \frac{1}{a^2 - x^2}\right) \left(y' - \sqrt{\frac{y}{x}}\right) = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓
18514	$x + \frac{y'}{\sqrt{1 + y'^2}} = a$	[_quadrature]	✓
18517	$y'^3 - (y^2 + xy + x^2) y'^2 + (xy^3 + y^2x^2 + x^3y) y' - x^3y^3 = 0$	[_quadrature]	✓
18530	$xy'^2 - (x - a)^2 = 0$	[_quadrature]	✓
18538	$4y'^2 = 9x$	[_quadrature]	✓
18539	$4x(x - 1)(-2 + x)y'^2 - (3x^2 - 6x + 2)^2 = 0$	[_quadrature]	✓

## 2.3.16 first order ode autonomous

Table 2.18: first order ode autonomous

#	ODE	CAS classification	Solved?
29	<i>i.c.</i> $y' = y^{1/3}$	[_quadrature]	✓
30	<i>i.c.</i> $y' = y^{1/3}$	[_quadrature]	✓
35	<i>i.c.</i> $y' = \ln(1 + y^2)$	[_quadrature]	✓
63	<i>i.c.</i> $1 + y' = 2y$	[_quadrature]	✓
69	<i>i.c.</i> $y' = y^2$	[_quadrature]	✓
70	<i>i.c.</i> $y'^2 = 4y$	[_quadrature]	✓
71	<i>i.c.</i> $y' = 2\sqrt{y}$	[_quadrature]	✓
72	<i>i.c.</i> $y' = y\sqrt{y^2 - 1}$	[_quadrature]	✓
73	<i>i.c.</i> $y' + y = 2$	[_quadrature]	✓
125	$y' = y + y^3$	[_quadrature]	✓
171	<i>i.c.</i> $x' = x - x^2$	[_quadrature]	✓
172	<i>i.c.</i> $x' = 10x - x^2$	[_quadrature]	✓
173	<i>i.c.</i> $x' = 1 - x^2$	[_quadrature]	✓
174	<i>i.c.</i> $x' = 9 - 4x^2$	[_quadrature]	✓
175	<i>i.c.</i> $x' = 3x(5 - x)$	[_quadrature]	✓
176	<i>i.c.</i> $x' = 3x(5 - x)$	[_quadrature]	✓
177	<i>i.c.</i> $x' = 4x(7 - x)$	[_quadrature]	✓
178	<i>i.c.</i> $x' = 7x(x - 13)$	[_quadrature]	✓
231	$y' + y^2 = 0$	[_quadrature]	✓

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Table 2.18 first order ode autonomous  
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#	ODE	CAS classification	Solved?
671	$y' = y^{1/3}$ i.c.	[_quadrature]	✓
672	$y' = y^{1/3}$ i.c.	[_quadrature]	✓
675	$y' = \ln(1 + y^2)$ i.c.	[_quadrature]	✓
698	$1 + y' = 2y$ i.c.	[_quadrature]	✓
704	$y' + y = 2$ i.c.	[_quadrature]	✓
749	$y' = y + y^3$	[_quadrature]	✓
1065	$y' = 1 + y^2$ i.c.	[_quadrature]	✓
1157	$y' = \frac{ay + b}{d + cy}$	[_quadrature]	✓
1176	$y^3 + y' = 0$	[_quadrature]	✓
1182	$y' = ay + by^2$	[_quadrature]	✓
1183	$y' = y(-2 + y)(-1 + y)$	[_quadrature]	✓
1184	$y' = -1 + e^y$	[_quadrature]	✓
1185	$y' = -1 + e^{-y}$	[_quadrature]	✓
1186	$y' = -\frac{2 \arctan(y)}{1 + y^2}$	[_quadrature]	✓
1187	$y' = -k(-1 + y)^2$	[_quadrature]	✓
1188	$y' = y^2(y^2 - 1)$	[_quadrature]	✓
1189	$y' = y(1 - y^2)$	[_quadrature]	✓
1190	$y' = -b\sqrt{y} + ay$	[_quadrature]	✓
1191	$y' = y^2(4 - y^2)$	[_quadrature]	✓
1192	$y' = (1 - y)^2 y^2$	[_quadrature]	✓
1519	$y' = 2y$	[_quadrature]	✓
1534	$y' = ay^{\frac{a-1}{a}}$	[_quadrature]	✓
1535	$y' =  y  + 1$ i.c.	[_quadrature]	✓
1537	$y' + ay = 0$	[_quadrature]	✓

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Table 2.18 first order ode autonomous  
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#	ODE	CAS classification	Solved?
1548	$y' + 3y = 1$	[_quadrature]	✓
1574	$\sec(y)^2 y' - 3 \tan(y) = -1$	[_quadrature]	✓
1596	$y' = 2y - y^2$	[_quadrature]	✓
1603	$y' = ay - by^2$	[_quadrature]	✓
1621	$y' = y^{2/5}$	[_quadrature]	✓
1638	$y' - 2y = 2\sqrt{y}$	[_quadrature]	✓
1682	$14x^2y^3 + 21x^2y^2y' = 0$	[_quadrature]	✓
1715	$2y^3 + 3y^2y' = 0$	[_quadrature]	✓
1792	$y' + y^2 + k^2 = 0$	[_quadrature]	✓
1793	$y' + y^2 - 3y + 2 = 0$	[_quadrature]	✓
1794	$y' + y^2 + 5y - 6 = 0$	[_quadrature]	✓
1795	$y' + y^2 + 8y + 7 = 0$	[_quadrature]	✓
1796	$y' + y^2 + 14y + 50 = 0$	[_quadrature]	✓
1797	$6y' + 6y^2 - y - 1 = 0$	[_quadrature]	✓
1798	$36y' + 36y^2 - 12y + 1 = 0$	[_quadrature]	✓
2328	$y' = k(a - y)(b - y)$	[_quadrature]	✓
2499	$y' = k(a - y)(b - y)$	[_quadrature]	✓
2809	$x' = x(-x + 1)$	[_quadrature]	✓
2810	$x' = -x(-x + 1)$	[_quadrature]	✓
2811	$x' = x^2$	[_quadrature]	✓
2865	$y' = e^y$	[_quadrature]	✓
2866	$e^y(1 + y') = 1$	[_quadrature]	✓
3058	$y' - y = 0$	[_quadrature]	✓
3286	$xyy'^2 + (x + y)y' + 1 = 0$	[_quadrature]	✓
3289	$(1 - y^2)y'^2 = 1$	[_quadrature]	✓

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Table 2.18 first order ode autonomous  
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#	ODE	CAS classification	Solved?
3294	$yy'^2 + (y^2 - x^3 - xy^2)y' - xy(y^2 + x^2) = 0$	[_quadrature]	✓
3299	$y'^2 + y^2 = 1$	[_quadrature]	✓
3305	$yy'^2 + 2y' + 1 = 0$	[_quadrature]	✓
3414	$y'^2 - y^2 = 0$	[_quadrature]	✓
3425	$y' = 2y - 4$	[_quadrature]	✓
	<i>i.c.</i>		
3426	$y' = -y^3$	[_quadrature]	✓
	<i>i.c.</i>		
3433	$y' = y^2 - y$	[_quadrature]	✓
3434	$y' = -1 + y$	[_quadrature]	✓
3435	$y' = 1 - y$	[_quadrature]	✓
3436	$y' = y^3 - y^2$	[_quadrature]	✓
3437	$y' = 1 - y^2$	[_quadrature]	✓
3439	$y' = -y$	[_quadrature]	✓
3447	$y' = y$	[_quadrature]	✓
	<i>i.c.</i>		
3448	$y' = 2y$	[_quadrature]	✓
	<i>i.c.</i>		
3561	$y' = -y^2$	[_quadrature]	✓
3608	$y' = \frac{2\sqrt{y-1}}{3}$	[_quadrature]	✓
	<i>i.c.</i>		
3609	$mv' = mg - kv^2$	[_quadrature]	✓
	<i>i.c.</i>		
4087	$y = y' + \frac{y'^2}{2}$	[_quadrature]	✓
4099	$y' + y = 0$	[_quadrature]	✓
4218	$y' = 3 \cos(y)^2$	[_quadrature]	✓
4306	$y^2y' = 2 + 3y^6$	[_quadrature]	✓
	<i>i.c.</i>		
4662	$y' = a + by^2$	[_quadrature]	✓
4667	$y' = a_0 + a_1y + a_2y^2$	[_quadrature]	✓
4688	$y' = y(a + by^2)$	[_quadrature]	✓

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Table 2.18 first order ode autonomous  
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#	ODE	CAS classification	Solved?
4689	$y' = a_0 + a_1 y + a_2 y^2 + a_3 y^3$	[_quadrature]	✓
4700	$y' = \sqrt{ y }$	[_quadrature]	✓
4701	$y' = a + by + \sqrt{A_0 + B_0 y}$	[_quadrature]	✓
4705	$y' = \sqrt{a + by^2}$	[_quadrature]	✓
4706	$y' = y\sqrt{a + by}$	[_quadrature]	✓
4713	$y' = a + b \cos(y)$	[_quadrature]	✓
4725	$y' = a + b \sin(y)$	[_quadrature]	✓
4729	$y' = \sqrt{a + b \cos(y)}$	[_quadrature]	✓
4735	$y' = af(y)$	[_quadrature]	✓
5024	$yy' = a_0 + a_1 y + a_2 y^2$	[_quadrature]	✓
5027	$yy' = \sqrt{y^2 + a^2}$	[_quadrature]	✓
5028	$yy' = \sqrt{y^2 - a^2}$	[_quadrature]	✓
5117	$x(y + 2)y' + ax = 0$	[_quadrature]	✓
5334	$y'^2 = y$	[_quadrature]	✓
5340	$y'^2 = 1 + y^2$	[_quadrature]	✓
5341	$y'^2 = 1 - y^2$	[_quadrature]	✓
5342	$y'^2 = a^2 - y^2$	[_quadrature]	✓
5343	$y'^2 = a^2 y^2$	[_quadrature]	✓
5344	$y'^2 = a + by^2$	[_quadrature]	✓
5346	$y'^2 = (y - 1)y^2$	[_quadrature]	✓
5347	$y'^2 = (y - a)(y - b)(y - c)$	[_quadrature]	✓
5348	$y'^2 = a^2 y^n$	[_quadrature]	✓
5349	$y'^2 = a^2(1 - \ln(y)^2)y^2$	[_quadrature]	✓
5358	$y'^2 - 2y' - y^2 = 0$	[_quadrature]	✓
5363	$y'^2 + ay' + by = 0$	[_quadrature]	✓
5393	$y'^2 + (x + y)y' + xy = 0$	[_quadrature]	✓
5395	$y'^2 + (1 + 2y)y' + y(y - 1) = 0$	[_quadrature]	✓

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Table 2.18 first order ode autonomous  
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#	ODE	CAS classification	Solved?
5396	$y'^2 - 2(x - y)y' - 4xy = 0$	[_quadrature]	✓
5397	$y'^2 - (1 + 4y)y' + (1 + 4y)y = 0$	[_quadrature]	✓
5398	$y'^2 - 2(1 - 3y)y' - (4 - 9y)y = 0$	[_quadrature]	✓
5399	$y'^2 + (a + 6y)y' + y(3a + b + 9y) = 0$	[_quadrature]	✓
5402	$y'^2 + (ax + by)y' + abxy = 0$	[_quadrature]	✓
5405	$y'^2 - (4 + y^2)y' + 4 + y^2 = 0$	[_quadrature]	✓
5406	$y'^2 - (x - y)yy' - xy^3 = 0$	[_separable]	✓
5417	$2y'^2 + 2(6y - 1)y' + 3y(6y - 1) = 0$	[_quadrature]	✓
5454	$xy'^2 - (xy + 1)y' + y = 0$	[_quadrature]	✓
5455	$xy'^2 + (1 - x)yy' - y^2 = 0$	[_quadrature]	✓
5493	$x^2y'^2 + (a + bx^2y^3)y' + aby^3 = 0$	[_quadrature]	✓
5529	$yy'^2 - (xy + 1)y' + x = 0$	[_quadrature]	✓
5530	$yy'^2 + (x - y^2)y' - xy = 0$	[_quadrature]	✓
5536	$(1 - ay)y'^2 = ay$	[_quadrature]	✓
5538	$xyy'^2 + (x + y)y' + 1 = 0$	[_quadrature]	✓
5547	$y^2y'^2 = a^2$	[_quadrature]	✓
5552	$y^2y'^2 - (x + 1)yy' + x = 0$	[_quadrature]	✓
5558	$(1 - y^2)y'^2 = 1$	[_quadrature]	✓
5559	$(a^2 - y^2)y'^2 = y^2$	[_quadrature]	✓
5572	$(2 - 3y)^2y'^2 = 4 - 4y$	[_quadrature]	✓
5588	$y'^3 = (y - a)^2(y - b)^2$	[_quadrature]	✓
5592	$y'^3 + y' - y = 0$	[_quadrature]	✓
5593	$y'^3 + y' = e^y$	[_quadrature]	✓
5601	$y'^3 - 2yy' + y^2 = 0$	[_quadrature]	✓
5606	$y'^3 + y'^2 - y = 0$	[_quadrature]	✓
5607	$y'^3 - y'^2 + y^2 = 0$	[_quadrature]	✓
5610	$y'^3 + a_0y'^2 + a_1y' + a_2 + a_3y = 0$	[_quadrature]	✓

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Table 2.18 first order ode autonomous

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#	ODE	CAS classification	Solved?
5612	$y'^3 - yy'^2 + y^2 = 0$	[_quadrature]	✓
5613	$y'^3 + (\cos(x) \cot(x) - y) y'^2 - (1 + y \cos(x) \cot(x)) y' + y = 0$	[_quadrature]	✓
5614	$y'^3 + (2x - y^2) y'^2 - 2xy^2 y' = 0$	[_quadrature]	✓
5615	$y'^3 - (2x + y^2) y'^2 + (x^2 - y^2 + 2xy^2) y' - (x^2 - y^2) y^2 = 0$	[_quadrature]	✓
5616	$y'^3 - (y^2 + xy + x^2) y'^2 + xy(y^2 + xy + x^2) y' - x^3 y^3 = 0$	[_quadrature]	✓
5617	$y'^3 - (x^2 + xy^2 + y^4) y'^2 + xy^2(x^2 + xy^2 + y^4) y' - x^3 y^6 = 0$	[_quadrature]	✓
5619	$2y'^3 + y'^2 - y = 0$	[_quadrature]	✓
5645	$y'^4 = (y - a)^3 (y - b)^2$	[_quadrature]	✓
5651	$y'^4 + 4yy'^3 + 6y^2 y'^2 - (1 - 4y^3) y' - (3 - y^3) y = 0$	[_quadrature]	✓
5652	$2y'^4 - yy' - 2 = 0$	[_quadrature]	✓
5654	$3y'^5 - yy' + 1 = 0$	[_quadrature]	✓
5655	$y'^6 = (y - a)^4 (y - b)^3$	[_quadrature]	✓
5664	$\sqrt{1 + y'^2} + ay' = y$	[_quadrature]	✓
5674	$y' \sin(y') + \cos(y') = y$	[_quadrature]	✓
5678	$e^{y'-y} - y'^2 + 1 = 0$	[_quadrature]	✓
5754	$y = ay' + by'^2$	[_quadrature]	✓
5756	$y = \sqrt{1 + y'^2} + ay'$	[_quadrature]	✓
5840	$y' + ay = b$	[_quadrature]	✓
6036	$y' + b^2 y^2 = a^2$	[_quadrature]	✓
6092	$y' = y$	[_quadrature]	✓
6101	$(1 + y) y' = y$	[_quadrature]	✓
	<i>i.c.</i>		
6103	$2y' = 3(y - 2)^{1/3}$	[_quadrature]	✓
	<i>i.c.</i>		
6257	$y' = 4y^2 - 3y + 1$	[_quadrature]	✓
6269	$x' - x^3 = x$	[_quadrature]	✓

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Table 2.18 first order ode autonomous  
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#	ODE	CAS classification	Solved?
6286	$y' = y^{1/3}$	[_quadrature]	✓
6287	$y' = y^{1/3}$ i.c.	[_quadrature]	✓
6293	$y' = y^2 - 3y + 2$ i.c.	[_quadrature]	✓
6321	$u' = \alpha(1 - u) - \beta u$	[_quadrature]	✓
6680	$y = 2y' + \sqrt{1 + y'^2}$	[_quadrature]	✓
6686	$(3y - 1)^2 y'^2 = 4y$	[_quadrature]	✓
7065	$y' = 3y^{2/3}$ i.c.	[_quadrature]	✓
7069	$(1 + z')e^{-z} = 1$	[_quadrature]	✓
7191	$y'^2 - a^2 y^2 = 0$	[_quadrature]	✓
7220	$y'^2 = a^2 - y^2$	[_quadrature]	✓
7264	$y' + 5y = 2$	[_quadrature]	✓
7266	$y' = ky$	[_quadrature]	✓
7267	$y' - 2y = 1$	[_quadrature]	✓
7273	$Ly' + Ry = E$	[_quadrature]	✓
7285	$y' = 1 + y$ i.c.	[_quadrature]	✓
7286	$y' = 1 + y^2$ i.c.	[_quadrature]	✓
7287	$y' = 1 + y^2$ i.c.	[_quadrature]	✓
7412	$y' = y^2$ i.c.	[_quadrature]	✓
7413	$y' = 2\sqrt{y}$ i.c.	[_quadrature]	✓
7414	$y' = 2\sqrt{y}$ i.c.	[_quadrature]	✓
7452	$y' = ky$	[_quadrature]	✓
7462	$1 + y^2 + y^2 y' = 0$	[_quadrature]	✓
7751	$y' + y = 1$	[_quadrature]	✓
7753	$y' - y = 2$	[_quadrature]	✓

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#	ODE	CAS classification	Solved?
7755	$y' + y = 0$	[_quadrature]	✓
7757	$y' - y = 0$	[_quadrature]	✓
8117	$xy'^2 - (xy + 1)y' + y = 0$	[_quadrature]	✓
8120	$yy'^2 + (x - y^2)y' - xy = 0$	[_quadrature]	✓
8124	$xyy'^2 + (-1 + xy^2)y' - y = 0$	[_quadrature]	✓
8129	$xyy'^2 + (x + y)y' + 1 = 0$	[_quadrature]	✓
8215	$y^2y'^2 - (x + 1)yy' + x = 0$	[_quadrature]	✓
8229	$xy'^2 + (1 - x)yy' - y^2 = 0$	[_quadrature]	✓
8393	$y' = 1 + y$	[_quadrature]	✓
8396	$y' = y$	[_quadrature]	✓
8406	$y' = \sqrt{\frac{1+y}{y^2}}$	[_quadrature]	✓
i.c.			
8420	$y' = \frac{1}{1-y}$	[_quadrature]	✓
i.c.			
8421	$p' = ap - bp^2$	[_quadrature]	✓
i.c.			
8434	$f' = \frac{1}{f}$	[_quadrature]	✓
8465	$x' = 4Ak\left(\frac{x}{A}\right)^{3/4} - 3kx$	[_quadrature]	✓
8470	$y' = 2\sqrt{y}$	[_quadrature]	✓
i.c.			
8472	$y' = \sqrt{1-y^2}$	[_quadrature]	✓
8536	$w' = -\frac{1}{2} - \frac{\sqrt{1-12w}}{2}$	[_quadrature]	✓
i.c.			
8628	$y' = y(1-y^2)$	[_quadrature]	✓
8652	$h^2 + \frac{2ah}{\sqrt{1+h^2}} = b^2$	[_quadrature]	✓
8669	$y' = y$	[_quadrature]	✓
8670	$y' = by$	[_quadrature]	✓
8677	$cy' = y$	[_quadrature]	✓

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#	ODE	CAS classification	Solved?
8678	$cy' = by$	[_quadrature]	✓
8847	$y' = y^{1/3}$ i.c.	[_quadrature]	✓
9702	$y' + y^2 - 1 = 0$	[_quadrature]	✓
9707	$y' - y^2 - 3y + 4 = 0$	[_quadrature]	✓
9713	$y' + y^2a - b = 0$	[_quadrature]	✓
9716	$y' - (Ay - a)(By - b) = 0$	[_quadrature]	✓
9729	$y' - a_3y^3 - a_2y^2 - a_1y - a_0 = 0$	[_quadrature]	✓
9747	$y' - \sqrt{ y } = 0$	[_quadrature]	✓
9749	$y' - a\sqrt{1 + y^2} - b = 0$	[_quadrature]	✓
9766	$y' - a \cos(y) + b = 0$	[_quadrature]	✓
9898	$yy' - \sqrt{y^2a + b} = 0$	[_quadrature]	✓
10049	$y' \cos(ay) - b(1 - c \cos(ay)) \sqrt{\cos(ay)^2 - 1 + c \cos(ay)} = 0$	[_quadrature]	✓
10058	$y'^2 + y^2 - a^2 = 0$	[_quadrature]	✓
10060	$y'^2 - y^3 + y^2 = 0$	[_quadrature]	✓
10061	$y'^2 - 4y^3 + ay + b = 0$	[_quadrature]	✓
10062	$y'^2 + a^2y^2(\ln(y)^2 - 1) = 0$	[_quadrature]	✓
10063	$y'^2 - 2y' - y^2 = 0$	[_quadrature]	✓
10065	$y'^2 + ay' + by = 0$	[_quadrature]	✓
10078	$y'^2 - (1 + 4y)y' + (1 + 4y)y = 0$	[_quadrature]	✓
10080	$y'^2 + (bx + ay)y' + abxy = 0$	[_quadrature]	✓
10084	$y'^2 + y(y - x)y' - xy^3 = 0$	[_separable]	✓
10091	$ay'^2 + by' - y = 0$	[_quadrature]	✓
10132	$x^2y'^2 + (ax^2y^3 + b)y' + aby^3 = 0$	[_quadrature]	✓
10165	$(ay + b)(1 + y'^2) - c = 0$	[_quadrature]	✓
10179	$(y^2 - a^2)y'^2 + y^2 = 0$	[_quadrature]	✓
10185	$(3y - 2)y'^2 - 4 + 4y = 0$	[_quadrature]	✓

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#	ODE	CAS classification	Solved?
10201	$y'^2(a \cos(y) + b) - c \cos(y) + d = 0$	[_quadrature]	✓
10205	$y'^3 - (y - a)^2 (y - b)^2 = 0$	[_quadrature]	✓
10207	$y'^3 + y' - y = 0$	[_quadrature]	✓
10211	$y'^3 - 2yy' + y^2 = 0$	[_quadrature]	✓
10213	$y'^3 - (y^2 + xy + x^2) y'^2 + (xy^3 + y^2x^2 + x^3y) y' - x^3y^3 = 0$	[_quadrature]	✓
10217	$y'^3 - yy'^2 + y^2 = 0$	[_quadrature]	✓
10219	$ay'^3 + by'^2 + cy' - y - d = 0$	[_quadrature]	✓
10226	$y'^3 \sin(x) - (y \sin(x) - \cos(x)^2) y'^2 - (y \cos(x)^2 + \sin(x)) y' + y \sin(x) = 0$	[_quadrature]	✓
10232	$y'^4 - (y - a)^3 (y - b)^2 = 0$	[_quadrature]	✓
10235	$y'^6 - (y - a)^4 (y - b)^3 = 0$	[_quadrature]	✓
10240	$ay'^m + by'^n - y = 0$	[_quadrature]	✓
10255	$y'^2 \sin(y') - y = 0$	[_quadrature]	✓
11678	$y' = f(y)$	[_quadrature]	✓
12002	$yy' - y = A$	[_quadrature]	✓
12552	$y'^2 + (x + y) y' + xy = 0$	[_quadrature]	✓
12554	$y'^2 + y^2 = 1$	[_quadrature]	✓
12557	$y'^3 - (2x + y^2) y'^2 + (x^2 - y^2 + 2xy^2) y' - (x^2 - y^2) y^2 = 0$	[_quadrature]	✓
12703	$x' = -x^2$	[_quadrature]	✓
12705	$x' = e^{-x}$	[_quadrature]	✓
12710	$x' = x \left(1 - \frac{x}{4}\right)$	[_quadrature]	✓
12720	$x' = \sqrt{x}$	[_quadrature]	✓
	<i>i.c.</i>		
12721	$x' = e^{-2x}$	[_quadrature]	✓
	<i>i.c.</i>		
12722	$y' = 1 + y^2$	[_quadrature]	✓
12723	$u' = \frac{1}{5 - 2u}$	[_quadrature]	✓

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#	ODE	CAS classification	Solved?
12724	$x' = ax + b$	[_quadrature]	✓
12725	$Q' = \frac{Q}{4 + Q^2}$	[_quadrature]	✓
12726	$x' = e^{x^2}$	[_quadrature]	✓
12727	$y' = r(a - y)$	[_quadrature]	✓
12732	$y' + y + \frac{1}{y} = 0$	[_quadrature]	✓
12734	$y' = \frac{1}{2y + 1}$	[_quadrature]	✓
	i.c.		
12738	$x' = x(x + 4)$	[_quadrature]	✓
	i.c.		
12774	$x' = ax + b$	[_quadrature]	✓
12780	$x' = ax + bx^3$	[_quadrature]	✓
12936	$y'^2 - 4y = 0$	[_quadrature]	✓
12947	$y' = y^{1/3}$	[_quadrature]	✓
	i.c.		
13390	$x' = -x + 1$	[_quadrature]	✓
13391	$x' = x(2 - x)$	[_quadrature]	✓
13392	$x' = (1 + x)(2 - x) \sin(x)$	[_quadrature]	✓
13393	$x' = -x(-x + 1)(2 - x)$	[_quadrature]	✓
13394	$x' = x^2 - x^4$	[_quadrature]	✓
13398	$x' = -x^2$	[_quadrature]	✓
13400	$x' + px = q$	[_quadrature]	✓
13403	$x' = \lambda x$	[_quadrature]	✓
13404	$mv' = -mg + kv^2$	[_quadrature]	✓
13405	$x' = kx - x^2$	[_quadrature]	✓
	i.c.		
13406	$x' = -x(k^2 + x^2)$	[_quadrature]	✓
	i.c.		
13425	$x' = kx - x^2$	[_quadrature]	✓
13535	$y'^2 = 9y^4$	[_quadrature]	✓
13541	$y = y'^4 - y'^3 - 2$	[_quadrature]	✓

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#	ODE	CAS classification	Solved?
13542	$y'^2 + y^2 = 4$	[_quadrature]	✓
13642	$yy' = 1$	[_quadrature]	✓
13895	$y = yy' + y' - y'^2$	[_quadrature]	✓
13991	$y' + \frac{1}{2y} = 0$	[_quadrature]	✓
13993	$y' - 2\sqrt{ y } = 0$	[_quadrature]	✓
13995	$y' - y^2 = 1$	[_quadrature]	✓
13998	$y' + 3y = 0$	[_quadrature]	✓
14006	$y'^2 - 4y = 0$	[_quadrature]	✓
14014	$y' = 3y^{2/3}$	[_quadrature]	✓
14029	$y' = 1 - y$	[_quadrature]	✓
14030	$y' = 1 + y$	[_quadrature]	✓
14031	$y' = y^2 - 4$	[_quadrature]	✓
14032	$y' = 4 - y^2$	[_quadrature]	✓
14041	$y' = 1 + y^2$	[_quadrature]	✓
14042	$y' = y^2 - 3y$	[_quadrature]	✓
14044	$y' =  y $	[_quadrature]	✓
14052	$y' = \ln(y - 1)$	[_quadrature]	✓
14053	$y' = \sqrt{(y + 2)(y - 1)}$	[_quadrature]	✓
14061	$y' = 4y - 5$	[_quadrature]	✓
	<i>i.c.</i>		
14062	$y' + 3y = 1$	[_quadrature]	✓
	<i>i.c.</i>		
14063	$y' = ay + b$	[_quadrature]	✓
	<i>i.c.</i>		
14083	$y' = 3y$	[_quadrature]	✓
	<i>i.c.</i>		
14084	$y' = 1 - y$	[_quadrature]	✓
	<i>i.c.</i>		
14085	$y' = 1 - y$	[_quadrature]	✓
	<i>i.c.</i>		
14089	$y' = -2y + y^2$	[_quadrature]	✓
	<i>i.c.</i>		

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#	ODE	CAS classification	Solved?
14093	$2yy' = 1$	[_quadrature]	✓
14098	$y' = 1 + 4y$	[_quadrature]	✓
14118	$y' = y^2$	[_quadrature]	✓
14119	$y' = y^2$	[_quadrature]	✓
14120	$y' = y^2$	[_quadrature]	✓
14121	$y' = y^3$	[_quadrature]	✓
14122	$y' = y^3$	[_quadrature]	✓
14123	$y' = y^3$	[_quadrature]	✓
14138	$y' = \sqrt{(y+2)(y-1)}$	[_quadrature]	✓
14139	$y' = \sqrt{(y+2)(y-1)}$	[_quadrature]	✓
14185	$y' - iy = 0$	[_quadrature]	✓
14280	$y' = 2y + 1$	[_quadrature]	✓
14281	$y' = 2 - y$	[_quadrature]	✓
14282	$y' = e^{-y}$	[_quadrature]	✓
14283	$x' = 1 + x^2$	[_quadrature]	✓
14288	$y' = \frac{1}{2y+1}$	[_quadrature]	✓
14290	$y' = y(1-y)$	[_quadrature]	✓
14295	$y' = y^2 - 4$	[_quadrature]	✓
14297	$y' = \sec(y)$	[_quadrature]	✓
14300	$y' = -y^2$	[_quadrature]	✓
14302	$y' = -y^2$	[_quadrature]	✓
14304	$y' = 2y + 1$	[_quadrature]	✓

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#	ODE	CAS classification	Solved?
14307	$y' = \frac{1-y^2}{y}$ i.c.	[_quadrature]	✓
14309	$y' = \frac{1}{2y+3}$ i.c.	[_quadrature]	✓
14311	$y' = \frac{y^2+5}{y}$ i.c.	[_quadrature]	✓
14314	$y' = 1 - 2y$	[_quadrature]	✓
14315	$y' = 4y^2$	[_quadrature]	✓
14316	$y' = 2y(1-y)$	[_quadrature]	✓
14318	$y' = 3y(1-y)$ i.c.	[_quadrature]	✓
14322	$S' = S^3 - 2S^2 + S$ i.c.	[_quadrature]	✓
14323	$S' = S^3 - 2S^2 + S$ i.c.	[_quadrature]	✓
14324	$S' = S^3 - 2S^2 + S$ i.c.	[_quadrature]	✓
14325	$S' = S^3 - 2S^2 + S$ i.c.	[_quadrature]	✓
14326	$S' = S^3 - 2S^2 + S$ i.c.	[_quadrature]	✓
14327	$y' = y^2 + y$	[_quadrature]	✓
14328	$y' = y^2 - y$	[_quadrature]	✓
14329	$y' = y^3 + y^2$	[_quadrature]	✓
14335	$\theta' = \frac{9}{10} - \frac{11 \cos(\theta)}{10}$	[_quadrature]	✓
14337	$\theta' = \frac{11}{10} - \frac{9 \cos(\theta)}{10}$	[_quadrature]	✓
14338	$v' = -\frac{v}{RC}$	[_quadrature]	✓
14339	$v' = \frac{K-v}{RC}$	[_quadrature]	✓
14341	$y' = 2y + 1$ i.c.	[_quadrature]	✓
14344	$y' = \sin(y)$ i.c.	[_quadrature]	✓

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#	ODE	CAS classification	Solved?
14345	$w' = (3 - w)(w + 1)$ i.c.	[_quadrature]	✓
14346	$w' = (3 - w)(w + 1)$ i.c.	[_quadrature]	✓
14347	$y' = e^{\frac{2}{y}}$ i.c.	[_quadrature]	✓
14348	$y' = e^{\frac{2}{y}}$ i.c.	[_quadrature]	✓
14349	$y' = y^2 - y^3$ i.c.	[_quadrature]	✓
14351	$y' = \sqrt{y}$ i.c.	[_quadrature]	✓
14352	$y' = 2 - y$ i.c.	[_quadrature]	✓
14353	$\theta' = \frac{9}{10} - \frac{11 \cos(\theta)}{10}$ i.c.	[_quadrature]	✓
14354	$y' = y(-1 + y)(y - 3)$ i.c.	[_quadrature]	✓
14355	$y' = y(-1 + y)(y - 3)$ i.c.	[_quadrature]	✓
14356	$y' = y(-1 + y)(y - 3)$ i.c.	[_quadrature]	✓
14357	$y' = y(-1 + y)(y - 3)$ i.c.	[_quadrature]	✓
14358	$y' = -y^2$	[_quadrature]	✓
14359	$y' = y^3$ i.c.	[_quadrature]	✓
14361	$y' = \frac{1}{(2 + y)^2}$ i.c.	[_quadrature]	✓
14363	$y' = 3y(-2 + y)$ i.c.	[_quadrature]	✓
14364	$y' = 3y(-2 + y)$ i.c.	[_quadrature]	✓
14365	$y' = 3y(-2 + y)$ i.c.	[_quadrature]	✓
14366	$y' = 3y(-2 + y)$ i.c.	[_quadrature]	✓

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Table 2.18 first order ode autonomous  
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#	ODE	CAS classification	Solved?
14367	$y' = y^2 - 4y - 12$ i.c.	[_quadrature]	✓
14368	$y' = y^2 - 4y - 12$ i.c.	[_quadrature]	✓
14369	$y' = y^2 - 4y - 12$ i.c.	[_quadrature]	✓
14370	$y' = y^2 - 4y - 12$ i.c.	[_quadrature]	✓
14371	$y' = \cos(y)$ i.c.	[_quadrature]	✓
14372	$y' = \cos(y)$ i.c.	[_quadrature]	✓
14373	$y' = \cos(y)$ i.c.	[_quadrature]	✓
14374	$y' = \cos(y)$ i.c.	[_quadrature]	✓
14375	$w' = w \cos(w)$	[_quadrature]	✓
14376	$w' = w \cos(w)$ i.c.	[_quadrature]	✓
14377	$w' = w \cos(w)$ i.c.	[_quadrature]	✓
14378	$w' = w \cos(w)$ i.c.	[_quadrature]	✓
14379	$w' = w \cos(w)$ i.c.	[_quadrature]	✓
14380	$w' = (1 - w) \sin(w)$	[_quadrature]	✓
14381	$y' = \frac{1}{-2 + y}$	[_quadrature]	✓
14382	$v' = -v^2 - 2v - 2$	[_quadrature]	✓
14383	$w' = 3w^3 - 12w^2$	[_quadrature]	✓
14384	$y' = 1 + \cos(y)$	[_quadrature]	✓
14385	$y' = \tan(y)$	[_quadrature]	✓
14386	$y' = y \ln( y )$	[_quadrature]	✓
14387	$w' = (w^2 - 2) \arctan(w)$	[_quadrature]	✓
14388	$y' = y^2 - 4y + 2$ i.c.	[_quadrature]	✓

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#	ODE	CAS classification	Solved?
14389	$y' = y^2 - 4y + 2$ i.c.	[_quadrature]	✓
14390	$y' = y^2 - 4y + 2$ i.c.	[_quadrature]	✓
14391	$y' = y^2 - 4y + 2$ i.c.	[_quadrature]	✓
14392	$y' = y^2 - 4y + 2$ i.c.	[_quadrature]	✓
14393	$y' = y^2 - 4y + 2$ i.c.	[_quadrature]	✓
14394	$y' = y \cos\left(\frac{\pi y}{2}\right)$	[_quadrature]	✓
14395	$y' = y - y^2$	[_quadrature]	✓
14396	$y' = y \sin\left(\frac{\pi y}{2}\right)$	[_quadrature]	✓
14397	$y' = y^3 - y^2$	[_quadrature]	✓
14398	$y' = \cos\left(\frac{\pi y}{2}\right)$	[_quadrature]	✓
14399	$y' = y^2 - y$	[_quadrature]	✓
14400	$y' = y \sin\left(\frac{\pi y}{2}\right)$	[_quadrature]	✓
14401	$y' = y^2 - y^3$	[_quadrature]	✓
14441	$y' = 3y$	[_quadrature]	✓
14443	$y' = -\sin(y)^5$	[_quadrature]	✓
14445	$y' = \sin(y)^2$	[_quadrature]	✓
14448	$y' = 3 - 2y$	[_quadrature]	✓
14454	$y' = 3 + y^2$	[_quadrature]	✓
14455	$y' = 2y - y^2$	[_quadrature]	✓
14465	$y' = 1 - y^2$ i.c.	[_quadrature]	✓
14467	$y' = y^2 - 2y + 1$ i.c.	[_quadrature]	✓
14472	$y' = 3 - y^2$ i.c.	[_quadrature]	✓
14656	$y' = 3 - \sin(y)$	[_quadrature]	✓
14702	$y' - y^3 = 8$	[_quadrature]	✓

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#	ODE	CAS classification	Solved?
14705	$y^3 - 25y + y' = 0$	[_quadrature]	✓
14708	$y' + 2y - y^2 = -2$	[_quadrature]	✓
14710	$y' = 2\sqrt{y}$ i.c.	[_quadrature]	✓
14715	$y' + 4y = 8$	[_quadrature]	✓
14722	$y' = y^2 + 9$	[_quadrature]	✓
14732	$y' - 4y = 2$	[_quadrature]	✓
14734	$y' = \sin(y)$	[_quadrature]	✓
14736	$y' = 200y - 2y^2$	[_quadrature]	✓
14740	$y' = \tan(y)$	[_quadrature]	✓
14745	$y' = e^{-y}$	[_quadrature]	✓
14746	$y' = e^{-y} + 1$	[_quadrature]	✓
14751	$y' = 200y - 2y^2$	[_quadrature]	✓
14752	$y' - 2y = -10$ i.c.	[_quadrature]	✓
14764	$y' = 4y + 8$	[_quadrature]	✓
14767	$y' + 4y = y^3$	[_quadrature]	✓
14769	$y' + 2y = 6$	[_quadrature]	✓
14779	$y' - 3y = 6$ i.c.	[_quadrature]	✓
14780	$y' - 3y = 6$ i.c.	[_quadrature]	✓
14796	$y' + 3y = 3y^3$	[_quadrature]	✓
14849	$(y^2 - 4)y' = y$	[_quadrature]	✓
14863	$y^2 + 1 - y' = 0$	[_quadrature]	✓
15460	$y'^2 + y = 0$	[_quadrature]	✓
15466	$y' + 2y = 0$	[_quadrature]	✓
15496	$y' + 2y = 0$ i.c.	[_quadrature]	✓
15540	$y' = y^{1/5}$ i.c.	[_quadrature]	✓
15544	$y' = 6y^{2/3}$ i.c.	[_quadrature]	✓

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Table 2.18 first order ode autonomous  
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#	ODE	CAS classification	Solved?
15548	$y' = \sqrt{y^2 - 1}$ i.c.	[_quadrature]	✓
15549	$y' = \sqrt{y^2 - 1}$ i.c.	[_quadrature]	✓
15551	$y' = \sqrt{y^2 - 1}$ i.c.	[_quadrature]	✓
15552	$y' = \sqrt{25 - y^2}$ i.c.	[_quadrature]	✓
15553	$y' = \sqrt{25 - y^2}$ i.c.	[_quadrature]	✓
15554	$y' = \sqrt{25 - y^2}$ i.c.	[_quadrature]	✓
15555	$y' = \sqrt{25 - y^2}$ i.c.	[_quadrature]	✓
15566	$y' = y^2$ i.c.	[_quadrature]	✓
15569	$y' = -y^3$ i.c.	[_quadrature]	✓
15573	$y' = \frac{1 + y^2}{y}$	[_quadrature]	✓
15582	$y' + ky = 0$	[_quadrature]	✓
15601	$y' = y^2 - 3y + 2$	[_quadrature]	✓
15604	$y' = y^3 + 1$	[_quadrature]	✓
15605	$y' = y^3 - 1$	[_quadrature]	✓
15606	$y' = y^3 + y$	[_quadrature]	✓
15607	$y' = y^3 - y^2$	[_quadrature]	✓
15608	$y' = y^3 - y$	[_quadrature]	✓
15609	$y' = y^3 + y$	[_quadrature]	✓
15612	$1 = \cos(y) y'$ i.c.	[_quadrature]	✓
15618	$y' = \frac{y}{\ln(y)}$ i.c.	[_quadrature]	✓
15634	$y' = (3y + 1)^4$	[_quadrature]	✓
15635	$y' = 3y$	[_quadrature]	✓
15636	$y' = -y$	[_quadrature]	✓

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Table 2.18 first order ode autonomous  
Continued from previous page

#	ODE	CAS classification	Solved?
15637	$y' = y^2 - y$	[_quadrature]	✓
15638	$y' = 16y - 8y^2$	[_quadrature]	✓
15639	$y' = 12 + 4y - y^2$	[_quadrature]	✓
15641	$y' - y = 10$	[_quadrature]	✓
15710	$-1 + 3y^2y' = 0$	[_quadrature]	✓
15832	$y' + y = 5$	[_quadrature]	✓
16342	$y' = y + 3y^{1/3}$	[_quadrature]	✓
16345	$y' = \sqrt{1 - y^2}$	[_quadrature]	✓
16348	$y' = 1 - \cot(y)$	[_quadrature]	✓
16358	$y' = (y - 1)^2$	[_quadrature]	✓
16372	$y' = y$	[_quadrature]	✓
16373	$y' = y^2$	[_quadrature]	✓
16385	$e^{-y}y' = 1$	[_quadrature]	✓
16409	$e^y = e^{4y}y' + 1$	[_quadrature]	✓
16499	$y'^3 = yy'^2 - x^2y' + x^2y$	[_quadrature]	✓
16502	$y = y'^2 e^{y'}$	[_quadrature]	✓
16503	$y' = e^{\frac{y'}{y}}$	[_quadrature]	✓
16506	$y = y' \ln(y')$	[_quadrature]	✓
16507	$y = (y' - 1)e^{y'}$	[_quadrature]	✓
16512	$y = y'(1 + y' \cos(y'))$	[_quadrature]	✓
16529	$y'^2 - 4y = 0$	[_quadrature]	✓
16531	$y'^2 - y^2 = 0$	[_quadrature]	✓
16532	$y' = y^{2/3} + a$	[_quadrature]	✓
16536	$(y' - 1)^2 = y^2$	[_quadrature]	✓
17012	$y' = \frac{ay + b}{d + cy}$	[_quadrature]	✓
17060	$y' = y^{1/3}$	[_quadrature]	✓
	<i>i.c.</i>		
17064	$y' + y^3 = 0$	[_quadrature]	✓
	<i>i.c.</i>		

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Table 2.18 first order ode autonomous  
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#	ODE	CAS classification	Solved?
17115	$y' = y + \sqrt{y}$	[_quadrature]	✓
17116	$y' = ry - k^2 y^2$	[_quadrature]	✓
17117	$y' = ay + by^3$	[_quadrature]	✓
17131	$y' + y - y^{1/4} = 0$	[_quadrature]	✓
17219	$x' = \frac{x\sqrt{6x-9}}{3}$	[_quadrature]	✓
	<i>i.c.</i>		
17614	$y'^3 - (y^2 + xy + x^2)y'^2 + (xy^3 + y^2x^2 + x^3y)y' - x^3y^3 = 0$	[_quadrature]	✓
17618	$y'^3 + y^3 - 3yy' = 0$	[_quadrature]	✓
17619	$y = y'^2 e^{y'}$	[_quadrature]	✓
17620	$y^2(y' - 1) = (2 - y')^2$	[_quadrature]	✓
17633	$y' = \sqrt{y}$	[_quadrature]	✓
17634	$y' = y \ln(y)$	[_quadrature]	✓
17635	$y' = y \ln(y)^2$	[_quadrature]	✓
17640	$y^2(y' - 1) = (2 - y')^2$	[_quadrature]	✓
17735	$y' = ky$	[_quadrature]	✓
17745	$1 + y^2 + y^2 y' = 0$	[_quadrature]	✓
17779	$v' = g - \frac{kv^2}{m}$	[_quadrature]	✓
18170	$x' = x^2 - 3x + 2$	[_quadrature]	✓
	<i>i.c.</i>		
18171	$x' = be^x$	[_quadrature]	✓
	<i>i.c.</i>		
18172	$x' = (x - 1)^2$	[_quadrature]	✓
	<i>i.c.</i>		
18173	$x' = \sqrt{x^2 - 1}$	[_quadrature]	✓
	<i>i.c.</i>		
18174	$x' = 2\sqrt{x}$	[_quadrature]	✓
	<i>i.c.</i>		
18175	$x' = \tan(x)$	[_quadrature]	✓
	<i>i.c.</i>		
18190	$x' = -\lambda x$	[_quadrature]	✓
18208	$y' + cy = a$	[_quadrature]	✓

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Table 2.18 first order ode autonomous  
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#	ODE	CAS classification	Solved?
18219	$x' = k(A - nx)(M - mx)$	[_quadrature]	✓
18236	$2y'^3 + y'^2 - y = 0$	[_quadrature]	✓
18477	$y'^3 + 2xy'^2 - y^2y'^2 - 2xy^2y' = 0$	[_quadrature]	✓
18487	$y = 2y' + 3y'^2$	[_quadrature]	✓
18490	$y^2 = a^2(1 + y'^2)$	[_quadrature]	✓
18517	$y'^3 - (y^2 + xy + x^2)y'^2 + (xy^3 + y^2x^2 + x^3y)y' - x^3y^3 = 0$	[_quadrature]	✓
18521	$y - \frac{1}{\sqrt{1 + y'^2}} = b$	[_quadrature]	✓
18532	$ay'^3 = 27y$	[_quadrature]	✓



## 2.3.17 first order ode lie symmetry

Table 2.19: first order ode lie symmetry

#	ODE	CAS classification	Solved?
20	$y' = x + y$	[[_linear, 'class A']]	✓
22	$y' = x - y$	[[_linear, 'class A']]	✓
23	$y' = y - x + 1$	[[_linear, 'class A']]	✓
24	$y' = x + 1 - y$	[[_linear, 'class A']]	✓
25	$y' = x^2 - y$	[[_linear, 'class A']]	✓
26	$y' = x^2 - y - 2$	[[_linear, 'class A']]	✓
27	$y' = 2y^2x^2$	[_separable]	✓
29	$y' = y^{1/3}$	[_quadrature]	✓
30	$y' = y^{1/3}$	[_quadrature]	✓
31	$y' = \sqrt{x - y}$	[[_homogeneous, 'class C'], _dAlembert]	✓
35	$y' = \ln(1 + y^2)$	[_quadrature]	✓
37	$y' = x + y$	[[_linear, 'class A']]	✓
38	$y' = y - x$	[[_linear, 'class A']]	✓
41	$y' + 2xy = 0$	[_separable]	✓
42	$y' + 2xy^2 = 0$	[_separable]	✓
43	$y' = y \sin(x)$	[_separable]	✓
44	$(x + 1)y' = 4y$	[_separable]	✓
46	$y' = 3\sqrt{xy}$	[[_homogeneous, 'class G']]	✓
47	$y' = 64^{1/3}(xy)^{1/3}$	[[_homogeneous, 'class G']]	✓
49	$(-x^2 + 1)y' = 2y$	[_separable]	✓
50	$(x + 1)^2 y' = (1 + y)^2$	[_separable]	✓
51	$y' = xy^3$	[_separable]	✓
57	$y' = 1 + x + y + xy$	[_separable]	✓
58	$x^2 y' = 1 - x^2 + y^2 - y^2 x^2$	[_separable]	✓

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Table 2.19 first order ode lie symmetry  
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#	ODE	CAS classification	Solved?
59	$y' = ye^x$ i.c.	[_separable]	✓
60	$y' = 3x^2(1 + y^2)$ i.c.	[_separable]	✓
62	$y' = 4x^3y - y$ i.c.	[_separable]	✓
63	$1 + y' = 2y$ i.c.	[_quadrature]	✓
64	$\tan(x)y' = y$ i.c.	[_separable]	✓
65	$-y + xy' = 2x^2y$ i.c.	[_separable]	✓
66	$y' = 2xy^2 + 3y^2x^2$ i.c.	[_separable]	✓
67	$y' = 6e^{2x-y}$ i.c.	[_separable]	✓
69	$y' = y^2$ i.c.	[_quadrature]	✓
72	$y' = y\sqrt{y^2 - 1}$ i.c.	[_quadrature]	✓
73	$y' + y = 2$ i.c.	[_quadrature]	✓
74	$y' - 2y = 3e^{2x}$ i.c.	[[_linear, 'class A']]	✓
75	$y' + 3y = 2xe^{-3x}$	[[_linear, 'class A']]	✓
76	$y' - 2xy = e^{x^2}$	[_linear]	✓
77	$xy' + 2y = 3x$ i.c.	[_linear]	✓
78	$xy' + 5y = 7x^2$ i.c.	[_linear]	✓
79	$2xy' + y = 10\sqrt{x}$	[_linear]	✓
80	$3xy' + y = 12x$	[_linear]	✓
81	$-y + xy' = x$ i.c.	[_linear]	✓
82	$2xy' - 3y = 9x^3$	[_linear]	✓
84	$xy' + 3y = 2x^5$ i.c.	[_linear]	✓

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Table 2.19 first order ode lie symmetry

Continued from previous page

#	ODE	CAS classification	Solved?
85	$y' + y = e^x$ i.c.	[[_linear, 'class A']]	✓
86	$xy' - 3y = x^3$ i.c.	[_linear]	✓
87	$y' + 2xy = x$ i.c.	[_separable]	✓
88	$y' = (1 - y) \cos(x)$ i.c.	[_separable]	✓
90	$xy' = 2y + x^3 \cos(x)$	[_linear]	✓
92	$y' = 1 + x + y + xy$ i.c.	[_separable]	✓
93	$xy' = 3y + x^4 \cos(x)$ i.c.	[_linear]	✓
94	$y' = 2xy + 3x^2 e^{x^2}$ i.c.	[_linear]	✓
95	$xy' + (2x - 3)y = 4x^4$	[_linear]	✓
96	$(x^2 + 4)y' + 3xy = x$ i.c.	[_separable]	✓
98	$\frac{1 - 4xy^2}{x'} = y^3$	[_linear]	✓
99	$\frac{x + y e^y}{x'} = 1$	[[_linear, 'class A']]	✓
100	$\frac{1 + 2xy}{x'} = y^2 + 1$	[_linear]	✓
103	$y' + p(x)y = 0$	[_separable]	✓
105	$(x + y)y' = x - y$	[[_homogeneous, 'class A'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
106	$2xyy' = x^2 + 2y^2$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
107	$xy' = y + 2\sqrt{xy}$	[[_homogeneous, 'class A'], _dAlembert]	✓
108	$(x - y)y' = x + y$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
109	$x(x + y)y' = (x - y)y$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓

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Table 2.19 first order ode lie symmetry  
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#	ODE	CAS classification	Solved?
110	$(x + 2y)y' = y$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
111	$xy^2y' = x^3 + y^3$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
112	$x^2y' = xy + x^2e^{\frac{y}{x}}$	[[_homogeneous, 'class A'], _dAlembert]	✓
113	$x^2y' = xy + y^2$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
114	$xyy' = x^2 + 3y^2$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
115	$(x^2 - y^2)y' = 2xy$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
116	$xyy' = y^2 + x\sqrt{4x^2 + y^2}$	[[_homogeneous, 'class A'], _dAlembert]	✓
117	$xy' = y + \sqrt{y^2 + x^2}$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
118	$x + yy' = \sqrt{y^2 + x^2}$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
119	$x(x + y)y' + y(3x + y) = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
120	$y' = \sqrt{x + y + 1}$	[[_homogeneous, 'class C'], _dAlembert]	✓
121	$y' = (4x + y)^2$	[[_homogeneous, 'class C'], _Riccati]	✓
122	$(x + y)y' = 1$	[[_homogeneous, 'class C'], _Abel, '2nd type', 'class C'], _dAlembert]	✓
123	$x^2y' + 2xy = 5y^3$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
125	$y' = y + y^3$	[_quadrature]	✓
126	$x^2y' + 2xy = 5y^4$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
127	$xy' + 6y = 3xy^{4/3}$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
128	$2xy' + y^3e^{-2x} = 2xy$	[_Bernoulli]	✓

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Table 2.19 first order ode lie symmetry  
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#	ODE	CAS classification	Solved?
130	$3y^2y' + y^3 = e^{-x}$	[[_1st_order, __with_linear_symmetries], _Bernoulli]	✓
131	$3xy^2y' = 3x^4 + y^3$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
134	$(e^y + x)y' = xe^{-y} - 1$	[[_1st_order, __with_linear_symmetries]]	✓
135	$2x + 3y + (3x + 2y)y' = 0$	[[_homogeneous, 'class A'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
136	$4x - y + (6y - x)y' = 0$	[[_homogeneous, 'class A'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
137	$3x^2 + 2y^2 + (4xy + 6y^2)y' = 0$	[[_homogeneous, 'class A'], _exact, _rational, _dAlembert]	✓
146	$\frac{2x^{5/2} - 3y^{5/3}}{2x^{5/2}y^{2/3}} + \frac{(3y^{5/3} - 2x^{5/2})y'}{3x^{3/2}y^{5/3}} = 0$	[[_1st_order, __with_linear_symmetries], _exact, _rational]	✓
159	$y' = f(ax + by + c)$	[[_homogeneous, 'class C'], _dAlembert]	✓
162	$xy' - 4x^2y + 2y \ln(y) = 0$	[[_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)']]]	✓
163	$y' = \frac{x - y - 1}{x + y + 3}$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
164	$y' = \frac{2y - x + 7}{4x - 3y - 18}$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
165	$y' = \sin(x - y)$	[[_homogeneous, 'class C'], _dAlembert]	✓
166	$y' = -\frac{y(2x^3 - y^3)}{x(2y^3 - x^3)}$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
168	$y' + 2xy = 1 + x^2 + y^2$	[[_homogeneous, 'class C'], _Riccati]	✓
171	$x' = x - x^2$ i.c.	[_quadrature]	✓
172	$x' = 10x - x^2$ i.c.	[_quadrature]	✓

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Table 2.19 first order ode lie symmetry  
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#	ODE	CAS classification	Solved?
173	$x' = 1 - x^2$ i.c.	[_quadrature]	✓
174	$x' = 9 - 4x^2$ i.c.	[_quadrature]	✓
175	$x' = 3x(5 - x)$ i.c.	[_quadrature]	✓
176	$x' = 3x(5 - x)$ i.c.	[_quadrature]	✓
177	$x' = 4x(7 - x)$ i.c.	[_quadrature]	✓
178	$x' = 7x(x - 13)$ i.c.	[_quadrature]	✓
179	$x^3 + 3y - xy' = 0$	[_linear]	✓
180	$xy^2 + 3y^2 - x^2y' = 0$	[_separable]	✓
181	$xy + y^2 - x^2y' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
183	$3y + x^4y' = 2xy$	[_separable]	✓
184	$2xy^2 + x^2y' = y^2$	[_separable]	✓
185	$2x^2y + x^3y' = 1$	[_linear]	✓
186	$x^2y' + 2xy = y^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
187	$xy' + 2y = 6x^2\sqrt{y}$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
188	$y' = 1 + x^2 + y^2 + y^2x^2$	[_separable]	✓
189	$x^2y' = xy + 3y^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
190	$6xy^3 + 2y^4 + (9y^2x^2 + 8xy^3)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class B']]	✓
191	$4xy^2 + y' = 5x^4y^2$	[_separable]	✓
192	$x^3y' = x^2y - y^3$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
193	$y' + 3y = 3x^2e^{-3x}$	[[_linear, 'class A']]	✓
194	$y' = x^2 - 2xy + y^2$	[[_homogeneous, 'class C', _Riccati]	✓
196	$2x^2y - x^3y' = y^3$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓

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Table 2.19 first order ode lie symmetry  
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#	ODE	CAS classification	Solved?
197	$3x^5y^2 + x^3y' = 2y^2$	[_separable]	✓
198	$xy' + 3y = \frac{3}{x^{3/2}}$	[_linear]	✓
200	$xy' = 6y + 12x^4y^{2/3}$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
202	$9y^2x^2 + x^{3/2}y' = y^2$	[_separable]	✓
203	$2y + (x + 1)y' = 3x + 3$	[_linear]	✓
204	$9\sqrt{x}y^{4/3} - 12x^{1/5}y^{3/2} + (8x^{3/2}y^{1/3} - 15x^{6/5}\sqrt{y})y' = 0$	[[_homogeneous, 'class G'], _exact, _rational]	✓
205	$3y + x^3y^4 + 3xy' = 0$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
207	$(2x + 1)y' + y = (2x + 1)^{3/2}$	[_linear]	✓
208	$y' = \sqrt{x + y}$	[[_homogeneous, 'class C'], _dAlembert]	✓
209	$y' = 3(y + 7)x^2$	[_separable]	✓
210	$y' = xy^3 - xy$	[_separable]	✓
211	$y' = -\frac{3x^2 + 2y^2}{4xy}$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
212	$y' = \frac{3y + x}{y - 3x}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
213	$y' = \frac{2xy + 2x}{x^2 + 1}$	[_separable]	✓
231	$y' + y^2 = 0$	[_quadrature]	✓
662	$y' = x + y$	[[_linear, 'class A']]	✓
664	$y' = x - y$	[[_linear, 'class A']]	✓
665	$y' = y - x + 1$	[[_linear, 'class A']]	✓
666	$y' = x + 1 - y$	[[_linear, 'class A']]	✓
667	$y' = x^2 - y$	[[_linear, 'class A']]	✓
668	$y' = x^2 - y - 2$	[[_linear, 'class A']]	✓
669	$y' = 2y^2x^2$	[_separable]	✓
671	$y' = y^{1/3}$	[_quadrature]	✓

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Table 2.19 first order ode lie symmetry  
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#	ODE	CAS classification	Solved?
672	$y' = y^{1/3}$ i.c.	[_quadrature]	✓
675	$y' = \ln(1 + y^2)$ i.c.	[_quadrature]	✓
677	$y' + 2xy = 0$	[_separable]	✓
678	$y' + 2xy^2 = 0$	[_separable]	✓
679	$y' = y \sin(x)$	[_separable]	✓
680	$(x + 1)y' = 4y$	[_separable]	✓
682	$y' = 3\sqrt{xy}$	[[_homogeneous, 'class G']]	✓
683	$y' = 4(xy)^{1/3}$	[[_homogeneous, 'class G']]	✓
685	$(-x^2 + 1)y' = 2y$	[_separable]	✓
686	$(x^2 + 1)y' = (1 + y)^2$	[_separable]	✓
687	$y' = xy^3$	[_separable]	✓
692	$y' = 1 + x + y + xy$	[_separable]	✓
693	$x^2y' = 1 - x^2 + y^2 - y^2x^2$	[_separable]	✓
694	$y' = ye^x$ i.c.	[_separable]	✓
695	$y' = 3x^2(1 + y^2)$ i.c.	[_separable]	✓
697	$y' = 4x^3y - y$ i.c.	[_separable]	✓
698	$1 + y' = 2y$ i.c.	[_quadrature]	✓
699	$\tan(x)y' = y$ i.c.	[_separable]	✓
700	$-y + xy' = 2x^2y$ i.c.	[_separable]	✓
701	$y' = 2xy^2 + 3y^2x^2$ i.c.	[_separable]	✓
702	$y' = 6e^{2x-y}$ i.c.	[_separable]	✓
704	$y' + y = 2$ i.c.	[_quadrature]	✓
705	$y' - 2y = 3e^{2x}$ i.c.	[[_linear, 'class A']]	✓

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Table 2.19 first order ode lie symmetry

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#	ODE	CAS classification	Solved?
706	$y' + 3y = 2x e^{-3x}$	[[_linear, 'class A']]	✓
707	$y' - 2xy = e^{x^2}$	[_linear]	✓
708	$xy' + 2y = 3x$	[_linear]	✓
	i.c.		
709	$2xy' + y = 10\sqrt{x}$	[_linear]	✓
	i.c.		
710	$2xy' + y = 10\sqrt{x}$	[_linear]	✓
711	$3xy' + y = 12x$	[_linear]	✓
712	$-y + xy' = x$	[_linear]	✓
	i.c.		
713	$2xy' - 3y = 9x^3$	[_linear]	✓
715	$xy' + 3y = 2x^5$	[_linear]	✓
	i.c.		
716	$y' + y = e^x$	[[_linear, 'class A']]	✓
	i.c.		
717	$xy' - 3y = x^3$	[_linear]	✓
	i.c.		
718	$y' + 2xy = x$	[_separable]	✓
	i.c.		
719	$y' = (1 - y) \cos(x)$	[_separable]	✓
	i.c.		
721	$xy' = 2y + x^3 \cos(x)$	[_linear]	✓
723	$y' = 1 + x + y + xy$	[_separable]	✓
	i.c.		
724	$xy' = x^4 \cos(x) + 3y$	[_linear]	✓
	i.c.		
725	$y' = 2xy + 3x^2 e^{x^2}$	[_linear]	✓
	i.c.		
726	$xy' + (2x - 3)y = 4x^4$	[_linear]	✓
727	$(x^2 + 4)y' + 3xy = x$	[_separable]	✓
	i.c.		
729	$(x + y)y' = x - y$	[[_homogeneous, 'class A'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
730	$2xyy' = y^2 + x^2$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓

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Table 2.19 first order ode lie symmetry

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#	ODE	CAS classification	Solved?
731	$xy' = y + 2\sqrt{xy}$	[[_homogeneous, 'class A', _dAlembert]	✓
732	$(x - y)y' = x + y$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
733	$x(x + y)y' = (x - y)y$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
734	$(x + 2y)y' = y$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
735	$xy^2y' = x^3 + y^3$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
736	$x^2y' = xy + x^2e^{\frac{y}{x}}$	[[_homogeneous, 'class A', _dAlembert]	✓
737	$x^2y' = xy + y^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
738	$xyy' = x^2 + 3y^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
739	$(x^2 - y^2)y' = 2xy$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
740	$xyy' = y^2 + x\sqrt{4x^2 + y^2}$	[[_homogeneous, 'class A', _dAlembert]	✓
741	$xy' = y + \sqrt{y^2 + x^2}$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
742	$x + yy' = \sqrt{y^2 + x^2}$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
743	$x(x + y)y' + y(3x + y) = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
744	$y' = \sqrt{x + y + 1}$	[[_homogeneous, 'class C', _dAlembert]	✓
745	$y' = (4x + y)^2$	[[_homogeneous, 'class C', _Riccati]	✓
747	$x^2y' + 2xy = 5y^3$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
749	$y' = y + y^3$	[_quadrature]	✓
750	$x^2y' + 2xy = 5y^4$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓

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Table 2.19 first order ode lie symmetry

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#	ODE	CAS classification	Solved?
751	$xy' + 6y = 3xy^{4/3}$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
752	$2xy' + y^3e^{-2x} = 2xy$	[_Bernoulli]	✓
754	$3y^2y' + y^3 = e^{-x}$	[[_1st_order, __with_lin- ear_symmetries], _Bernoulli]	✓
755	$3xy^2y' = 3x^4 + y^3$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
758	$(e^y + x)y' = xe^{-y} - 1$	[[_1st_order, __with_lin- ear_symmetries]]	✓
759	$2x + 3y + (3x + 2y)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
760	$4x - y + (6y - x)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
761	$3x^2 + 2y^2 + (4xy + 6y^2)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlem- bert]	✓
770	$\frac{2x^{5/2} - 3y^{5/3}}{2x^{5/2}y^{2/3}} + \frac{(3y^{5/3} - 2x^{5/2})y'}{3x^{3/2}y^{5/3}} = 0$	[[_1st_order, __with_lin- ear_symmetries], _exact, _rational]	✓
771	$x^3 + 3y - xy' = 0$	[_linear]	✓
772	$xy^2 + 3y^2 - x^2y' = 0$	[_separable]	✓
773	$xy + y^2 - x^2y' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
775	$3y + x^4y' = 2xy$	[_separable]	✓
776	$2xy^2 + x^2y' = y^2$	[_separable]	✓
777	$2x^2y + x^3y' = 1$	[_linear]	✓
778	$x^2y' + 2xy = y^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
779	$xy' + 2y = 6x^2\sqrt{y}$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
780	$y' = 1 + x^2 + y^2 + y^2x^2$	[_separable]	✓
781	$x^2y' = xy + 3y^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓

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Table 2.19 first order ode lie symmetry  
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#	ODE	CAS classification	Solved?
782	$6xy^3 + 2y^4 + (9y^2x^2 + 8xy^3) y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class B']]]	✓
784	$x^3y' = x^2y - y^3$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
785	$y' + 3y = 3x^2e^{-3x}$	[[_linear, 'class A']]]	✓
786	$y' = x^2 - 2xy + y^2$	[[_homogeneous, 'class C', _Riccati]]	✓
788	$2x^2y - x^3y' = y^3$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
789	$3x^5y^2 + x^3y' = 2y^2$	[_separable]	✓
790	$xy' + 3y = \frac{3}{x^{3/2}}$	[_linear]	✓
792	$xy' = 6y + 12x^4y^{2/3}$	[[_homogeneous, 'class G', _rational, _Bernoulli]]	✓
794	$9y^2x^2 + x^{3/2}y' = y^2$	[_separable]	✓
795	$2y + (x + 1)y' = 3x + 3$	[_linear]	✓
797	$3y + x^3y^4 + 3xy' = 0$	[[_homogeneous, 'class G', _rational, _Bernoulli]]	✓
799	$(2x + 1)y' + y = (2x + 1)^{3/2}$	[_linear]	✓
800	$y' = 3(y + 7)x^2$	[_separable]	✓
801	$y' = 3(y + 7)x^2$	[_separable]	✓
802	$y' = xy^3 - xy$	[_separable]	✓
803	$y' = \frac{-3x^2 - 2y^2}{4xy}$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
804	$y' = \frac{3y + x}{y - 3x}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
805	$y' = \frac{2xy + 2x}{x^2 + 1}$	[_separable]	✓
1065	$y' = 1 + y^2$ <i>i.c.</i>	[_quadrature]	✓
1098	$3y + y' = e^{-2t} + t$	[[_linear, 'class A']]]	✓
1099	$-2y + y' = e^{2t}t^2$	[[_linear, 'class A']]]	✓
1100	$y' + y = 1 + te^{-t}$	[[_linear, 'class A']]]	✓

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Table 2.19 first order ode lie symmetry  
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#	ODE	CAS classification	Solved?
1102	$-2y + y' = 3e^t$	[[_linear, 'class A']]	✓
1104	$2ty + y' = 2te^{-t^2}$	[_linear]	✓
1105	$4ty + (t^2 + 1)y' = \frac{1}{(t^2 + 1)^2}$	[_linear]	✓
1106	$y + 2y' = 3t$	[[_linear, 'class A']]	✓
1107	$-y + ty' = t^2e^{-t}$	[_linear]	✓
1109	$y + 2y' = 3t^2$	[[_linear, 'class A']]	✓
1111	$2y + y' = te^{-2t}$	[[_linear, 'class A']]	✓
i.c.			
1112	$2y + ty' = t^2 - t + 1$	[_linear]	✓
i.c.			
1114	$-2y + y' = e^{2t}$	[[_linear, 'class A']]	✓
i.c.			
1119	$-y + 2y' = e^{\frac{t}{3}}$	[[_linear, 'class A']]	✓
i.c.			
1120	$-2y + 3y' = e^{-\frac{\pi t}{2}}$	[[_linear, 'class A']]	✓
i.c.			
1121	$(t + 1)y + ty' = 2te^{-t}$	[_linear]	✓
i.c.			
1125	$\frac{2y}{3} + y' = 1 - \frac{t}{2}$	[[_linear, 'class A']]	✓
1128	$-\frac{3y}{2} + y' = 2e^t + 3t$	[[_linear, 'class A']]	✓
1129	$y' = \frac{x^2}{y}$	[_separable]	✓
1131	$\sin(x)y^2 + y' = 0$	[_separable]	✓
1134	$xy' = \sqrt{1 - y^2}$	[_separable]	✓
1137	$y' = (-2x + 1)y^2$	[_separable]	✓
i.c.			
1138	$y' = \frac{-2x + 1}{y}$	[_separable]	✓
i.c.			
1140	$r' = \frac{r^2}{x}$	[_separable]	✓
i.c.			
1142	$y' = \frac{xy^2}{\sqrt{x^2 + 1}}$	[_separable]	✓
i.c.			

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Table 2.19 first order ode lie symmetry  
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#	ODE	CAS classification	Solved?
1143	$y' = \frac{2x}{1+2y}$ i.c.	[_separable]	✓
1151	$y' = 2y^2 + xy^2$ i.c.	[_separable]	✓
1154	$y' = 2(x+1)(1+y^2)$ i.c.	[_separable]	✓
1155	$y' = \frac{t(4-y)y}{3}$	[_separable]	✓
1156	$y' = \frac{ty(4-y)}{t+1}$	[_separable]	✓
1157	$y' = \frac{ay+b}{d+cy}$	[_quadrature]	✓
1158	$y' = \frac{y^2 + xy + x^2}{x^2}$	[[_homogeneous, 'class A', _rational, _Riccati]	✓
1159	$y' = \frac{x^2 + 3y^2}{2xy}$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
1160	$y' = \frac{4y-3x}{2x-y}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
1161	$y' = -\frac{4x+3y}{2x+y}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
1162	$y' = \frac{3y+x}{x-y}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
1163	$x^2 + 3xy + y^2 - x^2y' = 0$	[[_homogeneous, 'class A', _rational, _Riccati]	✓
1164	$y' = \frac{x^2 - 3y^2}{2xy}$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
1165	$y' = \frac{3y^2 - x^2}{2xy}$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
1167	$y + (-4+t)ty' = 0$ i.c.	[_separable]	✓
1169	$2ty + (-t^2 + 4)y' = 3t^2$ i.c.	[_linear]	✓
1170	$2ty + (-t^2 + 4)y' = 3t^2$ i.c.	[_linear]	✓

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Table 2.19 first order ode lie symmetry  
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#	ODE	CAS classification	Solved?
1174	$y' = -\frac{4t}{y}$	[_separable]	✓
1175	$y' = 2ty^2$	[_separable]	✓
1176	$y' + y^3 = 0$	[_quadrature]	✓
1178	$y' = t(3 - y)y$	[_separable]	✓
1179	$y' = y(3 - ty)$	[_Bernoulli]	✓
1180	$y' = -y(3 - ty)$	[_Bernoulli]	✓
1182	$y' = ay + by^2$	[_quadrature]	✓
1183	$y' = y(-2 + y)(-1 + y)$	[_quadrature]	✓
1184	$y' = -1 + e^y$	[_quadrature]	✓
1185	$y' = -1 + e^{-y}$	[_quadrature]	✓
1186	$y' = -\frac{2 \arctan(y)}{1 + y^2}$	[_quadrature]	✓
1187	$y' = -k(-1 + y)^2$	[_quadrature]	✓
1188	$y' = y^2(y^2 - 1)$	[_quadrature]	✓
1189	$y' = y(1 - y^2)$	[_quadrature]	✓
1190	$y' = -b\sqrt{y} + ay$	[_quadrature]	✓
1191	$y' = y^2(4 - y^2)$	[_quadrature]	✓
1192	$y' = (1 - y)^2 y^2$	[_quadrature]	✓
1193	$3 + 2x + (2y - 2)y' = 0$	[_separable]	✓
1194	$2x + 4y + (2x - 2y)y' = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
1196	$2y + 2xy^2 + (2x + 2x^2y)y' = 0$	[_separable]	✓
1197	$y' = \frac{-ax - by}{bx + cy}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
1198	$y' = \frac{-ax + by}{bx - cy}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
1204	$\frac{x}{(y^2 + x^2)^{3/2}} + \frac{yy'}{(y^2 + x^2)^{3/2}} = 0$	[_separable]	✓

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Table 2.19 first order ode lie symmetry  
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#	ODE	CAS classification	Solved?
1205	<i>i.c.</i> $2x - y + (2y - x)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
1211	$y' = -1 + e^{2x} + y$	[[_linear, 'class A']]]	✓
1213	$y + (-e^{-2y} + 2xy)y' = 0$	[[_1st_order, _with_expo- nential_symmetries]]	✓
1217	$3xy + y^2 + (xy + x^2)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
1218	$y' = \frac{x^3 - 2y}{x}$	[_linear]	✓
1221	$y' = 3 - 6x + y - 2xy$	[_separable]	✓
1230	$y' = 1 + 2x + y^2 + 2xy^2$	[_separable]	✓
1231	<i>i.c.</i> $x + y + (x + 2y)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
1232	$(1 + e^x)y' = y - ye^x$	[_separable]	✓
1234	$y' = e^{2x} + 3y$	[[_linear, 'class A']]]	✓
1237	$y' = e^{x+y}$	[_separable]	✓
1243	$xy' = e^{\frac{y}{x}}x + y$	[[_homogeneous, 'class A', _dAlembert]]	✓
1245	$3t + 2y = -ty'$	[_linear]	✓
1246	$y' = \frac{x + y}{x - y}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
1247	$2xy + 3y^2 - (x^2 + 2xy)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
1248	<i>i.c.</i> $y' = \frac{-3x^2y - y^2}{2x^3 + 3xy}$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]]	✓
1519	$y' = 2y$	[_quadrature]	✓
1520	$xy' + y = x^2$	[_linear]	✓
1521	$y' + 2xy = x$	[_separable]	✓
1522	$2y' + x(y^2 - 1) = 0$	[_separable]	✓
1523	$y' = x^2(1 + y^2)$	[_separable]	✓

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Table 2.19 first order ode lie symmetry  
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#	ODE	CAS classification	Solved?
1531	$y' = \frac{x^2 - 2x^2y + 2}{x^3}$ i.c.	[_linear]	✓
1532	$y' = x(1 + y^2)$ i.c.	[_separable]	✓
1533	$y' = -\frac{y(1 + y)}{x}$ i.c.	[_separable]	✓
1534	$y' = ay^{\frac{a-1}{a}}$	[_quadrature]	✓
1536	$y' = -\frac{x}{2} - 1 + \frac{\sqrt{x^2 + 4x + 4y}}{2}$	[[_1st_order, __with_linear_symmetries], _Clairaut]	✓
1537	$y' + ay = 0$	[_quadrature]	✓
1538	$y' + 3x^2y = 0$	[_separable]	✓
1539	$xy' + y \ln(x) = 0$	[_separable]	✓
1540	$xy' + 3y = 0$	[_separable]	✓
1541	$x^2y' + y = 0$	[_separable]	✓
1542	$y' + \frac{(x+1)y}{x} = 0$ i.c.	[_separable]	✓
1543	$xy' + \left(1 + \frac{1}{\ln(x)}\right)y = 0$ i.c.	[_separable]	✓
1544	$xy' + (1 + x \cot(x))y = 0$ i.c.	[_separable]	✓
1545	$y' - \frac{2xy}{x^2 + 1} = 0$ i.c.	[_separable]	✓
1546	$y' + \frac{ky}{x} = 0$ i.c.	[_separable]	✓
1547	$y' + \tan(kx)y = 0$ i.c.	[_separable]	✓
1548	$y' + 3y = 1$	[_quadrature]	✓
1550	$y' + 2xy = xe^{-x^2}$	[_linear]	✓
1552	$y' + \frac{y}{x} = \frac{7}{x^2} + 3$	[_linear]	✓
1554	$xy' + (2x^2 + 1)y = x^3e^{-x^2}$	[_linear]	✓

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Table 2.19 first order ode lie symmetry

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#	ODE	CAS classification	Solved?
1555	$xy' + 2y = \frac{2}{x^2} + 1$	[_linear]	✓
1558	$(-2 + x)(x - 1)y' - (4x - 3)y = (-2 + x)^3$	[_linear]	✓
1561 i.c.	$y' + 7y = e^{3x}$	[[_linear, 'class A']]	✓
1562 i.c.	$(x^2 + 1)y' + 4xy = \frac{2}{x^2 + 1}$	[_linear]	✓
1565 i.c.	$y' + \frac{y}{x} = \frac{2}{x^2} + 1$	[_linear]	✓
1567 i.c.	$xy' + 2y = 8x^2$	[_linear]	✓
1568 i.c.	$xy' - 2y = -x^2$	[_linear]	✓
1569 i.c.	$y' + 2xy = x$	[_separable]	✓
1572 i.c.	$(x^2 - 1)y' - 2xy = x(x^2 - 1)$	[_linear]	✓
1573 i.c.	$xy' - 2y = -1$	[_separable]	✓
1574	$\sec(y)^2 y' - 3 \tan(y) = -1$	[_quadrature]	✓
1576	$\frac{xy'}{y} + 2 \ln(y) = 4x^2$	[[_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]]]	✓
1577	$\frac{y'}{(1+y)^2} - \frac{1}{x(1+y)} = -\frac{3}{x^2}$	[[_homogeneous, 'class C'], _rational, _Riccati]	✓
1580	$xy' + y^2 + y = 0$	[_separable]	✓
1582	$x^2 yy' = (y^2 - 1)^{3/2}$	[_separable]	✓
1583	$y' = x^2(1 + y^2)$	[_separable]	✓
1584	$(x^2 + 1)y' + xy = 0$	[_separable]	✓
1585	$y' = (x - 1)(y - 1)(y - 2)$	[_separable]	✓
1586	$(y - 1)^2 y' = 2x + 3$	[_separable]	✓
1588 i.c.	$y' + x(y^2 + y) = 0$	[_separable]	✓

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Table 2.19 first order ode lie symmetry  
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#	ODE	CAS classification	Solved?
1590	$y' + \frac{(1+y)(y-1)(y-2)}{x+1} = 0$ i.c.	[_separable]	✓
1591	$y' + 2x(1+y) = 0$ i.c.	[_separable]	✓
1592	$y' = 2xy(1+y^2)$ i.c.	[_separable]	✓
1593	$y'(x^2+2) = 4x(y^2+2y+1)$	[_separable]	✓
1594	$y' = -2x(y^3-3y+2)$ i.c.	[_separable]	✓
1595	$y' = \frac{2x}{1+2y}$ i.c.	[_separable]	✓
1596	$y' = 2y - y^2$ i.c.	[_quadrature]	✓
1597	$x + yy' = 0$ i.c.	[_separable]	✓
1598	$y' + x^2(1+y)(y-2)^2 = 0$	[_separable]	✓
1599	$(x+1)(-2+x)y' + y = 0$ i.c.	[_separable]	✓
1600	$y' = \frac{1+y^2}{x^2+1}$	[_separable]	✓
1601	$y'\sqrt{-x^2+1} + \sqrt{1-y^2} = 0$	[_separable]	✓
1603	$y' = ay - by^2$ i.c.	[_quadrature]	✓
1605	$xy' - 2y = \frac{x^6}{y+x^2}$	[_rational, [_Abel, '2nd type', 'class B']]	✓
1613	$y' = 2xy$	[_separable]	✓
1615	$y' = \frac{2x+3y}{x-4y}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
1619	$y' = \sqrt{x+y}$	[[_homogeneous, 'class C'], _dAlembert]	✓
1620	$y' = \frac{\tan(y)}{x-1}$	[_separable]	✓
1621	$y' = y^{2/5}$ i.c.	[_quadrature]	✓

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#	ODE	CAS classification	Solved?
1624	$y' = 3x(y-1)^{1/3}$ i.c.	[_separable]	✓
1625	$y' - y = xy^2$	[_Bernoulli]	✓
1626	$y' = \frac{y + x e^{-\frac{y}{x}}}{x}$	[[_homogeneous, 'class A', _dAlembert]	✓
1628	$x^2 y' = y^2 + xy - x^2$ i.c.	[[_homogeneous, 'class A', _rational, _Riccati]	✓
1638	$y' - 2y = 2\sqrt{y}$ i.c.	[_quadrature]	✓
1642	$y' = \frac{x+y}{x}$	[_linear]	✓
1643	$y' = \frac{y^2 + 2xy}{x^2}$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
1644	$xy^3 y' = y^4 + x^4$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
1645	$y' = \frac{y}{x} + \sec\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A', _dAlembert]	✓
1646	$x^2 y' = y^2 + xy + x^2$	[[_homogeneous, 'class A', _rational, _Riccati]	✓
1647	$xyy' = x^2 + 2y^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
1648	$y' = \frac{2y^2 + x^2 e^{-\frac{y^2}{x^2}}}{2xy}$	[[_homogeneous, 'class A']]	✓
1649	$y' = \frac{xy + y^2}{x^2}$ i.c.	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
1650	$y' = \frac{x^3 + y^3}{xy^2}$ i.c.	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
1651	$xyy' + x^2 + y^2 = 0$ i.c.	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
1652	$y' = \frac{y^2 - 3xy - 5x^2}{x^2}$ i.c.	[[_homogeneous, 'class A', _rational, _Riccati]	✓
1653	$x^2 y' = 2x^2 + y^2 + 4xy$ i.c.	[[_homogeneous, 'class A', _rational, _Riccati]	✓
1654	$xyy' = 3x^2 + 4y^2$ i.c.	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓

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#	ODE	CAS classification	Solved?
1655	$y' = \frac{x+y}{x-y}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
1657	$y' = \frac{y^3 + 2xy^2 + x^2y + x^3}{x(x+y)^2}$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
1658	$y' = \frac{x+2y}{2x+y}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
1659	$y' = \frac{y}{y-2x}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
1660	$y' = \frac{xy^2 + 2y^3}{x^3 + x^2y + xy^2}$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
1661	$y' = \frac{x^3 + x^2y + 3y^3}{x^3 + 3xy^2}$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
1662	$x^2y' = y^2 + xy - 4x^2$ i.c.	[[_homogeneous, 'class A'], _rational, _Riccati]	✓
1663	$xyy' = x^2 - xy + y^2$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
1664	$y' = \frac{2y^2 - xy + 2x^2}{xy + 2x^2}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
1665	$y' = \frac{y^2 + xy + x^2}{xy}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
1666	$y' = \frac{-6x + y - 3}{2x - y - 1}$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
1667	$y' = \frac{2x + y + 1}{x + 2y - 4}$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
1668	$y' = \frac{-x + 3y - 14}{x + y - 2}$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
1669	$3xy^2y' = y^3 + x$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓

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#	ODE	CAS classification	Solved?
1670	$xyy' = 3x^6 + 6y^2$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
1671	$x^3y' = 2y^2 + 2x^2y - 2x^4$	[[_homogeneous, 'class G', _rational, _Riccati]	✓
1672	$y' = y^2e^{-x} + 4y + 2e^x$	[[_1st_order, _with_linear_symmetries], _Riccati]	✓
1675	$2x(y + 2\sqrt{x})y' = (y + \sqrt{x})^2$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]	✓
1677	$y' + \frac{2y}{x} = \frac{3y^2x^2 + 6xy + 2}{x^2(2xy + 3)}$ i.c.	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]	✓
1678	$y' + \frac{3y}{x} = \frac{3x^4y^2 + 10x^2y + 6}{x^3(2x^2y + 5)}$ i.c.	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]	✓
1679	$y' = 1 + x - (2x + 1)y + xy^2$	[_Riccati]	✓
1680	$6y^2x^2 + 4x^3yy' = 0$	[_separable]	✓
1682	$14x^2y^3 + 21x^2y^2y' = 0$	[_quadrature]	✓
1685	$4x + 7y + (3x + 4y)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
1687	$2x + y + (2x + 2y)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
1692	$\frac{x}{(y^2 + x^2)^{3/2}} + \frac{yy'}{(y^2 + x^2)^{3/2}} = 0$	[_separable]	✓
1695	$e^{xy}(x^4y + 4x^3) + 3y + (x^5e^{xy} + 3x)y' = 0$	[_exact, [_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)']]]	✓
1701	$(2x - 1)(y - 1) + (x + 2)(x - 3)y' = 0$ i.c.	[_separable]	✓
1702	$7x + 4y + (4x + 3y)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
1707	$x^2 + y^2 + 2xyy' = 0$	[[_homogeneous, 'class A', _exact, _rational, _Bernoulli]	✓

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#	ODE	CAS classification	Solved?
1710	$y' + 2xy = -\frac{e^{-x^2}(3x + 2ye^{x^2})}{2x + 3ye^{x^2}}$ i.c.	[[_Abel, '2nd type', 'class B']]	✓
1711	$y + \left(2x + \frac{1}{y}\right)y' = 0$	[[_homogeneous, 'class G'], _rational, [_Abel, '2nd type', 'class B']]	✓
1712	$-y^2 + x^2y' = 0$	[_separable]	✓
1713	$y - xy' = 0$	[_separable]	✓
1714	$3x^2y + 2x^3y' = 0$	[_separable]	✓
1715	$2y^3 + 3y^2y' = 0$	[_quadrature]	✓
1718	$27xy^2 + 8y^3 + (18x^2y + 12xy^2)y' = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
1722	$x^2y + 4xy + 2y + (x^2 + x)y' = 0$	[_separable]	✓
1723	$-y + (x^4 - x)y' = 0$	[_separable]	✓
1726	$y \sin(y) + x(\sin(y) - y \cos(y))y' = 0$	[_separable]	✓
1729	$2y + 3(x^2 + x^2y^3)y' = 0$	[_separable]	✓
1731	$x^4y^4 + x^5y^3y' = 0$	[_separable]	✓
1733	$x^4y^3 + y + (x^5y^2 - x)y' = 0$	[[_homogeneous, 'class G'], _rational]	✓
1735	$12xy + 6y^3 + (9x^2 + 10xy^2)y' = 0$	[[_homogeneous, 'class G'], _rational]	✓
1736	$3y^2x^2 + 2y + 2xy' = 0$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
1792	$y' + y^2 + k^2 = 0$	[_quadrature]	✓
1793	$y' + y^2 - 3y + 2 = 0$	[_quadrature]	✓
1794	$y' + y^2 + 5y - 6 = 0$	[_quadrature]	✓
1795	$y' + y^2 + 8y + 7 = 0$	[_quadrature]	✓
1796	$y' + y^2 + 14y + 50 = 0$	[_quadrature]	✓
1797	$6y' + 6y^2 - y - 1 = 0$	[_quadrature]	✓
1798	$36y' + 36y^2 - 12y + 1 = 0$	[_quadrature]	✓
1800	$y' + y^2 + 4xy + 4x^2 + 2 = 0$	[[_homogeneous, 'class C'], _Riccati]	✓

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#	ODE	CAS classification	Solved?
1801	$(2x + 1)(y' + y^2) - 2y - 2x - 3 = 0$	[_rational, _Riccati]	✓
1802	$(3x - 1)(y' + y^2) - (2 + 3x)y - 6x + 8 = 0$	[_rational, _Riccati]	✓
1804	$x^2(y' + y^2) - 7xy + 7 = 0$	[[_homogeneous, 'class G'], _rational, _Riccati]	✓
2299	$\cos(t)y + y' = 0$	[_separable]	✓
2300	$\sqrt{t} \sin(t)y + y' = 0$	[_separable]	✓
2304	$t^2y + y' = t^2$	[_separable]	✓
2306	$\sqrt{t^2 + 1}y + y' = 0$	[_separable]	✓
	i.c.		
2307	$\sqrt{t^2 + 1}ye^{-t} + y' = 0$	[_separable]	✓
2308	$-2ty + y' = t$	[_separable]	✓
	i.c.		
2313	$4ty + (t^2 + 1)y' = t$	[_separable]	✓
	i.c.		
2318	$(t^2 + 1)y' = 1 + y^2$	[_separable]	✓
2319	$y' = (t + 1)(y + 1)$	[_separable]	✓
2320	$y' = 1 - t + y^2 - ty^2$	[_separable]	✓
2321	$y' = e^{3+t+y}$	[_separable]	✓
2325	$\sqrt{t^2 + 1}y' = \frac{ty^3}{\sqrt{t^2 + 1}}$	[_separable]	✓
	i.c.		
2328	$y' = k(a - y)(b - y)$	[_quadrature]	✓
	i.c.		
2330	$ty' = y + \sqrt{t^2 + y^2}$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
	i.c.		
2331	$2tyy' = 3y^2 - t^2$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
2332	$(t - \sqrt{ty})y' = y$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
2333	$y' = \frac{y + t}{t - y}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
2334	$e^{\frac{t}{y}}(-t + y)y' + y(1 + e^{\frac{t}{y}}) = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓

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#	ODE	CAS classification	Solved?
2335	$y' = \frac{t+y+1}{t-y+3}$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
2336	$1+t-2y+(4t-3y-6)y' = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
2337	$t+2y+3+(2t+4y-1)y' = 0$	[[_homogeneous, 'class C'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
2341	$\frac{y^2}{2} - 2e^t y + (-e^t + y)y' = 0$	[[_1st_order, _with_lin- ear_symmetries], [_Abel, '2nd type', 'class A']]	✓
2342	$2ty^3 + 3t^2 y^2 y' = 0$ i.c.	[_separable]	✓
2346	$3ty + y^2 + (t^2 + ty)y' = 0$ i.c.	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
2355	$y' = e^{(-t+y)^2}$ i.c.	[[_homogeneous, 'class C'], _dAlembert]	✓
2472	$\cos(t)y + y' = 0$	[_separable]	✓
2473	$\sqrt{t} \sin(t)y + y' = 0$	[_separable]	✓
2477	$t^2 y + y' = t^2$	[_separable]	✓
2479	$\sqrt{t^2+1}y + y' = 0$ i.c.	[_separable]	✓
2480	$\sqrt{t^2+1}y e^{-t} + y' = 0$ i.c.	[_separable]	✓
2482	$-2ty + y' = t$ i.c.	[_separable]	✓
2489	$(t^2+1)y' = 1+y^2$	[_separable]	✓
2490	$y' = (t+1)(y+1)$	[_separable]	✓
2491	$y' = 1-t+y^2-ty^2$	[_separable]	✓
2492	$y' = e^{3+t+y}$	[_separable]	✓
2499	$y' = k(a-y)(b-y)$ i.c.	[_quadrature]	✓
2501	$y' = \frac{2y}{t} + \frac{y^2}{t^2}$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓

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#	ODE	CAS classification	Solved?
2502	<i>i.c.</i> $ty' = y + \sqrt{t^2 + y^2}$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
2503	$2tyy' = 3y^2 - t^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
2504	$(t - \sqrt{ty})y' = y$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
2505	$y' = \frac{y+t}{t-y}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
2506	$e^{\frac{t}{y}}(-t+y)y' + y(1 + e^{\frac{t}{y}}) = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
2507	$y' = \frac{t+y+1}{t-y+3}$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
2508	$1 + t - 2y + (4t - 3y - 6)y' = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
2509	$t + 2y + 3 + (2t + 4y - 1)y' = 0$	[[_homogeneous, 'class C', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
2513	$\frac{y^2}{2} - 2e^t y + (-e^t + y)y' = 0$	[[_1st_order, _with_lin- ear_symmetries], [_Abel, '2nd type', 'class A']]	✓
2514	<i>i.c.</i> $2ty^3 + 3t^2y^2y' = 0$	[_separable]	✓
2518	<i>i.c.</i> $3ty + y^2 + (t^2 + ty)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
2519	<i>i.c.</i> $y' = 2t(y+1)$	[_separable]	✓
2530	<i>i.c.</i> $y' = e^{-(t+y)^2}$	[[_homogeneous, 'class C', _dAlembert]	✓
2542	<i>i.c.</i> $y' = ty^3 - y$	[_Bernoulli]	✓
2809	$x' = x(-x+1)$	[_quadrature]	✓
2810	$x' = -x(-x+1)$	[_quadrature]	✓
2811	$x' = x^2$	[_quadrature]	✓
2841	$(x^2 + 1)y' + xy = 0$	[_separable]	✓

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#	ODE	CAS classification	Solved?
2842	$xy^2 + x + (y - x^2y)y' = 0$	[_separable]	✓
2843	$1 + y^2 + (x^2 + 1)y' = 0$	[_separable]	✓
2844	$y + xy' = 0$	[_separable]	✓
2845	$y' = 2xy$	[_separable]	✓
2848	$(x + 1)y' - 1 + y = 0$	[_separable]	✓
2849	$y' \tan(x) - y = 1$	[_separable]	✓
2850	$y + 3 + \cot(x)y' = 0$	[_separable]	✓
2851	$y' = \frac{x}{y}$	[_separable]	✓
2853	$y + xy' = y^2$	[_separable]	✓
2857	$xy + \sqrt{x^2 + 1}y' = 0$	[_separable]	✓
2858	$y = xy + x^2y'$	[_separable]	✓
2860	$y^2 + yy' + x^2yy' - 1 = 0$	[_separable]	✓
2861	$y' = \frac{y}{x}$	[_separable]	✓
	i.c.		
2862	$xy' + 2y = 0$	[_separable]	✓
	i.c.		
2864	$x^2y' + y^2 = 0$	[_separable]	✓
	i.c.		
2865	$y' = e^y$	[_quadrature]	✓
	i.c.		
2866	$e^y(1 + y') = 1$	[_quadrature]	✓
	i.c.		
2867	$1 + y^2 = \frac{y'}{x^3(x-1)}$	[_separable]	✓
	i.c.		
2869	$(x^2 + x + 1)y' = y^2 + 2y + 5$	[_separable]	✓
	i.c.		
2870	$(x^2 - 2x - 8)y' = y^2 + y - 2$	[_separable]	✓
	i.c.		
2871	$x + y = xy'$	[_linear]	✓
2872	$(x + y)y' + x = y$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓

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#	ODE	CAS classification	Solved?
2873	$-y + xy' = \sqrt{xy}$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
2874	$y' = \frac{2x - y}{4y + x}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
2875	$-y + xy' = \sqrt{x^2 - y^2}$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
2876	$x + yy' = 2y$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
2877	$xy' - y + \sqrt{y^2 - x^2} = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
2878	$y^2 + x^2 = xyy'$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
2879	$(xy - x^2)y' - y^2 = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
2880	$y + xy' = 2\sqrt{xy}$	[[_homogeneous, 'class A', _dAlembert]	✓
2881	$x + y + (x - y)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
2882	$y(x^2 - xy + y^2) + xy'(y^2 + xy + x^2) = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
2883	$xy' - y - x \sin\left(\frac{y}{x}\right) = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
2884	$y' = \frac{y}{x} + \cosh\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A', _dAlembert]	✓
2885	$y^2 + x^2 = 2xyy'$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
2886	$\left(\frac{x}{y} + \frac{y}{x}\right)y' + 1 = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
2887	$x e^{\frac{y}{x}} + y = xy'$	[[_homogeneous, 'class A', _dAlembert]	✓
2888	$y' = \frac{x + y}{x - y}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓

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#	ODE	CAS classification	Solved?
2889	$y' = \frac{y}{x} + \tan\left(\frac{y}{x}\right)$ i.c.	[[_homogeneous, 'class A', _dAlembert]]	✓
2890	$(3xy - 2x^2)y' = 2y^2 - xy$ i.c.	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
2892	$y^2(yy' - x) + x^3 = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
2893	$y' = \frac{y}{x} + \tanh\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A', _dAlembert]]	✓
2894	$x + y - (x - y + 2)y' = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
2895	$x + (x - 2y + 2)y' = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class C', _dAlem- bert]]	✓
2896	$2x - y + 1 + (x + y)y' = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
2897	$x - y + 2 + (y - 1 + x)y' = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
2898	$x - y + (y - x + 1)y' = 0$	[[_homogeneous, 'class C', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
2899	$y' = \frac{y - 1 + x}{x - y - 1}$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
2900	$x + y + (2x + 2y - 1)y' = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
2901	$x - y + 1 + (x - y - 1)y' = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
2902	$x + 2y + (3x + 6y + 3)y' = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
2903	$x + 2y + 2 = (2x + y - 1)y'$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓

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#	ODE	CAS classification	Solved?
2904	$3x - y + 1 + (x - 3y - 5)y' = 0$ i.c.	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
2905	$6x - 3y + 6 + (2x - y + 5)y' = 0$ i.c.	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
2907	$x + y + 4 = (2x + 2y - 1)y'$ i.c.	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
2908	$2x + 3y - 1 + (2x + 3y + 2)y' = 0$ i.c.	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
2909	$3x - y + 2 + (x + 2y + 1)y' = 0$ i.c.	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
2910	$3x + 2y + 3 - (x + 2y - 1)y' = 0$ i.c.	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
2911	$x - 2y + 3 + (1 - x + 2y)y' = 0$ i.c.	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
2913	$2x + y + (4x - 2y + 1)y' = 0$ i.c.	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
2914	$x + y + (x - 2y)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
2915	$3x + y + (3y + x)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
2916	$a_1x + b_1y + c_1 + (b_1x + b_2y + c_2)y' = 0$	[[_homogeneous, 'class C', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
2919	$2xy - (y^2 + x^2)y' = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
2922	$ye^x - 2x + e^xy' = 0$	[[_linear, 'class A']]]	✓
2925	$\frac{2}{y} - \frac{y}{x^2} + \left(\frac{1}{x} - \frac{2x}{y^2}\right)y' = 0$	[_separable]]	✓
2927	$\frac{y(2 + x^3y)}{x^3} = \frac{(1 - 2x^3y)y'}{x^2}$	[[_homogeneous, 'class G', _exact, _rational, [_Abel, '2nd type', 'class B']]]	✓

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#	ODE	CAS classification	Solved?
2929	$\frac{2y}{x^3} + \frac{2x}{y^2} = \left(\frac{1}{x^2} + \frac{2x^2}{y^3}\right) y'$	[[_homogeneous, 'class G', _exact, _rational]	✓
2934	$\frac{x^2 + 3y^2}{x(3x^2 + 4y^2)} + \frac{(2x^2 + y^2)y'}{y(3x^2 + 4y^2)} = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]	✓
2935	$\frac{x^2 - y^2}{x(2x^2 + y^2)} + \frac{(x^2 + 2y^2)y'}{y(2x^2 + y^2)} = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]	✓
2937	$xy' + \ln(x) - y = 0$	[_linear]	✓
2938	$xy + (y + x^2)y' = 0$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class A']]	✓
2939	$(x - 2xy)y' + 2y = 0$	[_separable]	✓
2940	$x^2y + y^2 + x^3y' = 0$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
2941	$xy^3 - 1 + x^2y^2y' = 0$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
2942	$(x^3y^3 - 1)y' + x^2y^4 = 0$	[[_homogeneous, 'class G', _rational]	✓
2943	$y(y - x^2) + x^3y' = 0$	[[_homogeneous, 'class D', _rational, _Bernoulli]	✓
2944	$y + xy^2 + (x - x^2y)y' = 0$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]	✓
2946	$2xy + (y - x^2)y' = 0$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class A']]	✓
2947	$y = x(x^2y - 1)y'$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]	✓
2948	$e^x y' = 2xy^2 + y e^x$	[_Bernoulli]	✓
2950	$(2x + 3x^2y)y' + y + 2xy^2 = 0$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]	✓
2952	$y(1 - x^4y^2) + xy' = 0$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
2953	$y(x^2 - 1) + x(x^2 + 1)y' = 0$	[_separable]	✓

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#	ODE	CAS classification	Solved?
2954	$y^2x^2 - y + (2x^3y + x)y' = 0$ i.c.	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]]	✓
2957	$y(x + y^2) + x(x - y^2)y' = 0$ i.c.	[[_homogeneous, 'class G', _rational]]	✓
2958	$xy' + 2y = x^2$	[_linear]	✓
2960	$y' + 2xy = 2xe^{-x^2}$	[_linear]	✓
2961	$y' = y + 3e^x x^2$	[[_linear, 'class A']]]	✓
2962	$x' + x = e^{-y}$	[[_linear, 'class A']]]	✓
2964	$y + (2x - 3y)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
2965	$xy' - 2x^4 - 2y = 0$	[_linear]	✓
2966	$1 = (e^y + x)y'$	[[_1st_order, _with_expo- nential_symmetries]]	✓
2967	$y^2x' + (y^2 + 2y)x = 1$	[_linear]	✓
2968	$xy' = 5y + x + 1$	[_linear]	✓
2969	$x^2y' + y - 2xy - 2x^2 = 0$	[_linear]	✓
2972	$2y = (y^4 + x)y'$	[[_homogeneous, 'class G', _rational]]	✓
2975	$yx' = 2ye^{3y} + x(3y + 2)$	[_linear]	✓
2980	$y + 2(x - 2y^2)y' = 0$ i.c.	[[_homogeneous, 'class G', _rational]]	✓
2986	$xyy' = x^2 - y^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
2988	$tx' + x(1 - x^2t^4) = 0$	[[_homogeneous, 'class G', _rational, _Bernoulli]]	✓
2989	$x^2y' + y^2 = xy$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
2992	$y + xy' = y^2x^2 \cos(x)$	[_Bernoulli]	✓
2994	$xy' + 2y = 3x^3y^{4/3}$	[[_homogeneous, 'class G', _rational, _Bernoulli]]	✓
3000	$y' = x(1 - e^{2y-x^2})$ i.c.	[[_1st_order, '_with_sym- metry_[F(x),G(y)']]]	✓

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#	ODE	CAS classification	Solved?
3001	$2y = (x^2y^4 + x)y'$ <i>i.c.</i>	[[_homogeneous, 'class G', _rational]	✓
3004	$(1 - x)y' - 1 - y = 0$	[_separable]	✓
3005	$y^2 + (xy + x^2)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
3006	$2x + y - (x - 2y)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
3008	$x - 2y + 1 + (y - 2)y' = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
3010	$2e^x - t^2 + te^xx' = 0$	[[_1st_order, __with_lin- ear_symmetries]]	✓
3011	$2y + 6 = xy y'$	[_separable]	✓
3012	$x - 3y = (3y - x + 2)y'$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
3014	$x^2y - (x^3 + y^3)y' = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
3015	$y - xy' = 2y' + 2y^2$	[_separable]	✓
3016	$\tan(y) = (3x + 4)y'$	[_separable]	✓
3018	$2xy + y^4 + (xy^3 - 2x^2)y' = 0$	[[_homogeneous, 'class G', _rational]	✓
3019	$y + (-2y + 3x)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
3020	$r' = r \cot(\theta)$	[_separable]	✓
3021	$(3x + 4y)y' + 2x + y = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
3023	$xy' - y - \sqrt{y^2 + x^2} = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
3025	$x + y + (2x + 3y - 1)y' = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
3026	$1 + e^{\frac{x}{y}} + e^{\frac{x}{y}} \left(1 - \frac{x}{y}\right) y' = 0$	[[_homogeneous, 'class A', _exact, _dAlembert]	✓

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#	ODE	CAS classification	Solved?
3030	$2xy' - y + \frac{x^2}{y^2} = 0$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
3031	$xy' + y(1 + y^2) = 0$	[_separable]	✓
3032	$y\sqrt{y^2 + x^2} + xy = x^2y'$	[[_homogeneous, 'class A', _dAlembert]	✓
3036	$y \cos\left(\frac{x}{y}\right) - \left(y + x \cos\left(\frac{x}{y}\right)\right) y' = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
3037	$y(3x^2 + y) - x(x^2 - y) y' = 0$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]	✓
3038	$x + (2x + 3y + 2) y' = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class C', _dAlem- bert]	✓
3039	$xy' - 5y - x\sqrt{y} = 0$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
3041	$xy - y^2 - x^2y' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
3044	$xy' - 2y - 2x^4y^3 = 0$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
3045	$(-2x^2 - 3xy) y' + y^2 = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
3046	$xy' = x^4 + 4y$	[_linear]	✓
3047	$y + xy' = x^3y^6$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
3048	$x' = x + x^2e^\theta$	[[_1st_order, _with_lin- ear_symmetries], _Bernoulli]	✓
3049	$y^2 + x^2 = 2xyy'$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
3050	$3xy + (3x^2 + y^2) y' = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
3051	$y' + 2y = 3e^{2x}$	[[_linear, 'class A']]	✓
3052	$4xy^2 + (x^2 + 1) y' = 0$	[_separable]	✓

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#	ODE	CAS classification	Solved?
3053	<i>i.c.</i> $x - 2y + 3 = (x - 2y + 1) y'$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
3054	<i>i.c.</i> $y^2 + (x^3 - 2xy) y' = 0$	[[_homogeneous, 'class G'], _rational, [_Abel, '2nd type', 'class B']]	✓
3056	<i>i.c.</i> $y^3 + 2x^2y + (-3x^3 - 2xy^2) y' = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
3057	<i>i.c.</i> $2(x^2 + 1) y' = (2y^2 - 1) xy$	[_separable]	✓
3058	$y' - y = 0$	[_quadrature]	✓
3285	$4y^2 = y'^2 x^2$	[_separable]	✓
3286	$xyy'^2 + (x + y) y' + 1 = 0$	[_quadrature]	✓
3291	$y^2y'^2 + xyy' - 2x^2 = 0$	[_separable]	✓
3293	$y'^3 + (x + y - 2xy) y'^2 - 2y'xy(x + y) = 0$	[_quadrature]	✓
3294	$yy'^2 + (y^2 - x^3 - xy^2) y' - xy(y^2 + x^2) = 0$	[_quadrature]	✓
3296	$y = x + 3 \ln(y')$	[_separable]	✓
3310	$x = y - y'^3$	[[_homogeneous, 'class C'], _dAlembert]	✓
3320	$y'^3 + xyy' = 2y^2$	[[_1st_order, __with_lin- ear_symmetries]]	✓
3328	$y = xy' + \ln(y')$	[[_1st_order, __with_lin- ear_symmetries], _Clairaut]	✓
3331	$y = xy' + e^{y'}$	[[_1st_order, __with_lin- ear_symmetries], _Clairaut]	✓
3334	$y^2 - 2xyy' + y'^2(x^2 - 1) = 0$	[_separable]	✓
3409	$y' = xy$	[_separable]	✓
3410	$y' = y^2 x^2$	[_separable]	✓
3411	$y' = -x e^y$	[_separable]	✓
3413	$xy' = \sqrt{1 - y^2}$	[_separable]	✓
3414	$y'^2 - y^2 = 0$	[_quadrature]	✓
3425	<i>i.c.</i> $y' = 2y - 4$	[_quadrature]	✓

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#	ODE	CAS classification	Solved?
3426	$y' = -y^3$ i.c.	[_quadrature]	✓
3427	$y' = \frac{e^t}{y}$ i.c.	[_separable]	✓
3431	$y' = \frac{y}{t}$	[_separable]	✓
3432	$y' = -\frac{t}{y}$	[_separable]	✓
3433	$y' = y^2 - y$	[_quadrature]	✓
3434	$y' = -1 + y$	[_quadrature]	✓
3435	$y' = 1 - y$	[_quadrature]	✓
3436	$y' = y^3 - y^2$	[_quadrature]	✓
3437	$y' = 1 - y^2$	[_quadrature]	✓
3438	$y' = (t^2 + 1)y$	[_separable]	✓
3439	$y' = -y$	[_quadrature]	✓
3440	$y' = 2y + e^{-3t}$	[[_linear, 'class A']]	✓
3441	$y' = 2y + e^{2t}$	[[_linear, 'class A']]	✓
3442	$y' = t - y$	[[_linear, 'class A']]	✓
3445	$y' = \frac{2ty}{t^2 + 1} + t + 1$	[_linear]	✓
3447	$y' = y$ i.c.	[_quadrature]	✓
3448	$y' = 2y$ i.c.	[_quadrature]	✓
3449	$ty' = y + t^3$ i.c.	[_linear]	✓
3451	$y' = \frac{2y}{t+1}$ i.c.	[_separable]	✓
3452	$ty' = -y + t^3$ i.c.	[_linear]	✓
3453	$y' + 4 \tan(2t)y = \tan(2t)$ i.c.	[_separable]	✓
3457	$y' - xy^3 = 0$	[_separable]	✓
3458	$\frac{y'}{\tan(x)} - \frac{y}{x^2 + 1} = 0$	[_separable]	✓

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#	ODE	CAS classification	Solved?
3459	$x^2y' + xy^2 = 4y^2$	[_separable]	✓
3461	$2xy' + 3x + y = 0$	[_linear]	✓
3463	$(-x^2 + 1)y' + 4xy = (-x^2 + 1)^{3/2}$	[_linear]	✓
3465	$(y^3 + x)y' = y$	[[_homogeneous, 'class G', _rational]	✓
3467	$(y - x)y' + 2x + 3y = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
3468	$y' = \frac{1}{x + 2y + 1}$	[[_homogeneous, 'class C', _Abel, '2nd type', 'class C', _dAlembert]	✓
3469	$y' = -\frac{x + y}{3x + 3y - 4}$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
3471 i.c.	$x(1 - 2x^2y)y' + y = 3y^2x^2$	[[_homogeneous, 'class G', _exact, _rational, [_Abel, '2nd type', 'class B']]	✓
3472	$y' + \frac{xy}{a^2 + x^2} = x$	[_linear]	✓
3473	$y' = \frac{4y^2}{x^2} - y^2$	[_separable]	✓
3474 i.c.	$y' - \frac{y}{x} = 1$	[_linear]	✓
3476 i.c.	$y' - \frac{y^2}{x^2} = \frac{1}{4}$	[[_homogeneous, 'class A', _rational, _Riccati]	✓
3477	$y' - \frac{y^2}{x^2} = \frac{1}{4}$	[[_homogeneous, 'class A', _rational, _Riccati]	✓
3479	$(5x + y - 7)y' = 3x + 3y + 3$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
3480 i.c.	$xy' + y - \frac{y^2}{x^{3/2}} = 0$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
3515	$y' = 2xy$	[_separable]	✓
3516	$y' = \frac{y^2}{x^2 + 1}$	[_separable]	✓
3517	$e^{x+y}y' - 1 = 0$	[_separable]	✓

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#	ODE	CAS classification	Solved?
3518	$y' = \frac{y}{x \ln(x)}$	[_separable]	✓
3519	$y - (-2 + x)y' = 0$	[_separable]	✓
3520	$y' = \frac{2x(y-1)}{x^2+3}$	[_separable]	✓
3521	$y - xy' = 3 - 2x^2y'$	[_separable]	✓
3523	$y' = \frac{x(y^2-1)}{2(-2+x)(x-1)}$	[_separable]	✓
3525	$(x-a)(x-b)y' - y + c = 0$	[_separable]	✓
3526	$(x^2+1)y' + y^2 = -1$ i.c.	[_separable]	✓
3527	$(-x^2+1)y' + xy = ax$ i.c.	[_separable]	✓
3529	$y' = y^3 \sin(x)$	[_separable]	✓
3530	$y' - y = e^{2x}$	[[_linear, 'class A']]	✓
3532	$y' + 2xy = 2x^3$	[_linear]	✓
3533	$y' + \frac{2xy}{x^2+1} = 4x$	[_linear]	✓
3534	$y' + \frac{2xy}{x^2+1} = \frac{4}{(x^2+1)^2}$	[_linear]	✓
3541	$y' - \frac{y}{x} = 2x^2 \ln(x)$	[_linear]	✓
3542	$y' + \alpha y = e^{\beta x}$	[[_linear, 'class A']]	✓
3544	$(3x-y)y' = 3y$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
3545	$y' = \frac{(x+y)^2}{2x^2}$	[[_homogeneous, 'class A'], _rational, _Riccati]	✓
3546	$\sin\left(\frac{y}{x}\right)(-y+xy') = x \cos\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A'], _dAlembert]	✓
3547	$xy' = \sqrt{16x^2 - y^2} + y$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
3548	$-y + xy' = \sqrt{9x^2 + y^2}$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
3549	$x(x^2 - y^2) - x(y^2 + x^2)y' = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓

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#	ODE	CAS classification	Solved?
3550	$xy' + y \ln(x) = y \ln(y)$	[[_homogeneous, 'class A'], _dAlembert]	✓
3551	$y' = \frac{y^2 + 2xy - 2x^2}{x^2 - xy + y^2}$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
3552	$2xyy' - 2y^2 - x^2 e^{-\frac{y^2}{x^2}} = 0$	[[_homogeneous, 'class A']]	✓
3553	$x^2 y' = y^2 + 3xy + x^2$	[[_homogeneous, 'class A'], _rational, _Riccati]	✓
3554	$yy' = \sqrt{y^2 + x^2} - x$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
3555	$2x(2x + y)y' = y(4x - y)$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
3556	$xy' = x \tan\left(\frac{y}{x}\right) + y$	[[_homogeneous, 'class A'], _dAlembert]	✓
3557	$y' = \frac{x\sqrt{y^2 + x^2} + y^2}{xy}$	[[_homogeneous, 'class A'], _dAlembert]	✓
3561	$y' = -y^2$	[_quadrature]	✓
3562	$y' = \frac{y}{2x}$	[_separable]	✓
3593	$y' = 2xy$	[_separable]	✓
3594	$y' = \frac{y^2}{x^2 + 1}$	[_separable]	✓
3595	$e^{x+y}y' - 1 = 0$	[_separable]	✓
3596	$y' = \frac{y}{x \ln(x)}$	[_separable]	✓
3597	$y - (x - 1)y' = 0$	[_separable]	✓
3598	$y' = \frac{2x(y - 1)}{x^2 + 3}$	[_separable]	✓
3599	$y - xy' = 3 - 2x^2y'$	[_separable]	✓
3601	$y' = \frac{x(y^2 - 1)}{2(-2 + x)(x - 1)}$	[_separable]	✓
3602	$y' = \frac{x^2y - 32}{-x^2 + 16} + 2$	[_separable]	✓
3603	$(x - a)(x - b)y' - y + c = 0$	[_separable]	✓
3604	$(x^2 + 1)y' + y^2 = -1$ i.c.	[_separable]	✓

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#	ODE	CAS classification	Solved?
3605	$(-x^2 + 1)y' + xy = ax$ i.c.	[_separable]	✓
3607	$y' = y^3 \sin(x)$ i.c.	[_separable]	✓
3608	$y' = \frac{2\sqrt{y-1}}{3}$ i.c.	[_quadrature]	✓
3609	$mv' = mg - kv^2$ i.c.	[_quadrature]	✓
3627	$x' + \frac{2x}{4-t} = 5$ i.c.	[_linear]	✓
3628	$y - e^x + y' = 0$ i.c.	[[_linear, 'class A']]	✓
3633	$y' + y = e^{-2x}$	[[_linear, 'class A']]	✓
3635	$-y + xy' = x^2 \ln(x)$	[_linear]	✓
3636	$y' = \frac{y^2 + xy + x^2}{x^2}$	[[_homogeneous, 'class A'], _rational, _Riccati]	✓
3637	$(3x - y)y' = 3y$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
3638	$y' = \frac{(x+y)^2}{2x^2}$	[[_homogeneous, 'class A'], _rational, _Riccati]	✓
3639	$\sin\left(\frac{y}{x}\right)(-y + xy') = x \cos\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A'], _dAlembert]	✓
3640	$xy' = \sqrt{16x^2 - y^2} + y$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
3641	$-y + xy' = \sqrt{9x^2 + y^2}$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
3642	$y(x^2 - y^2) - x(x^2 - y^2)y' = 0$	[_separable]	✓
3643	$xy' + y \ln(x) = y \ln(y)$	[[_homogeneous, 'class A'], _dAlembert]	✓
3644	$y' = \frac{y^2 + 2xy - 2x^2}{x^2 - xy + y^2}$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
3645	$2xyy' - 2y^2 - x^2 e^{-\frac{y^2}{x^2}} = 0$	[[_homogeneous, 'class A']]	✓
3646	$x^2 y' = y^2 + 3xy + x^2$	[[_homogeneous, 'class A'], _rational, _Riccati]	✓

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#	ODE	CAS classification	Solved?
3647	$yy' = \sqrt{y^2 + x^2} - x$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
3648	$2x(2x + y)y' = y(4x - y)$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
3649	$xy' = x \tan\left(\frac{y}{x}\right) + y$	[[_homogeneous, 'class A', _dAlembert]	✓
3650	$y' = \frac{x\sqrt{y^2 + x^2} + y^2}{xy}$	[[_homogeneous, 'class A', _dAlembert]	✓
3651 i.c.	$y' = \frac{4y - 2x}{x + y}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
3652 i.c.	$y' = \frac{2x - y}{4y + x}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
3653 i.c.	$y' = \frac{y - \sqrt{y^2 + x^2}}{x}$	[[_homogeneous, 'class A', _dAlembert]	✓
3654	$-y + xy' = \sqrt{4x^2 - y^2}$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
3655	$y' = \frac{x + ay}{ax - y}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
3656 i.c.	$y' = \frac{x + \frac{y}{2}}{\frac{x}{2} - y}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
3661	$y' + \frac{2y}{x} = 6x^4y^2$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
3662	$2x(y' + x^2y^3) + y = 0$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
3667	$y' - \frac{y}{(\pi - 1)x} = \frac{3xy^\pi}{1 - \pi}$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
3672 i.c.	$y' = (-y + 9x)^2$	[[_homogeneous, 'class C', _Riccati]	✓
3673	$y' = (4x + y + 2)^2$	[[_homogeneous, 'class C', _Riccati]	✓
3674	$y' = \sin(3x - 3y + 1)^2$	[[_homogeneous, 'class C', _dAlembert]	✓

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#	ODE	CAS classification	Solved?
3675	$y' = \frac{y(\ln(xy) - 1)}{x}$	[[_homogeneous, 'class G']]	✓
3676	$y' = 2x(x + y)^2 - 1$ i.c.	[[_1st_order, __with_linear_symmetries], _Riccati]	✓
3677	$y' = \frac{x + 2y - 1}{2x - y + 3}$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
3679	$y' + \frac{2y}{x} - y^2 = -\frac{2}{x^2}$	[[_homogeneous, 'class G'], _rational, _Riccati]	✓
3680	$y' + \frac{7y}{x} - 3y^2 = \frac{3}{x^2}$	[[_homogeneous, 'class G'], _rational, _Riccati]	✓
3682	$\frac{y'}{y} - \frac{2 \ln(y)}{x} = \frac{1 - 2 \ln(x)}{x}$ i.c.	[[_homogeneous, 'class A'], _dAlembert]	✓
4080	$4xy^2 + 6y + (5x^2y + 8x)y' = 0$	[[_homogeneous, 'class G'], _rational, [_Abel, '2nd type', 'class B']]	✓
4081	$5x + 2y + 1 + (2x + y + 1)y' = 0$	[[_homogeneous, 'class C'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
4082	$3x - y + 1 - (6x - 2y - 3)y' = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
4083	$x - 2y - 3 + (2x + y - 1)y' = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
4084	$6x + 4y + 1 + (4x + 2y + 2)y' = 0$ i.c.	[[_homogeneous, 'class C'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
4085	$3x - y - 6 + (x + y + 2)y' = 0$ i.c.	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
4086	$2x + 3y + 1 + (4x + 6y + 1)y' = 0$ i.c.	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
4090	$x^2y' = x(y - 1) + (y - 1)^2$	[[_homogeneous, 'class C'], _rational, _Riccati]	✓
4093	$3y - 2x + (3x - 2)y' = 0$	[_linear]	✓
4095	$e^{2y} + (x + 1)y' = 0$	[_separable]	✓

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#	ODE	CAS classification	Solved?
4096	$(x + 1)y' - y^2x^2 = 0$	[_separable]	✓
4097	$y' = \frac{y - 2x}{x}$	[_linear]	✓
4098	$x^3 + y^3 - xy^2y' = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
4099	$y' + y = 0$	[_quadrature]	✓
4100	$y' + y = x^2 + 2$	[[_linear, 'class A']]	✓
4102	$y' = e^{x-2y}$	[_separable]	✓
	i.c.		
4103	$y' = \frac{y^2 + x^2}{2x^2}$	[[_homogeneous, 'class A'], _rational, _Riccati]	✓
4104	$xy' = x + y$	[_linear]	✓
	i.c.		
4105	$e^{-y} + (x^2 + 1)y' = 0$	[_separable]	✓
	i.c.		
4112	$y' = \frac{2x - y}{2x + y}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
	i.c.		
4113	$y' = \frac{3x - y + 1}{3y - x + 5}$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
	i.c.		
4114	$3y - 7x + 7 + (7y - 3x + 3)y' = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
	i.c.		
4190	$yy' = x$	[_separable]	✓
4191	$y' - y = x^3$	[[_linear, 'class A']]	✓
4196	$y + xy' = x$	[_linear]	✓
4197	$-y + xy' = x^3$	[_linear]	✓
4198	$xy' + ny = x^n$	[_linear]	✓
4199	$xy' - ny = x^n$	[_linear]	✓
4200	$(x^3 + x)y' + y = x$	[_linear]	✓
4213	$3y^2y' = 2x - 1$	[_separable]	✓
4214	$y' = 6xy^2$	[_separable]	✓
4216	$y' = e^{x-y}$	[_separable]	✓

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#	ODE	CAS classification	Solved?
4218	$y' = 3 \cos(y)^2$	[_quadrature]	✓
4219	$xy' = y$	[_separable]	✓
4220	$(1 - x)y' = y$	[_separable]	✓
4221	$y' = \frac{4xy}{x^2 + 1}$	[_separable]	✓
4222	$y' = \frac{2y}{x^2 - 1}$	[_separable]	✓
4223	$x^2y' - y^2 = 0$	[_separable]	✓
	i.c.		
4224	$y' + 2xy = 0$	[_separable]	✓
	i.c.		
4225	$\cot(x)y' = y$	[_separable]	✓
	i.c.		
4226	$y' = xe^{-2y}$	[_separable]	✓
	i.c.		
4227	$y' - 2xy = 2x$	[_separable]	✓
	i.c.		
4228	$xy' = xy + y$	[_separable]	✓
	i.c.		
4230	$x \cos(y)y' = 1 + \sin(y)$	[_separable]	✓
	i.c.		
4231	$xy' = 2y(y - 1)$	[_separable]	✓
	i.c.		
4232	$2xy' = 1 - y^2$	[_separable]	✓
	i.c.		
4233	$(1 - x)y' = xy$	[_separable]	✓
4234	$(x^2 - 1)y' = (x^2 + 1)y$	[_separable]	✓
4235	$y' = e^x(1 + y^2)$	[_separable]	✓
4238	$xyy' = \sqrt{y^2 - 9}$	[_separable]	✓
	i.c.		
4239	$(y - 1 + x)y' = x + 1 - y$	[[_homogeneous, 'class C', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
4240	$xyy' = 2x^2 - y^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
4241	$x^2 - y^2 + xyy' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓

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#	ODE	CAS classification	Solved?
4242	$x^2y' - 2xy - 2y^2 = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
4244	$x \sin\left(\frac{y}{x}\right) y' = y \sin\left(\frac{y}{x}\right) + x$	[[_homogeneous, 'class A', _dAlembert]	✓
4245	$xy' = y + 2e^{-\frac{y}{x}}$	[[_homogeneous, 'class D']]	✓
4246	$y' = (x + y)^2$	[[_homogeneous, 'class C', _Riccati]	✓
4247	$y' = \sin(x + 1 - y)^2$	[[_homogeneous, 'class C', _dAlembert]	✓
4248	$y' = \frac{x + y + 4}{x - y - 6}$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
4249	$y' = \frac{x + y + 4}{x + y - 6}$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
4250	$\left(x + \frac{2}{y}\right) y' + y = 0$	[[_homogeneous, 'class G', _exact, _rational, [_Abel, '2nd type', 'class B']]	✓
4254	$y + y \cos(xy) + (x + x \cos(xy)) y' = 0$	[_separable]	✓
4257	$-\frac{\sin\left(\frac{x}{y}\right)}{y} + \frac{x \sin\left(\frac{x}{y}\right) y'}{y^2} = 0$	[_separable]	✓
4258	$1 + y + (1 - x) y' = 0$	[_separable]	✓
4261	$(3x^2 - y^2) y' - 2xy = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
4263	$(x + 3x^3y^4) y' + y = 0$	[[_homogeneous, 'class G', _rational]	✓
4264	$(x - 1 - y^2) y' - y = 0$	[[_1st_order, _with_linear_symmetries], _rational]	✓
4265	$y - (x + xy^3) y' = 0$	[_separable]	✓
4267	$(x + y) y' = y - x$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
4269	$xy' - 3y = x^4$	[_linear]	✓
4272	$y' + y = 2xe^{-x} + x^2$	[[_linear, 'class A']]	✓
4274	$2y - x^3 = xy'$	[_linear]	✓

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#	ODE	CAS classification	Solved?
4275	$(1 - xy)y' = y^2$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]	✓
4276	$2x + 3y + 1 + (2y - 3x + 5)y' = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
4277	$xy' = \sqrt{y^2 + x^2}$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
4278	$y^2 = (x^3 - xy)y'$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]	✓
4279	$x^2y^3 + y = (x^3y^2 - x)y'$	[[_homogeneous, 'class G', _rational]	✓
4281	$(xy - x^2)y' = y^2$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
4283	$y + x^2 = xy'$	[_linear]	✓
4285	$6x + 4y + 3 + (3x + 2y + 2)y' = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
4286	$\cos(x + y) - x \sin(x + y) = x \sin(x + y)y'$	[[_1st_order, _with_lin- ear_symmetries], _exact]	✓
4288	$y' \ln(x - y) = 1 + \ln(x - y)$	[[_homogeneous, 'class C', _exact, _dAlembert]	✓
4289	$y' + 2xy = e^{-x^2}$	[_linear]	✓
4290	$y^2 - 3xy - 2x^2 = (x^2 - xy)y'$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
4291	$(x^2 + 1)y' + 2xy = 4x^3$	[_linear]	✓
4295	$2xy + x^2y' = 0$	[_separable]	✓
4300	$\frac{x}{y^2 + x^2} + \frac{y}{x^2} + \left(\frac{y}{y^2 + x^2} - \frac{1}{x}\right)y' = 0$ i.c.	[[_homogeneous, 'class A', _exact, _rational, _dAlem- bert]	✓
4302	$x(x - 1)y' = \cot(y)$	[_separable]	✓
4304	$\sqrt{x^2 + 1}y' + \sqrt{1 + y^2} = 0$	[_separable]	✓
4305	$y' = \frac{x(1 + y^2)}{y(x^2 + 1)}$ i.c.	[_separable]	✓

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#	ODE	CAS classification	Solved?
4306	$y^2 y' = 2 + 3y^6$ i.c.	[_quadrature]	✓
4311	$xy^3 + e^{x^2} y' = 0$	[_separable]	✓
4314	$y' + \frac{x}{y} + 2 = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
4315	$-y + xy' = x \cot\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A', _dAlembert]	✓
4316	$x \cos\left(\frac{y}{x}\right)^2 - y + xy' = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
4317	$xy' = y(1 + \ln(y) - \ln(x))$	[[_homogeneous, 'class A', _dAlembert]	✓
4318	$xy + (y^2 + x^2) y' = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
4319	$\left(1 - e^{-\frac{y}{x}}\right) y' + 1 - \frac{y}{x} = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
4320	$x^2 - xy + y^2 - xyy' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
4321	$(3 + 2x + 4y) y' = x + 2y + 1$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
4322	$y' = \frac{2x + y - 1}{x - y - 2}$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
4323	$y + 2 = (2x + y - 4) y'$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
4324	$y' = \sin(x - y)^2$	[[_homogeneous, 'class C', _dAlembert]	✓
4325	$y' = (x + 1)^2 + (1 + 4y)^2 + 8xy + 1$	[[_homogeneous, 'class C', _Riccati]	✓
4330	$x^2 + \ln(y) + \frac{xy'}{y} = 0$	[_exact, [_1st_or- der, '_with_symme- try_[F(x),G(x)*y+H(x)']]	✓
4333	$2xy + (x^2 + 2xy + y^2) y' = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓

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#	ODE	CAS classification	Solved?
4337	$y + x(y^2 + \ln(x))y' = 0$	[[_1st_order, '_with_symmetry_[F(x),G(y)]']]	✓
4339	$y^2 + (xy + y^2 - 1)y' = 0$	[[_1st_order, '_with_linear_symmetries], _rational]	✓
4341	$2y(x + y + 2) + (y^2 - x^2 - 4x - 1)y' = 0$	[[_1st_order, '_with_linear_symmetries], _rational]	✓
4347	$x - \sqrt{y^2 + x^2} + (y - \sqrt{y^2 + x^2})y' = 0$	[[_homogeneous, 'class G', _dAlembert]	✓
4349	$y^2 - (xy + x^3)y' = 0$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]	✓
4351	$2y^2x^2 + y + (x^3y - x)y' = 0$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]	✓
4352	$y^2 + (xy + \tan(xy))y' = 0$	[[_homogeneous, 'class G']]	✓
4353	$2x^2y^4 - y + (4x^3y^3 - x)y' = 0$	[[_homogeneous, 'class G', _rational]	✓
4355	$y(1 + y^2) + x(y^2 - x + 1)y' = 0$	[_rational, [_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓
4356	$y^2 + (e^x - y)y' = 0$	[[_1st_order, '_with_linear_symmetries], [_Abel, '2nd type', 'class A']]	✓
4357	$y^2x^2 - 2y + (x^3y - x)y' = 0$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]	✓
4358	$2x^3y + y^3 - (x^4 + 2xy^2)y' = 0$	[[_homogeneous, 'class G', _rational]	✓
4361	$1 - (y - 2xy)y' = 0$	[_separable]	✓
4363	$\left(y^3 + \frac{x}{y}\right)y' = 1$	[[_homogeneous, 'class G', _rational]	✓
4364	$1 + (x - y^2)y' = 0$	[[_1st_order, '_with_exponential_symmetries]]	✓
4365	$y^2 + (xy + y^2 - 1)y' = 0$	[[_1st_order, '_with_linear_symmetries], _rational]	✓
4368	$y + (y^2e^y - x)y' = 0$	[[_1st_order, '_with_linear_symmetries]]	✓

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Table 2.19 first order ode lie symmetry  
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#	ODE	CAS classification	Solved?
4373	$1 + y + (x - y(1 + y)^2) y' = 0$	[_exact, _rational, [_1st_order, ‘_with_symmetry_[F(x)*G(y),0]’]]	✓
4376	$y' = \frac{4x^3y^2}{x^4y + 2}$	[[_homogeneous, ‘class G’], _rational, [_Abel, ‘2nd type’, ‘class B’]]	✓
4382	$6y^2 - x(2x^3 + y) y' = 0$	[[_homogeneous, ‘class G’], _rational, [_Abel, ‘2nd type’, ‘class B’]]	✓
4389	$y = 2xy' + y^2y'^3$	[[_1st_order, _with_linear_symmetries]]	✓
4390	$y'^3 + y^2 = xy y'$	[[_1st_order, _with_linear_symmetries]]	✓
4391	$2xy' - y = y' \ln(y y')$	[[_1st_order, _with_linear_symmetries]]	✓
4392	$y = xy' - x^2y'^3$	[[_1st_order, _with_linear_symmetries]]	✓
4393	$y(y - 2xy')^3 = y'^2$	[[_homogeneous, ‘class G’]]	✓
4395	$2xy' - y = \ln(y')$	[[_1st_order, _with_linear_symmetries], _dAlembert]	✓
4396	$xy^2(y + xy') = 1$	[[_homogeneous, ‘class G’], _rational, _Bernoulli]	✓
4398	$y' = \frac{y + 2}{x + 1}$	[_separable]	✓
4399	$xy' = y - x e^{\frac{y}{x}}$	[[_homogeneous, ‘class A’], _dAlembert]	✓
4401	$2\sqrt{xy} - y - xy' = 0$	[[_homogeneous, ‘class A’], _dAlembert]	✓
4402	$y' = e^{\frac{xy'}{y}}$	[[_homogeneous, ‘class A’], _dAlembert]	✓
4405	$-y + xy' = x \tan\left(\frac{y}{x}\right)$	[[_homogeneous, ‘class A’], _dAlembert]	✓
4408	$2y - x(\ln(x^2y) - 1) y' = 0$	[[_homogeneous, ‘class G’]]	✓
4410	$y' = \frac{2(y + 2)^2}{(y - 1 + x)^2}$	[[_homogeneous, ‘class C’], _rational]	✓
4412	$xy + 2x^3y + x^2y' = 0$	[_separable]	✓

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#	ODE	CAS classification	Solved?
4416	$xy' = y + \sqrt{x^2 - y^2}$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
4419	$y^3 + (3x^2 - 2xy^2) y' = 0$	[[_homogeneous, 'class G', _rational]	✓
4420	$(1 + y') \ln \left( \frac{x + y}{x + 3} \right) = \frac{x + y}{x + 3}$	[[_homogeneous, 'class C', _exact, _dAlembert]	✓
4421	$2x^3yy' + 3y^2x^2 + 7 = 0$	[[_homogeneous, 'class G', _exact, _rational, _Bernoulli]	✓
4422	$x - y \cos \left( \frac{y}{x} \right) + x \cos \left( \frac{y}{x} \right) y' = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
4423	$x^2(-y + xy') = (x + y) y$	[[_homogeneous, 'class D', _rational, _Bernoulli]	✓
4424	$y^4 + xy + (xy^3 - x^2) y' = 0$	[[_homogeneous, 'class G', _rational]	✓
4425	$x^2 + 3 \ln(y) - \frac{xy'}{y} = 0$	[[_1st_order, '_with_symme- try_[F(x),G(x)*y+H(x)']]	✓
4427	$y + (xy - x - y^3) y' = 0$	[_rational, [_1st_or- der, '_with_symme- try_[F(x)*G(y),0]']]	✓
4428	$y + 2y^3y' = (x + 4y \ln(y)) y'$	[[_1st_order, _with_lin- ear_symmetries]]	✓
4433	$2y' + x = 4\sqrt{y}$	[[_1st_order, _with_lin- ear_symmetries], _Chini]	✓
4435	$y' - 6x e^{x-y} - 1 = 0$	[[_1st_order, _with_lin- ear_symmetries]]	✓
4441	$x + \sin \left( \frac{y}{x} \right)^2 (y - xy') = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
4443	$xy^3 - 1 + x^2y^2y' = 0$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
4611	$y' = a + bx + cy$	[[_linear, 'class A']]	✓
4614	$y' = a + b e^{kx} + cy$	[[_linear, 'class A']]	✓
4615	$y' = x(x^2 - y)$	[_linear]	✓
4617	$y' = x^2(ax^3 + by)$	[_linear]	✓
4618	$y' = a x^n y$	[_separable]	✓

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#	ODE	CAS classification	Solved?
4621	$y' = y \cot(x)$	[_separable]	✓
4624	$y' = (2 \csc(2x) + \cot(x)) y$	[_separable]	✓
4632	$y' = y \sec(x)$	[_separable]	✓
4634	$y' = y \tan(x)$	[_separable]	✓
4643	$y' = (a + \cos(\ln(x)) + \sin(\ln(x))) y$	[_separable]	✓
4650	$y' = (x + y)^2$	[[_homogeneous, 'class C', _Riccati]	✓
4651	$y' = (x - y)^2$	[[_homogeneous, 'class C', _Riccati]	✓
4652	$y' = 3 - 3x + 3y + (x - y)^2$	[[_homogeneous, 'class C', _Riccati]	✓
4654	$y' = x(x^3 + 2) - (2x^2 - y) y$	[[_1st_order, _with_linear_symmetries], _Riccati]	✓
4655	$y' = 1 + x(-x^3 + 2) + (2x^2 - y) y$	[[_1st_order, _with_linear_symmetries], _Riccati]	✓
4659	$y' = (3 + x - 4y)^2$	[[_homogeneous, 'class C', _Riccati]	✓
4660	$y' = (1 + 4x + 9y)^2$	[[_homogeneous, 'class C', _Riccati]	✓
4662	$y' = a + by^2$	[_quadrature]	✓
4667	$y' = a_0 + a_1 y + a_2 y^2$	[_quadrature]	✓
4671	$y' = xy(y + 3)$	[_separable]	✓
4672	$y' = 1 - x - x^3 + (2x^2 + 1) y - xy^2$	[_Riccati]	✓
4674	$y' = x + (-2x + 1) y - (1 - x) y^2$	[_Riccati]	✓
4675	$y' = axy^2$	[_separable]	✓
4676	$y' = x^n(a + by^2)$	[_separable]	✓
4682	$y' + \tan(x)(1 - y^2) = 0$	[_separable]	✓
4684	$y' = (a + by + cy^2) f(x)$	[_separable]	✓
4688	$y' = y(a + by^2)$	[_quadrature]	✓
4689	$y' = a_0 + a_1 y + a_2 y^2 + a_3 y^3$	[_quadrature]	✓
4690	$y' = xy^3$	[_separable]	✓
4691	$y' + y(1 - xy^2) = 0$	[_Bernoulli]	✓

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#	ODE	CAS classification	Solved?
4692	$y' = (a + bxy)y^2$	[[_homogeneous, 'class G'], _Abel]	✓
4695	$y' + y^3 \sec(x) \tan(x) = 0$	[_separable]	✓
4697	$y' = a x^{\frac{n}{1-n}} + by^n$	[[_homogeneous, 'class G'], _Chini]	✓
4701	$y' = a + by + \sqrt{A0 + B0y}$	[_quadrature]	✓
4702	$y' = ax + b\sqrt{y}$	[[_homogeneous, 'class G'], _Chini]	✓
4703	$y' + x^3 = x\sqrt{x^4 + 4y}$	[[_1st_order, __with_linear_symmetries]]	✓
4705	$y' = \sqrt{a + by^2}$	[_quadrature]	✓
4713	$y' = a + b \cos(y)$	[_quadrature]	✓
4725	$y' = a + b \sin(y)$	[_quadrature]	✓
4729	$y' = \sqrt{a + b \cos(y)}$	[_quadrature]	✓
4731	$y' = e^{x+y}$	[_separable]	✓
4735	$y' = af(y)$	[_quadrature]	✓
4736	$y' = f(a + bx + cy)$	[[_homogeneous, 'class C'], _dAlembert]	✓
4740	$2y' + ax = \sqrt{a^2x^2 - 4bx^2 - 4cy}$	[[_homogeneous, 'class G']]	✓
4741	$3y' = x + \sqrt{x^2 - 3y}$	[[_1st_order, __with_linear_symmetries], _dAlembert]	✓
4743	$xy' + x + y = 0$	[_linear]	✓
4744	$xy' + x^2 - y = 0$	[_linear]	✓
4745	$xy' = x^3 - y$	[_linear]	✓
4746	$xy' = 1 + x^3 + y$	[_linear]	✓
4747	$xy' = x^m + y$	[_linear]	✓
4749	$xy' = x^2 \sin(x) + y$	[_linear]	✓
4752	$xy' = ay$	[_separable]	✓
4753	$xy' = 1 + x + ay$	[_linear]	✓
4754	$xy' = ax + by$	[_linear]	✓
4755	$xy' = x^2a + by$	[_linear]	✓

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#	ODE	CAS classification	Solved?
4756	$xy' = a + bx^n + cy$	[_linear]	✓
4759	$xy' + (bx + a)y = 0$	[_separable]	✓
4760	$xy' = x^3 + (-2x^2 + 1)y$	[_linear]	✓
4766	$xy' = a + by^2$	[_separable]	✓
4772	$xy' + (1 - xy)y = 0$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
4773	$xy' = (1 - xy)y$	[[_homogeneous, 'class D', _rational, _Bernoulli]	✓
4774	$xy' = (xy + 1)y$	[[_homogeneous, 'class D', _rational, _Bernoulli]	✓
4776	$xy' = x^3 + (2x^2 + 1)y + xy^2$	[[_homogeneous, 'class D', _rational, _Riccati]	✓
4777	$xy' = y(1 + 2xy)$	[[_homogeneous, 'class D', _rational, _Bernoulli]	✓
4782	$xy' + (a + bx^n)y = 0$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
4784	$xy' = 2x - y + ax^n(x - y)^2$	[[_1st_order, __with_linear_symmetries], _rational, _Riccati]	✓
4785	$xy' + (1 - ay \ln(x))y = 0$	[_Bernoulli]	✓
4787	$xy' = y(1 + y^2)$	[_separable]	✓
4788	$xy' + y(1 - xy^2) = 0$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
4789	$y + xy' = a(x^2 + 1)y^3$	[_rational, _Bernoulli]	✓
4790	$xy' = ay + b(x^2 + 1)y^3$	[_rational, _Bernoulli]	✓
4792	$xy' = 4y - 4\sqrt{y}$	[_separable]	✓
4793	$xy' + 2y = \sqrt{1 + y^2}$	[_separable]	✓
4794	$xy' = y + \sqrt{y^2 + x^2}$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
4795	$xy' = y + \sqrt{x^2 - y^2}$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
4798	$xy' = y + a\sqrt{y^2 + b^2x^2}$	[[_homogeneous, 'class A', _dAlembert]	✓
4800	$xy' + x - y + x \cos\left(\frac{y}{x}\right) = 0$	[[_homogeneous, 'class A', _dAlembert]	✓

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#	ODE	CAS classification	Solved?
4801	$xy' = y - x \cos\left(\frac{y}{x}\right)^2$	[[_homogeneous, 'class A', _dAlembert]	✓
4803	$xy' = y - \cot(y)^2$	[_separable]	✓
4805	$xy' - y + x \sec\left(\frac{y}{x}\right) = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
4806	$xy' = y + x \sec\left(\frac{y}{x}\right)^2$	[[_homogeneous, 'class A', _dAlembert]	✓
4808	$xy' = y + x \sin\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A', _dAlembert]	✓
4809	$xy' + \tan(y) = 0$	[_separable]	✓
4810	$xy' + x + \tan(x + y) = 0$	[[_1st_order, __with_linear_symmetries]]	✓
4811	$xy' = y - x \tan\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A', _dAlembert]	✓
4812	$xy' = (1 + y^2)(x^2 + \arctan(y))$	['y=_G(x,y)']	✓
4813	$xy' = x e^{\frac{y}{x}} + y$	[[_homogeneous, 'class A', _dAlembert]	✓
4814	$xy' = x + y + x e^{\frac{y}{x}}$	[[_homogeneous, 'class A', _dAlembert]	✓
4815	$xy' = y \ln(y)$	[_separable]	✓
4816	$xy' = (1 + \ln(x) - \ln(y))y$	[[_homogeneous, 'class A', _dAlembert]	✓
4817	$xy' + (1 - \ln(x) - \ln(y))y = 0$	[[_homogeneous, 'class G']]	✓
4818	$xy' = y - 2x \tanh\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A', _dAlembert]	✓
4820	$xy' = yf(x^m y^n)$	[[_homogeneous, 'class G']]	✓
4821	$(x + 1)y' = x^3(3x + 4) + y$	[_linear]	✓
4822	$(x + 1)y' = (x + 1)^4 + 2y$	[_linear]	✓
4824	$(x + 1)y' = ay + bxy^2$	[_rational, _Bernoulli]	✓
4825	$(x + 1)y' + y + (x + 1)^4 y^3 = 0$	[[_1st_order, __with_linear_symmetries], _rational, _Bernoulli]	✓
4827	$(x + 1)y' = 1 + y + (x + 1)\sqrt{1 + y}$	[[_1st_order, __with_linear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
4829	$(x + a)y' = bx + y$	[_linear]	✓
4830	$(x + a)y' + bx^2 + y = 0$	[_linear]	✓
4831	$(x + a)y' = 2(x + a)^5 + 3y$	[_linear]	✓
4832	$(x + a)y' = b + cy$	[_separable]	✓
4833	$(x + a)y' = bx + cy$	[_linear]	✓
4834	$(x + a)y' = y(1 - ay)$	[_separable]	✓
4835	$(-x + a)y' = y + (cx + b)y^3$	[_rational, _Bernoulli]	✓
4836	$2xy' = 2x^3 - y$	[_linear]	✓
4838	$2xy' = y(1 + y^2)$	[_separable]	✓
4839	$2xy' + y(1 + y^2) = 0$	[_separable]	✓
4841	$2xy' + 4y + a + \sqrt{a^2 - 4b - 4cy} = 0$	[_separable]	✓
4842	$(-2x + 1)y' = 16 + 32x - 6y$	[_linear]	✓
4843	$(2x + 1)y' = 4e^{-y} - 2$	[_separable]	✓
4845	$2(x + 1)y' + 2y + (x + 1)^4 y^3 = 0$	[[_1st_order, _with_linear_symmetries], _rational, _Bernoulli]	✓
4847	$3xy' = (2 + xy^3)y$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
4849	$x^2y' = -y + a$	[_separable]	✓
4850	$x^2y' = a + bx + cx^2 + xy$	[_linear]	✓
4851	$x^2y' = a + bx + cx^2 - xy$	[_linear]	✓
4852	$x^2y' + (-2x + 1)y = x^2$	[_linear]	✓
4853	$x^2y' = a + bxy$	[_linear]	✓
4854	$x^2y' = (bx + a)y$	[_separable]	✓
4857	$x^2y' + x^2 + xy + y^2 = 0$	[[_homogeneous, 'class A'], _rational, _Riccati]	✓
4858	$x^2y' = (1 + 2x - y)^2$	[[_homogeneous, 'class C'], _rational, _Riccati]	✓
4859	$x^2y' = a + by^2$	[_separable]	✓
4860	$x^2y' = (x + ay)y$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓

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#	ODE	CAS classification	Solved?
4861	$x^2y' = (ax + by)y$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
4862	$x^2y' + x^2a + bxy + cy^2 = 0$	[[_homogeneous, 'class A', _rational, _Riccati]	✓
4864	$x^2y' + 2 + xy(4 + xy) = 0$	[[_homogeneous, 'class G', _rational, _Riccati]	✓
4866	$x^2y' = a + bx^2y^2$	[[_homogeneous, 'class G', _rational, [_Riccati, _special]]]	✓
4868	$x^2y' = a + bxy + cx^2y^2$	[[_homogeneous, 'class G', _rational, _Riccati]	✓
4871	$x^2y' = 2y(x - y^2)$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
4874	$x^2y' = (ax + by^3)y$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
4875	$x^2y' + xy + \sqrt{y} = 0$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
4879	$(-x^2 + 1)y' = 5 - xy$	[_linear]	✓
4881	$(x^2 + 1)y' + a - xy = 0$	[_linear]	✓
4883	$(-x^2 + 1)y' - x + xy = 0$	[_separable]	✓
4886	$(x^2 + 1)y' = x(x^2 + 1) - xy$	[_linear]	✓
4887	$(x^2 + 1)y' = x(3x^2 - y)$	[_linear]	✓
4888	$(-x^2 + 1)y' + 2xy = 0$	[_separable]	✓
4890	$(x^2 + 1)y' = 2x(x^2 + 1)^2 + 2xy$	[_linear]	✓
4894	$(x^2 + 1)y' = (2bx + a)y$	[_separable]	✓
4895	$(x^2 + 1)y' = 1 + y^2$	[_separable]	✓
4896	$(-x^2 + 1)y' = 1 - y^2$	[_separable]	✓
4897	$(-x^2 + 1)y' = 1 - (2x - y)y$	[_rational, [_1st_order, '_with_symmetry_[F(x),G(x)]', _Riccati]	✓
4899	$(x^2 + 1)y' + xy(1 - y) = 0$	[_separable]	✓
4900	$(-x^2 + 1)y' = xy(1 + ay)$	[_separable]	✓
4905	$(a^2 + x^2)y' = b + xy$	[_linear]	✓

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#	ODE	CAS classification	Solved?
4906	$(a^2 + x^2) y' = (b + y) (x + \sqrt{a^2 + x^2})$	[_separable]	✓
4907	$(a^2 + x^2) y' + (x - y) y = 0$	[_rational, _Bernoulli]	✓
4908	$(a^2 + x^2) y' = a^2 + 3xy - 2y^2$	[_rational, _Riccati]	✓
4909	$(a^2 + x^2) y' + xy + bxy^2 = 0$	[_separable]	✓
4913	$x(x + 1) y' = (-2x + 1) y$	[_separable]	✓
4914	$x(1 - x) y' + (2x + 1) y = a$	[_linear]	✓
4915	$x(1 - x) y' = a + 2(2 - x) y$	[_linear]	✓
4917	$x(x + 1) y' = (x + 1) (x^2 - 1) + (x^2 + x - 1) y$	[_linear]	✓
4919	$x(x + a) y' = (b + cy) y$	[_separable]	✓
4920	$(x + a)^2 y' = 2(x + a) (b + y)$	[_separable]	✓
4921	$(x - a)^2 y' + k(x + y - a)^2 + y^2 = 0$	[[_homogeneous, 'class C'], _rational, _Riccati]	✓
4922	$(x - a) (x - b) y' + ky = 0$	[_separable]	✓
4923	$(x - a) (x - b) y' = (x - a) (x - b) + (2x - a - b) y$	[_linear]	✓
4924	$(x - a) (x - b) y' = cy^2$	[_separable]	✓
4925	$(x - a) (x - b) y' + k(y - a) (y - b) = 0$	[_separable]	✓
4926	$(x - a) (x - b) y' + k(x + y - a) (x + y - b) + y^2 = 0$	[_rational, [_1st_order, '_with_symmetry_[F(x),G(x)]'], _Riccati]	✓
4927	$2x^2 y' = y$	[_separable]	✓
4929	$2x^2 y' + 1 + 2xy - y^2 x^2 = 0$	[[_homogeneous, 'class G'], _rational, _Riccati]	✓
4933	$x(-2x + 1) y' = 4x - (1 + 4x) y + y^2$	[_rational, [_1st_order, '_with_symmetry_[F(x),G(x)]'], _Riccati]	✓
4936	$2(x^2 + x + 1) y' = 1 + 8x^2 - (2x + 1) y$	[_linear]	✓
4938	$a x^2 y' = x^2 + axy + b^2 y^2$	[[_homogeneous, 'class A'], _rational, _Riccati]	✓
4939	$(b x^2 + a) y' = A + B y^2$	[_separable]	✓
4941	$x(ax + 1) y' + a - y = 0$	[_separable]	✓
4943	$x^3 y' = a + b x^2 y$	[_linear]	✓
4944	$x^3 y' = 3 - x^2 + x^2 y$	[_linear]	✓

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#	ODE	CAS classification	Solved?
4945	$x^3y' = x^4 + y^2$	[[_homogeneous, 'class G', _rational, _Riccati]	✓
4946	$x^3y' = y(y + x^2)$	[[_homogeneous, 'class D', _rational, _Bernoulli]	✓
4947	$x^3y' = x^2(y - 1) + y^2$	[[_homogeneous, 'class D', _rational, _Riccati]	✓
4948	$x^3y' = (x + 1)y^2$	[_separable]	✓
4949	$x^3y' + 20 + x^2y(1 - x^2y) = 0$	[[_homogeneous, 'class G', _rational, _Riccati]	✓
4951	$x^3y' = (2x^2 + y^2)y$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
4955	$x(x^2 + 1)y' = ax^3 + y$	[_linear]	✓
4957	$x(x^2 + 1)y' = (-x^2 + 1)y$	[_separable]	✓
4958	$x(-x^2 + 1)y' = (x^2 - x + 1)y$	[_separable]	✓
4959	$x(-x^2 + 1)y' = ax^3 + (-2x^2 + 1)y$	[_linear]	✓
4960	$x(-x^2 + 1)y' = x^3(-x^2 + 1) + (-2x^2 + 1)y$	[_linear]	✓
4964	$x^2(1 - x)y' = (2 - x)xy - y^2$	[[_homogeneous, 'class D', _rational, _Bernoulli]	✓
4965	$2x^3y' = (x^2 - y^2)y$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
4966	$2x^3y' = (3x^2 + y^2a)y$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
4969	$x^4y' = (x^3 + y)y$	[[_homogeneous, 'class D', _rational, _Bernoulli]	✓
4970	$x^4y' + a^2 + x^4y^2 = 0$	[_rational, [_Riccati, _spe- cial]]	✓
4971	$x^4y' + x^3y + \csc(xy) = 0$	[[_1st_order, '_with_symme- try_[F(x),G(x)*y+H(x)']]	✓
4972	$(-x^4 + 1)y' = 2x(1 - y^2)$	[_separable]	✓
4976	$x(-2x^3 + 1)y' = 2(-x^3 + 1)y$	[_separable]	✓
4977	$(cx^2 + bx + a)^2(y' + y^2) + A = 0$	[_rational, _Riccati]	✓
4978	$x^5y' = 1 - 3x^4y$	[_linear]	✓
4981	$x^n y' = a + b x^{n-1} y$	[_linear]	✓

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#	ODE	CAS classification	Solved?
4984	$x^n y' = a^2 x^{-2+2n} + b^2 y^2$	[[_homogeneous, 'class G'], _Riccati]	✓
4988	$y' \sqrt{-x^2 + 1} = 1 + y^2$	[_separable]	✓
4991	$y' \sqrt{b^2 + x^2} = \sqrt{y^2 + a^2}$	[_separable]	✓
5009	$(1 - 4 \cos(x)^2) y' = \tan(x) (1 + 4 \cos(x)^2) y$	[_separable]	✓
5010	$(-\sin(x) + 1) y' + y \cos(x) = 0$	[_separable]	✓
5011	$(\cos(x) - \sin(x)) y' + y(\cos(x) + \sin(x)) = 0$	[_separable]	✓
5014	$y' x \ln(x) = ax(\ln(x) + 1) - y$	[_linear]	✓
5015	$x + yy' = 0$	[_separable]	✓
5018	$yy' + ax + by = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
5024	$yy' = a_0 + a_1 y + a_2 y^2$	[_quadrature]	✓
5027	$yy' = \sqrt{y^2 + a^2}$	[_quadrature]	✓
5028	$yy' = \sqrt{y^2 - a^2}$	[_quadrature]	✓
5030	$(1 + y) y' = x + y$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
5032	$(x + y) y' + y = 0$	[[_homogeneous, 'class A'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
5033	$(x - y) y' = y$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
5034	$(x + y) y' + x - y = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
5035	$(x + y) y' = x - y$	[[_homogeneous, 'class A'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
5036	$1 - y' = x + y$	[[_linear, 'class A']]	✓
5039	$(x - y) y' = \left(e^{-\frac{x}{y}} + 1\right) y$	[[_homogeneous, 'class A'], _dAlembert]	✓
5040	$(x + y + 1) y' + 1 + 4x + 3y = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓

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Table 2.19 first order ode lie symmetry  
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#	ODE	CAS classification	Solved?
5041	$(x + y + 2)y' = 1 - x - y$	[[_homogeneous, 'class C', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
5042	$(3 - x - y)y' = 1 + x - 3y$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
5043	$(3 - x + y)y' = 11 - 4x + 3y$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
5044	$(2x + y)y' + x - 2y = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
5045	$(2 + 2x - y)y' + 3 + 6x - 3y = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
5046	$(2x - y + 3)y' + 2 = 0$	[[_homogeneous, 'class C', [_Abel, '2nd type', 'class C', _dAlembert]]	✓
5047	$(4 + 2x - y)y' + 5 + x - 2y = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
5048	$(5 - 2x - y)y' + 4 - x - 2y = 0$	[[_homogeneous, 'class C', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
5049	$(1 - 3x + y)y' = 2x - 2y$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
5050	$(2 - 3x + y)y' + 5 - 2x - 3y = 0$	[[_homogeneous, 'class C', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
5051	$(4x - y)y' + 2x - 5y = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
5052	$(6 - 4x - y)y' = 2x - y$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
5053	$(1 + 5x - y)y' + 5 + x - 5y = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
5054	$(a + bx + y)y' + a - bx - y = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓

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Table 2.19 first order ode lie symmetry  
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#	ODE	CAS classification	Solved?
5056	$(x^2 - y) y' = 4xy$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class A']]]	✓
5060	$(x - 2y) y' = y$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
5061	$(x + 2y) y' + 2x - y = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
5062	$(x - 2y) y' + 2x + y = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
5063	$(1 + x - 2y) y' = 1 + 2x - y$	[[_homogeneous, 'class C', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
5064	$(x + 2y + 1) y' + 1 - x - 2y = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
5065	$(x + 2y + 1) y' + 7 + x - 4y = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
5067	$(3 + 2x - 2y) y' = 1 + 6x - 2y$	[[_homogeneous, 'class C', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
5068	$(1 - 4x - 2y) y' + 2x + y = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
5069	$(6x - 2y) y' = 2 + 3x - y$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
5070	$(19 + 9x + 2y) y' + 18 - 2x - 6y = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
5073	$(x e^{-x} - 2y) y' = 2x e^{-2x} - (e^{-x} + x e^{-x} - 2y) y$	[[_Abel, '2nd type', 'class B']]]	✓
5076	$(x - 3y) y' + 4 + 3x - y = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
5077	$(4 - x - 3y) y' + 3 - x - 3y = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓

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Table 2.19 first order ode lie symmetry  
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#	ODE	CAS classification	Solved?
5078	$(2 + 2x + 3y)y' = 1 - 2x - 3y$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
5079	$(5 - 2x - 3y)y' + 1 - 2x - 3y = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
5080	$(1 + 9x - 3y)y' + 2 + 3x - y = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
5081	$(4y + x)y' + 4x - y = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
5082	$(3 + 2x + 4y)y' = x + 2y + 1$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
5083	$(5 + 2x - 4y)y' = 3 + x - 2y$	[[_homogeneous, 'class C', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
5084	$(5 + 3x - 4y)y' = 2 + 7x - 3y$	[[_homogeneous, 'class C', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
5085	$4(1 - x - y)y' + 2 - x = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class C', _dAlem- bert]]	✓
5086	$(11 - 11x - 4y)y' = 62 - 8x - 25y$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
5087	$(6 + 3x + 5y)y' = 2 + x + 7y$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
5088	$(7x + 5y)y' + 10x + 8y = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
5090	$(5 - x + 6y)y' = 3 - x + 4y$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
5091	$3(x + 2y)y' = 1 - x - 2y$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓

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#	ODE	CAS classification	Solved?
5092	$3y - 7x + 7 + (7y - 3x + 3)y' = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
5093	$(1 + x + 9y)y' + 1 + x + 5y = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
5094	$(8 + 5x - 12y)y' = 3 + 2x - 5y$	[[_homogeneous, 'class C', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
5095	$(140 + 7x - 16y)y' + 25 + 8x + y = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
5096	$(3 + 9x + 21y)y' = 45 + 7x - 5y$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
5097	$(ax + by)y' + x = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class C', _dAlem- bert]]	✓
5098	$(ax + by)y' + y = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
5099	$(ax + by)y' + bx + ay = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
5100	$(ax + by)y' = bx + ay$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
5101	$xyy' + 1 + y^2 = 0$	[_separable]	✓
5102	$xyy' = x + y^2$	[[_homogeneous, 'class D', _rational, _Bernoulli]]	✓
5103	$xyy' + x^2 + y^2 = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
5104	$xyy' + x^4 - y^2 = 0$	[[_homogeneous, 'class D', _rational, _Bernoulli]]	✓
5106	$xyy' = x^2 - xy + y^2$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
5107	$xyy' + 2x^2 - 2xy - y^2 = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓

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#	ODE	CAS classification	Solved?
5108	$xyy' = a + by^2$	[_separable]	✓
5109	$xyy' = ax^n + by^2$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
5111	$xyy' + x^2 \operatorname{arccot}\left(\frac{y}{x}\right) - y^2 = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
5112	$xyy' + x^2 e^{-\frac{2y}{x}} - y^2 = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
5113	$(xy + 1)y' + y^2 = 0$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]	✓
5117	$x(y + 2)y' + ax = 0$	[_quadrature]	✓
5119	$x(4 + y)y' = 2x + 2y + y^2$	[_rational, [_Abel, '2nd type', 'class B']]	✓
5122	$x(x + y)y' + y^2 = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
5123	$x(x - y)y' + y^2 = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
5124	$x(x + y)y' = y^2 + x^2$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
5125	$x(x - y)y' + 2x^2 + 3xy - y^2 = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
5126	$x(x + y)y' - (x + y)y + x\sqrt{x^2 - y^2} = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
5128	$x(2x + y)y' = x^2 + xy - y^2$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
5129	$x(4x - y)y' + 4x^2 - 6xy - y^2 = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
5130	$x(x^3 + y)y' = (x^3 - y)y$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]	✓
5131	$x(2x^3 + y)y' = (2x^3 - y)y$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]	✓

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Table 2.19 first order ode lie symmetry  
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#	ODE	CAS classification	Solved?
5132	$x(2x^3 + y)y' = 6y^2$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]]	✓
5134	$(x + a)(x + b)y' = xy$	[_separable]	✓
5136	$2xyy' + a + y^2 = 0$	[_separable]	✓
5137	$2xyy' = ax + y^2$	[[_homogeneous, 'class G', _rational, _Bernoulli]]	✓
5138	$2xyy' + x^2 + y^2 = 0$	[[_homogeneous, 'class A', _exact, _rational, _Bernoulli]]	✓
5139	$2xyy' = y^2 + x^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
5140	$2xyy' = 4x^2(2x + 1) + y^2$	[_rational, _Bernoulli]	✓
5143	$x(x - 2y)y' + y^2 = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
5144	$x(x + 2y)y' + (2x - y)y = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
5145	$x(x - 2y)y' + (2x - y)y = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class B']]]	✓
5148	$2x(2x^2 + y)y' + (12x^2 + y)y = 0$	[[_homogeneous, 'class G', _exact, _rational, [_Abel, '2nd type', 'class B']]]	✓
5150	$x(2x + 3y)y' = y^2$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
5151	$x(2x + 3y)y' + 3(x + y)^2 = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
5154	$axy' = y^2 + x^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
5155	$axy' + x^2 - y^2 = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
5156	$x(a + by)y' = cy$	[_separable]	✓
5157	$x(x - ay)y' = y(y - ax)$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓

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Table 2.19 first order ode lie symmetry  
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#	ODE	CAS classification	Solved?
5158	$x(x^n + ay)y' + (b + cy)y^2 = 0$	[_rational, [_1st_order, '_with_symmetry_[F(x)*G(y),0]', [_Abel, '2nd type', 'class C']]	✓
5161	$x(1 - xy)y' + (xy + 1)y = 0$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]	✓
5163	$x(2 - xy)y' + 2y - xy^2(xy + 1) = 0$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class C']]	✓
5164	$x(3 - xy)y' = y(xy - 1)$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]	✓
5167	$(x^2 + 1)yy' + x(1 - y^2) = 0$	[_separable]	✓
5170	$x(1 - 2xy)y' + y(1 + 2xy) = 0$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]	✓
5171	$x(1 + 2xy)y' + (2 + 3xy)y = 0$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]	✓
5172	$x(1 + 2xy)y' + (1 + 2xy - y^2x^2)y = 0$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class C']]	✓
5173	$x^2(x - 2y)y' = 2x^3 - 4xy^2 + y^3$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class C'], _dAlembert]	✓
5174	$2(x + 1)xyy' = 1 + y^2$	[_separable]	✓
5175	$3x^2yy' + 1 + 2xy^2 = 0$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
5176	$x^2(4x - 3y)y' = (6x^2 - 3xy + 2y^2)y$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class C'], _dAlembert]	✓
5177	$(1 - x^3y)y' = y^2x^2$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]	✓
5178	$2x^3yy' + a + 3y^2x^2 = 0$	[[_homogeneous, 'class G', _exact, _rational, _Bernoulli]	✓

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Table 2.19 first order ode lie symmetry  
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#	ODE	CAS classification	Solved?
5180	$x(3 + 2x^2y)y' + (4 + 3x^2y)y = 0$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]]	✓
5181	$8x^3yy' + 3x^4 - 6y^2x^2 - y^4 = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
5182	$xy(bx^2 + a)y' = A + By^2$	[_separable]	✓
5183	$3x^4yy' = 1 - 2x^3y^2$	[[_homogeneous, 'class G', _rational, _Bernoulli]]	✓
5192	$(y^2 + x^2)y' + xy = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
5193	$(y^2 + x^2)y' = xy$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
5194	$(x^2 - y^2)y' = 2xy$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
5195	$(x^2 - y^2)y' + x(x + 2y) = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlem- bert]]	✓
5196	$(y^2 + x^2)y' + 2x(2x + y) = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlem- bert]]	✓
5197	$(1 - x^2 + y^2)y' = 1 + x^2 - y^2$	[[_1st_order, _with_lin- ear_symmetries], _rational]	✓
5201	$(3x^2 - y^2)y' = 2xy$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
5202	$(x^4 + y^2)y' = 4x^3y$	[[_homogeneous, 'class G', _rational]]	✓
5207	$(1 + y + xy + y^2)y' + 1 + y = 0$	[[_1st_order, _with_lin- ear_symmetries], _rational]	✓
5208	$(x + y)^2y' = a^2$	[[_homogeneous, 'class C', _dAlembert]]	✓
5209	$(x - y)^2y' = a^2$	[[_homogeneous, 'class C', _dAlembert]]	✓
5210	$(x^2 + 2xy - y^2)y' + x^2 - 2xy + y^2 = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
5211	$(x + y)^2y' = x^2 - 2xy + 5y^2$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
5212	$(a + b + x + y)^2y' = 2(a + y)^2$	[[_homogeneous, 'class C', _rational]]	✓

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Table 2.19 first order ode lie symmetry

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#	ODE	CAS classification	Solved?
5213	$(2x^2 + 4xy - y^2) y' = x^2 - 4xy - 2y^2$	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]	✓
5214	$(3x + y)^2 y' = 4(3x + 2y) y$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5215	$(1 - 3x - y)^2 y' = (1 - 2y) (3 - 6x - 4y)$	[[_homogeneous, 'class C', _rational]	✓
5219	$(2x^2 + 3y^2) y' + x(3x + y) = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5221	$(3x^2 + 2xy + 4y^2) y' + 2x^2 + 6xy + y^2 = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]	✓
5222	$(1 - 3x + 2y)^2 y' = (4 + 2x - 3y)^2$	[[_homogeneous, 'class C', _rational]	✓
5225	$(x^2 + y^2 a) y' = xy$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5226	$(x^2 + xy + y^2 a) y' = x^2 a + xy + y^2$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5227	$(x^2 a + 2xy - y^2 a) y' + x^2 - 2axy - y^2 = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5228	$(x^2 a + 2bxy + cy^2) y' + kx^2 + 2axy + by^2 = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]	✓
5230	$x(3x - y^2) y' + (5x - 2y^2) y = 0$	[[_homogeneous, 'class G', _rational]	✓
5232	$x(1 - x^2 + y^2) y' + (1 + x^2 - y^2) y = 0$	[_rational, [_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)']]]	✓
5233	$x(a - x^2 - y^2) y' + (a + x^2 + y^2) y = 0$	[_rational, [_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)']]]	✓
5234	$x(2x^2 + y^2) y' = (2x^2 + 3y^2) y$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5235	$(x(a - x^2 - y^2) + y) y' + x - (a - x^2 - y^2) y = 0$	[[_1st_order, _with_linear_symmetries], _rational]	✓
5236	$x(a + y)^2 y' = by^2$	[_separable]	✓
5237	$x(x^2 - xy + y^2) y' + (y^2 + xy + x^2) y = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓

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#	ODE	CAS classification	Solved?
5238	$x(x^2 - xy - y^2) y' = (x^2 + xy - y^2) y$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5239	$x(x^2 + axy + y^2) y' = (x^2 + bxy + y^2) y$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5240	$x(x^2 - 2y^2) y' = (2x^2 - y^2) y$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5241	$x(x^2 + 2y^2) y' = (2x^2 + 3y^2) y$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5242	$2x(5x^2 + y^2) y' = x^2y - y^3$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5243	$x(x^2 + axy + 2y^2) y' = (ax + 2y) y^2$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5244	$3xy^2y' = 2x - y^3$	[[_homogeneous, 'class G', _exact, _rational, _Bernoulli]	✓
5246	$x(x - 3y^2) y' + (2x - y^2) y = 0$	[[_homogeneous, 'class G', _exact, _rational]	✓
5249	$6xy^2y' + x + 2y^3 = 0$	[[_homogeneous, 'class G', _exact, _rational, _Bernoulli]	✓
5250	$x(x + 6y^2) y' + xy - 3y^3 = 0$	[[_homogeneous, 'class G', _rational]	✓
5251	$x(x^2 - 6y^2) y' = 4(x^2 + 3y^2) y$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5252	$x(3x - 7y^2) y' + (5x - 3y^2) y = 0$	[[_homogeneous, 'class G', _rational]	✓
5254	$(1 - y^2x^2) y' = xy^3$	[[_homogeneous, 'class G', _rational]	✓
5255	$(1 - y^2x^2) y' = (xy + 1) y^2$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]	✓
5256	$x(1 + xy^2) y' + y = 0$	[[_homogeneous, 'class G', _rational]	✓
5257	$x(1 + xy^2) y' = (2 - 3xy^2) y$	[[_homogeneous, 'class G', _rational]	✓
5263	$x^3(1 + y^2) y' + 3x^2y = 0$	[_separable]	✓
5264	$x(1 - xy)^2 y' + (1 + y^2x^2) y = 0$	[[_homogeneous, 'class G', _rational]	✓

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#	ODE	CAS classification	Solved?
5265	$(1 - x^4 y^2) y' = x^3 y^3$	[[_homogeneous, 'class G', _rational]	✓
5267	$(x^3 - y^3) y' + x^2 y = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5268	$(x^3 + y^3) y' + x^2(ax + 3y) = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]	✓
5272	$(3x^2 + y^2) yy' + x(x^2 + 3y^2) = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]	✓
5274	$2y^3 y' = x^3 - xy^2$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5276	$(3x^2 + 2y^2) yy' + x^3 = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5277	$(5x^2 + 2y^2) yy' + x(x^2 + 5y^2) = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]	✓
5279	$(3x^3 + 6x^2 y - 3xy^2 + 20y^3) y'$ $+ 4x^3 + 9x^2 y + 6xy^2 - y^3 = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]	✓
5280	$(x^3 + ay^3) y' = x^2 y$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5282	$x(x - y^3) y' = (3x + y^3) y$	[[_homogeneous, 'class G', _rational]	✓
5283	$x(2x^3 + y^3) y' = (2x^3 - x^2 y + y^3) y$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5284	$x(2x^3 - y^3) y' = (x^3 - 2y^3) y$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5285	$x(x^3 + 3x^2 y + y^3) y' = (3x^2 + y^2) y^2$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5286	$x(x^3 - 2y^3) y' = (2x^3 - y^3) y$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5287	$x(x^4 - 2y^3) y' + (2x^4 + y^3) y = 0$	[[_homogeneous, 'class G', _rational]	✓
5291	$x(2 - xy^2 - 2xy^3) y' + 1 + 2y = 0$	[_rational, [_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓
5295	$x(1 - xy)(1 - y^2 x^2) y' + (xy + 1)(1 + y^2 x^2) y = 0$	[[_homogeneous, 'class G', _rational]	✓

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#	ODE	CAS classification	Solved?
5296	$(x^2 - y^4) y' = xy$	[[_homogeneous, 'class G', _rational]	✓
5297	$(x^3 - y^4) y' = 3x^2y$	[[_homogeneous, 'class G', _rational]	✓
5298	$(a^2x^2 + (y^2 + x^2)^2) y' = a^2xy$	[_rational]	✓
5299	$2(x - y^4) y' = y$	[[_homogeneous, 'class G', _rational]	✓
5301	$(ax^3 + (ax + by)^3) yy' + x((ax + by)^3 + by^3) = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5303	$2x(x^3 + y^4) y' = (x^3 + 2y^4) y$	[[_homogeneous, 'class G', _rational]	✓
5304	$x(1 - x^2y^4) y' + y = 0$	[[_homogeneous, 'class G', _rational]	✓
5305	$(x^2 - y^5) y' = 2xy$	[[_homogeneous, 'class G', _rational]	✓
5306	$x(x^3 + y^5) y' = (x^3 - y^5) y$	[[_homogeneous, 'class G', _rational]	✓
5308	$(1 + a(x + y))^n y' + a(x + y)^n = 0$	[[_homogeneous, 'class C', _dAlembert]	✓
5309	$x(a + y^n x) y' + by = 0$	[[_homogeneous, 'class G', _rational]	✓
5313	$y' \sqrt{y} = \sqrt{x}$	[_separable]	✓
5314	$(1 + \sqrt{x + y}) y' + 1 = 0$	[[_homogeneous, 'class C', _dAlembert]	✓
5315	$y' \sqrt{xy} + x - y = \sqrt{xy}$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5316	$(x - 2\sqrt{xy}) y' = y$	[[_homogeneous, 'class A', _dAlembert]	✓
5319	$(x - \sqrt{y^2 + x^2}) y' = y$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5321	$x(x + \sqrt{y^2 + x^2}) y' + y\sqrt{y^2 + x^2} = 0$	[[_homogeneous, 'class G', _dAlembert]	✓
5322	$xy(x + \sqrt{x^2 - y^2}) y' = xy^2 - (x^2 - y^2)^{3/2}$	[[_1st_order, __with_lin- ear_symmetries], _dAlem- bert]	✓
5323	$(x\sqrt{1 + x^2 + y^2} - y(y^2 + x^2)) y'$ $= x(y^2 + x^2) + y\sqrt{1 + x^2 + y^2}$	[[_1st_order, __with_lin- ear_symmetries]]	✓

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Table 2.19 first order ode lie symmetry  
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#	ODE	CAS classification	Solved?
5327	$(1 + (x + y) \tan(y)) y' + 1 = 0$	[[_1st_order, __with_linear_symmetries]]	✓
5328	$x \left(x - y \tan\left(\frac{y}{x}\right)\right) y' + \left(x + y \tan\left(\frac{y}{x}\right)\right) y = 0$	[[_homogeneous, 'class A', _dAlembert]]	✓
5330	$(1 - 2x - \ln(y)) y' + 2y = 0$	[[_1st_order, __with_linear_symmetries]]	✓
5343	$y'^2 = a^2 y^2$	[_quadrature]	✓
5345	$y'^2 = y^2 x^2$	[_separable]	✓
5391	$y'^2 + yy' = x(x + y)$	[_quadrature]	✓
5392	$y'^2 - yy' + e^x = 0$	[[_1st_order, __with_linear_symmetries]]	✓
5393	$y'^2 + (x + y) y' + xy = 0$	[_quadrature]	✓
5396	$y'^2 - 2(x - y) y' - 4xy = 0$	[_quadrature]	✓
5402	$y'^2 + (ax + by) y' + abxy = 0$	[_quadrature]	✓
5403	$y'^2 - xyy' + y^2 \ln(ay) = 0$	[[_1st_order, '_with_symmetry_[F(x),G(y)]']]	✓
5404	$y'^2 - (1 + 2xy) y' + 2xy = 0$	[_quadrature]	✓
5406	$y'^2 - (x - y) yy' - xy^3 = 0$	[_separable]	✓
5409	$y'^2 - xy(y^2 + x^2) y' + x^4 y^4 = 0$	[_separable]	✓
5421	$4y'^2 + 2x e^{-2y} y' - e^{-2y} = 0$	[[_1st_order, __with_linear_symmetries]]	✓
5451	$xy'^2 - (2x + 3y) y' + 6y = 0$	[_quadrature]	✓
5454	$xy'^2 - (xy + 1) y' + y = 0$	[_quadrature]	✓
5455	$xy'^2 + (1 - x) yy' - y^2 = 0$	[_quadrature]	✓
5456	$xy'^2 + (1 - x^2 y) y' - xy = 0$	[_quadrature]	✓
5472	$x^2 y'^2 = y^2$	[_separable]	✓
5474	$x^2 y'^2 = (x - y)^2$	[_linear]	✓
5476	$x^2 y'^2 - xy' + y(1 - y) = 0$	[_separable]	✓
5478	$x^2 y'^2 - 2x yy' - x + y(1 + y) = 0$	[[_1st_order, __with_linear_symmetries], _rational]]	✓
5483	$x^2 y'^2 + 2x(2x + y) y' - 4a + y^2 = 0$	[[_1st_order, '_with_symmetry_[F(x),G(y)]']]	✓

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#	ODE	CAS classification	Solved?
5485	$x^2y'^2 + 3xyy' + 2y^2 = 0$	[_separable]	✓
5487	$x^2y'^2 + 4xyy' - 5y^2 = 0$	[_separable]	✓
5489	$x^2y'^2 - 5xyy' + 6y^2 = 0$	[_separable]	✓
5493	$x^2y'^2 + (a + bx^2y^3)y' + aby^3 = 0$	[_quadrature]	✓
5501	$(a^2 - x^2)y'^2 - 2xyy' - y^2 = 0$	[_separable]	✓
5527	$yy'^2 + (x - y)y' - x = 0$	[_quadrature]	✓
5529	$yy'^2 - (xy + 1)y' + x = 0$	[_quadrature]	✓
5530	$yy'^2 + (x - y^2)y' - xy = 0$	[_quadrature]	✓
5537	$(x^2 - ay)y'^2 - 2xyy' = 0$	[_quadrature]	✓
5538	$xyy'^2 + (x + y)y' + 1 = 0$	[_quadrature]	✓
5539	$xyy'^2 + (y^2 + x^2)y' + xy = 0$	[_separable]	✓
5540	$xyy'^2 + (x^2 - y^2)y' - xy = 0$	[_separable]	✓
5541	$xyy'^2 - (x^2 - y^2)y' - xy = 0$	[_separable]	✓
5543	$xyy'^2 - (a - bx^2 + y^2)y' - bxy = 0$	[_rational]	✓
5544	$xyy'^2 + (3x^2 - 2y^2)y' - 6xy = 0$	[_separable]	✓
5547	$y^2y'^2 = a^2$	[_quadrature]	✓
5552	$y^2y'^2 - (x + 1)yy' + x = 0$	[_quadrature]	✓
5564	$(x + y)^2y'^2 = y^2$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
5565	$(x + y)^2y'^2 - (x^2 - xy - 2y^2)y' - (x - y)y = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
5569	$4y^2y'^2 + 2(3x + 1)xyy' + 3x^3 = 0$	[_separable]	✓
5570	$(x^2 - 4y^2)y'^2 + 6xyy' - 4x^2 + y^2 = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
5579	$4x^2y^2y'^2 = (y^2 + x^2)^2$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
5586	$y'^3 + x - y = 0$	[[_homogeneous, 'class C'], _dAlembert]	✓

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#	ODE	CAS classification	Solved?
5602	$y'^3 - axyy' + 2y^2a = 0$	[[_1st_order, __with_linear_symmetries]]	✓
5603	$y'^3 - xy^4y' - y^5 = 0$	[[_1st_order, __with_linear_symmetries]]	✓
5613	$y'^3 + (\cos(x) \cot(x) - y) y'^2 - (1 + y \cos(x) \cot(x)) y' + y = 0$	[_quadrature]	✓
5614	$y'^3 + (2x - y^2) y'^2 - 2xy^2y' = 0$	[_quadrature]	✓
5615	$y'^3 - (2x + y^2) y'^2 + (x^2 - y^2 + 2xy^2) y' - (x^2 - y^2) y^2 = 0$	[_quadrature]	✓
5616	$y'^3 - (y^2 + xy + x^2) y'^2 + xy(y^2 + xy + x^2) y' - x^3y^3 = 0$	[_quadrature]	✓
5617	$y'^3 - (x^2 + xy^2 + y^4) y'^2 + xy^2(x^2 + xy^2 + y^4) y' - x^3y^6 = 0$	[_quadrature]	✓
5620	$3y'^3 - x^4y' + 2x^3y = 0$	[[_1st_order, __with_linear_symmetries]]	✓
5624	$xy'^3 - (x + x^2 + y) y'^2 + (x^2 + y + xy) y' - xy = 0$	[_quadrature]	✓
5625	$xy'^3 - 2yy'^2 + 4x^2 = 0$	[[_1st_order, __with_linear_symmetries]]	✓
5632	$2x^3y'^3 + 6x^2yy'^2 - (1 - 6xy) yy' + 2y^3 = 0$	[[_homogeneous, 'class G']]	✓
5633	$x^4y'^3 - x^3yy'^2 - x^2y^2y' + xy^3 = 1$	[[_1st_order, __with_linear_symmetries]]	✓
5634	$x^6y'^3 - xy' - y = 0$	[[_1st_order, __with_linear_symmetries]]	✓
5635	$yy'^3 - 3xy' + 3y = 0$	[[_1st_order, __with_linear_symmetries], __dAlembert]	✓
5637	$(x + 2y) y'^3 + 3(x + y) y'^2 + (2x + y) y' = 0$	[_quadrature]	✓
5638	$y^2y'^3 - xy' + y = 0$	[[_1st_order, __with_linear_symmetries]]	✓
5639	$y^2y'^3 + 2xy' - y = 0$	[[_1st_order, __with_linear_symmetries]]	✓
5640	$4y^2y'^3 - 2xy' + y = 0$	[[_1st_order, __with_linear_symmetries]]	✓
5641	$16y^2y'^3 + 2xy' - y = 0$	[[_1st_order, __with_linear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
5644	$y^4 y'^3 - 6xy' + 2y = 0$	[[_1st_order, __with_linear_symmetries]]	✓
5662	$2(1+y)^{3/2} + 3xy' - 3y = 0$	[_separable]	✓
5674	$y' \sin(y') + \cos(y') = y$	[_quadrature]	✓
5678	$e^{y'-y} - y'^2 + 1 = 0$	[_quadrature]	✓
5680	$\ln(y') + xy' + a = y$	[[_1st_order, __with_linear_symmetries], _Clairaut]	✓
5681	$\ln(y') + xy' + a + by = 0$	[[_1st_order, __with_linear_symmetries], _dAlembert]	✓
5682	$\ln(y') + 4xy' - 2y = 0$	[[_1st_order, __with_linear_symmetries], _dAlembert]	✓
5683	$\ln(y') + a(-y + xy') = 0$	[[_1st_order, __with_linear_symmetries], _Clairaut]	✓
5685	$y \ln(y') + y' - y \ln(y) - xy = 0$	[_separable]	✓
5686	$y' \ln(y') - (x+1)y' + y = 0$	[[_1st_order, __with_linear_symmetries], _Clairaut]	✓
5689	$y' = \frac{xy}{x^2 - y^2}$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
5690	$y' = \frac{x+y-3}{x-y-1}$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
5691	$y' = \frac{2x+y-1}{4x+2y+5}$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
5692	$y' - \frac{2y}{x+1} = (x+1)^2$	[_linear]	✓
5694	$\frac{2x}{y^3} + \frac{(y^2 - 3x^2)y'}{y^4} = 0$	[[_homogeneous, 'class A'], _exact, _rational, _dAlembert]	✓
5695	$y + xy^2 - xy' = 0$	[[_homogeneous, 'class D'], _rational, _Bernoulli]	✓
5701	$xy(x^2 + 1)y' - 1 - y^2 = 0$	[_separable]	✓

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#	ODE	CAS classification	Solved?
5705	$(y - x)y' + y = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
5706	$(2\sqrt{xy} - x)y' + y = 0$	[[_homogeneous, 'class A', _dAlembert]]	✓
5707	$xy' - y - \sqrt{y^2 + x^2} = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
5708	$x - y \cos\left(\frac{y}{x}\right) + x \cos\left(\frac{y}{x}\right)y' = 0$	[[_homogeneous, 'class A', _dAlembert]]	✓
5709	$(7x + 5y)y' + 10x + 8y = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
5710	$2x - y + 1 + (2y - 1)y' = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
5711	$3y - 7x + 7 + (7y - 3x + 3)y' = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
5713	$x(-x^2 + 1)y' + (2x^2 - 1)y = ax^3$	[_linear]	✓
5716	$(x^2 + 1)y' + y = \arctan(x)$	[_linear]	✓
5717	$(-x^2 + 1)z' - xz = axz^2$	[_separable]	✓
5721	$xy' + y = y^2 \ln(x)$	[_Bernoulli]	✓
5733	$-y + xy' = \sqrt{y^2 + x^2}$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
5734	$(7x + 5y)y' + 10x + 8y = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
5735	$x^2 + 2xy - y^2 + (y^2 + 2xy - x^2)y' = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
5736	$y^2 + (xy + x^2)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
5738	$(y^2x^2 + xy)y + (y^2x^2 - 1)xy' = 0$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]]	✓
5739	$(x^3y^3 + y^2x^2 + xy + 1)y$ $+ (x^3y^3 - y^2x^2 - xy + 1)xy' = 0$	[[_homogeneous, 'class G', _rational]]	✓

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#	ODE	CAS classification	Solved?
5763	$y = xy' + x\sqrt{1+y'^2}$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
5771	$2xy + (y^2 + x^2)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlem- bert]	✓
5772	$(x + \sqrt{y^2 - xy})y' - y = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5773	$x + y - (x - y)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
5774	$xy' - y - x \sin\left(\frac{y}{x}\right) = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
5775	$2x^2y + y^3 + (xy^2 - 2x^3)y' = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5776	$y^2 + (x\sqrt{y^2 - x^2} - xy)y' = 0$	[[_homogeneous, 'class G', _dAlembert]	✓
5777	$\frac{y \cos\left(\frac{y}{x}\right)}{x} - \left(\frac{x \sin\left(\frac{y}{x}\right)}{y} + \cos\left(\frac{y}{x}\right)\right)y' = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
5778	$y + x \ln\left(\frac{y}{x}\right)y' - 2xy' = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
5779	$2ye^{\frac{x}{y}} + (y - 2xe^{\frac{x}{y}})y' = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
5780	$xe^{\frac{y}{x}} - y \sin\left(\frac{y}{x}\right) + x \sin\left(\frac{y}{x}\right)y' = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
5781	$y^2 + x^2 = 2xyy'$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
5782	$xe^{\frac{y}{x}} + y = xy'$	[[_homogeneous, 'class A', _dAlembert]	✓
5783	$y' - \frac{y}{x} + \csc\left(\frac{y}{x}\right) = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
5784	$xy - y^2 - x^2y' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
5785	$x + 2y - 4 - (2x - 4y)y' = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
5786	$3x + 2y + 1 - (3x + 2y - 1)y' = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓

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#	ODE	CAS classification	Solved?
5788	$x + y - 1 + (2x + 2y - 3)y' = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
5789	$x + y - 1 - (x - y - 1)y' = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
5790	$x + y + (2x + 2y - 1)y' = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
5791	$7y - 3 + (2x + 1)y' = 0$	[_separable]	✓
5792	$x + 2y + (3x + 6y + 3)y' = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
5793	$x + 2y + (y - 1)y' = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
5794	$3x - 2y + 4 - (2x + 7y - 1)y' = 0$	[[_homogeneous, 'class C', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
5796	$3x + 2y + 3 - (x + 2y - 1)y' = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
5797	<i>i.c.</i> $y + 7 + (2x + y + 3)y' = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
5798	$x + y + 2 - (x - y - 4)y' = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
5819	$y(2x^2y^3 + 3) + x(x^2y^3 - 1)y' = 0$	[[_homogeneous, 'class G', _rational]]	✓
5825	$x^2 - y^2 - y - (x^2 - y^2 - x)y' = 0$	[[_1st_order, _with_linear _symmetries], _rational]	✓
5839	$xy' + y = x^3$	[_linear]	✓
5840	$y' + ay = b$	[_quadrature]	✓
5841	$xy' + y = y^2 \ln(x)$	[_Bernoulli]	✓
5842	$x' + 2xy = e^{-y^2}$	[_linear]	✓
5844	$y' - \frac{2xy}{x^2 + 1} = 1$	[_linear]	✓
5848	$y' + 2y = 3e^{-2x}$	[[_linear, 'class A']]]	✓

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#	ODE	CAS classification	Solved?
5849	$y' + 2y = \frac{3e^{-2x}}{4}$	[[_linear, 'class A']]	✓
5854	$-y + xy' = x^2 \sin(x)$	[_linear]	✓
5855	$xy' + xy^2 - y = 0$	[[_homogeneous, 'class D'], _rational, _Bernoulli]	✓
5856	$xy' - y(2y \ln(x) - 1) = 0$	[_Bernoulli]	✓
5857	$x^2(x-1)y' - y^2 - x(-2+x)y = 0$	[[_homogeneous, 'class D'], _rational, _Bernoulli]	✓
5858	$y' - y = e^x$	[[_linear, 'class A']]	✓
	<i>i.c.</i>		
5864	$y' = \frac{1}{x^2} - \frac{y}{x} - y^2$	[[_homogeneous, 'class G'], _rational, _Riccati]	✓
5865	$y' = 1 + \frac{y}{x} - \frac{y^2}{x^2}$	[[_homogeneous, 'class A'], _rational, _Riccati]	✓
5868	$(x+1)y' - 1 - y = (x+1)\sqrt{1+y}$	[[_1st_order, __with_linear_symmetries]]	✓
5869	$e^y(1+y') = e^x$	[[_homogeneous, 'class C'], _dAlembert]	✓
5871	$(x-y)^2 y' = 4$	[[_homogeneous, 'class C'], _dAlembert]	✓
5872	$-y + xy' = \sqrt{y^2 + x^2}$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
5873	$(3x+2y+1)y' + 4x+3y+2 = 0$	[[_homogeneous, 'class C'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
5874	$(x^2 - y^2)y' = 2xy$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
5875	$y + (1 + y^2 e^{2x})y' = 0$	[[_1st_order, __with_linear_symmetries]]	✓
5876	$x^2y + y^2 + x^3y' = 0$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
5878	$y' = (x^2 + 2y - 1)^{2/3} - x$	[[_1st_order, __with_linear_symmetries]]	✓
5879	$xy' + y = x^2(1 + e^x)y^2$	[_Bernoulli]	✓
5880	$2y - xy \ln(x) - 2y'x \ln(x) = 0$	[_separable]	✓
5881	$y' + ay = k e^{bx}$	[[_linear, 'class A']]	✓

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#	ODE	CAS classification	Solved?
5882	$y' = (x + y)^2$	[[_homogeneous, 'class C', _Riccati]	✓
5886	$xy' - y^2 + 1 = 0$	[_separable]	✓
5888	$xy' = x e^{\frac{y}{x}} + x + y$	[[_homogeneous, 'class A', _dAlembert]	✓
5890	$xy' - y(\ln(xy) - 1) = 0$	[[_homogeneous, 'class G']]	✓
5891	$x^3y' - y^2 - x^2y = 0$	[[_homogeneous, 'class D', _rational, _Bernoulli]	✓
5892	$xy' + ay + b x^n = 0$	[_linear]	✓
5893	$xy' - y - x \sin\left(\frac{y}{x}\right) = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
5894	$(xy - x^2)y' + y^2 - 3xy - 2x^2 = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
5896	$x^2y' + y^2 + xy + x^2 = 0$	[[_homogeneous, 'class A', _rational, _Riccati]	✓
5899	$(x^2 - 1)y' + xy - 3xy^2 = 0$	[_separable]	✓
5900	$(x^2 - 1)y' - 2xy \ln(y) = 0$	[_separable]	✓
5903	$(2xy + 4x^3)y' + y^2 + 12x^2y = 0$	[[_homogeneous, 'class G', _exact, _rational, [_Abel, '2nd type', 'class B']]	✓
5905	$(x^2 - y)y' - 4xy = 0$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class A']]	✓
5906	$xyy' + x^2 + y^2 = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
5907	$2xyy' + 3x^2 - y^2 = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
5908	$(2xy^3 - x^4)y' + 2x^3y - y^4 = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5909	$(xy - 1)^2 xy' + (1 + y^2 x^2)y = 0$	[[_homogeneous, 'class G', _rational]	✓
5910	$(y^2 + x^2)y' + 2x(2x + y) = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlem- bert]	✓
5911	$3xy^2y' + y^3 - 2x = 0$	[[_homogeneous, 'class G', _exact, _rational, _Bernoulli]	✓

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#	ODE	CAS classification	Solved?
5912	$2y^3y' + xy^2 - x^3 = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
6019	$-ay^3 - \frac{b}{x^{3/2}} + y' = 0$	[[_homogeneous, 'class G', _rational, _Abel]	✓
6020	$axy^3 + by^2 + y' = 0$	[[_homogeneous, 'class G', _Abel]	✓
6025	$y' + y \tan(x) = 0$	[_separable]	✓
6029	$y' = e^{ax} + ay$	[[_linear, 'class A']]	✓
6032	$y' = axy^2$	[_separable]	✓
6034	$xy(x^2 + 1)y' = 1 + y^2$	[_separable]	✓
6036	$y' + b^2y^2 = a^2$	[_quadrature]	✓
6037	$y' = \frac{1 + y^2}{x^2 + 1}$	[_separable]	✓
6039	$axy' + 2y = xy y'$	[_separable]	✓
6075	$y' + y^2 = \frac{a^2}{x^4}$	[_rational, _Riccati]	✓
6092	$y' = y$	[_quadrature]	✓
6093	$xy' = y$	[_separable]	✓
6096	$xyy' + 1 + y^2 = 0$	[_separable]	✓
6100	$y' + 2xy^2 = 0$	[_separable]	✓
6101	$(1 + y)y' = y$	[_quadrature]	✓
6102	$y' - xy = x$	[_separable]	✓
6103	$2y' = 3(y - 2)^{1/3}$	[_quadrature]	✓
6104	$(x + xy)y' + y = 0$	[_separable]	✓
6120	$y' + \frac{y}{x} = 2x^{3/2}\sqrt{y}$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
6121	$3xy^2y' + 3y^3 = 1$	[_separable]	✓

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#	ODE	CAS classification	Solved?
6123	$(x - y)y' + x + y + 1 = 0$	[[_homogeneous, 'class C', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
6125	$x^2y' + y^2 - xy = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
6126	$yy' = -x + \sqrt{y^2 + x^2}$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
6127	$xy + (y^2 - x^2)y' = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
6128	$y^2 - xy + (xy + x^2)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
6129	$y' = \cos(x + y)$	[[_homogeneous, 'class C', _dAlembert]]	✓
6130	$y' = \frac{y}{x} - \tan\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A', _dAlembert]]	✓
6131	$(x - 1)y' + y - \frac{1}{x^2} + \frac{2}{x^3} = 0$	[_linear]	✓
6132	$y' = xy^2 - \frac{2y}{x} - \frac{1}{x^3}$	[[_homogeneous, 'class G', _rational, _Riccati]]	✓
6134	$y' = e^{-x}y^2 + y - e^x$	[[_1st_order, _with_lin- ear_symmetries], _Riccati]]	✓
6208	$x^2y' - xy = \frac{1}{x}$	[_linear]	✓
6214	$3x^3y^2y' - x^2y^3 = 1$	[[_homogeneous, 'class G', _rational, _Bernoulli]]	✓
6216	$y' - 2y - y^2e^{3x} = 0$	[[_1st_order, _with_lin- ear_symmetries], _Bernoulli]]	✓
6218	$y + 2x - xy' = 0$	[_linear]	✓
6224	$(2x + y)y' - x + 2y = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
6226	$\sin(x)^2y' + \sin(x)^2 + (x + y)\sin(2x) = 0$	[_linear]	✓
6232	$3x^2y + x^3y' = 0$ i.c.	[_separable]	✓
6233	$-y + xy' = x^2$ i.c.	[_linear]	✓
6237	$xy' = xy + y$	[_separable]	✓

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#	ODE	CAS classification	Solved?
6239	$y' = 3x^2y$	[_separable]	✓
6241	$xy' = y$	[_separable]	✓
6256	$y' - \sin(x + y) = 0$	[[_homogeneous, 'class C'], _dAlembert]	✓
6257	$y' = 4y^2 - 3y + 1$	[_quadrature]	✓
6262	$xy' = \frac{1}{y^3}$	[_separable]	✓
6263	$x' = 3xt^2$	[_separable]	✓
6266	$xv' = \frac{1 - 4v^2}{3v}$	[_separable]	✓
6267	$y' = \frac{\sec(y)^2}{x^2 + 1}$	[_separable]	✓
6268	$y' = 3x^2(1 + y^2)^{3/2}$	[_separable]	✓
6269	$x' - x^3 = x$	[_quadrature]	✓
6271	$\frac{y'}{y} + ye^{\cos(x)} \sin(x) = 0$	[_separable]	✓
6272	$y' = (1 + y^2) \tan(x)$	[_separable]	✓
6273	$y' = x^3(1 - y)$	[_separable]	✓
6277	$x^2 + 2yy' = 0$	[_separable]	✓
6279	$y' = 8x^3e^{-2y}$	[_separable]	✓
6280	$y' = x^2(1 + y)$	[_separable]	✓
6284	$y' = \sqrt{\sin(x) + 1} (1 + y^2)$	[_separable]	✓
6285	$y' = 2y - 2ty$	[_separable]	✓
6286	$y' = y^{1/3}$	[_quadrature]	✓
6287	$y' = y^{1/3}$	[_quadrature]	✓
6288	$y' = (x - 3)(1 + y)^{2/3}$	[_separable]	✓
6289	$y' = xy^3$	[_separable]	✓

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#	ODE	CAS classification	Solved?
6290	$y' = xy^3$ i.c.	[_separable]	✓
6291	$y' = xy^3$ i.c.	[_separable]	✓
6292	$y' = xy^3$ i.c.	[_separable]	✓
6293	$y' = y^2 - 3y + 2$ i.c.	[_quadrature]	✓
6296	$(t^2 + 1)y' = ty - y$	[_separable]	✓
6299	$3r = r' - \theta^3$	[[_linear, 'class A']]	✓
6300	$y' - y - e^{3x} = 0$	[[_linear, 'class A']]	✓
6301	$y' = \frac{y}{x} + 2x + 1$	[_linear]	✓
6303	$xy' + 2y = \frac{1}{x^3}$	[_linear]	✓
6304	$t + y + 1 - y' = 0$	[[_linear, 'class A']]	✓
6305	$y' = x^2 e^{-4x} - 4y$	[[_linear, 'class A']]	✓
6306	$yx' + 2x = 5y^3$	[_linear]	✓
6308	$(x^2 + 1)y' + xy - x = 0$	[_separable]	✓
6310	$y' - \frac{y}{x} = x e^x$ i.c.	[_linear]	✓
6311	$y' + 4y - e^{-x} = 0$ i.c.	[[_linear, 'class A']]	✓
6313	$y' + \frac{3y}{x} + 2 = 3x$ i.c.	[_linear]	✓
6317	$(e^{4y} + 2x)y' - 1 = 0$	[[_1st_order, _with_exponential_symmetries]]	✓
6319	$y' + \frac{3y}{x} = x^2$	[_linear]	✓
6321	$u' = \alpha(1 - u) - \beta u$	[_quadrature]	✓
6322	$x^2 y + x^4 \cos(x) - x^3 y' = 0$	[_linear]	✓
6323	$x^{10/3} - 2y + xy' = 0$	[_linear]	✓
6324	$\sqrt{-2y - y^2} + (-x^2 + 2x + 3)y' = 0$	[_separable]	✓
6341	$y' - 4y = 32x^2$	[[_linear, 'class A']]	✓

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#	ODE	CAS classification	Solved?
6343	$y' + \frac{3y}{x} = x^2 - 4x + 3$	[_linear]	✓
6344	$2xy^3 - (-x^2 + 1)y' = 0$	[_separable]	✓
6345	$y^2t^3 + \frac{t^4y'}{y^6} = 0$	[_separable]	✓
6399	$y' - y = e^{2x}$	[[_linear, 'class A']]	✓
6400	$x^2y' + 2xy - x + 1 = 0$	[_linear]	✓
	i.c.		
6401	$y' + y = (x + 1)^2$	[[_linear, 'class A']]	✓
	i.c.		
6403	$y' + \frac{y}{1-x} + 2x - x^2 = 0$	[_linear]	✓
6404	$y' + \frac{y}{1-x} + x - x^2 = 0$	[_linear]	✓
6405	$(x^2 + 1)y' = xy + 1$	[_linear]	✓
6406	$y' + xy = xy^2$	[_separable]	✓
6407	$3xy' + y + x^2y^4 = 0$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
6416	$y' - \frac{2y}{x} - x^2 = 0$	[_linear]	✓
6417	$y' + \frac{2y}{x} - x^3 = 0$	[_linear]	✓
6420	$(x + 1)^2 y' = 1 + y^2$	[_separable]	✓
6421	$y' + 2y = e^{3x}$	[[_linear, 'class A']]	✓
6422	$-y + xy' = x^2$	[_linear]	✓
6424	$x \cos(y)y' - \sin(y) = 0$	[_separable]	✓
6425	$(x^3 + xy^2)y' = 2y^3$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
6426	$(x^2 - 1)y' + 2xy = x$	[_separable]	✓
6428	$xy' - 2y = x^3 \cos(x)$	[_linear]	✓
6429	$y' + \frac{y}{x} = y^3$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
6430	$xy' + 3y = y^2x^2$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
6431	$x(-3 + y)y' = 4y$	[_separable]	✓

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#	ODE	CAS classification	Solved?
6432	$(x^3 + 1)y' = x^2y$ i.c.	[_separable]	✓
6433	$x^3 + (1 + y)^2 y' = 0$	[_separable]	✓
6436	$(2y - x)y' = 2x + y$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
6437	$xy + y^2 + (x^2 - xy)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
6438	$x^3 + y^3 = 3xy^2y'$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
6439	$y - 3x + (3x + 4y)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
6440	$(x^3 + 3xy^2)y' = y^3 + 3x^2y$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
6446	$(3x + 3y - 4)y' = -x - y$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
6448	$x - y - 1 + (4y + x - 1)y' = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
6449	$3y - 7x + 7 + (7y - 3x + 3)y' = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
6450	$y(xy + 1) + x(1 + xy + y^2x^2)y' = 0$	[[_homogeneous, 'class G', _rational]]	✓
6458	$x^2 - 2xy + 5y^2 = (x^2 + 2xy + y^2)y'$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
6460	$y + (x^2 - 4x)y' = 0$	[_separable]	✓
6462	$y' = \frac{2xy + y^2}{x^2 + 2xy}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
6463	$(x^2 + 1)y' = x(1 + y)$	[_separable]	✓
6464	$xy' + 2y = 3x - 1$ i.c.	[_linear]	✓
6465	$x^2y' = y^2 - xy y'$ i.c.	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓

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#	ODE	CAS classification	Solved?
6466	$y' = e^{-2y+3x}$ i.c.	[_separable]	✓
6468	$y^2 + x^2y' = xy y'$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
6469	$2xy y' = x^2 - y^2$	[[_homogeneous, 'class A', _exact, _rational, _Bernoulli]]	✓
6470	$y' = \frac{1+x-2y}{2x-4y}$ i.c.	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
6471	$(-x^3 + 1)y' + x^2y = x^2(-x^3 + 1)$	[_linear]	✓
6473	$y' + x + xy^2 = 0$ i.c.	[_separable]	✓
6476	$x(1 + y^2) - (x^2 + 1)yy' = 0$	[_separable]	✓
6479	$y' + \frac{y}{x} = xy^2$	[[_homogeneous, 'class G', _rational, _Bernoulli]]	✓
6517	$y' - 5y = 3e^x - 2x + 1$	[[_linear, 'class A']]]	✓
6524	$y' - y = e^x$	[[_linear, 'class A']]]	✓
6534	$y' + \frac{4y}{x} = x^4$	[_linear]	✓
6543	$y' - \frac{y}{x} = x^2$	[_linear]	✓
6570	$xy' = 2y$	[_separable]	✓
6571	$x + yy' = 0$	[_separable]	✓
6573	$2x^3y' = y(3x^2 + y^2)$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
6580	$4y + xy' = 0$	[_separable]	✓
6581	$1 + 2y + (-x^2 + 4)y' = 0$	[_separable]	✓
6582	$y^2 - x^2y' = 0$	[_separable]	✓
6583	$1 + y - (x + 1)y' = 0$	[_separable]	✓
6584	$xy^2 + y + (x^2y - x)y' = 0$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]]	✓
6585	$x \sin\left(\frac{y}{x}\right) - y \cos\left(\frac{y}{x}\right) + x \cos\left(\frac{y}{x}\right)y' = 0$	[[_homogeneous, 'class A', _dAlembert]]	✓

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#	ODE	CAS classification	Solved?
6587	$y\sqrt{y^2+x^2} - x(x+\sqrt{y^2+x^2})y' = 0$	[[_homogeneous, 'class G', _dAlembert]	✓
6588	$x + y + 1 + (2x + 2y + 1)y' = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
6589	$1 + 2y - (4 - x)y' = 0$	[_separable]	✓
6590	$xy + (x^2 + 1)y' = 0$	[_separable]	✓
6591	$x + 2y + (2x + 3y)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
6592	$2xy' - 2y = \sqrt{4y^2 + x^2}$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
6593	$3y - 7x + 7 + (7y - 3x + 3)y' = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
6595	$y^2 - x^2 + xyy' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
6596	$y(1 + 2xy) + x(1 - xy)y' = 0$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]	✓
6597	$1 + (-x^2 + 1)\cot(y)y' = 0$	[_separable]	✓
6598	$x^3 + y^3 + 3xy^2y' = 0$	[[_homogeneous, 'class A', _exact, _rational, _Bernoulli]	✓
6599	$3x + 2y + 1 - (3x + 2y - 1)y' = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
6600	$xy' + 2y = 0$ i.c.	[_separable]	✓
6601	$xyy' + x^2 + y^2 = 0$ i.c.	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
6604	$y' = -2(2x + 3y)^2$	[[_homogeneous, 'class C', _Riccati]	✓
6616	$y(x - 2y) - x^2y' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
6617	$xyy' + x^2 + y^2 = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓

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#	ODE	CAS classification	Solved?
6618	$x^2 + y^2 + 2xyy' = 0$	[[_homogeneous, 'class A'], _exact, _rational, _Bernoulli]	✓
6620	$x + y + 1 - (x - y - 3)y' = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
6633	$1 + y^2 = (x^2 + x)y'$	[_separable]	✓
6642	$y' + y = 2x + 2$	[[_linear, 'class A']]	✓
6643	$y' - y = xy$	[_separable]	✓
6644	$-3y - (-2 + x)e^x + xy' = 0$	[_linear]	✓
6646	$y' + y = y^2e^x$	[[_1st_order, _with_linear_symmetries], _Bernoulli]	✓
6649	$xy' + y - x^3y^6 = 0$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
6656	$2 + y^2 - (xy + 2y + y^3)y' = 0$	[_rational, [_1st_order, 'with_symmetry_[F(x)*G(y),0]']]	✓
6658	$2y^5x - y + 2xy' = 0$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
6660	$xy' = 2y + x^3e^x$	[_linear]	✓
	<i>i.c.</i>		
6667	$x^2y'^2 + xyy' - 6y^2 = 0$	[_separable]	✓
6668	$xy'^2 + (y - 1 - x^2)y' - x(y - 1) = 0$	[_quadrature]	✓
6677	$y = 2xy' + y^2y'^3$	[[_1st_order, _with_linear_symmetries]]	✓
6690	$y'^3 - 4x^4y' + 8x^3y = 0$	[[_1st_order, _with_linear_symmetries]]	✓
6795	$xy' = 1 - x + 2y$	[_linear]	✓
7058	$y' = \frac{x^2}{y}$	[_separable]	✓
7060	$y' = y \sin(x)$	[_separable]	✓
7061	$xy' = \sqrt{1 - y^2}$	[_separable]	✓
7063	$xyy' = \sqrt{1 + y^2}$	[_separable]	✓
7064	$(x^2 - 1)y' + 2xy^2 = 0$	[_separable]	✓
	<i>i.c.</i>		

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#	ODE	CAS classification	Solved?
7066	<i>i.c.</i> $xy' + y = y^2$	[_separable]	✓
7067	$2x^2yy' + y^2 = 2$	[_separable]	✓
7068	$y' - xy^2 = 2xy$	[_separable]	✓
7069	$(1 + z')e^{-z} = 1$	[_quadrature]	✓
7072	$\frac{y}{x-1} + \frac{xy'}{1+y} = 0$	[_separable]	✓
7074	$\frac{1}{\sqrt{x}} + \frac{y'}{\sqrt{y}} = 0$	[_separable]	✓
7075	$\frac{1}{\sqrt{-x^2+1}} + \frac{y'}{\sqrt{1-y^2}} = 0$	[_separable]	✓
7077	$y' = (y-1)(x+1)$	[_separable]	✓
7078	$y' = e^{x-y}$	[_separable]	✓
7079	$y' = \frac{\sqrt{y}}{\sqrt{x}}$	[_separable]	✓
7080	$y' = \frac{\sqrt{y}}{x}$	[_separable]	✓
7081	$z' = 10^{x+z}$	[_separable]	✓
7083	$y' = \cos(x-y)$	[[_homogeneous, 'class C'], _dAlembert]	✓
7084	$y' - y = 2x - 3$	[[_linear, 'class A']]	✓
7086	$y' + y = 2x + 1$	[[_linear, 'class A']]	✓
7087	$y' = \cos(x-y-1)$	[[_homogeneous, 'class C'], _dAlembert]	✓
7088	$y' + \sin(x+y)^2 = 0$	[[_homogeneous, 'class C'], _dAlembert]	✓
7089	$y' = 2\sqrt{2x+y+1}$	[[_homogeneous, 'class C'], _dAlembert]	✓
7090	$y' = (x+y+1)^2$	[[_homogeneous, 'class C'], _Riccati]	✓
7093	$(x+y)y' + x - y = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
7094	$y - 2xy + x^2y' = 0$	[_separable]	✓

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#	ODE	CAS classification	Solved?
7096	$y^2 + x^2y' = xyy'$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
7097	$(y^2 + x^2)y' = 2xy$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
7098	$-y + xy' = x \tan\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A', _dAlembert]]	✓
7099	$xy' = y - xe^{\frac{y}{x}}$	[[_homogeneous, 'class A', _dAlembert]]	✓
7100	$-y + xy' = (x + y) \ln\left(\frac{x + y}{x}\right)$	[[_homogeneous, 'class A', _dAlembert]]	✓
7101	$xy' = y \cos\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A', _dAlembert]]	✓
7102	$y + \sqrt{xy} - xy' = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
7103	$xy' - \sqrt{x^2 - y^2} - y = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
7104	$x + y - (x - y)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
7106	$-y + xy' = yy'$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
7107	$y^2 + (x^2 - xy)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
7108	$y^2 + xy + x^2 = x^2y'$	[[_homogeneous, 'class A', _rational, _Riccati]]	✓
7109	$\frac{1}{x^2 - xy + y^2} = \frac{y'}{2y^2 - xy}$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
7110	$y' = \frac{2xy}{3x^2 - y^2}$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
7111	$y' = \frac{x}{y} + \frac{y}{x}$ i.c.	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
7112	$xy' = y + \sqrt{y^2 - x^2}$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
7113	$y + (2\sqrt{xy} - x)y' = 0$	[[_homogeneous, 'class A', _dAlembert]]	✓

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#	ODE	CAS classification	Solved?
7114	$xy' = y \ln\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A'], _dAlembert]	✓
7115	<i>i.c.</i> $y'(y' + y) = x(x + y)$	[_quadrature]	✓
7117	$x^2y'^2 - 3xyy' + 2y^2 = 0$	[_separable]	✓
7118	$-y + xy' = \sqrt{y^2 + x^2}$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
7120	$y' + \frac{x + 2y}{x} = 0$	[_linear]	✓
7121	$y' = \frac{y}{x + y}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
7123	$y' = \frac{x + y - 2}{y - 4 - x}$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
7124	$2x - 4y + 6 + (x + y - 2)y' = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
7125	$y' = \frac{2y - x + 5}{2x - y - 4}$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
7126	$y' = -\frac{4x + 3y + 15}{2x + y + 7}$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
7127	$y' = \frac{x + 3y - 5}{x - y - 1}$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
7128	$y' = \frac{2(y + 2)^2}{(x + y + 1)^2}$	[[_homogeneous, 'class C'], _rational]	✓
7129	$2x + y + 1 - (4x + 2y - 3)y' = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
7130	$x - y - 1 + (y - x + 2)y' = 0$	[[_homogeneous, 'class C'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
7131	$(4y + x)y' = 2x + 3y - 5$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓

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#	ODE	CAS classification	Solved?
7132	$y + 2 = (2x + y - 4) y'$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
7133	$(1 + y') \ln \left( \frac{x + y}{x + 3} \right) = \frac{x + y}{x + 3}$	[[_homogeneous, 'class C', _exact, _dAlembert]]	✓
7134	$y' = \frac{x - 2y + 5}{y - 2x - 4}$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
7135	$y' = \frac{3x - y + 1}{2x + y + 4}$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
7136	$2xy' + (x^2y^4 + 1)y = 0$	[[_homogeneous, 'class G', _rational, _Bernoulli]]	✓
7152	$2x + 3 + (2y - 2)y' = 0$	[_separable]	✓
7153	$2x + 4y + (2x - 2y)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
7178	$y' = x^2(1 + y^2)$	[_separable]	✓
7181	$xy' - 2\sqrt{xy} = y$	[[_homogeneous, 'class A', _dAlembert]]	✓
7182	$y' = \frac{y - 1 + x}{x - y + 3}$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
7185	$x^2y' + y^2 - xy = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
7186	$x + y - (x - y)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
7187	$y' = \frac{y}{2x} + \frac{x^2}{2y}$	[[_homogeneous, 'class G', _rational, _Bernoulli]]	✓
7188	$y' = -\frac{2}{t} + \frac{y}{t} + \frac{y^2}{t}$	[_separable]	✓
7191	$y'^2 - a^2y^2 = 0$	[_quadrature]	✓
7219	$y + \sqrt{y^2 + x^2} - xy' = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
7223	$(1 + y^2x^2)y + (y^2x^2 - 1)xy' = 0$	[[_homogeneous, 'class G', _rational]]	✓

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#	ODE	CAS classification	Solved?
7226	$\phi' - \frac{\phi^2}{2} - \phi \cot(\theta) = 0$	[_Bernoulli]	✓
7231	$y e^{xy} + x e^{xy} y' = 0$	[_separable]	✓
7236	$x^2 + y^2 - 2xyy' = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
7237	$x^2 - y^2 + 2xyy' = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
7240	$x + yy' + y - xy' = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
7259	$y' + \cos(x)y = 0$	[_separable]	✓
7264	$y' + 5y = 2$	[_quadrature]	✓
7266	$y' = ky$	[_quadrature]	✓
7267	$y' - 2y = 1$	[_quadrature]	✓
7268	$y' + y = e^x$	[[_linear, 'class A']]	✓
7269	$y' - 2y = x^2 + x$	[[_linear, 'class A']]	✓
7270	$3y' + y = 2e^{-x}$	[[_linear, 'class A']]	✓
7271	$y' + 3y = e^{ix}$	[[_linear, 'class A']]	✓
7272	$y' + iy = x$	[[_linear, 'class A']]	✓
7273	$Ly' + Ry = E$	[_quadrature]	✓
7275	$Ly' + Ry = E e^{i\omega x}$ i.c.	[[_linear, 'class A']]	✓
7277	$y' + 2xy = x$	[_separable]	✓
7278	$xy' + y = 3x^3 - 1$	[_linear]	✓
7279	$y' + y e^x = 3e^x$	[_separable]	✓
7281	$y' + 2xy = x e^{-x^2}$	[_linear]	✓
7283	$x^2 y' + 2xy = 1$	[_linear]	✓
7285	$y' = 1 + y$ i.c.	[_quadrature]	✓
7286	$y' = 1 + y^2$ i.c.	[_quadrature]	✓
7287	$y' = 1 + y^2$ i.c.	[_quadrature]	✓
7407	$y' = x^2 y$	[_separable]	✓

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#	ODE	CAS classification	Solved?
7408	$yy' = x$	[_separable]	✓
7411	$y' = y^2x^2 - 4x^2$	[_separable]	✓
7412	$y' = y^2$	[_quadrature]	✓
i.c.			
7413	$y' = 2\sqrt{y}$	[_quadrature]	✓
i.c.			
7414	$y' = 2\sqrt{y}$	[_quadrature]	✓
i.c.			
7415	$y' = \frac{x+y}{x-y}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
7416	$y' = \frac{y^2}{xy+x^2}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
7417	$y' = \frac{y^2+xy+x^2}{x^2}$	[[_homogeneous, 'class A'], _rational, _Riccati]	✓
7418	$y' = \frac{y+x e^{-\frac{2y}{x}}}{x}$	[[_homogeneous, 'class A'], _dAlembert]	✓
7419	$y' = \frac{x-y+2}{y-1+x}$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
7420	$y' = \frac{2x+3y+1}{-2y-1+x}$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
7421	$y' = \frac{x+y+1}{2x+2y-1}$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
7422	$y' = \frac{(y-1+x)^2}{2(x+2)^2}$	[[_homogeneous, 'class C'], _rational, _Riccati]	✓
7450	$xy' = 2y$	[_separable]	✓
7451	$yy' = e^{2x}$	[_separable]	✓
7452	$y' = ky$	[_quadrature]	✓
7457	$y' = \frac{xy}{y^2+x^2}$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
7458	$2xyy' = y^2 + x^2$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓

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#	ODE	CAS classification	Solved?
7460	$y' = \frac{y^2}{xy - x^2}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
7461	$(y \cos(y) - \sin(y) + x)y' = y$	[[_1st_order, __with_lin- ear_symmetries]]	✓
7462	$1 + y^2 + y^2y' = 0$	[_quadrature]	✓
7481	$y' = \frac{2xy^2}{1 - x^2y}$	[[_homogeneous, 'class G'], _rational, [_Abel, '2nd type', 'class B']]	✓
7483	$x^5y' + y^5 = 0$	[_separable]	✓
7484	$y' = 4xy$	[_separable]	✓
7485	$y' + y \tan(x) = 0$	[_separable]	✓
7486	$(x^2 + 1)y' + 1 + y^2 = 0$	[_separable]	✓
7487	$y \ln(y) - xy' = 0$	[_separable]	✓
7490	$y' - y \tan(x) = 0$	[_separable]	✓
7491	$xyy' = y - 1$	[_separable]	✓
7492	$xy^2 - x^2y' = 0$	[_separable]	✓
7493	$yy' = x + 1$	[_separable]	✓
	<i>i.c.</i>		
7496	$y^2y' = x + 2$	[_separable]	✓
	<i>i.c.</i>		
7497	$y' = y^2x^2$	[_separable]	✓
	<i>i.c.</i>		
7517	$xy' + y = x^4y^3$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
7519	$xy' + y = xy^2$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
7522	$y - xy' = y'y^2e^y$	[[_1st_order, __with_lin- ear_symmetries]]	✓
7523	$xy' + 2 = x^3(y - 1)y'$	[[_1st_order, '.__with_sym- metry_[F(x)*G(y),0']], _Abel, '2nd type', 'class C']]	✓
7524	$xy' = 2x^2y + y \ln(x)$	[_separable]	✓

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#	ODE	CAS classification	Solved?
7526	$\left(x + \frac{2}{y}\right)y' + y = 0$	[[_homogeneous, 'class G', _exact, _rational, [_Abel, '2nd type', 'class B']]]	✓
7530	$y + y \cos(xy) + (x + x \cos(xy))y' = 0$	[_separable]	✓
7534	$1 + y + (1 - x)y' = 0$	[_separable]	✓
7539	$2x(1 + \sqrt{x^2 - y}) = \sqrt{x^2 - y}y'$	[_exact, [_1st_order, '_with_symmetry_[F(x),G(y)']]]	✓
7545	$\frac{y - xy'}{(x + y)^2} + y' = 1$	[[_1st_order, _with_linear_symmetries], _exact, _rational]	✓
7547	$x^2 - 2y^2 + xyy' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
7548	$x^2y' - 3xy - 2y^2 = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
7550	$x \sin\left(\frac{y}{x}\right)y' = y \sin\left(\frac{y}{x}\right) + x$	[[_homogeneous, 'class A', _dAlembert]	✓
7551	$xy' = y + 2xe^{-\frac{y}{x}}$	[[_homogeneous, 'class A', _dAlembert]	✓
7552	$x - y - (x + y)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
7553	$xy' = 2x - 6y$	[_linear]	✓
7554	$xy' = \sqrt{y^2 + x^2}$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
7555	$x^2y' = 2xy + y^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
7556	$x^3 + y^3 - x^2y' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
7557	$y' = \frac{x + y + 4}{x - y - 6}$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
7558	$y' = \frac{x + y + 4}{x + y - 6}$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
7559	$2x - 2y + (y - 1)y' = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓

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#	ODE	CAS classification	Solved?
7560	$y' = \frac{y-1+x}{x+4y+2}$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
7561	$2x + 3y - 1 - 4(x+1)y' = 0$	[_linear]	✓
7562	$y' = \frac{1-xy^2}{2x^2y}$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
7563	$y' = \frac{2+3xy^2}{4x^2y}$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
7564	$y' = \frac{y-xy^2}{x+x^2y}$	[[_homogeneous, 'class G'], _rational, [_Abel, '2nd type', 'class B']]	✓
7565	$y' = \sin\left(\frac{y}{x}\right) - \cos\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A'], _dAlembert]	✓
7566	$e^{\frac{x}{y}} - \frac{yy'}{x} = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓
7567	$y' = \frac{x^2-xy}{y^2 \cos\left(\frac{x}{y}\right)}$	[[_homogeneous, 'class A'], _dAlembert]	✓
7568	$y' = \frac{y \tan\left(\frac{y}{x}\right)}{x}$	[[_homogeneous, 'class A'], _dAlembert]	✓
7580	$y' = \frac{2y}{x} + \frac{x^3}{y} + x \tan\left(\frac{y}{x^2}\right)$	[[_homogeneous, 'class G']]	✓
7593	$xy' + y = x$	[_linear]	✓
7595	$x^2y' = y$	[_separable]	✓
7597	$y' = \frac{y^2+x^2}{x^2-y^2}$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
7598	$y' = \frac{x+2y}{2x-y}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
7599	$x^2y' + 2xy = 0$	[_separable]	✓
7601	$-y + xy' = 2x$	[_linear]	✓
	<i>i.c.</i>		
7603	$y^2y' = x$	[_separable]	✓
	<i>i.c.</i>		

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#	ODE	CAS classification	Solved?
7605	$y' = \frac{x+y}{x-y}$ i.c.	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
7606	$y' = \frac{x^2 + 2y^2}{x^2 - 2y^2}$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
7607	$2x \cos(y) - x^2 \sin(y) y' = 0$ i.c.	[_separable]	✓
7608	$\frac{1}{y} - \frac{xy'}{y^2} = 0$	[_separable]	✓
7749	$y' = 2xy$	[_separable]	✓
7751	$y' + y = 1$	[_quadrature]	✓
7753	$y' - y = 2$	[_quadrature]	✓
7755	$y' + y = 0$	[_quadrature]	✓
7757	$y' - y = 0$	[_quadrature]	✓
7759	$y' - y = x^2$	[[_linear, 'class A']]	✓
7761	$xy' = y$	[_separable]	✓
7763	$x^2y' = y$	[_separable]	✓
7765	$y' - \frac{y}{x} = x^2$	[_linear]	✓
7766	$y' + \frac{y}{x} = x$	[_linear]	✓
7770	$y' = x - y$ i.c.	[[_linear, 'class A']]	✓
7891	$y' - 2y = x^2$ i.c.	[[_linear, 'class A']]	✓
8111	$x^2y'^2 - y^2 = 0$	[_separable]	✓
8112	$xy'^2 - (2x + 3y)y' + 6y = 0$	[_quadrature]	✓
8113	$x^2y'^2 - 5xyy' + 6y^2 = 0$	[_separable]	✓
8114	$x^2y'^2 + xy' - y^2 - y = 0$	[_separable]	✓
8115	$xy'^2 + (1 - x^2y)y' - xy = 0$	[_quadrature]	✓
8116	$y'^2 - (x^2y + 3)y' + 3x^2y = 0$	[_quadrature]	✓
8117	$xy'^2 - (xy + 1)y' + y = 0$	[_quadrature]	✓
8118	$y'^2 - y^2x^2 = 0$	[_separable]	✓

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#	ODE	CAS classification	Solved?
8119	$(x + y)^2 y' = y^2$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
8120	$yy' + (x - y^2) y' - xy = 0$	[_quadrature]	✓
8121	$y^2 - xy(x + y) y' + x^3 y^3 = 0$	[_separable]	✓
8122	$(4x - y) y'^2 + 6(x - y) y' + 2x - 5y = 0$	[_quadrature]	✓
8123	$(x - y)^2 y' = y^2$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
8124	$xyy' + (-1 + xy^2) y' - y = 0$	[_quadrature]	✓
8125	$(y^2 + x^2)^2 y' = 4y^2 x^2$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
8126	$(x + y)^2 y' + (2y^2 + xy - x^2) y' + (y - x) y = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
8127	$xy(y^2 + x^2) (y' - 1) = y' (x^4 + y^2 x^2 + y^4)$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
8128	$xy'^3 - (x + x^2 + y) y'^2 + (x^2 + y + xy) y' - xy = 0$	[_quadrature]	✓
8129	$xyy'^2 + (x + y) y' + 1 = 0$	[_quadrature]	✓
8138	$y^4 y'^3 - 6xy' + 2y = 0$	[[_1st_order, __with_lin- ear_symmetries]]	✓
8141	$2xy'^3 - 6yy'^2 + x^4 = 0$	[[_1st_order, __with_lin- ear_symmetries]]	✓
8150	$x^6 y'^3 - 3xy' - 3y = 0$	[[_1st_order, __with_lin- ear_symmetries]]	✓
8151	$y = x^6 y'^3 - xy'$	[[_1st_order, __with_lin- ear_symmetries]]	✓
8210	$6xy'^2 - (3x + 2y) y' + y = 0$	[_quadrature]	✓
8215	$y^2 y'^2 - (x + 1) yy' + x = 0$	[_quadrature]	✓
8217	$4y^2 y'^3 - 2xy' + y = 0$	[[_1st_order, __with_lin- ear_symmetries]]	✓
8226	$x^2 y'^2 = (x - y)^2$	[_linear]	✓
8229	$xy'^2 + y(1 - x) y' - y^2 = 0$	[_quadrature]	✓

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#	ODE	CAS classification	Solved?
8232	$xy'^3 - 2yy'^2 + 4x^2 = 0$	[[_1st_order, __with_linear_symmetries]]	✓
8373	$y' = \frac{y}{x \ln(x)}$	[_separable]	✓
8374	$(x^2 + 1)y' + y^2 = -1$ i.c.	[_separable]	✓
8375	$y' + \frac{2y}{x} = 5x^2$	[_linear]	✓
8377	$y' = \frac{2x - y}{4y + x}$ i.c.	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
8378	$y' + \frac{2y}{x} = 6x^4y^2$	[[_homogeneous, 'class G', _rational, _Bernoulli]]	✓
8393	$y' = 1 + y$	[_quadrature]	✓
8396	$y' = y$	[_quadrature]	✓
8400	$y' = \frac{2y}{x}$ i.c.	[_separable]	✓
8401	$y' = \frac{2y}{x}$	[_separable]	✓
8404	$y' = \frac{-xy - 1}{4x^3y - 2x^2}$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]]	✓
8409	$y' = \sqrt{y} + x$	[[_1st_order, __with_linear_symmetries], _Chini]	✓
8410	$y^2 + x^2y' = xyy'$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
8418	$y' = \frac{5x^2 - xy + y^2}{x^2}$	[[_homogeneous, 'class A', _rational, _Riccati]]	✓
8419	$2t + 3x + (x + 2)x' = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
8420	$y' = \frac{1}{1 - y}$ i.c.	[_quadrature]	✓
8421	$p' = ap - bp^2$ i.c.	[_quadrature]	✓

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#	ODE	CAS classification	Solved?
8422	$y^2 + \frac{2}{x} + 2xyy' = 0$	[[_homogeneous, 'class G'], _exact, _rational, _Bernoulli]	✓
8427	$yy' - y = x$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
8434	$f' = \frac{1}{f}$	[_quadrature]	✓
8447	$y' + \sin(x - y) = 0$	[[_homogeneous, 'class C'], _dAlembert]	✓
8465	$x' = 4Ak\left(\frac{x}{A}\right)^{3/4} - 3kx$	[_quadrature]	✓
8468	$y' = \frac{y\left(1 + \frac{a^2x}{\sqrt{a^2(x^2+1)}}\right)}{\sqrt{a^2(x^2+1)}}$	[_separable]	✓
8470	$y' = 2\sqrt{y}$	[_quadrature]	✓
	<i>i.c.</i>		
8472	$y' = \sqrt{1 - y^2}$	[_quadrature]	✓
8536	$w' = -\frac{1}{2} - \frac{\sqrt{1 - 12w}}{2}$	[_quadrature]	✓
	<i>i.c.</i>		
8562	$y' = e^{-\frac{y}{x}}$	[[_homogeneous, 'class A'], _dAlembert]	✓
8628	$y' = y(1 - y^2)$	[_quadrature]	✓
8656	$y' = \frac{y}{2y \ln(y) + y - x}$	[[_1st_order, __with_linear_symmetries]]	✓
8658	$x^2y' + e^{-y} = 0$	[_separable]	✓
8666	$y' = axy$	[_separable]	✓
8667	$y' = ax + y$	[[_linear, 'class A']]	✓
8668	$y' = ax + by$	[[_linear, 'class A']]	✓
8669	$y' = y$	[_quadrature]	✓
8670	$y' = by$	[_quadrature]	✓
8675	$cy' = ax + y$	[[_linear, 'class A']]	✓
8676	$cy' = ax + by$	[[_linear, 'class A']]	✓
8677	$cy' = y$	[_quadrature]	✓
8678	$cy' = by$	[_quadrature]	✓

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#	ODE	CAS classification	Solved?
8688	$y' = \cos(x) + \frac{y}{x}$	[_linear]	✓
8720	$y' = \sqrt{1 + 6x + y}$	[[_homogeneous, 'class C'], _dAlembert]	✓
8721	$y' = (1 + 6x + y)^{1/3}$	[[_homogeneous, 'class C'], _dAlembert]	✓
8722	$y' = (1 + 6x + y)^{1/4}$	[[_homogeneous, 'class C'], _dAlembert]	✓
8723	$y' = (a + bx + y)^4$	[[_homogeneous, 'class C'], _dAlembert]	✓
8724	$y' = (\pi + x + 7y)^{7/2}$	[[_homogeneous, 'class C'], _dAlembert]	✓
8725	$y' = (a + bx + cy)^6$	[[_homogeneous, 'class C'], _dAlembert]	✓
8726	$y' = e^{x+y}$	[_separable]	✓
8727	$y' = 10 + e^{x+y}$	[[_homogeneous, 'class C'], _dAlembert]	✓
8806	$y' = (x + y)^4$	[[_homogeneous, 'class C'], _dAlembert]	✓
8847	$y' = y^{1/3}$	[_quadrature]	✓
	<i>i.c.</i>		
9692	$y' + ay - ce^{bx} = 0$	[[_linear, 'class A']]	✓
9694	$y' + 2xy - xe^{-x^2} = 0$	[_linear]	✓
9699	$y' - (\sin(\ln(x)) + \cos(\ln(x)) + a)y = 0$	[_separable]	✓
9702	$y' + y^2 - 1 = 0$	[_quadrature]	✓
9705	$y' + y^2 - 2x^2y + x^4 - 2x - 1 = 0$	[[_1st_order, __with_linear_symmetries], _Riccati]	✓
9707	$y' - y^2 - 3y + 4 = 0$	[_quadrature]	✓
9709	$y' - (x + y)^2 = 0$	[[_homogeneous, 'class C'], _Riccati]	✓
9713	$y' + y^2a - b = 0$	[_quadrature]	✓
9716	$y' - (Ay - a)(By - b) = 0$	[_quadrature]	✓
9719	$y' - xy^2 - 3xy = 0$	[_separable]	✓
9721	$y' - ax^n(1 + y^2) = 0$	[_separable]	✓
9725	$y' + f(x)(y^2 + 2ay + b) = 0$	[_separable]	✓

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#	ODE	CAS classification	Solved?
9728	$y' - ay^3 - \frac{b}{x^{3/2}} = 0$	[[_homogeneous, 'class G', _rational, _Abel]	✓
9729	$y' - a_3y^3 - a_2y^2 - a_1y - a_0 = 0$	[_quadrature]	✓
9731	$y' + axy^3 + by^2 = 0$	[[_homogeneous, 'class G', _Abel]	✓
9742	$y' - ay^n - bx^{\frac{n}{1-n}} = 0$	[[_homogeneous, 'class G', _Chini]	✓
9748	$y' - a\sqrt{y} - bx = 0$	[[_homogeneous, 'class G', _Chini]	✓
9749	$y' - a\sqrt{1+y^2} - b = 0$	[_quadrature]	✓
9750	$y' - \frac{\sqrt{y^2-1}}{\sqrt{x^2-1}} = 0$	[_separable]	✓
9766	$y' - a \cos(y) + b = 0$	[_quadrature]	✓
9767	$y' - \cos(bx + ay) = 0$	[[_homogeneous, 'class C', _dAlembert]	✓
9774	$y' - f(ax + by) = 0$	[[_homogeneous, 'class C', _dAlembert]	✓
9776	$y' - \frac{y - xf(x^2 + y^2a)}{x + ayf(x^2 + y^2a)} = 0$	[[_1st_order, _with_linear_symmetries]]	✓
9781	$xy' - y - \frac{x}{\ln(x)} = 0$	[_linear]	✓
9782	$xy' - y - x^2 \sin(x) = 0$	[_linear]	✓
9783	$xy' - y - \frac{x \cos(\ln(\ln(x)))}{\ln(x)} = 0$	[_linear]	✓
9784	$xy' + ay + bx^n = 0$	[_linear]	✓
9786	$xy' - y^2 + 1 = 0$	[_separable]	✓
9791	$xy' + xy^2 - y = 0$	[[_homogeneous, 'class D', _rational, _Bernoulli]	✓
9792	$xy' + xy^2 - y - ax^3 = 0$	[[_homogeneous, 'class D', _rational, _Riccati]	✓
9793	$xy' + xy^2 - (2x^2 + 1)y - x^3 = 0$	[[_homogeneous, 'class D', _rational, _Riccati]	✓
9798	$xy' - y^2 \ln(x) + y = 0$	[_Bernoulli]	✓
9799	$xy' - y(2y \ln(x) - 1) = 0$	[_Bernoulli]	✓
9802	$xy' - \sqrt{y^2 + x^2} - y = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓

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#	ODE	CAS classification	Solved?
9803	$xy' + a\sqrt{y^2 + x^2} - y = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
9806	$xy' - xe^{\frac{y}{x}} - y - x = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
9807	$xy' - y \ln(y) = 0$	[_separable]	✓
9808	$xy' - y(\ln(xy) - 1) = 0$	[[_homogeneous, 'class G']]	✓
9812	$xy' - y - x \sin\left(\frac{y}{x}\right) = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
9813	$xy' + x - y + x \cos\left(\frac{y}{x}\right) = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
9814	$xy' + x \tan\left(\frac{y}{x}\right) - y = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
9815	$xy' - yf(xy) = 0$	[[_homogeneous, 'class G']]	✓
9816	$xy' - yf(x^a y^b) = 0$	[[_homogeneous, 'class G']]	✓
9819	$2xy' - y - 2x^3 = 0$	[_linear]	✓
9820	$(2x + 1)y' - 4e^{-y} + 2 = 0$	[_separable]	✓
9824	$x^2y' - (x - 1)y = 0$	[_separable]	✓
9825	$x^2y' + y^2 + xy + x^2 = 0$	[[_homogeneous, 'class A', _rational, _Riccati]	✓
9826	$x^2y' - y^2 - xy = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
9827	$x^2y' - y^2 - xy - x^2 = 0$	[[_homogeneous, 'class A', _rational, _Riccati]	✓
9829	$x^2(y' + y^2) + 4xy + 2 = 0$	[[_homogeneous, 'class G', _rational, _Riccati]	✓
9830	$x^2(y' + y^2) + axy + b = 0$	[[_homogeneous, 'class G', _rational, _Riccati]	✓
9832	$x^2(y' + y^2a) - b = 0$	[[_homogeneous, 'class G', _rational, [_Riccati, _special]]]	✓
9838	$(x^2 + 1)y' + xy - x(x^2 + 1) = 0$	[_linear]	✓
9842	$(x^2 - 1)y' - xy + a = 0$	[_linear]	✓
9844	$(x^2 - 1)y' + y^2 - 2xy + 1 = 0$	[_rational, [_1st_order, '_with_symmetry_[F(x),G(x)]'], _Riccati]	✓

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#	ODE	CAS classification	Solved?
9845	$(x^2 - 1)y' - (y - x)y = 0$	[_rational, _Bernoulli]	✓
9847	$(x^2 - 1)y' + axy^2 + xy = 0$	[_separable]	✓
9848	$(x^2 - 1)y' - 2xy \ln(y) = 0$	[_separable]	✓
9851	$(x - a)(x - b)y' + k(x + y - a)(x + y - b) + y^2 = 0$	[_rational, [_1st_order, '_with_symmetry_[F(x),G(x)]'], _Riccati]	✓
9854	$x(2x - 1)y' + y^2 - (1 + 4x)y + 4x = 0$	[_rational, [_1st_order, '_with_symmetry_[F(x),G(x)]'], _Riccati]	✓
9856	$3x^2y' - 7y^2 - 3xy - x^2 = 0$	[[_homogeneous, 'class A'], _rational, _Riccati]	✓
9859	$x^3y' - y^2 - x^4 = 0$	[[_homogeneous, 'class G'], _rational, _Riccati]	✓
9860	$x^3y' - y^2 - x^2y = 0$	[[_homogeneous, 'class D'], _rational, _Bernoulli]	✓
9861	$x^3y' - x^4y^2 + x^2y + 20 = 0$	[[_homogeneous, 'class G'], _rational, _Riccati]	✓
9863	$x(x^2 + 1)y' + x^2y = 0$	[_separable]	✓
9864	$x(x^2 - 1)y' - (2x^2 - 1)y + ax^3 = 0$	[_linear]	✓
9866	$x^2(x - 1)y' - y^2 - x(-2 + x)y = 0$	[[_homogeneous, 'class D'], _rational, _Bernoulli]	✓
9870	$x^4(y' + y^2) + a = 0$	[_rational, [_Riccati, _special]]	✓
9872	$(2x^4 - x)y' - 2(x^3 - 1)y = 0$	[_separable]	✓
9873	$(x^2a + bx + c)^2(y' + y^2) + A = 0$	[_rational, _Riccati]	✓
9875	$x^n y' + y^2 - (n - 1)x^{n-1}y + x^{-2+2n} = 0$	[[_homogeneous, 'class G'], _Riccati]	✓
9876	$x^n y' - y^2 a - b x^{-2+2n} = 0$	[[_homogeneous, 'class G'], _Riccati]	✓
9877	$x^{2n+1}y' - ay^3 - bx^{3n} = 0$	[[_homogeneous, 'class G'], _Abel]	✓
9878	$x^{m(n-1)+n}y' - ay^n - bx^{n(m+1)} = 0$	[[_homogeneous, 'class G']]	✓
9879	$\sqrt{x^2 - 1}y' - \sqrt{y^2 - 1} = 0$	[_separable]	✓
9882	$y'x \ln(x) + y - ax(\ln(x) + 1) = 0$	[_linear]	✓

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#	ODE	CAS classification	Solved?
9893	$yy' + ay + x = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
9898	$yy' - \sqrt{y^2a + b} = 0$	[_quadrature]	✓
9900	$yy' - xe^{\frac{x}{y}} = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓
9902	$(1 + y)y' - y - x = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
9903	$(y - 1 + x)y' - y + 2x + 3 = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
9904	$(y + 2x - 2)y' - y + x + 1 = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
9905	$(y - 2x + 1)y' + y + x = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
9907	$(y - x^2)y' + 4xy = 0$	[[_homogeneous, 'class G'], _rational, [_Abel, '2nd type', 'class A']]	✓
9910	$(2y + x + 1)y' - x - 2y + 1 = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
9911	$(2y + x + 7)y' - y + 2x + 4 = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
9912	$(2y - x)y' - y - 2x = 0$	[[_homogeneous, 'class A'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
9913	$(2y - 6x)y' - y + 3x + 2 = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
9914	$(4y + 2x + 3)y' - 2y - x - 1 = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
9915	$(4y - 2x - 3)y' + 2y - x - 1 = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓

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#	ODE	CAS classification	Solved?
9916	$(4y - 3x - 5)y' - 3y + 7x + 2 = 0$	[[_homogeneous, 'class C', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
9917	$(4y + 11x - 11)y' - 25y - 8x + 62 = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
9918	$(12y - 5x - 8)y' - 5y + 2x + 3 = 0$	[[_homogeneous, 'class C', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
9920	$(ay + bx + c)y' + \alpha y + \beta x + \gamma = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
9921	$xyy' + y^2 + x^2 = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
9925	$x(4 + y)y' - y^2 - 2y - 2x = 0$	[_rational, [_Abel, '2nd type', 'class B']]]	✓
9927	$(x(x + y) + a)y' - y(x + y) - b = 0$	[[_1st_order, _with_lin- ear_symmetries], _rational, [_Abel, '2nd type', 'class B']]]	✓
9928	$(xy - x^2)y' + y^2 - 3xy - 2x^2 = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
9929	$2xyy' - y^2 + ax = 0$	[[_homogeneous, 'class G', _rational, _Bernoulli]]	✓
9930	$2xyy' - y^2 + x^2a = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
9931	$2xyy' + 2y^2 + 1 = 0$	[_separable]]	✓
9934	$(2xy + 4x^3)y' + y^2 + 112x^2y = 0$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]]	✓
9935	$x(2x + 3y)y' + 3(x + y)^2 = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
9936	$(2 + 3x)(y - 2x - 1)y' - y^2 + xy - 7x^2 - 9x - 3 = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class B']]]	✓
9938	$(axy + bx^n)y' + \alpha y^3 + \beta y^2 = 0$	[_rational, [_1st_or- der, 'with_symme- try_[F(x)*G(y),0']', [_Abel, '2nd type', 'class C']]]	✓

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#	ODE	CAS classification	Solved?
9943	$x(xy - 2)y' + x^2y^3 + xy^2 - 2y = 0$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class C']]	✓
9944	$x(xy - 3)y' + xy^2 - y = 0$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]	✓
9949	$(2x^2y + x)y' - x^2y^3 + 2xy^2 + y = 0$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class C']]	✓
9950	$(2x^2y - x)y' - 2xy^2 - y = 0$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]	✓
9951	$(2x^2y - x^3)y' + y^3 - 4xy^2 + 2x^3 = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class C'], _dAlem- bert]	✓
9953	$2x(x^3y + 1)y' + (3x^3y - 1)y = 0$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]	✓
9960	$(y^2 + x^2)y' + 2x(2x + y) = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlem- bert]	✓
9961	$(y^2 + x^2)y' - y^2 = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
9965	$(y^2 - x^2)y' + 2xy = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
9966	$(y^2 + x^4)y' - 4x^3y = 0$	[[_homogeneous, 'class G', _rational]	✓
9969	$(x + y)^2y' - a^2 = 0$	[[_homogeneous, 'class C', _dAlembert]	✓
9970	$(y^2 + 2xy - x^2)y' - y^2 + 2xy + x^2 = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
9971	$(y + 3x - 1)^2y' - (2y - 1)(4y + 6x - 3) = 0$	[[_homogeneous, 'class C', _rational]	✓
9973	$(4y^2 + x^2)y' - xy = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
9974	$(3x^2 + 2xy + 4y^2)y' + 2x^2 + 6xy + y^2 = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlem- bert]	✓

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Table 2.19 first order ode lie symmetry  
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#	ODE	CAS classification	Solved?
9975	$(1 - 3x + 2y)^2 y' - (3y - 2x - 4)^2 = 0$	[[_homogeneous, 'class C', _rational]	✓
9976	$(2y - 4x + 1)^2 y' - (y - 2x)^2 = 0$	[[_homogeneous, 'class C', _rational, _dAlembert]	✓
9979	$(y^2 a + 2bxy + c x^2) y' + by^2 + 2cxy + d x^2 = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlem- bert]	✓
9980	$(b(\beta y + \alpha x)^2 - \beta(ax + by)) y'$ $+ a(\beta y + \alpha x)^2 - \alpha(ax + by) = 0$	[[_1st_order, _with_lin- ear_symmetries], _rational]	✓
9981	$(ay + bx + c)^2 y' + (\alpha y + \beta x + \gamma)^2 = 0$	[[_homogeneous, 'class C', _rational]	✓
9982	$x(y^2 - 3x) y' + 2y^3 - 5xy = 0$	[[_homogeneous, 'class G', _rational]	✓
9983	$x(y^2 + x^2 - a) y' - y(y^2 + x^2 + a) = 0$	[_rational, [_1st_or- der, '_with_symme- try_[F(x),G(x)*y+H(x)']]]	✓
9984	$x(y^2 + xy - x^2) y' - y^3 + xy^2 + x^2 y = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
9985	$x(y^2 + x^2 y + x^2) y' - 2y^3 - 2y^2 x^2 + x^4 = 0$	[_rational, [_1st_or- der, '_with_symme- try_[F(x),G(x)*y+H(x)']]]	✓
9986	$2x(5x^2 + y^2) y' + y^3 - x^2 y = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
9987	$3xy^2 y' + y^3 - 2x = 0$	[[_homogeneous, 'class G', _exact, _rational, _Bernoulli]	✓
9988	$(3xy^2 - x^2) y' + y^3 - 2xy = 0$	[[_homogeneous, 'class G', _exact, _rational]	✓
9989	$6xy^2 y' + 2y^3 + x = 0$	[[_homogeneous, 'class G', _exact, _rational, _Bernoulli]	✓
9990	$(6xy^2 + x^2) y' - y(3y^2 - x) = 0$	[[_homogeneous, 'class G', _rational]	✓
9991	$(y^2 x^2 + x) y' + y = 0$	[[_homogeneous, 'class G', _rational]	✓
9992	$(xy - 1)^2 xy' + (1 + y^2 x^2) y = 0$	[[_homogeneous, 'class G', _rational]	✓
9993	$(10x^3 y^2 + x^2 y + 2x) y' + 5x^2 y^3 + xy^2 = 0$	[[_homogeneous, 'class G', _rational]	✓

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#	ODE	CAS classification	Solved?
9995	$(y^3 - x^3) y' - x^2 y = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
9997	$2y^3 y' + xy^2 = 0$	[_separable]	✓
9999	$(2y^3 + 5x^2 y) y' + 5xy^2 + x^3 = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]	✓
10000	$(20y^3 - 3xy^2 + 6x^2 y + 3x^3) y' - y^3 + 6xy^2 + 9x^2 y + 4x^3 = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]	✓
10004	$(2xy^3 - x^4) y' + 2x^3 y - y^4 = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
10010	$(2x^2 y^3 + y^2 x^2 - 2x) y' - 2y - 1 = 0$	[_rational, [_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓
10014	$y(y^3 - 2x^3) y' + (2y^3 - x^3) x = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
10015	$y((bx + ay)^3 + bx^3) y' + x((bx + ay)^3 + ay^3) = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
10017	$a x^2 y^n y' - 2xy' + y = 0$	[[_homogeneous, 'class G', _rational]	✓
10018	$y^m x^n (axy' + by) + \alpha xy' + \beta y = 0$	[[_homogeneous, 'class G', _rational]	✓
10019	$(f(x + y) + 1) y' + f(x + y) = 0$	[[_homogeneous, 'class C', _exact, _dAlembert]	✓
10021	$(\sqrt{xy} - 1) xy' - (\sqrt{xy} + 1) y = 0$	[[_homogeneous, 'class G']]	✓
10022	$(2x^{5/2} y^{3/2} + x^2 y - x) y' - x^{3/2} y^{5/2} + xy^2 - y = 0$	[[_homogeneous, 'class G', _rational]	✓
10023	$(1 + \sqrt{x + y}) y' + 1 = 0$	[[_homogeneous, 'class C', _dAlembert]	✓
10026	$(x + \sqrt{y^2 + x^2}) y' - y = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
10027	$(y\sqrt{y^2 + x^2} + (y^2 - x^2) \sin(\alpha) - 2xy \cos(\alpha)) y' + x\sqrt{y^2 + x^2} + 2xy \sin(\alpha) + (y^2 - x^2) \cos(\alpha) = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
10028	$(x\sqrt{1 + x^2 + y^2} - y(y^2 + x^2)) y' - y\sqrt{1 + x^2 + y^2} - x(y^2 + x^2) = 0$	[[_1st_order, _with_linear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
10031	$x(3e^{xy} + 2e^{-xy})(xy' + y) + 1 = 0$	[[_homogeneous, 'class G']]	✓
10033	$(\ln(y) + 2x - 1)y' - 2y = 0$	[[_1st_order, __with_linear_symmetries]]	✓
10038	$xy' \cot\left(\frac{y}{x}\right) + 2x \sin\left(\frac{y}{x}\right) - y \cot\left(\frac{y}{x}\right) = 0$	[[_homogeneous, 'class A']]	✓
10042	$xy' \cos(y) + \sin(y) = 0$	[_separable]	✓
10049	$y' \cos(ay) - b(1 - c \cos(ay)) \sqrt{\cos(ay)^2 - 1 + c \cos(ay)} = 0$	[_quadrature]	✓
10051	$(x^2y \sin(xy) - 4x)y' + xy^2 \sin(xy) - y = 0$	[[_homogeneous, 'class G']]	✓
10052	$(-y + xy') \cos\left(\frac{y}{x}\right)^2 + x = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓
10053	$\left(y \sin\left(\frac{y}{x}\right) - x \cos\left(\frac{y}{x}\right)\right) xy' - \left(x \cos\left(\frac{y}{x}\right) + y \sin\left(\frac{y}{x}\right)\right) y = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓
10054	$(yf(y^2 + x^2) - x)y' + y + xf(y^2 + x^2) = 0$	[[_1st_order, __with_linear_symmetries]]	✓
10076	$y'^2 + (y' - y)e^x = 0$	[[_1st_order, __with_linear_symmetries]]	✓
10080	$y'^2 + (bx + ay)y' + abxy = 0$	[_quadrature]	✓
10081	$y'^2 - xyy' + y^2 \ln(ay) = 0$	[[_1st_order, '_with_symmetry_[F(x),G(y)]']]	✓
10084	$y'^2 + y(y - x)y' - xy^3 = 0$	[_separable]	✓
10121	$(xy' + y + 2x)^2 - 4xy - 4x^2 - 4a = 0$	[[_1st_order, '_with_symmetry_[F(x),G(y)]']]	✓
10123	$x^2y'^2 - 2xyy' + y(1 + y) - x = 0$	[[_1st_order, __with_linear_symmetries], _rational]	✓
10126	$x^2y'^2 + 3xyy' + 2y^2 = 0$	[_separable]	✓
10128	$x^2y'^2 + 4xyy' - 5y^2 = 0$	[_separable]	✓
10130	$x^2y'^2 + (x^2y - 2xy + x^3)y' + (y^2 - x^2y)(1 - x) = 0$	[_linear]	✓
10132	$x^2y'^2 + (ax^2y^3 + b)y' + aby^3 = 0$	[_quadrature]	✓
10136	$(-a^2 + x^2)y'^2 + 2xyy' + y^2 = 0$	[_separable]	✓
10158	$yy'^2 - (y - x)y' - x = 0$	[_quadrature]	✓
10168	$xyy'^2 + (y^2 + x^2)y' + xy = 0$	[_separable]	✓

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#	ODE	CAS classification	Solved?
10172	$axy y'^2 - (y^2 a + b x^2 + c) y' + bxy = 0$	[_rational]	✓
10192	$xy^2 y'^2 - 2y^3 y' + 2xy^2 - x^3 = 0$	[_separable]	✓
10213	$y'^3 - (y^2 + xy + x^2) y'^2 + (xy^3 + y^2 x^2 + x^3 y) y' - x^3 y^3 = 0$	[_quadrature]	✓
10214	$y'^3 - xy^4 y' - y^5 = 0$	[[_1st_order, __with_linear_symmetries]]	✓
10224	$x^3 y'^3 - 3x^2 y y'^2 + (3xy^2 + x^6) y' - y^3 - 2x^5 y = 0$	[[_1st_order, __with_linear_symmetries]]	✓
10225	$2(xy' + y)^3 - yy' = 0$	[[_homogeneous, 'class G']]	✓
10226	$y'^3 \sin(x) - (y \sin(x) - \cos(x)^2) y'^2 - (y \cos(x)^2 + \sin(x)) y' + y \sin(x) = 0$	[_quadrature]	✓
10228	$y^2 y'^3 + 2xy' - y = 0$	[[_1st_order, __with_linear_symmetries]]	✓
10229	$16y^2 y'^3 + 2xy' - y = 0$	[[_1st_order, __with_linear_symmetries]]	✓
10231	$x^7 y^2 y'^3 - (3x^6 y^3 - 1) y'^2 + 3x^5 y^4 y' - x^4 y^5 = 0$	[[_homogeneous, 'class G']]	✓
10240	$ay'^m + by'^n - y = 0$	[_quadrature]	✓
10244	$x \left( \sqrt{1 + y'^2} + y' \right) - y = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
10247	$ay \sqrt{1 + y'^2} - 2xy y' + y^2 - x^2 = 0$	[_rational]	✓
10250	$\ln(y') + xy' + ay + b = 0$	[[_1st_order, __with_linear_symmetries], _dAlembert]	✓
10251	$\ln(y') + a(-y + xy') = 0$	[[_1st_order, __with_linear_symmetries], _Clairaut]	✓
10252	$y \ln(y') + y' - y \ln(y) - xy = 0$	[_separable]	✓
10255	$y'^2 \sin(y') - y = 0$	[_quadrature]	✓
10264	$y' = F\left(\frac{y}{x+a}\right)$	[[_homogeneous, 'class C'], _dAlembert]	✓
10265	$y' = 2x + F(y - x^2)$	[[_1st_order, __with_linear_symmetries]]	✓
10266	$y' = -\frac{ax}{2} + F\left(y + \frac{x^2 a}{4} + \frac{bx}{2}\right)$	[[_1st_order, __with_linear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
10267	$y' = F(y e^{-bx}) e^{bx}$	[[_1st_order, __with_linear_symmetries]]	✓
10271	$y' = \frac{2a}{y + 2F(y^2 - 4ax) a}$	[[_1st_order, __with_linear_symmetries]]	✓
10276	$y' = \frac{F\left(-\frac{-1+y \ln(x)}{y}\right) y^2}{x}$	[[_1st_order, ‘_with_symmetry_[F(x),G(y)]’]]	✓
10283	$y' = \frac{-2x^2 + x + F(y + x^2 - x)}{x}$	[[_1st_order, ‘_with_symmetry_[F(x),G(x)]’]]	✓
10284	$y' = \frac{2a}{x^2 \left(-y + 2F\left(\frac{xy^2 - 4a}{x}\right) a\right)}$	[[_1st_order, ‘_with_symmetry_[F(x),G(y)]’]]	✓
10285	$y' = \frac{y + F\left(\frac{y}{x}\right)}{x - 1}$	[[_homogeneous, ‘class D’]]	✓
10287	$y' = \frac{F\left(-\frac{2y \ln(x) - 1}{y}\right) y^2}{x}$	[[_1st_order, ‘_with_symmetry_[F(x),G(y)]’]]	✓
10292	$y' = -\frac{y^2 \left(2x - F\left(-\frac{xy - 2}{2y}\right)\right)}{4x}$	[NONE]	✓
10295	$y' = \frac{\sqrt{y}}{\sqrt{y} + F\left(\frac{x-y}{\sqrt{y}}\right)}$	[[_1st_order, __with_linear_symmetries]]	✓
10299	$y' = \frac{\left(y e^{-\frac{x^2}{4}} x + 2F\left(y e^{-\frac{x^2}{4}}\right)\right) e^{\frac{x^2}{4}}}{2}$	[[_1st_order, ‘_with_symmetry_[F(x),G(y)]’]]	✓
10303	$y' = -\frac{-x^2 + 2x^3y - F((xy - 1)x)}{x^4}$	[[_1st_order, ‘_with_symmetry_[F(x),G(x)*y+H(x)]’]]	✓
10307	$y' = \frac{y^2 + 2xy + x^2 + e^{2F(-(x-y)(x+y))}}{y^2 + 2xy + x^2 - e^{2F(-(x-y)(x+y))}}$	[[_1st_order, __with_linear_symmetries]]	✓
10308	$y' = \frac{1}{y + \sqrt{x}}$	[[_homogeneous, ‘class G’], [_Abel, ‘2nd type’, ‘class C’]]	✓
10309	$y' = \frac{1}{y + 2 + \sqrt{3x + 1}}$	[[_1st_order, __with_linear_symmetries], [_Abel, ‘2nd type’, ‘class C’]]	✓
10310	$y' = \frac{x^2}{y + x^{3/2}}$	[[_1st_order, __with_linear_symmetries], _rational, [_Abel, ‘2nd type’, ‘class C’]]	✓

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#	ODE	CAS classification	Solved?
10311	$y' = \frac{x^{5/3}}{y + x^{4/3}}$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class C']]]	✓
10314	$y' = \frac{(-1 + y \ln(x))^2}{x}$	[_Riccati]	✓
10315	$y' = \frac{x(-2 + 3\sqrt{x^2 + 3y})}{3}$	[[_1st_order, '_with_sym- metry_[F(x),G(y)]']]	✓
10316	$y' = \frac{(2y \ln(x) - 1)^2}{x}$	[_Riccati]	✓
10317	$y' = \frac{e^{bx}}{y e^{-bx} + 1}$	[[_1st_order, '_with_lin- ear_symmetries], [_Abel, '2nd type', 'class C']]]	✓
10318	$y' = \frac{x^2(1 + 2\sqrt{x^3 - 6y})}{2}$	[[_1st_order, '_with_sym- metry_[F(x),G(y)]']]	✓
10319	$y' = \frac{e^x}{y e^{-x} + 1}$	[[_1st_order, '_with_lin- ear_symmetries], [_Abel, '2nd type', 'class C']]]	✓
10320	$y' = \frac{e^{\frac{2x}{3}}}{y e^{-\frac{2x}{3}} + 1}$	[[_1st_order, '_with_lin- ear_symmetries], [_Abel, '2nd type', 'class C']]]	✓
10322	$y' = \frac{x(x + 2\sqrt{x^3 - 6y})}{2}$	[[_1st_order, '_with_sym- metry_[F(x),G(x)]']]	✓
10323	$y' = (-\ln(y) + x^2)y$	[[_1st_order, '_with_symme- try_[F(x),G(x)*y+H(x)]']]	✓
10330	$y' = \frac{x(-2 + 3x\sqrt{x^2 + 3y})}{3}$	[[_1st_order, '_with_sym- metry_[F(x),G(x)]']]	✓
10332	$y' = (-\ln(y) + x)y$	[[_1st_order, '_with_lin- ear_symmetries]]	✓
10333	$y' = \frac{x^3 + x^2 + 2\sqrt{x^3 - 6y}}{2x + 2}$	[[_1st_order, '_with_sym- metry_[F(x),G(x)]']]	✓
10336	$y' = -\frac{x}{4} + \frac{1}{4} + x\sqrt{x^2 - 2x + 1 + 8y}$	[[_1st_order, '_with_sym- metry_[F(x),G(x)]']]	✓
10337	$y' = -\frac{x}{2} - \frac{a}{2} + x\sqrt{x^2 + 2ax + a^2 + 4y}$	[[_1st_order, '_with_sym- metry_[F(x),G(x)]']]	✓

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#	ODE	CAS classification	Solved?
10338	$y' = \frac{(\ln(y) + x^2)y}{x}$	[[_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]']]	✓
10340	$y' = -\frac{x}{2} + 1 + x\sqrt{x^2 - 4x + 4y}$	[[_1st_order, '_with_symmetry_[F(x),G(x)]']]	✓
10341	$y' = -\frac{2x^2 + 2x - 3\sqrt{x^2 + 3y}}{3(x + 1)}$	[[_1st_order, '_with_symmetry_[F(x),G(x)]']]	✓
10342	$y' = \frac{y^3 e^{-\frac{4x}{3}}}{y e^{-\frac{2x}{3}} + 1}$	[[_1st_order, '_with_linear_symmetries], [_Abel, '2nd type', 'class C']]	✓
10343	$y' = \frac{(\ln(y) + x^3)y}{x}$	[[_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]']]	✓
10344	$y' = -\frac{x}{4} + \frac{1}{4} + x^2\sqrt{x^2 - 2x + 1 + 8y}$	[[_1st_order, '_with_symmetry_[F(x),G(x)]']]	✓
10345	$y' = -\frac{x^2 - 1 - 4\sqrt{x^2 - 2x + 1 + 8y}}{4(x + 1)}$	[[_1st_order, '_with_symmetry_[F(x),G(x)]']]	✓
10346	$y' = -\frac{ax}{2} - \frac{b}{2} + x\sqrt{a^2x^2 + 2abx + b^2 + 4ay - 4c}$	[[_1st_order, '_with_symmetry_[F(x),G(x)]']]	✓
10347	$y' = -\frac{x}{2} - \frac{a}{2} + x^2\sqrt{x^2 + 2ax + a^2 + 4y}$	[[_1st_order, '_with_symmetry_[F(x),G(x)]']]	✓
10348	$y' = -\frac{ax}{2} - \frac{b}{2} + x^2\sqrt{a^2x^2 + 2abx + b^2 + 4ay - 4c}$	[[_1st_order, '_with_symmetry_[F(x),G(x)]']]	✓
10349	$y' = \frac{x}{2} + \frac{1}{2} + x^2\sqrt{x^2 + 2x + 1 - 4y}$	[[_1st_order, '_with_symmetry_[F(x),G(x)]']]	✓
10351	$y' = -\frac{x}{2} + 1 + x^2\sqrt{x^2 - 4x + 4y}$	[[_1st_order, '_with_symmetry_[F(x),G(x)]']]	✓
10353	$y' = (-\ln(y) + 1 + x^2 + x^3)y$	[[_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]']]	✓
10354	$y' = \frac{y^3 e^{-2bx}}{y e^{-bx} + 1}$	[[_1st_order, '_with_linear_symmetries], [_Abel, '2nd type', 'class C']]	✓
10355	$y' = \frac{y^3 e^{-2x}}{y e^{-x} + 1}$	[[_1st_order, '_with_linear_symmetries], [_Abel, '2nd type', 'class C']]	✓

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#	ODE	CAS classification	Solved?
10361	$y' = -\frac{x^2 - x - 2 - 2\sqrt{x^2 - 4x + 4y}}{2(x + 1)}$	[[_1st_order, '_with_symmetry_[F(x),G(x)]']]	✓
10367	$y' = \frac{x^2 + 2x + 1 + 2\sqrt{x^2 + 2x + 1 - 4y}}{2x + 2}$	[[_1st_order, '_with_symmetry_[F(x),G(x)]']]	✓
10369	$y' = \frac{2a}{x(-xy + 2axy^2 - 8a^2)}$	[[_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓
10370	$y' = \frac{y(-1 + \ln(x(x + 1)))yx^4 - \ln(x(x + 1))x^3}{x}$	[_Bernoulli]	✓
10380	$y' = (1 + y^2e^{-2bx} + y^3e^{-3bx})e^{bx}$	[[_1st_order, '_with_linear_symmetries], _Abel]	✓
10384	$y' = (1 + y^2e^{-\frac{4x}{3}} + y^3e^{-2x})e^{\frac{2x}{3}}$	[[_1st_order, '_with_linear_symmetries], _Abel]	✓
10385	$y' = (1 + y^2e^{-2x} + y^3e^{-3x})e^x$	[[_1st_order, '_with_linear_symmetries], _Abel]	✓
10390	$y' = \frac{y(1 - x + yx^2 \ln(x) + x^3y - x \ln(x) - x^2)}{(x - 1)x}$	[_Bernoulli]	✓
10392	$y' = \frac{(\ln(y) + x + x^3 + x^4)y}{x}$	[[_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]']]	✓
10397	$y' = \frac{-\ln(x) + e^{\frac{1}{x}} + 4x^2y + 2x + 2xy^2 + 2x^3}{\ln(x) - e^{\frac{1}{x}}}$	[[_1st_order, '_with_symmetry_[F(x),G(x)]'], _Riccati]	✓
10400	$y' = \frac{-bya + b^2 + ab + b^2x - ba\sqrt{x} - a^2}{a(-ay + b + a + bx - a\sqrt{x})}$	[[_1st_order, '_with_linear_symmetries], _rational, [_Abel, '2nd type', 'class A']]	✓
10401	$y' = \frac{y(-\ln(\frac{1}{x}) + e^x + yx^2 \ln(x) + x^3y - x \ln(x) - x^2)}{(-\ln(\frac{1}{x}) + e^x)x}$	[_Bernoulli]	✓
10404	$y' = -\frac{x^2 + x + ax + a - 2\sqrt{x^2 + 2ax + a^2 + 4y}}{2(x + 1)}$	[[_1st_order, '_with_symmetry_[F(x),G(x)]']]	✓
10406	$y' = \frac{y(-e^x + \ln(2x)x^2y - \ln(2x)x)e^{-x}}{x}$	[_Bernoulli]	✓
10408	$y' = \frac{(18x^{3/2} + 36y^2 - 12x^3y + x^6)\sqrt{x}}{36}$	[[_1st_order, '_with_symmetry_[F(x),G(x)]'], _Riccati]	✓

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#	ODE	CAS classification	Solved?
10409	$y' = -\frac{y^3}{(-1 + 2y \ln(x) - y)x}$	[[_1st_order, '_with_symmetry_[F(x)*G(y),0]'], [_Abel, '2nd type', 'class C']]	✓
10410	$y' = \frac{2a}{y + 2ay^4 - 16a^2xy^2 + 32a^3x^2}$	[[_1st_order, '_with_linear_symmetries]]	✓
10411	$y' = -\frac{y^3}{(-1 + y \ln(x) - y)x}$	[[_1st_order, '_with_symmetry_[F(x)*G(y),0]'], [_Abel, '2nd type', 'class C']]	✓
10412	$y' = \frac{-\ln(x) + 2 \ln(2x)xy + \ln(2x) + \ln(2x)y^2 + \ln(2x)x}{\ln(x)}$	[[_1st_order, '_with_symmetry_[F(x),G(x)]'], _Riccati]	✓
10413	$y' = -\frac{bya - bc + b^2x + ba\sqrt{x} - a^2}{a(ay - c + bx + a\sqrt{x})}$	[[_1st_order, '_with_linear_symmetries], _rational, [_Abel, '2nd type', 'class A']]	✓
10418	$y' = \frac{1 + 2y}{x(-2 + xy^2 + 2xy^3)}$	[_rational, [_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓
10422	$y' = \frac{(2y \ln(x) - 1)^3}{(-1 + 2y \ln(x) - y)x}$	[[_1st_order, '_with_symmetry_[F(x),G(y)]'], [_Abel, '2nd type', 'class C']]	✓
10423	$y' = \frac{2x^2 + 2x + x^4 - 2x^2y - 1 + y^2}{x + 1}$	[_rational, [_1st_order, '_with_symmetry_[F(x),G(x)]'], _Riccati]	✓
10425	$y' = \frac{2a}{-x^2y + 2ay^4x^2 - 16a^2xy^2 + 32a^3}$	['y=_G(x,y)']	✓
10426	$y' = \frac{1 + 2y}{x(-2 + xy + 2xy^2)}$	[_rational, [_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓
10432	$y' = \frac{(-1 + y \ln(x))^3}{(-1 + y \ln(x) - y)x}$	[[_1st_order, '_with_symmetry_[F(x),G(y)]'], [_Abel, '2nd type', 'class C']]	✓
10434	$y' = -\frac{y(\tan(x) + \ln(2x)x - \ln(2x)x^2y)}{x \tan(x)}$	[_Bernoulli]	✓

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#	ODE	CAS classification	Solved?
10438	$y' = \frac{(\ln(y)x + \ln(y) + x^4)y}{x(x+1)}$	[[_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]]]	✓
10442	$y' = \frac{y^{3/2}}{y^{3/2} + x^2 - 2xy + y^2}$	[[_1st_order, '_with_linear_symmetries], _rational]	✓
10444	$y' = \frac{-4xy + x^3 + 2x^2 - 4x - 8}{-8y + 2x^2 + 4x - 8}$	[[_1st_order, '_with_linear_symmetries], _rational, [_Abel, '2nd type', 'class A']]	✓
10448	$y' = \frac{-4xy - x^3 + 4x^2 - 4x + 8}{8y + 2x^2 - 8x + 8}$	[[_1st_order, '_with_linear_symmetries], _rational, [_Abel, '2nd type', 'class A']]	✓
10450	$y' = \frac{(\ln(y)x + \ln(y) + x)y}{x(x+1)}$	[[_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]]]	✓
10453	$y' = \frac{y(-\ln(x) - x \ln(\frac{(x-1)(x+1)}{x})) + \ln(\frac{(x-1)(x+1)}{x})x^2}{x \ln(x)}$	Bernoulli]	✓
10454	$y' = \frac{-8xy - x^3 + 2x^2 - 8x + 32}{32y + 4x^2 - 8x + 32}$	[[_1st_order, '_with_linear_symmetries], _rational, [_Abel, '2nd type', 'class A']]	✓
10455	$y' = \frac{y(1+y)}{x(-y-1+xy)}$	[_rational, [_1st_order, '_with_symmetry_[F(x)*G(y),0]], [_Abel, '2nd type', 'class B']]	✓
10458	$y' = \frac{-4axy - a^2x^3 - 2ax^2b - 4ax + 8}{8y + 2x^2a + 4bx + 8}$	[[_1st_order, '_with_linear_symmetries], _rational, [_Abel, '2nd type', 'class A']]	✓
10460	$y' = \frac{xy + x + y^2}{(x-1)(x+y)}$	[[_homogeneous, 'class D'], _rational, [_Abel, '2nd type', 'class B']]	✓
10461	$y' = \frac{-4xy - x^3 - 2x^2a - 4x + 8}{8y + 2x^2 + 4ax + 8}$	[[_1st_order, '_with_linear_symmetries], _rational, [_Abel, '2nd type', 'class A']]	✓

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#	ODE	CAS classification	Solved?
10462	$y' = \frac{x - y + \sqrt{y}}{x - y + \sqrt{y} + 1}$	[[_1st_order, _with_linear_symmetries], _rational]	✓
10463	$y' = \frac{y \left( -\ln\left(\frac{1}{x}\right) - \ln\left(\frac{x^2+1}{x}\right)x + \ln\left(\frac{x^2+1}{x}\right)x^2y \right)}{x \ln\left(\frac{1}{x}\right)}$	[_Bernoulli]	✓
10464	$y' = \frac{y(1+y)}{x(-y-1+xy^4)}$	[_rational, [_1st_order, 'with_symmetry_[F(x)*G(y),0]']]	✓
10466	$y' = \frac{x^3y + x^3 + xy^2 + y^3}{(x-1)x^3}$	[[_homogeneous, 'class D'], _rational, _Abel]	✓
10469	$y' = \frac{y \left( -\tanh\left(\frac{1}{x}\right) - \ln\left(\frac{x^2+1}{x}\right)x + \ln\left(\frac{x^2+1}{x}\right)x^2y \right)}{x \tanh\left(\frac{1}{x}\right)}$	[_Bernoulli]	✓
10470	$y' = -\frac{y(\tanh(x) + \ln(2x)x - \ln(2x)x^2y)}{x \tanh(x)}$	[_Bernoulli]	✓
10471	$y' = \frac{-\sinh(x) + x^2 \ln(x) + 2y \ln(x)x + \ln(x) + y^2 \ln(x)}{\sinh(x)}$	[[_1st_order, 'with_symmetry_[F(x),G(x)]'], _Riccati]	✓
10472	$y' = \frac{\ln(x) - \sinh(x)x^2 - 2\sinh(x)xy - \sinh(x) - \sinh(x)y^2}{\ln(x)}$	[[_1st_order, 'with_symmetry_[F(x),G(x)]'], _Riccati]	✓
10475	$y' = \frac{y(\ln(x-1) + \coth(x+1)x - \coth(x+1)x^2y)}{x \ln(x-1)}$	[_Bernoulli]	✓
10476	$y' = \frac{\ln(x-1) - \coth(x+1)x^2 - 2\coth(x+1)xy - \coth(x+1) - \coth(x+1)y^2}{\ln(x-1)}$	[[_1st_order, 'with_symmetry_[F(x),G(x)]'], _Riccati]	✓
10479	$y' = \frac{y \left( -\cosh\left(\frac{1}{x+1}\right)x + \cosh\left(\frac{1}{x+1}\right) - x + x^2y - x^2 + x^3y \right)}{x(x-1)\cosh\left(\frac{1}{x+1}\right)}$	[_Bernoulli]	✓
10480	$y' = -\frac{y(xy+1)}{x(xy+1-y)}$	[_rational, [_Abel, '2nd type', 'class B']]	✓
10482	$y' = \frac{x^3 + 3x^2a + 3a^2x + a^3 + xy^2 + y^2a + y^3}{(x+a)^3}$	[[_homogeneous, 'class C'], _rational, _Abel]	✓
10484	$y' = \frac{y \left( -1 - \cosh\left(\frac{x+1}{x-1}\right)x + \cosh\left(\frac{x+1}{x-1}\right)x^2y - \cosh\left(\frac{x+1}{x-1}\right)x^2 + \cosh\left(\frac{x+1}{x-1}\right)x^3y \right)}{x}$	[_Bernoulli]	✓

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#	ODE	CAS classification	Solved?
10486	$y' = \frac{y \left( -1 - x e^{\frac{x+1}{x-1}} + x^2 e^{\frac{x+1}{x-1}} y - e^{\frac{x+1}{x-1}} x^2 + x^3 e^{\frac{x+1}{x-1}} y \right)}{x}$	[_Bernoulli]	✓
10487	$y' = \frac{-b^3 + 6b^2x - 12bx^2 + 8x^3 - 4by^2 + 8xy^2 + 8y^3}{(2x - b)^3}$	[[_homogeneous, 'class C', _rational, _Abel]	✓
10488	$y' = \frac{\left( y e^{-\frac{x^2}{4}} x + 2 + 2y^2 e^{-\frac{x^2}{2}} + 2y^3 e^{-\frac{3x^2}{4}} \right) e^{\frac{x^2}{4}}}{2}$	[_Abel]	✓
10495	$y' = \frac{(1 + 2y)(1 + y)}{x(-2y - 2 + x + 2xy)}$	[_rational, [_1st_order, '_with_symmetry_[F(x)*G(y),0]'], [_Abel, '2nd type', 'class B']]	✓
10496	$y' = \frac{-125 + 300x - 240x^2 + 64x^3 - 80y^2 + 64xy^2 + 64y^3}{(4x - 5)^3}$	[[_homogeneous, 'class C', _rational, _Abel]	✓
10505	$y' = \frac{y}{x(-1 + xy + xy^3 + xy^4)}$	[_rational, [_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓
10511	$y' = \frac{y(x^3 + x^2y + y^2)}{x^2(x - 1)(x + y)}$	[[_homogeneous, 'class D', _rational, [_Abel, '2nd type', 'class C']]	✓
10515	$y' = \frac{(1 + 2y)(1 + y)}{x(-2y - 2 + xy^3 + 2xy^4)}$	[_rational, [_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓
10526	$y' = \frac{(e^{-\frac{y}{x}} y + x e^{-\frac{y}{x}} + x^2) e^{\frac{y}{x}}}{x}$	[[_1st_order, _with_linear_symmetries]]	✓
10527	$y' = \frac{(e^{-\frac{y}{x}} y + x e^{-\frac{y}{x}} + x^3) e^{\frac{y}{x}}}{x}$	[[_1st_order, _with_linear_symmetries]]	✓
10538	$y' = \frac{b^3 + y^2 b^3 + 2yb^2ax + x^2 b a^2 + y^3 b^3 + 3y^2 b^2 ax + 3y b a^2 x^2 + a^3 x^3}{b^3}$	[[_homogeneous, 'class C', _Abel]	✓
10539	$y' = \frac{\alpha^3 + y^2 \alpha^3 + 2y \alpha^2 \beta x + \alpha \beta^2 x^2 + y^3 \alpha^3 + 3y^2 \alpha^2 \beta x + 3y \alpha \beta^2 x^2 + \beta^3 x^3}{\alpha^3}$	[[_homogeneous, 'class C', _Abel]	✓
10545	$y' = \frac{a^3 + y^2 a^3 + 2ya^2bx + a b^2 x^2 + y^3 a^3 + 3y^2 a^2 bx + 3y a b^2 x^2 + b^3 x^3}{a^3}$	[[_homogeneous, 'class C', _Abel]	✓
10550	$y' = \frac{y \left( e^{-\frac{x^2}{2}} xy + e^{-\frac{x^2}{4}} x + 2y^2 e^{-\frac{3x^2}{4}} \right) e^{\frac{x^2}{4}}}{2y e^{-\frac{x^2}{4}} + 2}$	[[_Abel, '2nd type', 'class C', [_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]']]	✓

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#	ODE	CAS classification	Solved?
10553	$y' = -\frac{2x}{3} + 1 + y^2 + \frac{2x^2y}{3} + \frac{x^4}{9} + y^3 + y^2x^2 + \frac{yx^4}{3} + \frac{x^6}{27}$	[[_1st_order, __with_linear_symmetries], _Abel]	✓
10554	$y' = 2x + 1 + y^2 - 2x^2y + x^4 + y^3 - 3y^2x^2 + 3yx^4 - x^6$	[[_1st_order, __with_linear_symmetries], _Abel]	✓
10559	$y' = \frac{1 + 2y}{x(-2 + x + xy^2 + 3xy^3 + 2xy + 2xy^4)}$	[_rational, [_1st_order, 'with_symmetry_[F(x)*G(y),0]']]	✓
10562	$y' = -\frac{y^2(x^2y - 2x - 2xy + y)}{2(-2 + xy - 2y)x}$	[_rational, [_Abel, '2nd type', 'class C']]	✓
10563	$y' = \frac{-2xy + 2x^3 - 2x - y^3 + 3y^2x^2 - 3yx^4 + x^6}{-y + x^2 - 1}$	[[_1st_order, __with_linear_symmetries], _rational, [_Abel, '2nd type', 'class C']]	✓
10566	$y' = \frac{2a}{-y - 2a - 2ay^4 + 16a^2xy^2 - 32a^3x^2 - 2ay^6 + 24y^2a^2xy^2 + 128a^4x^3}$	[[_1st_order, __with_linear_symmetries]]	✓
10567	$y' = \frac{-18xy - 6x^3 - 18x + 27y^3 + 27y^2x^2 + 9yx^4 + x^6}{27y + 9x^2 + 27}$	[[_1st_order, __with_linear_symmetries], _rational, [_Abel, '2nd type', 'class C']]	✓
10572	$y' = \frac{2x^2 - 4x^3y + 1 + x^4y^2 + x^6y^3 - 3y^2x^5 + 3yx^4 - x^4}{x^4}$	[_rational, _Abel]	✓
10574	$y' = \frac{6x^2y - 2x + 1 - 5x^3y^2 - 2xy + y^3x^4}{x^2(x^2y - x + 1)}$	[_rational, [_Abel, '2nd type', 'class C'], [_1st_order, 'with_symmetry_[F(x),G(x)*y+H(x)]]]	✓
10578	$y' = \frac{y^2 + 2xy + x^2 + e^{-\frac{2}{-y^2+x^2-1}}}{y^2 + 2xy + x^2 - e^{-\frac{2}{-y^2+x^2-1}}}$	[[_1st_order, __with_linear_symmetries]]	✓
10586	$y' = \frac{2a(-y^2 + 4ax - 1)}{-y^3 + 4axy - y - 2ay^6 + 24y^4a^2x - 96y^2a^3x^2 + 128a^4x^3}$	[[_1st_order, __with_linear_symmetries], _rational]	✓
10598	$y' = \frac{2ax}{-x^3y + 2ax^3 + 2ay^4x^3 - 16y^2a^2x^2 + 32a^3x + 2ay^6x^3 - 24y^4a^2x^2 + 96y^2xa^3 - 128a^4}$	[_rational]	✓
10599	$y' = \frac{-y^3 - y + 2y^2 \ln(x) - \ln(x)^2 y^3 - 1 + 3y \ln(x)}{yx}$	[[_Abel, '2nd type', 'class C'], [_1st_order, 'with_symmetry_[F(x),G(x)*y+H(x)]]]	✓

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#	ODE	CAS classification	Solved?
10600	$y' = \frac{2a(xy^2 - 4a + x)}{-x^3y^3 + 4ax^2y - x^3y + 2ay^6x^3 - 24y^4a^2x^2 + 96y^2xa^3 - 128a^4}$	[_rational]	✓
10601	$y' = \frac{-y^3 - y + 4y^2 \ln(x) - 4 \ln(x)^2 y^3 - 1 + 6y \ln(x)}{yx}$	[[_Abel, '2nd type', 'class C']]	✓
10605	$y' = \frac{y^{3/2}(x - y + \sqrt{y})}{y^{3/2}x - y^{5/2} + y^2 + x^3 - 3x^2y + 3xy^2 - y^3}$	[[_1st_order, _with_linear_symmetries], _rational]	✓
10608	$y' = \frac{y^2}{y^2 + y^{3/2} + \sqrt{y}x^2 - 2y^{3/2}x + y^{5/2} + x^3 - 3x^2y + 3xy^2 - y^3}$	[[_1st_order, _with_linear_symmetries], _rational]	✓
10609	$y' = \frac{y^2 + 2xy + x^2 + e^{-2(x-y)(x+y)}}{y^2 + 2xy + x^2 - e^{-2(x-y)(x+y)}}$	[[_1st_order, _with_linear_symmetries]]	✓
10611	$y' = \frac{y^2 + 2xy + x^2 + e^{2(x-y)^2(x+y)^2}}{y^2 + 2xy + x^2 - e^{2(x-y)^2(x+y)^2}}$	[[_1st_order, _with_linear_symmetries]]	✓
10612	$y' = \frac{-8x^2y^3 + 16xy^2 + 16xy^3 - 8 + 12xy - 6y^2x^2 + x^3}{16(-2 + xy - 2y)x}$	[_rational, [_Abel, '2nd type', 'class C']]	✓
10615	$y' = \frac{16xy^3 - 8y^3 - 8y + 8xy^2 - 2x^2y^3 - 8 + 12xy - 6y^2x^2 + x^3}{32yx}$	[_rational, [_Abel, '2nd type', 'class C']]	✓
10617	$y' = \frac{-3x^2y - 2x^3 - 2x - xy^2 - y + x^3y^3 + 3x^4y^2 + 3x^5y + x^6}{x(xy + x^2 + 1)}$	[_rational, [_Abel, '2nd type', 'class C'], [_1st_order, _with_symmetry_[F(x),G(x)*y+H(x)]]]	✓
10620	$y' = \frac{x}{2} + 1 + y^2 + \frac{x^2y}{4} - xy - \frac{x^4}{8} + \frac{x^3}{8} + \frac{x^2}{4} + y^3 - \frac{3y^2x^2}{4} - \frac{3xy^2}{2} + \frac{3yx^4}{16} + \frac{3x^3y}{4} - \frac{x^6}{64} - \frac{3x^5}{32}$	[[_1st_order, _with_linear_symmetries], _Abel]	✓
10621	$y' = -\frac{x}{2} + 1 + y^2 + \frac{7x^2y}{2} - 2xy + \frac{13x^4}{16} - \frac{3x^3}{2} + x^2 + y^3 + \frac{3y^2x^2}{4} - 3xy^2 + \frac{3yx^4}{16} - \frac{3x^3y}{2} + \frac{x^6}{64} - \frac{3x^5}{16}$	[[_1st_order, _with_linear_symmetries], _Abel]	✓
10622	$y' = -\frac{x}{4} + 1 + y^2 + \frac{7x^2y}{16} - \frac{xy}{2} + \frac{5x^4}{128} - \frac{5x^3}{64} + \frac{x^2}{16} + y^3 + \frac{3y^2x^2}{8} - \frac{3xy^2}{4} + \frac{3yx^4}{64} - \frac{3x^3y}{16} + \frac{x^6}{512} - \frac{3x^5}{256}$	[[_1st_order, _with_linear_symmetries], _Abel]	✓
10624	$y' = \frac{-x^2 + x + 1 + y^2 + 5x^2y - 2xy + 4x^4 - 3x^3 + y^3}{x}$	[_rational, [_1st_order, _with_symmetry_[F(x),G(x)]]], _Abel]	✓

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#	ODE	CAS classification	Solved?
10625	$y' = \frac{-32xy + 16x^3 + 16x^2 - 32x - 64y^3 + 48y^2x^2 + 96xy^2 - 12yx^3 - 48x^3y - 48x^2y + x^6}{-64y + 16x^2 + 32xy - 64}$	[[_1st_order, _with_linear_symmetries], _rational, [_Abel, '2nd type', 'class C']]	✓
10627	$y' = \frac{-32xy - 72x^3 + 32x^2 - 32x + 64y^3 + 48y^2x^2 - 192xy^2 + 12yx^3 - 96x^3y + 192x^2y + x^6}{64y + 16x^2 + 64x - 64}$	[[_1st_order, _with_linear_symmetries], _rational, [_Abel, '2nd type', 'class C']]	✓
10628	$y' = -\frac{y^2 + 2xy + x^2 + e^{\frac{2(x-y)^3(x+y)^3}{-y^2+x^2-1}}}{-y^2 - 2xy - x^2 + e^{\frac{2(x-y)^3(x+y)^3}{-y^2+x^2-1}}}$	[[_1st_order, _with_linear_symmetries]]	✓
10629	$y' = \frac{-128xy - 24x^3 + 32x^2 - 128x + 512y^3 + 192y^2x^2 - 384xy^2 + 24yx^4 - 96x^4y + 96x^2y}{512y + 64x - 128x + 512}$	[[_1st_order, _with_linear_symmetries], _rational, [_Abel, '2nd type', 'class C']]	✓
10630	$y' = \frac{-32axy - 8a^2x^3 - 16ax^2b - 32ax + 64y^3 + 48x^2ay + 96y^2bx + 12ya^2x^4 + 48abyx^4 + 48yb^2x^2 + a^3x^6 + 6a^2x^4}{64y^3 + 16x^2a + 32bx - 64}$	[[_1st_order, _with_linear_symmetries], _rational, [_Abel, '2nd type', 'class C']]	✓
10631	$y' = \frac{-32xy - 8x^3 - 16x^2a - 32x + 64y^3 + 48y^2x^2 + 96axy + 12yx^3 + 48yax^3 + 48a^2xy + x^6 + 6x^5a + 12a^2x^4 + 6a^3x^2}{64y^3 + 16x^2a + 32ax - 64}$	[[_1st_order, _with_linear_symmetries], _rational, [_Abel, '2nd type', 'class C']]	✓
10635	$y' = \frac{x^2y + x^4 + 2x^3 - 3x^2 + xy + x + y^3 + 3y^2x^2 - 3xy^2 + 3yx^3 - 6x^3y + x^6}{x(y + x^2 - x + 1)}$	[_2_rational, '[_1st_order, _with_symmetry_[F(x),G(x)']', [_Abel, '2nd type', 'class C']]	✓
10636	$y' = -\frac{ax}{2} + 1 + y^2 + \frac{ax^2y}{2} + bxy + \frac{a^2x^4}{16} + \frac{ax^3b}{4} + \frac{b^2x^2}{4} + y^3 + \frac{3x^2ay^2}{4} + \frac{3y^2bx}{2} + \frac{3ya^2x^4}{16} + \frac{3abyx^3}{4} + \frac{3yb^2x^2}{4} + \frac{a^3x^6}{64} + \frac{3a^2x^5b}{32} + \frac{3ax^4b^2}{16} + \frac{b^3x^3}{8}$	[[_1st_order, _with_linear_symmetries], _Abel]	✓
10637	$y' = -\frac{x}{2} + 1 + y^2 + \frac{x^2y}{2} + axy + \frac{x^4}{16} + \frac{ax^3}{4} + \frac{a^2x^2}{4} + y^3 + \frac{3y^2x^2}{4} + \frac{3axy^2}{2} + \frac{3yx^4}{16} + \frac{3yax^3}{4} + \frac{3a^2x^2y}{4} + \frac{x^6}{64} + \frac{3x^5a}{32} + \frac{3a^2x^4}{16} + \frac{a^3x^3}{8}$	[[_1st_order, _with_linear_symmetries], _Abel]	✓

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#	ODE	CAS classification	Solved?
10647	$y' = \frac{y^2 + 2xy + x^2 + e^{2+2y^4-4y^2x^2+2x^4+2y^6-6x^2y^4+6x^4y^2}}{y^2 + 2xy + x^2 - e^{2+2y^4-4y^2x^2+2x^4+2y^6-6x^2y^4+6x^4y^2}}$	[[_1st_order, _with_linear_symmetries]]	✓
10655	$y' = \frac{y \sin(\frac{3y}{2x}) \cos(\frac{y}{2x}) x + y \sin(\frac{3y}{2x}) \cos(\frac{y}{2x}) + y \cos(\frac{y}{2x}) \sin(\frac{3y}{2x})}{2 \cos(\frac{y}{x}) \sin(\frac{y}{2x}) x \cos(\frac{y}{2x}) (x+1)} - \sin(\frac{y}{x}) yx - y \sin(\frac{y}{x})$	[[_homogeneous, 'class D']]	✓
10657	$y' = \frac{(xy+1)^3}{x^5}$	[_rational, [_1st_order, 'with_symmetry_[F(x),G(x)]'], _Abel]	✓
10659	$y' = y(y^2 + ye^{bx} + e^{2bx}) e^{-2bx}$	[[_1st_order, _with_linear_symmetries], _Abel]	✓
10660	$y' = y^3 - 3y^2x^2 + 3yx^4 - x^6 + 2x$	[[_1st_order, _with_linear_symmetries], _Abel]	✓
10661	$y' = y^3 + y^2x^2 + \frac{yx^4}{3} + \frac{x^6}{27} - \frac{2x}{3}$	[[_1st_order, _with_linear_symmetries], _Abel]	✓
10665	$y' = \frac{y^3 - 3xy^2 + 3x^2y - x^3 + x}{x}$	[[_1st_order, _with_linear_symmetries], _rational, _Abel]	✓
10668	$y' = \frac{ye^{-\frac{x^2}{2}} (2y^2 + 2ye^{\frac{x^2}{4}} + 2e^{\frac{x^2}{2}} + xe^{\frac{x^2}{2}})}{2}$	[_Abel]	✓
10669	$y' = \frac{y^3 - 3xy^2 + 3x^2y - x^3 + x^2}{(x-1)(x+1)}$	[_rational, [_1st_order, 'with_symmetry_[F(x),G(x)]'], _Abel]	✓
10671	$y' = \frac{(xy+1)(y^2x^2 + x^2y + 2xy + 1 + x + x^2)}{x^5}$	[_rational, [_1st_order, 'with_symmetry_[F(x),G(x)]'], _Abel]	✓
10685	$y' = \frac{(y-x+\ln(x+1))^2 + x}{x+1}$	[[_1st_order, _with_linear_symmetries], _Riccati]	✓
11678	$y' = f(y)$	[_quadrature]	✓
11682	$y' = f\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A'], _dAlembert]	✓
11689	$y' = ax^ny^2 + bx^{-n-2}$	[[_homogeneous, 'class G'], _Riccati]	✓
11695	$x^2y' = x^2ay^2 + b$	[[_homogeneous, 'class G'], _rational, [_Riccati, _special]]	✓
11700	$x^4y' = -x^4y^2 - a^2$	[_rational, [_Riccati, _special]]	✓

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#	ODE	CAS classification	Solved?
11702	$(x^2a + bx + c)^2 (y' + y^2) + A = 0$	[_rational, _Riccati]	✓
11721	$xy' = ax^ny^2 + by + cx^{-n}$	[[_homogeneous, 'class G'], _rational, _Riccati]	✓
11728	$(ax + c)y' = \alpha(bx + ay)^2 + \beta(bx + ay) - bx + \gamma$	[[_1st_order, _with_linear_symmetries], _rational, _Riccati]	✓
11731	$x^2y' = x^2ay^2 + bxy + c$	[[_homogeneous, 'class G'], _rational, _Riccati]	✓
11740	$(x^2a + b)y' + y^2 - 2xy + (-a + 1)x^2 - b = 0$	[_rational, [_1st_order, '_with_symmetry_[F(x),G(x)]'], _Riccati]	✓
11741	$(x^2a + bx + c)y' = y^2 + (2\lambda x + b)y + \lambda(\lambda - a)x^2 + \mu$	[_rational, [_1st_order, '_with_symmetry_[F(x),G(x)]'], _Riccati]	✓
11745	$(x - a)(x - b)y' + k(x + y - a)(x + y - b) + y^2 = 0$	[_rational, [_1st_order, '_with_symmetry_[F(x),G(x)]'], _Riccati]	✓
11771	$y' = ae^{\lambda x}y^2 + by + ce^{-\lambda x}$	[[_1st_order, _with_linear_symmetries], _Riccati]	✓
11783	$y' = ae^{\lambda x}y^2 + be^{-\lambda x}$	[[_1st_order, _with_linear_symmetries], _Riccati]	✓
11844	$xy' = (ay + b \ln(x))^2$	[[_1st_order, _with_linear_symmetries], _Riccati]	✓
12002	$yy' - y = A$	[_quadrature]	✓
12003	$yy' - y = Ax + B$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
12081	$yy' = \frac{y}{\sqrt{ax + b}} + 1$	[[_1st_order, _with_linear_symmetries], [_Abel, '2nd type', 'class B']]	✓
12091	$yy' = (3ax + b)y - a^2x^3 - a^2x^2b + cx$	[_rational, [_Abel, '2nd type', 'class A']]	✓
12170	$(Ay + Bx + a)y' + By + kx + b = 0$	[[_homogeneous, 'class C'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
12171	$(y + ax + b)y' = \alpha y + \beta x + \gamma$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓

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#	ODE	CAS classification	Solved?
12475	$\frac{y^2 - 2x^2}{xy^2 - x^3} + \frac{(2y^2 - x^2)y'}{y^3 - x^2y} = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]	✓
12476	$\frac{1}{\sqrt{y^2 + x^2}} + \left(\frac{1}{y} - \frac{x}{y\sqrt{y^2 + x^2}}\right)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]	✓
12477	$y + x + xy' = 0$	[_linear]	✓
12478	$6x - 2y + 1 + (2y - 2x - 3)y' = 0$	[[_homogeneous, 'class C', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
12480	$(x + 1)y^2 - x^3y' = 0$	[_separable]	✓
12483	$xe^{\frac{y}{x}} + y - xy' = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
12484	$2x^2y + 3y^3 - (x^3 + 2xy^2)y' = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
12485	$y^2 - xy + x^2y' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
12486	$2x^2y + y^3 - x^3y' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
12487	$y^3 + x^3y' = 0$	[_separable]	✓
12488	$x + y \cos\left(\frac{y}{x}\right) - x \cos\left(\frac{y}{x}\right)y' = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
12489	$4x + 3y + 1 + (x + y + 1)y' = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
12490	$4x - y + 2 + (x + y + 3)y' = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
12491	$2x + y - (4x + 2y - 1)y' = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
12492	$y + 2xy^2 - x^2y^3 + 2x^2yy' = 0$	[[_homogeneous, 'class G', _rational, _Riccati]	✓
12493	$2y + 3xy^2 + (2x^2y + x)y' = 0$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]	✓
12494	$y + xy^2 + (x - x^2y)y' = 0$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]	✓

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#	ODE	CAS classification	Solved?
12497	$y' - \frac{2y}{x+1} = (x+1)^3$	[_linear]	✓
12499	$x^2y' + (-2x+1)y = x^2$	[_linear]	✓
12504	$y' - \frac{1+y}{x+1} = \sqrt{1+y}$	[[_1st_order, __with_linear_symmetries]]	✓
12505	$x^4y(3y+2xy') + x^2(4y+3xy') = 0$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]]	✓
12506	$y^2(3y-6xy') - x(y-2xy') = 0$	[_separable]	✓
12507	$2x^3y - y^2 - (2x^4 + xy)y' = 0$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]]	✓
12508	$y^2 - xy + x^2y' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
12510	$x + y - (x - y)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
12511	$x^2 + y^2 - 2xyy' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
12512	$x - y^2 + 2xyy' = 0$	[[_homogeneous, 'class G', _rational, _Bernoulli]]	✓
12514	$3x^2 + 6xy + 3y^2 + (2x^2 + 3xy)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
12517	$x^3y - y^4 + (xy^3 - x^4)y' = 0$	[_separable]	✓
12518	$y^2 - x^2 + 2myx + (my^2 - mx^2 - 2xy)y' = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
12519	$xy' - y + 2x^2y - x^3 = 0$	[_linear]	✓
12520	$(x+y)y' - 1 = 0$	[[_homogeneous, 'class C', [_Abel, '2nd type', 'class C', _dAlembert]]	✓
12521	$x + yy' + y - xy' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
12524	$\sqrt{1-y^2} + y'\sqrt{-x^2+1} = 0$	[_separable]	✓
12525	$y' - x^2y = x^5$	[_linear]	✓
12526	$(y-x)^2y' = 1$	[[_homogeneous, 'class C', _dAlembert]]	✓

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#	ODE	CAS classification	Solved?
12529	$(y - x)y' + y = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
12530	$-y + xy' = \sqrt{y^2 + x^2}$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
12531	$-y + xy' = \sqrt{x^2 - y^2}$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
12532	$x \sin\left(\frac{y}{x}\right) - y \cos\left(\frac{y}{x}\right) + x \cos\left(\frac{y}{x}\right) y' = 0$	[[_homogeneous, 'class A', _dAlembert]]	✓
12533	$x - 2y + 5 + (2x - y + 4)y' = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
12535	$(-x^2 + 1)y' - xy = axy^2$	[_separable]	✓
12536	$xy^2(3y + xy') - 2y + xy' = 0$	[[_homogeneous, 'class G', _rational]]	✓
12537	$(x^2 + 1)y' + y = \arctan(x)$	[_linear]	✓
12538	$5xy - 3y^3 + (3x^2 - 7xy^2)y' = 0$	[[_homogeneous, 'class G', _rational]]	✓
12540	$xy^2 + y - xy' = 0$	[[_homogeneous, 'class D', _rational, _Bernoulli]]	✓
12542	$3x^2y + (x^3 + x^3y^2)y' = 0$	[_separable]	✓
12544	$2x + 3y - 1 + (2x + 3y - 5)y' = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
12545	$y^3 - 2x^2y + (2xy^2 - x^3)y' = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
12547	$(y^2 + x^2)(x + yy') + \sqrt{1 + x^2 + y^2}(y - xy') = 0$	[[_1st_order, __with_linear _symmetries]]	✓
12548	$1 + e^{\frac{y}{x}} + e^{\frac{x}{y}} \left(1 - \frac{x}{y}\right) y' = 0$	[[_homogeneous, 'class A', _dAlembert]]	✓
12549	$xy' + y - y^2 \ln(x) = 0$	[_Bernoulli]	✓
12551	$(2\sqrt{xy} - x)y' + y = 0$	[[_homogeneous, 'class A', _dAlembert]]	✓
12552	$y'^2 + (x + y)y' + xy = 0$	[_quadrature]	✓
12557	$y'^3 - (2x + y^2)y'^2 + (x^2 - y^2 + 2xy^2)y' - (x^2 - y^2)y^2 = 0$	[_quadrature]	✓

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#	ODE	CAS classification	Solved?
12558	$2xy' - y + \ln(y') = 0$	[[_1st_order, __with_linear_symmetries], _dAlembert]	✓
12561	$y' + 2xy = y^2 + x^2$	[[_homogeneous, 'class C'], _Riccati]	✓
12564	$x + y'y(2y'^2 + 3) = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓
12567	$y'^3 - 4xyy' + 8y^2 = 0$	[[_1st_order, __with_linear_symmetries]]	✓
12574	$y = 2xy' + y^2y'^3$	[[_1st_order, __with_linear_symmetries]]	✓
12582	$(-y + xy')(x + yy') = a^2y'$	[_rational]	✓
12585	$x^2y'^2 - 2(xy + 2y')y' + y^2 = 0$	[_separable]	✓
12701	$x' = \frac{2x}{t}$	[_separable]	✓
12702	$x' = -\frac{t}{x}$	[_separable]	✓
12703	$x' = -x^2$	[_quadrature]	✓
12705	$x' = e^{-x}$	[_quadrature]	✓
12706	$x' + 2x = t^2 + 4t + 7$	[[_linear, 'class A']]	✓
12707	$2tx' = x$	[_separable]	✓
12710	$x' = x\left(1 - \frac{x}{4}\right)$	[_quadrature]	✓
12720	$x' = \sqrt{x}$	[_quadrature]	✓
12721	$x' = e^{-2x}$	[_quadrature]	✓
12722	$y' = 1 + y^2$	[_quadrature]	✓
12723	$u' = \frac{1}{5 - 2u}$	[_quadrature]	✓
12724	$x' = ax + b$	[_quadrature]	✓
12725	$Q' = \frac{Q}{4 + Q^2}$	[_quadrature]	✓
12726	$x' = e^{x^2}$	[_quadrature]	✓
12727	$y' = r(a - y)$	[_quadrature]	✓
12728	$x' = \frac{2x}{t + 1}$	[_separable]	✓

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#	ODE	CAS classification	Solved?
12730	$(2u + 1)u' - t - 1 = 0$	[_separable]	✓
12731	$R' = (t + 1)(1 + R^2)$	[_separable]	✓
12732	$y' + y + \frac{1}{y} = 0$	[_quadrature]	✓
12733	$(t + 1)x' + x^2 = 0$	[_separable]	✓
12734	$y' = \frac{1}{2y + 1}$	[_quadrature]	✓
i.c.			
12735	$x' = (4t - x)^2$	[[_homogeneous, 'class C'], _Riccati]	✓
i.c.			
12736	$x' = 2tx^2$	[_separable]	✓
i.c.			
12737	$x' = t^2e^{-x}$	[_separable]	✓
i.c.			
12738	$x' = x(x + 4)$	[_quadrature]	✓
i.c.			
12739	$x' = e^{t+x}$	[_separable]	✓
i.c.			
12740	$T' = 2at(T^2 - a^2)$	[_separable]	✓
i.c.			
12743	$y' = \frac{2ty^2}{t^2 + 1}$	[_separable]	✓
i.c.			
12745	$x' = 6t(x - 1)^{2/3}$	[_separable]	✓
12746	$x' = \frac{4t^2 + 3x^2}{2xt}$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
12747	$x'e^{2t} + 2xe^{2t} = e^{-t}$	[[_linear, 'class A']]	✓
i.c.			
12749	$y' = \frac{y^2 + 2ty}{t^2}$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
12750	$y' = -y^2e^{-t^2}$	[_separable]	✓
i.c.			
12757	$x' = -\frac{2x}{t} + t$	[_linear]	✓
12758	$y' + y = e^t$	[[_linear, 'class A']]	✓
12759	$x' + 2xt = e^{-t^2}$	[_linear]	✓
12760	$tx' = -x + t^2$	[_linear]	✓

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#	ODE	CAS classification	Solved?
12761	$\theta' = -a\theta + e^{tb}$	[[_linear, 'class A']]	✓
12762	$(t^2 + 1)x' = -3xt + 6t$	[_separable]	✓
12763	$x' + \frac{5x}{t} = t + 1$	[_linear]	✓
	<i>i.c.</i>		
12764	$x' = \left(a + \frac{b}{t}\right)x$	[_separable]	✓
	<i>i.c.</i>		
12766	$N' = N - 9e^{-t}$	[[_linear, 'class A']]	✓
12767	$\cos(\theta)v' + v = 3$	[_separable]	✓
12768	$R' = \frac{R}{t} + te^{-t}$	[_linear]	✓
	<i>i.c.</i>		
12770	$x' = 2xt$	[_separable]	✓
12773	$x' = (t + x)^2$	[[_homogeneous, 'class C'], _Riccati]	✓
12774	$x' = ax + b$	[_quadrature]	✓
12775	$x' + p(t)x = 0$	[_separable]	✓
12776	$x' = \frac{2x}{3t} + \frac{2t}{x}$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
12777	$x' = x(1 + xe^t)$	[[_1st_order, _with_linear_symmetries], _Bernoulli]	✓
12778	$x' = -\frac{x}{t} + \frac{1}{tx^2}$	[_separable]	✓
12779	$t^2y' + 2ty - y^2 = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
12780	$x' = ax + bx^3$	[_quadrature]	✓
12782	$x^3 + 3tx^2x' = 0$	[_separable]	✓
12785	$x + 3tx^2x' = 0$	[_separable]	✓
12786	$x^2 - t^2x' = 0$	[_separable]	✓
12787	$t \cot(x)x' = -2$	[_separable]	✓
12922	$y' + y = x + 1$	[[_linear, 'class A']]	✓
12926	$2xyy' + x^2 + y^2 = 0$	[[_homogeneous, 'class A'], _exact, _rational, _Bernoulli]	✓

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#	ODE	CAS classification	Solved?
12927	$xy' + y = x^3y^3$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
12928	$y' + 3y = 3x^2e^{-3x}$	[[_linear, 'class A']]	✓
12929	$y' + 4xy = 8x$	[_separable]	✓
12938 i.c.	$y' + y = 2xe^{-x}$	[[_linear, 'class A']]	✓
12939 i.c.	$y' + y = 2xe^{-x}$	[[_linear, 'class A']]	✓
12946 i.c.	$y' = \frac{y^2}{-2+x}$	[_separable]	✓
12947 i.c.	$y' = y^{1/3}$	[_quadrature]	✓
12948	$3x + 2y + (2x + y)y' = 0$	[[_homogeneous, 'class A'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
12955	$\frac{(2s-1)s'}{t} + \frac{s-s^2}{t^2} = 0$	[_separable]	✓
12961 i.c.	$\frac{3-y}{x^2} + \frac{(y^2-2x)y'}{xy^2} = 0$	[_exact, _rational, [_1st_order, '_with_sym- metry_[F(x)*G(y),0']]]	✓
12962 i.c.	$\frac{1+8xy^{2/3}}{x^{2/3}y^{1/3}} + \frac{(2x^{4/3}y^{2/3}-x^{1/3})y'}{y^{4/3}} = 0$	[[_homogeneous, 'class G'], _exact, _rational]	✓
12963	$4x + 3y^2 + 2xyy' = 0$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
12964	$y^2 + 2xy - x^2y' = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
12965	$y + x(y^2 + x^2)^2 + (y(y^2 + x^2)^2 - x)y' = 0$	[[_1st_order, _with_lin- ear_symmetries], _rational]	✓
12966	$4xy + (x^2 + 1)y' = 0$	[_separable]	✓
12967	$xy + 2x + y + 2 + (x^2 + 2x)y' = 0$	[_separable]	✓
12968	$2r(s^2 + 1) + (r^4 + 1)s' = 0$	[_separable]	✓
12970	$\tan(\theta) + 2r\theta' = 0$	[_separable]	✓
12973	$x + y - xy' = 0$	[_linear]	✓

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#	ODE	CAS classification	Solved?
12974	$2xy + 3y^2 - (2xy + x^2)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
12975	$v^3 + (u^3 - uv^2)v' = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
12976	$x \tan\left(\frac{y}{x}\right) + y - xy' = 0$	[[_homogeneous, 'class A', _dAlembert]]	✓
12977	$(2s^2 + 2st + t^2)s' + s^2 + 2st - t^2 = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlem- bert]]	✓
12978	$x^3 + y^2\sqrt{y^2 + x^2} - xy\sqrt{y^2 + x^2}y' = 0$	[[_homogeneous, 'class A', _dAlembert]]	✓
12980	$y + 2 + y(4 + x)y' = 0$ i.c.	[_separable]	✓
12983	$x^2 + 3y^2 - 2xyy' = 0$ i.c.	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
12984	$2x - 5y + (4x - y)y' = 0$ i.c.	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
12985	$3x^2 + 9xy + 5y^2 - (6x^2 + 4xy)y' = 0$ i.c.	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
12986	$x + 2y + (2x - y)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
12987	$3x - y - (x + y)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
12988	$x^2 + 2y^2 + (4xy - y^2)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlem- bert]]	✓
12989	$2x^2 + 2xy + y^2 + (2xy + x^2)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class B']]]	✓
12990	$y' + \frac{3y}{x} = 6x^2$	[_linear]	✓
12991	$x^4y' + 2x^3y = 1$	[_linear]	✓
12992	$y' + 3y = 3x^2e^{-3x}$	[[_linear, 'class A']]]	✓
12993	$y' + 4xy = 8x$	[_separable]	✓

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#	ODE	CAS classification	Solved?
12994	$x' + \frac{x}{t^2} = \frac{1}{t^2}$	[_separable]	✓
12995	$(u^2 + 1)v' + 4vu = 3u$	[_separable]	✓
13004	$y' - \frac{y}{x} = -\frac{y^2}{x}$	[_separable]	✓
13005	$xy' + y = -2x^6y^4$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
13008	$xy' - 2y = 2x^4$	[_linear]	✓
13009	$y' + 3x^2y = x^2$	[_separable]	✓
13011	$2x(1+y) - (x^2+1)y' = 0$	[_separable]	✓
13014	$y' + \frac{y}{2x} = \frac{x}{y^3}$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
13020	$ay' + by = ke^{-\lambda x}$	[[_linear, 'class A']]	✓
13024	$y' = (1-x)y^2 + (2x-1)y - x$	[_Riccati]	✓
13026	$y' = -8xy^2 + 4x(1+4x)y - 8x^3 - 4x^2 + 1$	[[_1st_order, '_with_symmetry_[F(x),G(x)]', _Riccati]	✓
13027	$6x^2y - (x^3+1)y' = 0$	[_separable]	✓
13028	$(3y^2x^2 - x)y' + 2xy^3 - y = 0$	[[_homogeneous, 'class G', _exact, _rational]	✓
13029	$y - 1 + x(x+1)y' = 0$	[_separable]	✓
13030	$x^2 - 2y + xy' = 0$	[_linear]	✓
13031	$3x - 5y + (x+y)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
13032	$e^{2x}y^2 + (e^{2x}y - 2y)y' = 0$	[_separable]	✓
13033	$8x^3y - 12x^3 + (x^4+1)y' = 0$	[_separable]	✓
13034	$2x^2 + xy + y^2 + 2x^2y' = 0$	[[_homogeneous, 'class A', _rational, _Riccati]	✓
13035	$y' = \frac{4x^3y^2 - 3x^2y}{x^3 - 2yx^4}$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]	✓
13036	$(x+1)y' + xy = e^{-x}$	[_linear]	✓

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#	ODE	CAS classification	Solved?
13037	$y' = \frac{2x - 7y}{3y - 8x}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
13038	$x^2y' + xy = xy^3$	[_separable]	✓
13039	$(x^3 + 1)y' + 6x^2y = 6x^2$	[_separable]	✓
13040	$y' = \frac{2x^2 + y^2}{2xy - x^2}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
13041	$x^2 + y^2 - 2xyy' = 0$ i.c.	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
13042	$2y^2 + 8 + (-x^2 + 1)yy' = 0$ i.c.	[_separable]	✓
13043	$e^{2x}y^2 - 2x + e^{2x}yy' = 0$ i.c.	[_exact, _Bernoulli]	✓
13045	$4xyy' = 1 + y^2$ i.c.	[_separable]	✓
13046	$y' = \frac{2x + 7y}{2x - 2y}$ i.c.	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
13047	$y' = \frac{xy}{x^2 + 1}$ i.c.	[_separable]	✓
13050	$x^2y' + xy = \frac{y^3}{x}$ i.c.	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
13055	$4xy^2 + 6y + (5x^2y + 8x)y' = 0$	[[_homogeneous, 'class G'], _rational, [_Abel, '2nd type', 'class B']]	✓
13056	$8x^2y^3 - 2y^4 + (5x^3y^2 - 8xy^3)y' = 0$	[[_homogeneous, 'class G'], _rational, [_Abel, '2nd type', 'class B']]	✓
13057	$5x + 2y + 1 + (2x + y + 1)y' = 0$	[[_homogeneous, 'class C'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
13058	$3x - y + 1 - (6x - 2y - 3)y' = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
13059	$x - 2y - 3 + (2x + y - 1)y' = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓

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#	ODE	CAS classification	Solved?
13060	$10x - 4y + 12 - (x + 5y + 3)y' = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
13061 i.c.	$6x + 4y + 1 + (4x + 2y + 2)y' = 0$	[[_homogeneous, 'class C'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
13062 i.c.	$3x - y - 6 + (x + y + 2)y' = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
13063 i.c.	$2x + 3y + 1 + (4x + 6y + 1)y' = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
13064 i.c.	$4x + 3y + 1 + (x + y + 1)y' = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
13389 i.c.	$x'e^{3t} + 3xe^{3t} = e^{-t}$	[[_linear, 'class A']]	✓
13390	$x' = -x + 1$	[_quadrature]	✓
13391	$x' = x(2 - x)$	[_quadrature]	✓
13392	$x' = (1 + x)(2 - x)\sin(x)$	[_quadrature]	✓
13393	$x' = -x(-x + 1)(2 - x)$	[_quadrature]	✓
13394	$x' = x^2 - x^4$	[_quadrature]	✓
13395 i.c.	$x' = t^3(-x + 1)$	[_separable]	✓
13396 i.c.	$y' = (1 + y^2)\tan(x)$	[_separable]	✓
13397	$x' = t^2x$	[_separable]	✓
13398	$x' = -x^2$	[_quadrature]	✓
13399	$y' = y^2e^{-t^2}$	[_separable]	✓
13400	$x' + px = q$	[_quadrature]	✓
13401	$xy' = ky$	[_separable]	✓
13402	$i' = p(t)i$	[_separable]	✓
13403	$x' = \lambda x$	[_quadrature]	✓
13404	$mv' = -mg + kv^2$	[_quadrature]	✓
13405 i.c.	$x' = kx - x^2$	[_quadrature]	✓

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#	ODE	CAS classification	Solved?
13406	$x' = -x(k^2 + x^2)$ i.c.	[_quadrature]	✓
13407	$y' + \frac{y}{x} = x^2$	[_linear]	✓
13408	$x' + xt = 4t$ i.c.	[_separable]	✓
13413	$x' + 5x = t$	[[_linear, 'class A']]	✓
13423	$xy + y^2 + x^2 - x^2y' = 0$	[[_homogeneous, 'class A'], _rational, _Riccati]	✓
13424	$x' = \frac{x^2 + t\sqrt{t^2 + x^2}}{xt}$	[[_homogeneous, 'class A'], _dAlembert]	✓
13425	$x' = kx - x^2$	[_quadrature]	✓
13525	$12x + 6y - 9 + (5x + 2y - 3)y' = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
13526	$xy' = y + \sqrt{y^2 + x^2}$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
13527	$xy' + y = x^3$	[_linear]	✓
13528	$y - xy' = x^2yy'$	[[_homogeneous, 'class G'], _rational, [_Abel, '2nd type', 'class B']]	✓
13529	$x' + 3x = e^{2t}$	[[_linear, 'class A']]	✓
13531	$y' = e^{x-y}$	[_separable]	✓
13533	$x(\ln(x) - \ln(y))y' - y = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓
13534	$xyy'^2 - (y^2 + x^2)y' + xy = 0$	[_separable]	✓
13535	$y'^2 = 9y^4$	[_quadrature]	✓
13536	$x' = e^{\frac{x}{t}} + \frac{x}{t}$	[[_homogeneous, 'class A'], _dAlembert]	✓
13538	$y = xy' + \frac{1}{y}$	[_separable]	✓
13540	$y' = \frac{y}{y^3 + x}$	[[_homogeneous, 'class G'], _rational]	✓
13543	$y' = \frac{2y - x - 4}{2x - y + 5}$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓

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#	ODE	CAS classification	Solved?
13544	$y' - \frac{y}{x+1} + y^2 = 0$	[[_1st_order, _with_linear_symmetries], _rational, _Bernoulli]	✓
13548	$2x + 2y - 1 + (x + y - 2)y' = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
13552	$y' = (x - 5y)^{1/3} + 2$	[[_homogeneous, 'class C'], _dAlembert]	✓
13553	$(x - y)y - x^2y' = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
13558	$y' = \frac{3x - 4y - 2}{3x - 4y - 3}$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
13561	$y' - \frac{3y}{x} + x^3y^2 = 0$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
13564	$3y^2 - x + 2y(y^2 - 3x)y' = 0$	[[_homogeneous, 'class G'], _rational]	✓
13565	$(x - y)y - x^2y' = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
13566	$y' = \frac{x + y - 3}{y - x + 1}$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
13567	$xy' + y - y^2 \ln(x) = 0$	[_Bernoulli]	✓
13569	$(4y + 2x + 3)y' - 2y - x - 1 = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
13571	$(y^2 - x^2)y' + 2xy = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
13572	$3xy^2y' + y^3 - 2x = 0$	[[_homogeneous, 'class G'], _exact, _rational, _Bernoulli]	✓
13625	$x^2y' = 1 + y^2$	[_separable]	✓
13628	$y' = \cos(x + y)$	[[_homogeneous, 'class C'], _dAlembert]	✓
13629	$xy' + y = xy^2$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
13642	$yy' = 1$	[_quadrature]	✓
13644	$5y' - xy = 0$	[_separable]	✓

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#	ODE	CAS classification	Solved?
13833	$xy(1 - y'^2) = (x^2 - y^2 - a^2)y'$	[_rational]	✓
13838	$y - xy' = 0$	[_separable]	✓
13840	$1 + y - (1 - x)y' = 0$	[_separable]	✓
13842	$y - a + x^2y' = 0$	[_separable]	✓
13843	$z - (-a^2 + t^2)z' = 0$	[_separable]	✓
13844	$y' = \frac{1 + y^2}{x^2 + 1}$	[_separable]	✓
13845	$1 + s^2 - \sqrt{t}s' = 0$	[_separable]	✓
13846	$r' + r \tan(t) = 0$	[_separable]	✓
13847	$(x^2 + 1)y' - \sqrt{1 - y^2} = 0$	[_separable]	✓
13848	$y'\sqrt{-x^2 + 1} - \sqrt{1 - y^2} = 0$	[_separable]	✓
13851	$y - x + (x + y)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
13852	$x + y + xy' = 0$	[_linear]	✓
13853	$x + y + (y - x)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
13854	$-y + xy' = \sqrt{y^2 + x^2}$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
13855	$8y + 10x + (5y + 7x)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
13856	$2\sqrt{st} - s + ts' = 0$	[[_homogeneous, 'class A', _dAlembert]]	✓
13857	$t - s + ts' = 0$	[_linear]	✓
13858	$xy^2y' = x^3 + y^3$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
13859	$x \cos\left(\frac{y}{x}\right)(xy' + y) = y \sin\left(\frac{y}{x}\right)(-y + xy')$	[[_homogeneous, 'class A', _dAlembert]]	✓
13860	$3y - 7x + 7 - (3x - 7y - 3)y' = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
13861	$x + 2y + 1 - (4y + 2x + 3)y' = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓

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#	ODE	CAS classification	Solved?
13862	$x + 2y + 1 - (2x - 3)y' = 0$	[_linear]	✓
13863	$\frac{y - xy'}{\sqrt{y^2 + x^2}} = m$	[[_homogeneous, 'class A'], _dAlembert]	✓
13864	$\frac{x + yy'}{\sqrt{y^2 + x^2}} = m$	[[_homogeneous, 'class A'], _exact, _dAlembert]	✓
13865	$y + \frac{x}{y'} = \sqrt{y^2 + x^2}$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
13866	$yy' = -x + \sqrt{y^2 + x^2}$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
13867	$y' - \frac{2y}{x+1} = (x+1)^3$	[_linear]	✓
13868	$y' - \frac{ay}{x} = \frac{x+1}{x}$	[_linear]	✓
13873	$y' + \frac{ny}{x} = ax^{-n}$	[_linear]	✓
13874	$y' + y = e^{-x}$	[[_linear, 'class A']]	✓
13875	$y' + \frac{(-2x+1)y}{x^2} - 1 = 0$	[_linear]	✓
13877	$(-x^2 + 1)y' - xy + axy^2 = 0$	[_separable]	✓
13880	$xy' = (y \ln(x) - 2)y$	[_Bernoulli]	✓
13884	$(y^3 - x)y' = y$	[[_homogeneous, 'class G'], _exact, _rational]	✓
13887	$\frac{x}{(x+y)^2} + \frac{(2x+y)y'}{(x+y)^2} = 0$	[[_homogeneous, 'class A'], _exact, _rational, [_Abel, '2nd type', 'class C'], _dAlembert]	✓
13888	$\frac{1}{x^2} + \frac{3y^2}{x^4} = \frac{2yy'}{x^3}$	[[_homogeneous, 'class A'], _exact, _rational, _Bernoulli]	✓
13889	$\frac{x^2y'}{(x-y)^2} - \frac{y^2}{(x-y)^2} = 0$	[_separable]	✓
13890	$x + yy' = \frac{y}{y^2 + x^2} - \frac{xy'}{y^2 + x^2}$	[[_1st_order, _with_lin- ear_symmetries], _exact, _rational]	✓
13895	$y = yy' + y' - y'^2$	[_quadrature]	✓
13897	$y = xy' + y'$	[_separable]	✓

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Table 2.19 first order ode lie symmetry  
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#	ODE	CAS classification	Solved?
13900	$y' = \frac{2y}{x} - \sqrt{3}$	[_linear]	✓
13952	$\frac{x^2 y'}{(x-y)^2} - \frac{y^2}{(x-y)^2} = 0$	[_separable]	✓
13955	$(x^2 + 1)y' - xy - \alpha = 0$	[_linear]	✓
13956	$x \cos\left(\frac{y}{x}\right)y' = y \cos\left(\frac{y}{x}\right) - x$	[[_homogeneous, 'class A'], _dAlembert]	✓
13958	$xy' + y - y^2 \ln(x) = 0$	[_Bernoulli]	✓
13959	$2x + 2y - 1 + (x + y - 2)y' = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
13987	$-y + xy' = 0$	[_separable]	✓
13991	$y' + \frac{1}{2y} = 0$	[_quadrature]	✓
13992	$y' - \frac{y}{x} = 1$	[_linear]	✓
13994	$x^2 y' + 2xy = 0$	[_separable]	✓
13995	$y' - y^2 = 1$	[_quadrature]	✓
13998	$y' + 3y = 0$	[_quadrature]	✓
14002	$2xy' - y = 0$	[_separable]	✓
14009	$y' - 2xy = 0$	[_separable]	✓
14010	$y' + y = x^2 + 2x - 1$	[[_linear, 'class A']]	✓
14012	$y' = x\sqrt{y}$	[_separable]	✓
14015	$y'x \ln(x) - (\ln(x) + 1)y = 0$	[_separable]	✓
14029	$y' = 1 - y$	[_quadrature]	✓
14030	$y' = 1 + y$	[_quadrature]	✓
14031	$y' = y^2 - 4$	[_quadrature]	✓
14032	$y' = 4 - y^2$	[_quadrature]	✓
14033	$y' = xy$	[_separable]	✓
14034	$y' = -xy$	[_separable]	✓
14037	$y' = x + y$	[[_linear, 'class A']]	✓
14038	$y' = xy$	[_separable]	✓

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#	ODE	CAS classification	Solved?
14039	$y' = \frac{x}{y}$	[_separable]	✓
14040	$y' = \frac{y}{x}$	[_separable]	✓
14041	$y' = 1 + y^2$	[_quadrature]	✓
14042	$y' = y^2 - 3y$	[_quadrature]	✓
14045	$y' = e^{x-y}$	[_separable]	✓
14046	$y' = \ln(x + y)$	[[_homogeneous, 'class C'], _dAlembert]	✓
14047	$y' = \frac{2x - y}{3y + x}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
14050	$y' = \frac{xy}{y^2 + x^2}$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
14051	$y' = \frac{1}{xy}$	[_separable]	✓
14052	$y' = \ln(y - 1)$	[_quadrature]	✓
14053	$y' = \sqrt{(y + 2)(y - 1)}$	[_quadrature]	✓
14054	$y' = \frac{y}{y - x}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
14055	$y' = \frac{x}{y^2}$	[_separable]	✓
14056	$y' = \frac{\sqrt{y}}{x}$	[_separable]	✓
14058	$y' = (xy)^{1/3}$	[[_homogeneous, 'class G']]	✓
14059	$y' = \sqrt{\frac{y - 4}{x}}$	[[_homogeneous, 'class C'], _dAlembert]	✓
14060	$y' = -\frac{y}{x} + y^{1/4}$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
14061	$y' = 4y - 5$	[_quadrature]	✓
14062	$y' + 3y = 1$	[_quadrature]	✓
14063	$y' = ay + b$	[_quadrature]	✓

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Table 2.19 first order ode lie symmetry  
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#	ODE	CAS classification	Solved?
14066	$y' = \frac{y}{x} + \cos(x)$ i.c.	[_linear]	✓
14072	$y' = -\frac{x}{2} + \frac{\sqrt{x^2 + 4y}}{2}$ i.c.	[[_1st_order, _with_linear_symmetries], _Clairaut]	✓
14083	$y' = 3y$ i.c.	[_quadrature]	✓
14085	$y' = 1 - y$ i.c.	[_quadrature]	✓
14087	$y' = \frac{y}{x}$ i.c.	[_separable]	✓
14088	$y' = \frac{2x}{y}$ i.c.	[_separable]	✓
14089	$y' = -2y + y^2$ i.c.	[_quadrature]	✓
14090	$y' = xy + x$ i.c.	[_separable]	✓
14091	$x e^y + y' = 0$ i.c.	[_separable]	✓
14092	$y - x^2 y' = 0$ i.c.	[_separable]	✓
14093	$2yy' = 1$	[_quadrature]	✓
14094	$2xyy' + y^2 = -1$	[_separable]	✓
14095	$y' = \frac{1 - xy}{x^2}$	[_linear]	✓
14096	$y' = -\frac{y(2x + y)}{x(x + 2y)}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
14097	$y' = \frac{y^2}{1 - xy}$	[[_homogeneous, 'class G'], _rational, [_Abel, '2nd type', 'class B']]	✓
14098	$y' = 4y + 1$ i.c.	[_quadrature]	✓
14100	$y' = \frac{y}{x}$ i.c.	[_separable]	✓
14101	$y' = \frac{y}{x-1} + x^2$ i.c.	[_linear]	✓

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#	ODE	CAS classification	Solved?
14102	$y' = \frac{y}{x} + \sin(x^2)$ i.c.	[_linear]	✓
14103	$y' = \frac{2y}{x} + e^x$ i.c.	[_linear]	✓
14105	$x - yy' = 0$	[_separable]	✓
14106	$y - xy' = 0$	[_separable]	✓
14107	$x^2 - y + xy' = 0$	[_linear]	✓
14108	$xy(1 - y) - 2y' = 0$	[_separable]	✓
14110	$(2x - 1)y + x(x + 1)y' = 0$	[_separable]	✓
14112	$y' = x + y$ i.c.	[[_linear, 'class A']]	✓
14113	$y' = \frac{y}{x}$ i.c.	[_separable]	✓
14114	$y' = \frac{y}{x}$ i.c.	[_separable]	✓
14118	$y' = y^2$ i.c.	[_quadrature]	✓
14119	$y' = y^2$ i.c.	[_quadrature]	✓
14120	$y' = y^2$ i.c.	[_quadrature]	✓
14121	$y' = y^3$ i.c.	[_quadrature]	✓
14122	$y' = y^3$ i.c.	[_quadrature]	✓
14123	$y' = y^3$ i.c.	[_quadrature]	✓
14125	$y' = -\frac{3x^2}{2y}$ i.c.	[_separable]	✓
14126	$y' = -\frac{3x^2}{2y}$ i.c.	[_separable]	✓
14128	$y' = \frac{\sqrt{y}}{x}$ i.c.	[_separable]	✓

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#	ODE	CAS classification	Solved?
14129	$y' = \frac{\sqrt{y}}{x}$ i.c.	[_separable]	✓
14130	$y' = \frac{\sqrt{y}}{x}$ i.c.	[_separable]	✓
14131	$y' = \frac{\sqrt{y}}{x}$ i.c.	[_separable]	✓
14132	$y' = 3xy^{1/3}$ i.c.	[_separable]	✓
14134	$y' = 3xy^{1/3}$ i.c.	[_separable]	✓
14135	$y' = 3xy^{1/3}$ i.c.	[_separable]	✓
14136	$y' = 3xy^{1/3}$ i.c.	[_separable]	✓
14138	$y' = \sqrt{(y+2)(y-1)}$ i.c.	[_quadrature]	✓
14139	$y' = \sqrt{(y+2)(y-1)}$ i.c.	[_quadrature]	✓
14141	$y' = \frac{y}{y-x}$ i.c.	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
14143	$y' = \frac{y}{y-x}$ i.c.	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
14144	$y' = \frac{xy}{y^2+x^2}$ i.c.	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
14146	$y' = \frac{xy}{y^2+x^2}$ i.c.	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
14151	$y' = -\frac{x}{2} + \frac{\sqrt{x^2+4y}}{2}$ i.c.	[[_1st_order, __with_lin- ear_symmetries], _Clairaut]	✓
14152	$y' = -\frac{x}{2} + \frac{\sqrt{x^2+4y}}{2}$ i.c.	[[_1st_order, __with_lin- ear_symmetries], _Clairaut]	✓

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#	ODE	CAS classification	Solved?
14153	$y' = -\frac{x}{2} + \frac{\sqrt{x^2 + 4y}}{2}$ i.c.	[[_1st_order, __with_linear_symmetries], _Clairaut]	✓
14154	$y' = -\frac{x}{2} + \frac{\sqrt{x^2 + 4y}}{2}$ i.c.	[[_1st_order, __with_linear_symmetries], _Clairaut]	✓
14155	$y' = -\frac{x}{2} + \frac{\sqrt{x^2 + 4y}}{2}$ i.c.	[[_1st_order, __with_linear_symmetries], _Clairaut]	✓
14185	$y' - iy = 0$ i.c.	[_quadrature]	✓
14277	$y' = \frac{y+1}{t+1}$	[_separable]	✓
14278	$y' = t^2 y^2$	[_separable]	✓
14279	$y' = t^4 y$	[_separable]	✓
14280	$y' = 2y + 1$	[_quadrature]	✓
14281	$y' = 2 - y$	[_quadrature]	✓
14282	$y' = e^{-y}$	[_quadrature]	✓
14283	$x' = 1 + x^2$	[_quadrature]	✓
14284	$y' = 2ty^2 + 3y^2$	[_separable]	✓
14285	$y' = \frac{t}{y}$	[_separable]	✓
14287	$y' = ty^{1/3}$	[_separable]	✓
14288	$y' = \frac{1}{2y+1}$	[_quadrature]	✓
14289	$y' = \frac{2y+1}{t}$	[_separable]	✓
14290	$y' = y(1-y)$	[_quadrature]	✓
14292	$v' = t^2 v - 2 - 2v + t^2$	[_separable]	✓
14293	$y' = \frac{1}{ty + t + y + 1}$	[_separable]	✓
14295	$y' = y^2 - 4$	[_quadrature]	✓
14296	$w' = \frac{w}{t}$	[_separable]	✓
14297	$y' = \sec(y)$	[_quadrature]	✓

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#	ODE	CAS classification	Solved?
14298	$x' = -xt$ i.c.	[_separable]	✓
14299	$y' = ty$ i.c.	[_separable]	✓
14300	$y' = -y^2$ i.c.	[_quadrature]	✓
14301	$y' = t^2y^3$ i.c.	[_separable]	✓
14302	$y' = -y^2$ i.c.	[_quadrature]	✓
14304	$y' = 2y + 1$ i.c.	[_quadrature]	✓
14305	$y' = ty^2 + 2y^2$ i.c.	[_separable]	✓
14307	$y' = \frac{1 - y^2}{y}$ i.c.	[_quadrature]	✓
14308	$y' = (1 + y^2)t$ i.c.	[_separable]	✓
14309	$y' = \frac{1}{2y + 3}$ i.c.	[_quadrature]	✓
14310	$y' = 2ty^2 + 3t^2y^2$ i.c.	[_separable]	✓
14311	$y' = \frac{y^2 + 5}{y}$ i.c.	[_quadrature]	✓
14314	$y' = 1 - 2y$	[_quadrature]	✓
14315	$y' = 4y^2$	[_quadrature]	✓
14316	$y' = 2y(1 - y)$	[_quadrature]	✓
14317	$y' = y + t + 1$	[[_linear, 'class A']]	✓
14318	$y' = 3y(1 - y)$ i.c.	[_quadrature]	✓
14319	$y' = 2y - t$ i.c.	[[_linear, 'class A']]	✓
14321	$y' = (t + 1)y$ i.c.	[_separable]	✓
14322	$S' = S^3 - 2S^2 + S$ i.c.	[_quadrature]	✓

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#	ODE	CAS classification	Solved?
14323	$S' = S^3 - 2S^2 + S$ i.c.	[_quadrature]	✓
14325	$S' = S^3 - 2S^2 + S$ i.c.	[_quadrature]	✓
14326	$S' = S^3 - 2S^2 + S$ i.c.	[_quadrature]	✓
14327	$y' = y^2 + y$	[_quadrature]	✓
14328	$y' = y^2 - y$	[_quadrature]	✓
14329	$y' = y^3 + y^2$	[_quadrature]	✓
14331	$y' = ty + ty^2$	[_separable]	✓
14332	$y' = t^2 + t^2y$	[_separable]	✓
14333	$y' = t + ty$	[_separable]	✓
14335	$\theta' = \frac{9}{10} - \frac{11 \cos(\theta)}{10}$	[_quadrature]	✓
14337	$\theta' = \frac{11}{10} - \frac{9 \cos(\theta)}{10}$	[_quadrature]	✓
14338	$v' = -\frac{v}{RC}$	[_quadrature]	✓
14339	$v' = \frac{K - v}{RC}$	[_quadrature]	✓
14341	$y' = 2y + 1$ i.c.	[_quadrature]	✓
14345	$w' = (3 - w)(w + 1)$ i.c.	[_quadrature]	✓
14346	$w' = (3 - w)(w + 1)$ i.c.	[_quadrature]	✓
14347	$y' = e^{\frac{2}{y}}$ i.c.	[_quadrature]	✓
14348	$y' = e^{\frac{2}{y}}$ i.c.	[_quadrature]	✓
14349	$y' = y^2 - y^3$ i.c.	[_quadrature]	✓
14351	$y' = \sqrt{y}$ i.c.	[_quadrature]	✓
14352	$y' = 2 - y$ i.c.	[_quadrature]	✓

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#	ODE	CAS classification	Solved?
14353	$\theta' = \frac{9}{10} - \frac{11 \cos(\theta)}{10}$ i.c.	[_quadrature]	✓
14354	$y' = y(-1 + y)(y - 3)$ i.c.	[_quadrature]	✓
14356	$y' = y(-1 + y)(y - 3)$ i.c.	[_quadrature]	✓
14357	$y' = y(-1 + y)(y - 3)$ i.c.	[_quadrature]	✓
14358	$y' = -y^2$	[_quadrature]	✓
14359	$y' = y^3$ i.c.	[_quadrature]	✓
14360	$y' = \frac{1}{(y+1)(t-2)}$ i.c.	[_separable]	✓
14361	$y' = \frac{1}{(2+y)^2}$ i.c.	[_quadrature]	✓
14362	$y' = \frac{t}{y-2}$ i.c.	[_separable]	✓
14363	$y' = 3y(y-2)$ i.c.	[_quadrature]	✓
14364	$y' = 3y(y-2)$ i.c.	[_quadrature]	✓
14365	$y' = 3y(y-2)$ i.c.	[_quadrature]	✓
14367	$y' = y^2 - 4y - 12$ i.c.	[_quadrature]	✓
14368	$y' = y^2 - 4y - 12$ i.c.	[_quadrature]	✓
14370	$y' = y^2 - 4y - 12$ i.c.	[_quadrature]	✓
14375	$w' = w \cos(w)$	[_quadrature]	✓
14376	$w' = w \cos(w)$ i.c.	[_quadrature]	✓
14377	$w' = w \cos(w)$ i.c.	[_quadrature]	✓
14378	$w' = w \cos(w)$ i.c.	[_quadrature]	✓

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#	ODE	CAS classification	Solved?
14379	$w' = w \cos(w)$ i.c.	[_quadrature]	✓
14380	$w' = (1 - w) \sin(w)$	[_quadrature]	✓
14381	$y' = \frac{1}{y-2}$	[_quadrature]	✓
14382	$v' = -v^2 - 2v - 2$	[_quadrature]	✓
14383	$w' = 3w^3 - 12w^2$	[_quadrature]	✓
14384	$y' = 1 + \cos(y)$	[_quadrature]	✓
14385	$y' = \tan(y)$	[_quadrature]	✓
14387	$w' = (w^2 - 2) \arctan(w)$	[_quadrature]	✓
14388	$y' = y^2 - 4y + 2$ i.c.	[_quadrature]	✓
14389	$y' = y^2 - 4y + 2$ i.c.	[_quadrature]	✓
14390	$y' = y^2 - 4y + 2$ i.c.	[_quadrature]	✓
14391	$y' = y^2 - 4y + 2$ i.c.	[_quadrature]	✓
14392	$y' = y^2 - 4y + 2$ i.c.	[_quadrature]	✓
14393	$y' = y^2 - 4y + 2$ i.c.	[_quadrature]	✓
14394	$y' = y \cos\left(\frac{\pi y}{2}\right)$	[_quadrature]	✓
14395	$y' = y - y^2$	[_quadrature]	✓
14396	$y' = y \sin\left(\frac{\pi y}{2}\right)$	[_quadrature]	✓
14397	$y' = y^3 - y^2$	[_quadrature]	✓
14398	$y' = \cos\left(\frac{\pi y}{2}\right)$	[_quadrature]	✓
14399	$y' = y^2 - y$	[_quadrature]	✓
14400	$y' = y \sin\left(\frac{\pi y}{2}\right)$	[_quadrature]	✓
14401	$y' = y^2 - y^3$	[_quadrature]	✓
14402	$y' = -4y + 9e^{-t}$	[[_linear, 'class A']]	✓
14403	$y' = -4y + 3e^{-t}$	[[_linear, 'class A']]	✓

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#	ODE	CAS classification	Solved?
14406	$y' = 3y - 4e^{3t}$	[[_linear, 'class A']]	✓
14407	$y' = \frac{y}{2} + 4e^{\frac{t}{2}}$	[[_linear, 'class A']]	✓
14408	$y' + 2y = e^{\frac{t}{3}}$	[[_linear, 'class A']]	✓
14409	$y' - 2y = 3e^{-2t}$	[[_linear, 'class A']]	✓
14412	$y' - 2y = 7e^{2t}$	[[_linear, 'class A']]	✓
14413	$y' + 2y = 3t^2 + 2t - 1$	[[_linear, 'class A']]	✓
14414	$y' + 2y = t^2 + 2t + 1 + e^{4t}$	[[_linear, 'class A']]	✓
14416	$y' - 3y = 2t - e^{4t}$	[[_linear, 'class A']]	✓
14418	$y' = -\frac{y}{t} + 2$	[_linear]	✓
14419	$y' = \frac{3y}{t} + t^5$	[_linear]	✓
14420	$y' = -\frac{y}{t+1} + t^2$	[_linear]	✓
14421	$y' = -2ty + 4e^{-t^2}$	[_linear]	✓
14422	$y' - \frac{2ty}{t^2+1} = 3$	[_linear]	✓
14423	$y' - \frac{2y}{t} = t^3e^t$	[_linear]	✓
14424	$y' = -\frac{y}{t+1} + 2$	[_linear]	✓
14425	$y' = \frac{y}{t+1} + 4t^2 + 4t$	[_linear]	✓
14426	$y' = -\frac{y}{t} + 2$	[_linear]	✓
14427	$y' = -2ty + 4e^{-t^2}$	[_linear]	✓
14428	$y' - \frac{2y}{t} = 2t^2$	[_linear]	✓
14429	$y' - \frac{3y}{t} = 2t^3e^{2t}$	[_linear]	✓
14439	$y' = -2ty + 4e^{-t^2}$	[_linear]	✓

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#	ODE	CAS classification	Solved?
14440	$y' + 2y = 3e^{-2t}$	[[_linear, 'class A']]	✓
14441	$y' = 3y$	[_quadrature]	✓
14443	$y' = -\sin(y)^5$	[_quadrature]	✓
14445	$y' = \sin(y)^2$	[_quadrature]	✓
14447	$y' = y + e^{-t}$	[[_linear, 'class A']]	✓
14448	$y' = 3 - 2y$	[_quadrature]	✓
14449	$y' = ty$	[_separable]	✓
14450	$y' = 3y + e^{7t}$	[[_linear, 'class A']]	✓
14451	$y' = \frac{ty}{t^2 + 1}$	[_separable]	✓
14453	$y' = t + \frac{2y}{t + 1}$	[_linear]	✓
14454	$y' = 3 + y^2$	[_quadrature]	✓
14455	$y' = 2y - y^2$	[_quadrature]	✓
14456	$y' = -3y + e^{-2t} + t^2$	[[_linear, 'class A']]	✓
14457	$x' = -xt$	[_separable]	✓
	<i>i.c.</i>		
14459	$y' = 3y + 2e^{3t}$	[[_linear, 'class A']]	✓
	<i>i.c.</i>		
14460	$y' = t^2y^3 + y^3$	[_separable]	✓
	<i>i.c.</i>		
14461	$y' + 5y = 3e^{-5t}$	[[_linear, 'class A']]	✓
	<i>i.c.</i>		
14462	$y' = 2ty + 3te^{t^2}$	[_linear]	✓
	<i>i.c.</i>		
14464	$y' = 2ty^2 + 3t^2y^2$	[_separable]	✓
	<i>i.c.</i>		
14467	$y' = y^2 - 2y + 1$	[_quadrature]	✓
	<i>i.c.</i>		
14470	$y' = t^2y + 1 + y + t^2$	[_separable]	✓
14471	$y' = \frac{2y + 1}{t}$	[_separable]	✓
14472	$y' = 3 - y^2$	[_quadrature]	✓
	<i>i.c.</i>		
14656	$y' = 3 - \sin(y)$	[_quadrature]	✓

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#	ODE	CAS classification	Solved?
14657	$y' + 4y = e^{2x}$	[[_linear, 'class A']]	✓
14659	$yy' = 2x$	[_separable]	✓
14700	$y' + 3xy = 6x$	[_separable]	✓
14702	$y' - y^3 = 8$	[_quadrature]	✓
14703	$x^2y' + xy^2 = x$	[_separable]	✓
14705	$y^3 - 25y + y' = 0$	[_quadrature]	✓
14706	$(-2 + x)y' = y + 3$	[_separable]	✓
14707	$(y - 2)y' = x - 3$	[_separable]	✓
14708	$y' + 2y - y^2 = -2$	[_quadrature]	✓
14710	$y' = 2\sqrt{y}$	[_quadrature]	✓
	<i>i.c.</i>		
14711	$y' = 3y^2 - y^2 \sin(x)$	[_separable]	✓
14715	$y' + 4y = 8$	[_quadrature]	✓
14716	$y' + xy = 4x$	[_separable]	✓
14717	$y' + 4y = x^2$	[[_linear, 'class A']]	✓
14718	$y' = xy - 3x - 2y + 6$	[_separable]	✓
14719	$y' = \sin(x + y)$	[[_homogeneous, 'class C'], _dAlembert]	✓
14721	$y' = \frac{x}{y}$	[_separable]	✓
14722	$y' = y^2 + 9$	[_quadrature]	✓
14723	$xyy' = y^2 + 9$	[_separable]	✓
14724	$y' = \frac{1 + y^2}{x^2 + 1}$	[_separable]	✓
14726	$y' = e^{2x-3y}$	[_separable]	✓
14727	$y' = \frac{x}{y}$	[_separable]	✓
	<i>i.c.</i>		
14728	$y' = 2x - 1 + 2xy - y$	[_separable]	✓
	<i>i.c.</i>		
14731	$y' = xy - 4x$	[_separable]	✓
14732	$y' - 4y = 2$	[_quadrature]	✓
14734	$y' = \sin(y)$	[_quadrature]	✓

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#	ODE	CAS classification	Solved?
14736	$y' = 200y - 2y^2$	[_quadrature]	✓
14737	$y' = xy - 4x$	[_separable]	✓
14738	$y' = xy - 3x - 2y + 6$	[_separable]	✓
14739	$y' = 3y^2 - y^2 \sin(x)$	[_separable]	✓
14740	$y' = \tan(y)$	[_quadrature]	✓
14741	$y' = \frac{y}{x}$	[_separable]	✓
14743	$(x^2 + 1)y' = 1 + y^2$	[_separable]	✓
14744	$(y^2 - 1)y' = 4xy^2$	[_separable]	✓
14745	$y' = e^{-y}$	[_quadrature]	✓
14746	$y' = e^{-y} + 1$	[_quadrature]	✓
14747	$y' = 3xy^3$	[_separable]	✓
14749	$y' - 3y^2x^2 = -3x^2$	[_separable]	✓
14750	$y' - 3y^2x^2 = 3x^2$	[_separable]	✓
14751	$y' = 200y - 2y^2$	[_quadrature]	✓
14752	$y' - 2y = -10$	[_quadrature]	✓
	i.c.		
14756	$xy' = y^2 - y$	[_separable]	✓
	i.c.		
14757	$y' = \frac{y^2 - 1}{xy}$	[_separable]	✓
	i.c.		
14764	$y' = 4y + 8$	[_quadrature]	✓
14766	$y' = y \sin(x)$	[_separable]	✓
14767	$y' + 4y = y^3$	[_quadrature]	✓
14769	$y' + 2y = 6$	[_quadrature]	✓
14770	$y' + 2y = 20e^{3x}$	[[_linear, 'class A']]	✓
14771	$y' = 4y + 16x$	[[_linear, 'class A']]	✓
14772	$y' - 2xy = x$	[_separable]	✓
14773	$xy' + 3y - 10x^2 = 0$	[_linear]	✓
14775	$xy' = \sqrt{x} + 3y$	[_linear]	✓

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#	ODE	CAS classification	Solved?
14777	$xy' + (5x + 2)y = \frac{20}{x}$	[_linear]	✓
14779	$y' - 3y = 6$	[_quadrature]	✓
14781	$y' + 5y = e^{-3x}$	[[_linear, 'class A']]	✓
14782	$xy' + 3y = 20x^2$	[_linear]	✓
14783	$xy' = y + x^2 \cos(x)$	[_linear]	✓
14784	$(x^2 + 1)y' = x(3 + 3x^2 - y)$	[_linear]	✓
14787	$-y + xy' = x^2 e^{-x^2}$	[_linear]	✓
14788	$y' = \frac{1}{(3x + 3y + 2)^2}$	[[_homogeneous, 'class C'], _dAlembert]	✓
14789	$y' = \frac{(-2y + 3x)^2 + 1}{-2y + 3x} + \frac{3}{2}$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
14790	$\cos(-4y + 8x - 3)y' = 2 + 2 \cos(-4y + 8x - 3)$	[[_homogeneous, 'class C'], _exact, _dAlembert]	✓
14791	$y' = 1 + (y - x)^2$	[[_homogeneous, 'class C'], _Riccati]	✓
14792	$x^2 y' - xy = y^2$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
14793	$y' = \frac{y}{x} + \frac{x}{y}$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
14794	$\cos\left(\frac{y}{x}\right)\left(y' - \frac{y}{x}\right) = 1 + \sin\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A'], _dAlembert]	✓
14795	$y' = \frac{x - y}{x + y}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
14796	$y' + 3y = 3y^3$	[_quadrature]	✓
14797	$y' - \frac{3y}{x} = \frac{y^2}{x^2}$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
14799	$y' - \frac{y}{x} = \frac{1}{y}$	[[_homogeneous, 'class D'], _rational, _Bernoulli]	✓

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#	ODE	CAS classification	Solved?
14800	$y' = \frac{y}{x} + \frac{x^2}{y^2}$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
14801	$3y' = -2 + \sqrt{2x + 3y + 4}$	[[_homogeneous, 'class C', _dAlembert]	✓
14802	$3y' + \frac{2y}{x} = 4\sqrt{y}$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
14803	$y' = 4 + \frac{1}{\sin(4x - y)}$	[[_homogeneous, 'class C', _dAlembert]	✓
14804	$(y - x)y' = 1$	[[_homogeneous, 'class C', [_Abel, '2nd type', 'class C', _dAlembert]	✓
14805	$(x + y)y' = y$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
14806	$(2xy + 2x^2)y' = x^2 + 2xy + 2y^2$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
14807	$y' + \frac{y}{x} = x^2y^3$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
14808	$y' = 2\sqrt{2x + y - 3} - 2$	[[_homogeneous, 'class C', _dAlembert]	✓
14809	$y' = 2\sqrt{2x + y - 3}$	[[_homogeneous, 'class C', _dAlembert]	✓
14810	$-y + xy' = \sqrt{xy + x^2}$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
14811	$y' + 3y = \frac{28e^{2x}}{y^3}$	[[_1st_order, __with_lin- ear_symmetries], _Bernoulli]	✓
14812	$y' = (x - y + 3)^2$	[[_homogeneous, 'class C', _Riccati]	✓
14813	$y' + 2x = 2\sqrt{y + x^2}$	[[_1st_order, __with_lin- ear_symmetries], _Clairaut]	✓
14815	$y' = x\left(1 + \frac{2y}{x^2} + \frac{y^2}{x^4}\right)$	[[_homogeneous, 'class G', _rational, _Riccati]	✓
14816	$y' = \frac{1}{y} - \frac{y}{2x}$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓

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#	ODE	CAS classification	Solved?
14817	$e^{xy^2-x^2}(y^2-2x) + 2e^{xy^2-x^2}xyy' = 0$	[[_homogeneous, 'class G'], _exact, _rational, _Bernoulli]	✓
14818	$2xy + y^2 + (2xy + x^2)y' = 0$	[[_homogeneous, 'class A'], _exact, _rational, [_Abel, '2nd type', 'class B']]	✓
14819	$2xy^3 + 4x^3 + 3x^2y^2y' = 0$	[[_homogeneous, 'class G'], _exact, _rational, _Bernoulli]	✓
14820	$2 - 2x + 3y^2y' = 0$	[_separable]	✓
14822	$4x^3y + (x^4 - y^4)y' = 0$	[[_homogeneous, 'class A'], _exact, _rational, _dAlembert]	✓
14823	$1 + \ln(xy) + \frac{xy'}{y} = 0$	[[_homogeneous, 'class G'], _exact]	✓
14824	$1 + e^y + xe^yy' = 0$	[_separable]	✓
14825	$e^y + (xe^y + 1)y' = 0$	[[_1st_order, _with_exponential_symmetries], _exact]	✓
14826	$1 + y^4 + xy^3y' = 0$	[_separable]	✓
14827	$y + (y^4 - 3x)y' = 0$	[[_homogeneous, 'class G'], _rational]	✓
14828	$\frac{2y}{x} + (4x^2y - 3)y' = 0$	[[_homogeneous, 'class G'], _rational, [_Abel, '2nd type', 'class B']]	✓
14830	$3y + 3y^2 + (2x + 4xy)y' = 0$	[_separable]	✓
14831	$2x(1 + y) - y' = 0$	[_separable]	✓
14832	$2y^3 + (4x^3y^3 - 3xy^2)y' = 0$	[[_homogeneous, 'class G'], _rational, [_Abel, '2nd type', 'class B']]	✓
14833	$4xy + (3x^2 + 5y)y' = 0$	[[_homogeneous, 'class G'], _rational, [_Abel, '2nd type', 'class A']]	✓
14834	$6 + 12y^2x^2 + \left(7x^3y + \frac{x}{y}\right)y' = 0$	[[_homogeneous, 'class G'], _rational]	✓
14835	$xy' = 2y - 6x^3$	[_linear]	✓
14836	$xy' = 2y^2 - 6y$	[_separable]	✓

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#	ODE	CAS classification	Solved?
14837	$4y^2 - y^2x^2 + y' = 0$	[_separable]	✓
14838	$y' = \sqrt{x+y}$	[[_homogeneous, 'class C'], _dAlembert]	✓
14840	$xyy' - y^2 = \sqrt{x^4 + y^2x^2}$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
14841	$y' = y^2 - 2xy + x^2$	[[_homogeneous, 'class C'], _Riccati]	✓
14842	$4xy - 6 + x^2y' = 0$	[_linear]	✓
14843	$xy^2 - 6 + x^2yy' = 0$	[[_homogeneous, 'class G'], _exact, _rational, _Bernoulli]	✓
14844	$x^3 + y^3 + xy^2y' = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
14845	$3y - x^3 + xy' = 0$	[_linear]	✓
14847	$3xy^3 - y + xy' = 0$	[[_homogeneous, 'class D'], _rational, _Bernoulli]	✓
14848	$2 + 2x^2 - 2xy + (x^2 + 1)y' = 0$	[_linear]	✓
14849	$(y^2 - 4)y' = y$	[_quadrature]	✓
14851	$y' = \frac{1}{xy - 3x}$	[_separable]	✓
14852	$y' = \frac{3y}{x+1} - y^2$	[[_1st_order, _with_linear_symmetries], _rational, _Bernoulli]	✓
14854	$\sin(y) + (x+1)\cos(y)y' = 0$	[_separable]	✓
14856	$xyy' = 2y^2 + 2x^2$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
14857	$y' = \frac{x+2y}{x+2y+3}$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
14858	$y' = \frac{x+2y}{2x-y}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
14859	$y' = \frac{y}{x} + \tan\left(\frac{y}{x}\right)$	[[_homogeneous, 'class A'], _dAlembert]	✓
14860	$y' = xy^2 + 3y^2 + x + 3$	[_separable]	✓

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#	ODE	CAS classification	Solved?
14861	$1 - (x + 2y)y' = 0$	[[_homogeneous, 'class C'], [_Abel, '2nd type', 'class C'], _dAlembert]	✓
14863	$y^2 + 1 - y' = 0$	[_quadrature]	✓
14864	$y' - 3y = 12e^{2x}$	[[_linear, 'class A']]	✓
14865	$xyy' = y^2 + xy + x^2$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
14867	$xy^3y' = y^4 - x^2$	[[_homogeneous, 'class D'], _rational, _Bernoulli]	✓
14868	$y' = 4y - \frac{16e^{4x}}{y^2}$	[[_1st_order, _with_lin- ear_symmetries], _Bernoulli]	✓
14869	$2y - 6x + (x + 1)y' = 0$	[_linear]	✓
14870	$xy^2 + (x^2y + 10y^4)y' = 0$	[[_homogeneous, 'class G'], _exact, _rational]	✓
14872	$(y - x + 3)^2(y' - 1) = 1$	[[_homogeneous, 'class C'], _exact, _rational, _dAlem- bert]	✓
14874	$y^2 - y^2 \cos(x) + y' = 0$	[_separable]	✓
14877	$y' = y^3 - y^3 \cos(x)$	[_separable]	✓
14879	$y' = e^{4x+3y}$	[_separable]	✓
14880	$y' = \tan(6x + 3y + 1) - 2$	[[_homogeneous, 'class C'], _dAlembert]	✓
14881	$y' = e^{4x+3y}$	[_separable]	✓
15465	$2x - y - yy' = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
15466	$y' + 2y = 0$	[_quadrature]	✓
15467	$y' + xy = 0$	[_separable]	✓
15478	$y' = -\frac{x}{y}$	[_separable]	✓
15479	$3y(t^2 + y) + t(t^2 + 6y)y' = 0$	[[_homogeneous, 'class G'], _exact, _rational, [_Abel, '2nd type', 'class B']]	✓
15480	$y' = -\frac{2y}{x} - 3$	[_linear]	✓

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#	ODE	CAS classification	Solved?
15496	$y' + 2y = 0$ i.c.	[_quadrature]	✓
15508	$y' = \frac{(x-4)y^3}{x^3(y-2)}$	[_separable]	✓
15509	$y' = \frac{y^2 + 2xy}{x^2}$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
15518	$y' + y \cos(x) = 0$	[_separable]	✓
15526	$2x - 3y + (2y - 3x)y' = 0$	[[_homogeneous, 'class A'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
15532	$y' + 2y = x^2$ i.c.	[[_linear, 'class A']]	✓
15540	$y' = y^{1/5}$ i.c.	[_quadrature]	✓
15543	$y' = y\sqrt{t}$ i.c.	[_separable]	✓
15545	$ty' = y$	[_separable]	✓
15546	$y' = y \tan(t)$ i.c.	[_separable]	✓
15548	$y' = \sqrt{y^2 - 1}$ i.c.	[_quadrature]	✓
15556	$ty' + y = t^3$ i.c.	[_linear]	✓
15566	$y' = y^2$ i.c.	[_quadrature]	✓
15567	$y' = ty^2$ i.c.	[_separable]	✓
15568	$y' = -\frac{t}{y}$ i.c.	[_separable]	✓
15569	$y' = -y^3$ i.c.	[_quadrature]	✓
15570	$y' = \frac{x}{y^2}$	[_separable]	✓
15571	$\frac{1}{2\sqrt{t}} + y^2y' = 0$	[_separable]	✓
15572	$y' = \frac{\sqrt{y}}{x^2}$	[_separable]	✓

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#	ODE	CAS classification	Solved?
15573	$y' = \frac{1+y^2}{y}$	[_quadrature]	✓
15577	$y' = \frac{y+1}{t+1}$	[_separable]	✓
15578	$y' = \frac{2+y}{2t+1}$	[_separable]	✓
15579	$\frac{3}{t^2} = \left(\frac{1}{\sqrt{y}} + \sqrt{y}\right) y'$	[_separable]	✓
15582	$y' + ky = 0$	[_quadrature]	✓
15585	$y' = e^{2y+10t}$	[_separable]	✓
15586	$y' = e^{3y+2t}$	[_separable]	✓
15599	$y' = \frac{5^{-t}}{y^2}$	[_separable]	✓
15600	$y' = t^2 y^2 + y^2 - t^2 - 1$	[_separable]	✓
15601	$y' = y^2 - 3y + 2$	[_quadrature]	✓
15602	$4(x-1)^2 y' - 3(y+3)^2 = 0$	[_separable]	✓
15604	$y' = y^3 + 1$	[_quadrature]	✓
15605	$y' = y^3 - 1$	[_quadrature]	✓
15606	$y' = y^3 + y$	[_quadrature]	✓
15607	$y' = y^3 - y^2$	[_quadrature]	✓
15608	$y' = y^3 - y$	[_quadrature]	✓
15609	$y' = y^3 + y$	[_quadrature]	✓
15614	$y' = \frac{\sqrt{t}}{y}$	[_separable]	✓
i.c.			
15615	$y' = \sqrt{\frac{y}{t}}$	[[_homogeneous, 'class A'], _dAlembert]	✓
i.c.			
15616	$y' = \frac{e^t}{y+1}$	[_separable]	✓
i.c.			
15618	$y' = \frac{y}{\ln(y)}$	[_quadrature]	✓
i.c.			
15622	$y' = \frac{y+3}{3x+1}$	[_separable]	✓
i.c.			

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#	ODE	CAS classification	Solved?
15623	$y' = e^{x-y}$ i.c.	[_separable]	✓
15624	$y' = e^{2x-y}$ i.c.	[_separable]	✓
15625	$y' = \frac{3y+1}{x+3}$ i.c.	[_separable]	✓
15626	$y' = y \cos(t)$ i.c.	[_separable]	✓
15627	$y' = y^2 \cos(t)$ i.c.	[_separable]	✓
15630	$y' = -\frac{y-2}{-2+x}$ i.c.	[_separable]	✓
15631	$y' = \frac{x+y+3}{3x+3y+1}$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
15632	$y' = \frac{x-y+2}{2x-2y-1}$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
15633	$y' = (x+y-4)^2$	[[_homogeneous, 'class C'], _Riccati]	✓
15634	$y' = (3y+1)^4$	[_quadrature]	✓
15635	$y' = 3y$	[_quadrature]	✓
15636	$y' = -y$	[_quadrature]	✓
15637	$y' = y^2 - y$	[_quadrature]	✓
15638	$y' = 16y - 8y^2$	[_quadrature]	✓
15639	$y' = 12 + 4y - y^2$	[_quadrature]	✓
15640	$y' = yf(t)$ i.c.	[_separable]	✓
15641	$y' - y = 10$	[_quadrature]	✓
15642	$y' - y = 2e^{-t}$	[[_linear, 'class A']]	✓
15644	$y' - y = t^2 - 2t$	[[_linear, 'class A']]	✓
15646	$ty' + y = t^2$	[_linear]	✓
15647	$ty' + y = t$	[_linear]	✓

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#	ODE	CAS classification	Solved?
15650	$y' - \frac{2ty}{t^2 + 1} = 2$	[_linear]	✓
15651	$y' - \frac{4ty}{4t^2 + 1} = 4t$	[_linear]	✓
15652	$y' = 2x + \frac{xy}{x^2 - 1}$	[_linear]	✓
15654	$y' - \frac{3ty}{t^2 - 4} = t$	[_linear]	✓
15655	$y' - \frac{4ty}{4t^2 - 9} = t$	[_linear]	✓
15656	$y' - \frac{9xy}{9x^2 + 49} = x$	[_linear]	✓
15658	$y' + xy = x^3$	[_linear]	✓
15659	$y' - xy = x$	[_separable]	✓
15660	$y' = \frac{1}{x + y^2}$	[[_1st_order, _with_exponential_symmetries]]	✓
15661	$y' - x = y$	[[_linear, 'class A']]	✓
15662	$y - (x + 3y^2) y' = 0$	[[_homogeneous, 'class G'], _rational]	✓
15663	$x' = \frac{3xt^2}{-t^3 + 1}$	[_separable]	✓
15664	$p' = t^3 + \frac{p}{t}$	[_linear]	✓
15665	$v' + v = e^{-s}$	[[_linear, 'class A']]	✓
15666	$y' - y = 4e^t$	[[_linear, 'class A']]	✓
15667	$y' + y = e^{-t}$	[[_linear, 'class A']]	✓
15668	$y' + 3t^2y = e^{-t^3}$	[_linear]	✓
15669	$y' + 2ty = 2t$	[_separable]	✓
15673	$(t^2 + 4) y' + 2ty = 2t$	[_separable]	✓
15674	$x' = x + t + 1$	[[_linear, 'class A']]	✓
15675	$y' = e^{2t} + 2y$	[[_linear, 'class A']]	✓

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#	ODE	CAS classification	Solved?
15676	$y' - \frac{y}{t} = \ln(t)$	[_linear]	✓
15681	$y' + y = 5e^{2t}$	[[_linear, 'class A']]	✓
15682	$y' + y = e^{-t}$	[[_linear, 'class A']]	✓
15683	$y' + y = 2 - e^{2t}$	[[_linear, 'class A']]	✓
15684	$y' - 5y = t$	[[_linear, 'class A']]	✓
15685	$y' + 3y = 27t^2 + 9$	[[_linear, 'class A']]	✓
15688	$y' + 10y = 2e^t$	[[_linear, 'class A']]	✓
15689	$y' - 3y = 27t^2$	[[_linear, 'class A']]	✓
15690	$y' - y = 2e^t$	[[_linear, 'class A']]	✓
15691	$y' + y = 4 + 3e^t$	[[_linear, 'class A']]	✓
15696	$y' + y = t$ i.c.	[[_linear, 'class A']]	✓
15699	$y' + y = e^t$ i.c.	[[_linear, 'class A']]	✓
15700	$y^2 - \frac{y}{2\sqrt{t}} + (2ty - \sqrt{t} + 1)y' = 0$	[_exact, _rational, [_Abel, '2nd type', 'class B']]	✓
15701	$\frac{t}{\sqrt{t^2 + y^2}} + \frac{yy'}{\sqrt{t^2 + y^2}} = 0$	[_separable]	✓
15702	$y \cos(ty) + t \cos(ty)y' = 0$	[_separable]	✓
15704	$3ty^2 + y^3y' = 0$	[_separable]	✓
15707	$\ln(ty) + \frac{ty'}{y} = 0$	[[_homogeneous, 'class G'], _exact]	✓
15708	$e^{ty} + \frac{te^{ty}y'}{y} = 0$	[_separable]	✓
15710	$-1 + 3y^2y' = 0$	[_quadrature]	✓
15711	$y^2 + 2tyy' = 0$	[_separable]	✓
15712	$\frac{3t^2}{y} - \frac{t^3y'}{y^2} = 0$	[_separable]	✓
15714	$-\frac{1}{y} + \left(\frac{t}{y^2} + 3y^2\right)y' = 0$	[[_homogeneous, 'class G'], _exact, _rational]	✓
15715	$2ty + (t^2 + y^2)y' = 0$	[[_homogeneous, 'class A'], _exact, _rational, _dAlembert]	✓

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#	ODE	CAS classification	Solved?
15716	$2ty^3 + (1 + 3t^2y^2)y' = 0$	[[_homogeneous, 'class G', _exact, _rational]	✓
15717	$\sin(y)^2 + t \sin(2y)y' = 0$	[_separable]	✓
15718	$3t^2 + 3y^2 + 6tyy' = 0$	[[_homogeneous, 'class A', _exact, _rational, _Bernoulli]	✓
15721	$-2ty^2 \sin(t^2) + 2y \cos(t^2)y' = 0$	[_separable]	✓
15725	$(3+t) \cos(y+t) + \sin(y+t)+ (3+t) \cos(y+t)y' = 0$	[[_1st_order, _with_lin- ear_symmetries], _exact]	✓
15727	$-\frac{y^2 e^{\frac{y}{t}}}{t^2} + 1 + e^{\frac{y}{t}} \left(1 + \frac{y}{t}\right)y' = 0$	[[_homogeneous, 'class A', _exact, _dAlembert]	✓
15728	$2t \sin\left(\frac{y}{t}\right) - y \cos\left(\frac{y}{t}\right) + t \cos\left(\frac{y}{t}\right)y' = 0$	[[_homogeneous, 'class A', _exact, _dAlembert]	✓
15729	$2ty^2 + 2t^2yy' = 0$ i.c.	[_separable]	✓
15730	$1 + \frac{y}{t^2} - \frac{y'}{t} = 0$ i.c.	[_linear]	✓
15732	$1 + 5t - y - (t + 2y)y' = 0$ i.c.	[[_homogeneous, 'class C', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
15741	$t^2y + t^3y' = 0$	[_separable]	✓
15742	$y(2e^t + 4t) + 3(e^t + t^2)y' = 0$	[_separable]	✓
15744	$2ty + y^2 - t^2y' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
15747	$5ty^2 + y + (2t^3 - t)y' = 0$	[[_homogeneous, 'class D', _rational, _Bernoulli]	✓
15752	$\frac{9t}{5} + 2y + (2t + 2y)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
15753	$2t + \frac{19y}{10} + \left(\frac{19t}{10} + 2y\right)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
15755	$y' + y = ty^2$	[_Bernoulli]	✓
15760	$y' - \frac{y}{t} = ty^2$	[[_homogeneous, 'class D', _rational, _Bernoulli]	✓

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#	ODE	CAS classification	Solved?
15761	$y' - \frac{y}{t} = \frac{y^2}{t^2}$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
15762	$y' - \frac{y}{t} = \frac{y^2}{t}$	[_separable]	✓
15763	$y' - \frac{y}{t} = t^2 y^{3/2}$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
15764	$\cos\left(\frac{t}{y+t}\right) + e^{\frac{2y}{t}} y' = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓
15767	$\frac{2}{t} + \frac{1}{y} + \frac{ty'}{y^2} = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
15770	$2t + (y - 3t)y' = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class C'], _dAlem- bert]	✓
15771	$2y - 3t + ty' = 0$	[_linear]	✓
15772	$ty - y^2 + t(t - 3y)y' = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
15773	$t^2 + ty + y^2 - tyy' = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
15774	$t^3 + y^3 - ty^2 y' = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
15775	$y' = \frac{t + 4y}{4t + y}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
15776	$t - y + ty' = 0$	[_linear]	✓
15777	$y + (y + t)y' = 0$	[[_homogeneous, 'class A'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
15778	$2t^2 - 7ty + 5y^2 + tyy' = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
15779	$y + 2\sqrt{t^2 + y^2} - ty' = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓
15780	$y^2 = (ty - 4t^2)y'$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓

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#	ODE	CAS classification	Solved?
15781	$y - (3\sqrt{ty} + t)y' = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
15782	$(t^2 - y^2)y' + y^2 + ty = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
15783	$tyy' - t^2e^{-\frac{y}{t}} - y^2 = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
15784	$y' = \frac{1}{\frac{2ye^{-\frac{t}{y}}}{t} + \frac{t}{y}}$	[[_homogeneous, 'class A', _dAlembert]	✓
15785	$t(\ln(t) - \ln(y))y' = y$	[[_homogeneous, 'class A', _dAlembert]	✓
15788 i.c.	$y' = \frac{4y^2 - t^2}{2ty}$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
15789 i.c.	$t + y - ty' = 0$	[_linear]	✓
15790 i.c.	$ty' - y - \sqrt{t^2 + y^2} = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
15791 i.c.	$t^3 + y^2\sqrt{t^2 + y^2} - ty\sqrt{t^2 + y^2}y' = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
15792 i.c.	$y^3 - t^3 - ty^2y' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
15793 i.c.	$ty^3 - (t^4 + y^4)y' = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
15795	$t - 2y + 1 + (4t - 3y - 6)y' = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
15796	$5t + 2y + 1 + (2t + y + 1)y' = 0$	[[_homogeneous, 'class C', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
15797	$3t - y + 1 - (6t - 2y - 3)y' = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
15798	$2t + 3y + 1 + (4t + 6y + 1)y' = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
15799	$y' - \frac{2y}{x} = -x^2y$	[_separable]	✓

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#	ODE	CAS classification	Solved?
15804	$1 + y - ty' = \ln(y')$	[[_1st_order, __with_linear_symmetries], _Clairaut]	✓
15808	$y = t(y' + 1) + 2y' + 1$	[_linear]	✓
15810	$t^{1/3}y^{2/3} + t + (t^{2/3}y^{1/3} + y)y' = 0$	[[_homogeneous, 'class G'], _rational]	✓
15811 i.c.	$y' = \frac{y^2 - t^2}{ty}$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
15812 i.c.	$y \sin\left(\frac{t}{y}\right) - \left(t + t \sin\left(\frac{t}{y}\right)\right)y' = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓
15813	$y' = \frac{2t^5}{5y^2}$	[_separable]	✓
15815	$y' - \frac{y}{t} = \frac{y^2}{t}$	[_separable]	✓
15816	$y' = \frac{e^{8y}}{t}$	[_separable]	✓
15817	$y' = \frac{e^{5t}}{y^4}$	[_separable]	✓
15820	$y' = \frac{(4 - 7x)(2y - 3)}{(x - 1)(2x - 5)}$	[_separable]	✓
15822	$3t + (t - 4y)y' = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class C'], _dAlembert]	✓
15823	$y - t + (y + t)y' = 0$	[[_homogeneous, 'class A'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
15824	$y - x + y' = 0$	[[_linear, 'class A']]	✓
15825	$y^2 + (ty + t^2)y' = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
15826	$r' = \frac{r^2 + t^2}{rt}$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
15827	$x' = \frac{5tx}{x^2 + t^2}$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
15832	$y' + y = 5$	[_quadrature]	✓
15833	$y' + ty = t$	[_separable]	✓

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#	ODE	CAS classification	Solved?
15834	$x' + \frac{x}{y} = y^2$	[_linear]	✓
15836	$y' - y = ty^3$	[_Bernoulli]	✓
15837	$y' + y = \frac{e^t}{y^2}$	[[_1st_order, __with_linear_symmetries], _Bernoulli]	✓
15839	$y - ty' = 2y^2 \ln(t)$	[[_homogeneous, 'class D'], _Bernoulli]	✓
15842 i.c.	$2x - y - 2 + (2y - x)y' = 0$	[[_homogeneous, 'class C'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
15843 i.c.	$\cos(t - y) + (1 - \cos(t - y))y' = 0$	[[_homogeneous, 'class C'], _exact, _dAlembert]	✓
15849 i.c.	$y' = \sqrt{x - y}$	[[_homogeneous, 'class C'], _dAlembert]	✓
15976	$y' - 4y = t^2$	[[_linear, 'class A']]	✓
15978 i.c.	$y' - y = e^{4t}$	[[_linear, 'class A']]	✓
15979 i.c.	$y' + 4y = e^{-4t}$	[[_linear, 'class A']]	✓
15980	$y' + 4y = te^{-4t}$	[[_linear, 'class A']]	✓
16341	$y' = \frac{x}{y}$	[_separable]	✓
16342	$y' = y + 3y^{1/3}$	[_quadrature]	✓
16343	$y' = \sqrt{x - y}$	[[_homogeneous, 'class C'], _dAlembert]	✓
16344	$y' = \sqrt{x^2 - y} - x$	[[_1st_order, __with_linear_symmetries], _dAlembert]	✓
16345	$y' = \sqrt{1 - y^2}$	[_quadrature]	✓
16346	$y' = \frac{1 + y}{x - y}$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
16348	$y' = 1 - \cot(y)$	[_quadrature]	✓
16349	$y' = (3x - y)^{1/3} - 1$	[[_homogeneous, 'class C'], _dAlembert]	✓
16352	$y' + 2y = e^x$	[[_linear, 'class A']]	✓

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#	ODE	CAS classification	Solved?
16353	$(-x^2 + 1)y' + xy = 2x$	[_separable]	✓
16355	$y' = x + y$	[[_linear, 'class A']]	✓
16356	$y' = y - x$	[[_linear, 'class A']]	✓
16357	$y' = \frac{x}{2} - y + \frac{3}{2}$	[[_linear, 'class A']]	✓
16358	$y' = (y - 1)^2$	[_quadrature]	✓
16359	$y' = (y - 1)x$	[_separable]	✓
16361	$y' = \cos(x - y)$	[[_homogeneous, 'class C'], _dAlembert]	✓
16362	$y' = y - x^2$	[[_linear, 'class A']]	✓
16363	$y' = x^2 + 2x - y$	[[_linear, 'class A']]	✓
16364	$y' = \frac{1 + y}{x - 1}$	[_separable]	✓
16365	$y' = \frac{x + y}{x - y}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
16367	$y' = 2x - y$	[[_linear, 'class A']]	✓
16368	$y' = y + x^2$	[[_linear, 'class A']]	✓
16369	$y' = -\frac{y}{x}$	[_separable]	✓
16372	$y' = y$	[_quadrature]	✓
16373	$y' = y^2$	[_quadrature]	✓
16376	$y' = x + y$	[[_linear, 'class A']]	✓
	<i>i.c.</i>		
16378	$xy' = 2x - y$	[_linear]	✓
	<i>i.c.</i>		
16379	$1 + y^2 + (x^2 + 1)y' = 0$	[_separable]	✓
16380	$1 + y^2 + xy y' = 0$	[_separable]	✓
16381	$y' \sin(x) - y \cos(x) = 0$	[_separable]	✓
	<i>i.c.</i>		
16382	$1 + y^2 = xy'$	[_separable]	✓
16385	$e^{-y}y' = 1$	[_quadrature]	✓
16386	$y \ln(y) + xy' = 1$	[_separable]	✓
	<i>i.c.</i>		

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#	ODE	CAS classification	Solved?
16387	$y' = a^{x+y}$	[_separable]	✓
16388	$e^y(x^2 + 1)y' - 2x(1 + e^y) = 0$	[_separable]	✓
16392	$y' = \sin(x - y)$	[[_homogeneous, 'class C', _dAlembert]	✓
16393	$y' = ax + by + c$	[[_linear, 'class A']]	✓
16394	$(x + y)^2 y' = a^2$	[[_homogeneous, 'class C', _dAlembert]	✓
16396	$a^2 + y^2 + 2x\sqrt{ax - x^2}y' = 0$ i.c.	[_separable]	✓
16397	$y' = \frac{y}{x}$ i.c.	[_separable]	✓
16409	$e^y = e^{4y}y' + 1$	[_quadrature]	✓
16410	$(x + 1)y' = y - 1$	[_separable]	✓
16411	$y' = 2x(\pi + y)$	[_separable]	✓
16413	$xy' = y + x \cos\left(\frac{y}{x}\right)^2$	[[_homogeneous, 'class A', _dAlembert]	✓
16414	$x - y + xy' = 0$	[_linear]	✓
16415	$xy' = y(\ln(y) - \ln(x))$	[[_homogeneous, 'class A', _dAlembert]	✓
16416	$x^2y' = y^2 - xy + x^2$	[[_homogeneous, 'class A', _rational, _Riccati]	✓
16417	$xy' = y + \sqrt{y^2 - x^2}$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
16418	$2x^2y' = y^2 + x^2$	[[_homogeneous, 'class A', _rational, _Riccati]	✓
16419	$4x - 3y + (2y - 3x)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
16420	$y - x + (x + y)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
16421	$x + y - 2 + (1 - x)y' = 0$	[_linear]	✓
16422	$3y - 7x + 7 - (3x - 7y - 3)y' = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓

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#	ODE	CAS classification	Solved?
16423	$x + y - 2 + (x - y + 4)y' = 0$	[[_homogeneous, 'class C'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
16424	$x + y + (x - y - 2)y' = 0$	[[_homogeneous, 'class C'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
16425	$2x + 3y - 5 + (3x + 2y - 5)y' = 0$	[[_homogeneous, 'class C'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
16426	$8x + 4y + 1 + (4x + 2y + 1)y' = 0$	[[_homogeneous, 'class C'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
16427	$x - 2y - 1 + (3x - 6y + 2)y' = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
16428	$x + y + (y - 1 + x)y' = 0$	[[_homogeneous, 'class C'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
16429	$2xy'(x - y^2) + y^3 = 0$	[[_homogeneous, 'class G'], _rational]	✓
16430	$4y^6 + x^3 = 6xy^5y'$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
16431	$y(1 + \sqrt{x^2y^4 + 1}) + 2xy' = 0$	[[_homogeneous, 'class G']]	✓
16432	$x + y^3 + 3(y^3 - x)y^2y' = 0$	[[_homogeneous, 'class G'], _rational]	✓
16433	$y' + 2y = e^{-x}$	[[_linear, 'class A']]	✓
16434	$x^2 - xy' = y$ i.c.	[_linear]	✓
16435	$y' - 2xy = 2xe^{x^2}$	[_linear]	✓
16436	$y' + 2xy = e^{-x^2}$	[_linear]	✓
16438	$xy' - 2y = x^3 \cos(x)$	[_linear]	✓
16441	$(2x - y^2)y' = 2y$	[[_homogeneous, 'class G'], _rational]	✓
16443	$y' = \frac{y}{2y \ln(y) + y - x}$	[[_1st_order, _with_lin- ear_symmetries]]	✓
16453	$xy' + y = 2x$	[_linear]	✓
16456	$y' + 2xy = 2xy^2$	[_separable]	✓

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#	ODE	CAS classification	Solved?
16457	$3xy^2y' - 2y^3 = x^3$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
16458	$(x^3 + e^y)y' = 3x^2$	[[_1st_order, _with_linear_symmetries]]	✓
16459	$y' + 3xy = ye^{x^2}$	[_separable]	✓
16464	$y' - y \cos(x) = y^2 \cos(x)$	[_separable]	✓
16470	$x(2x^2 + y^2) + y(x^2 + 2y^2)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]	✓
16477	$\frac{xy}{\sqrt{x^2+1}} + 2xy - \frac{y}{x} + (\sqrt{x^2+1} + x^2 - \ln(x))y' = 0$	[_separable]	✓
16482	$3x^2y + y^3 + (x^3 + 3xy^2)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]	✓
16484	$x^2 + y - xy' = 0$	[_linear]	✓
16485	$x + y^2 - 2xyy' = 0$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
16490	$3y^2 - x + (2y^3 - 6xy)y' = 0$	[[_homogeneous, 'class G', _rational]	✓
16491	$x^2 + y^2 + 1 - 2xyy' = 0$	[_rational, _Bernoulli]	✓
16492	$x - xy + (y + x^2)y' = 0$	[_rational, [_1st_order, '_with_symmetry_[F(x)*G(y),0]'], [_Abel, '2nd type', 'class A']]	✓
16496	$x^2y'^2 + 3xyy' + 2y^2 = 0$	[_separable]	✓
16497	$y'^2 - (2x + y)y' + x^2 + xy = 0$	[_quadrature]	✓
16499	$y'^3 = yy'^2 - x^2y' + x^2y$	[_quadrature]	✓
16500	$y'^2 - yy' + e^x = 0$	[[_1st_order, _with_linear_symmetries]]	✓
16503	$y' = e^{\frac{y'}{y}}$	[_quadrature]	✓
16507	$y = (y' - 1)e^{y'}$	[_quadrature]	✓
16512	$y = y'(1 + y' \cos(y'))$	[_quadrature]	✓
16514	$y = 2xy' + \ln(y')$	[[_1st_order, _with_linear_symmetries], _dAlembert]	✓

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#	ODE	CAS classification	Solved?
16526	$xy' - y^2 + (2x + 1)y = x^2 + 2x$	[[_1st_order, __with_linear_symmetries], _rational, _Riccati]	✓
16527	$x^2y' = y^2x^2 + xy + 1$	[[_homogeneous, 'class G'], _rational, _Riccati]	✓
16530	$y'^3 - 4xyy' + 8y^2 = 0$	[[_1st_order, __with_linear_symmetries]]	✓
16531	$y'^2 - y^2 = 0$	[_quadrature]	✓
16532	$y' = y^{2/3} + a$	[_quadrature]	✓
16536	$(y' - 1)^2 = y^2$	[_quadrature]	✓
16540	$y'^2 - yy' + e^x = 0$	[[_1st_order, __with_linear_symmetries]]	✓
16543	$y' = (x - y)^2 + 1$	[[_homogeneous, 'class C'], _Riccati]	✓
16546	$x^3 - 3xy^2 + (y^3 - 3x^2y)y' = 0$	[[_homogeneous, 'class A'], _exact, _rational, _dAlembert]	✓
16547	$5xy - 4y^2 - 6x^2 + \left(y^2 - 8xy + \frac{5x^2}{2}\right)y' = 0$	[[_homogeneous, 'class A'], _exact, _rational, _dAlembert]	✓
16549	$y - xy^2 \ln(x) + xy' = 0$	[_Bernoulli]	✓
16551	$y' = \frac{1}{2x - y^2}$	[[_1st_order, __with_exponential_symmetries]]	✓
16553	$xyy' - y^2 = x^4$	[[_homogeneous, 'class D'], _rational, _Bernoulli]	✓
16554	$\frac{1}{y^2 - xy + x^2} = \frac{y'}{2y^2 - xy}$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
16555	$(2x - 1)y' - 2y = \frac{1 - 4x}{x^2}$	[_linear]	✓
16556	$x - y + 3 + (3x + y + 1)y' = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
16558	$y'(3x^2 - 2x) - y(6x - 2) = 0$	[_separable]	✓
16559	$xy^2y' - y^3 = \frac{x^4}{3}$	[[_homogeneous, 'class D'], _rational, _Bernoulli]	✓

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#	ODE	CAS classification	Solved?
16560	$1 + e^{\frac{x}{y}} + e^{\frac{x}{y}} \left(1 - \frac{x}{y}\right) y' = 0$ i.c.	[[_homogeneous, 'class A', _exact, _dAlembert]	✓
16561	$x^2 + y^2 - xyy' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
16562	$x - y + 2 + (x - y + 3) y' = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
16563	$xy^2 + y - xy' = 0$	[[_homogeneous, 'class D', _rational, _Bernoulli]	✓
16566	$(x - 2xy - y^2) y' + y^2 = 0$	[_rational, [_1st_or- der, '_with_symme- try_[F(x)*G(y),0']]	✓
16568	$y' - 1 = e^{x+2y}$	[[_homogeneous, 'class C', _dAlembert]	✓
16569	$2x^5 + 4x^3y - 2xy^2 + (y^2 + 2x^2y - x^4) y' = 0$	[[_homogeneous, 'class G', _rational]	✓
16570	$x^2y^n y' = 2xy' - y$	[[_homogeneous, 'class G', _rational]	✓
16571	$(3x + 3y + a^2) y' = 4x + 4y + b^2$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
16572	$x - y^2 + 2xyy' = 0$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
16573	$xy' + y = y^2 \ln(x)$ i.c.	[_Bernoulli]	✓
16576	$(5x - 7y + 1) y' + y - 1 + x = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
16577	$x + y + 1 + (2x + 2y - 1) y' = 0$ i.c.	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
16578	$y^3 + 2(x^2 - xy^2) y' = 0$	[[_homogeneous, 'class G', _rational]	✓
16579	$y' = \frac{2(y+2)^2}{(y-1+x)^2}$	[[_homogeneous, 'class C', _rational]	✓
16976	$y' = \frac{x^4}{y}$	[_separable]	✓
16978	$y' + y^3 \sin(x) = 0$	[_separable]	✓

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#	ODE	CAS classification	Solved?
16981	$xy' = \sqrt{1 - y^2}$	[_separable]	✓
16986	$y' = 4\sqrt{xy}$	[[_homogeneous, 'class G']]	✓
16987	$y' = x(y - y^2)$	[_separable]	✓
16988	$y' = (1 - 12x)y^2$	[_separable]	✓
16989	$y' = \frac{3 - 2x}{y}$	[_separable]	✓
16991	$r' = \frac{r^2}{\theta}$	[_separable]	✓
16993	$y' = \frac{2x}{1 + 2y}$	[_separable]	✓
16994	$y' = 2xy^2 + 4x^3y^2$	[_separable]	✓
16995	$y' = x^2e^{-3y}$	[_separable]	✓
16996	$y' = (1 + y^2) \tan(2x)$	[_separable]	✓
16999	$x^2y' = y - xy$	[_separable]	✓
17006	$y' = 2y^2 + xy^2$	[_separable]	✓
17009	$y' = 2(x + 1)(1 + y^2)$	[_separable]	✓
17010	$y' = \frac{ty(4 - y)}{3}$	[_separable]	✓
17011	$y' = \frac{ty(4 - y)}{t + 1}$	[_separable]	✓
17012	$y' = \frac{ay + b}{cy + d}$	[_quadrature]	✓
17013	$y' + 4y = t + e^{-2t}$	[[_linear, 'class A']]	✓
17014	$y' - 2y = t^2e^{2t}$	[[_linear, 'class A']]	✓
17015	$y' + y = te^{-t} + 1$	[[_linear, 'class A']]	✓
17017	$y' - 2y = 3e^t$	[[_linear, 'class A']]	✓
17019	$y' + 2ty = 16te^{-t^2}$	[_linear]	✓

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#	ODE	CAS classification	Solved?
17020	$(t^2 + 1)y' + 4ty = \frac{1}{(t^2 + 1)^2}$	[_linear]	✓
17021	$2y' + y = 3t$	[[_linear, 'class A']]	✓
17022	$ty' - y = t^3e^{-t}$	[_linear]	✓
17024	$2y' + y = 3t^2$	[[_linear, 'class A']]	✓
17026	$y' + 2y = te^{-2t}$	[[_linear, 'class A']]	✓
17027	$ty' + 4y = t^2 - t + 1$	[_linear]	✓
17029	$y' - 2y = e^{2t}$	[[_linear, 'class A']]	✓
17034	$2y' - y = e^{\frac{t}{3}}$	[[_linear, 'class A']]	✓
17035	$3y' - 2y = e^{-\frac{\pi t}{2}}$	[[_linear, 'class A']]	✓
17036	$ty' + (t + 1)y = 2te^{-t}$	[_linear]	✓
17040	$y' + \frac{4y}{3} = 1 - \frac{t}{4}$	[[_linear, 'class A']]	✓
17043	$y' - \frac{3y}{2} = 3t + 3e^t$	[[_linear, 'class A']]	✓
17044	$y' - 6y = t^6e^{6t}$	[[_linear, 'class A']]	✓
17047	$2y' + y = 3t^2$	[[_linear, 'class A']]	✓
17049	$t(-4 + t)y' + y = 0$	[_separable]	✓
17051	$(-t^2 + 4)y' + 2ty = 3t^2$	[_linear]	✓
17052	$(-t^2 + 4)y' + 2ty = 3t^2$	[_linear]	✓
17054	$y' = \frac{t - y}{2t + 5y}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
17060	$y' = y^{1/3}$	[_quadrature]	✓

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#	ODE	CAS classification	Solved?
17061	$y' = -\frac{t}{2} + \frac{\sqrt{t^2 + 4y}}{2}$ i.c.	[[_1st_order, __with_linear_symmetries], _Clairaut]	✓
17062	$y' = -\frac{4t}{y}$ i.c.	[_separable]	✓
17063	$y' = 2ty^2$ i.c.	[_separable]	✓
17064	$y' + y^3 = 0$ i.c.	[_quadrature]	✓
17066	$y' = ty(3 - y)$	[_separable]	✓
17067	$y' = y(3 - ty)$	[_Bernoulli]	✓
17068	$y' = -y(3 - ty)$	[_Bernoulli]	✓
17071	$2x + 3 + (2y - 2)y' = 0$	[_separable]	✓
17072	$2x + 4y + (2x - 2y)y' = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
17074	$2xy^2 + 2y + (2x^2y + 2x)y' = 0$	[_separable]	✓
17075	$y' = -\frac{4x + 2y}{2x + 3y}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
17076	$y' = -\frac{4x - 2y}{2x - 3y}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
17082	$\frac{x}{(y^2 + x^2)^{3/2}} + \frac{yy'}{(y^2 + x^2)^{3/2}} = 0$	[_separable]	✓
17083	$2x - y + (2y - x)y' = 0$ i.c.	[[_homogeneous, 'class A'], _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
17090	$y' = e^{2x} + y - 1$	[[_linear, 'class A']]	✓
17092	$y + (2xy - e^{-2y})y' = 0$	[[_1st_order, __with_exponential_symmetries]]	✓
17096	$3xy + y^2 + (xy + x^2)y' = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
17097	$yy' = x + 1$	[_separable]	✓

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#	ODE	CAS classification	Solved?
17099	$\frac{(3x^3 - xy^2)y'}{3x^2y + y^3} = 1$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
17100	$x(x-1)y' = y(1+y)$	[_separable]	✓
17101	$\sqrt{x^2 - y^2} + y = xy'$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
17102	$xyy' = (x+y)^2$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
17103	$y' = \frac{4y - 7x}{5x - y}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
17104	$xy' - 4\sqrt{y^2 - x^2} = y$	[[_homogeneous, 'class A'], _dAlembert]	✓
17105	$y' = \frac{y^4 + 2xy^3 - 3y^2x^2 - 2x^3y}{2y^2x^2 - 2x^3y - 2x^4}$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
17106	$(y + xe^{\frac{x}{y}})y' = ye^{\frac{x}{y}}$	[[_homogeneous, 'class A'], _dAlembert]	✓
17107	$xyy' = y^2 + x^2$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
17108	$y' = \frac{x+y}{x-y}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
17109	$ty' + y = t^2y^2$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
17111	$y' + \frac{3y}{t} = t^2y^2$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
17112	$t^2y' + 2ty - y^3 = 0$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
17114	$3ty' + 9y = 2ty^{5/3}$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
17115	$y' = y + \sqrt{y}$	[_quadrature]	✓
17116	$y' = ry - k^2y^2$	[_quadrature]	✓
17117	$y' = ay + by^3$	[_quadrature]	✓
17119	$(3x - y)x' + 9y - 2x = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓

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#	ODE	CAS classification	Solved?
17120	$1 = (3e^y - 2x)y'$	[[_1st_order, _with_exponential_symmetries]]	✓
17121	$y' - 4e^x y^2 = y$	[[_1st_order, _with_linear_symmetries], _Bernoulli]	✓
17124	$\frac{\sqrt{x}y'}{y} = 1$	[_separable]	✓
17125	$5xy^2 + 5y + (5x^2y + 5x)y' = 0$	[_separable]	✓
17127	$(2 - x)y' = y + 2(2 - x)^5$	[_linear]	✓
17129	$x' = \frac{2xy + x^2}{3y^2 + 2xy}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
17130	$4xyy' = 8x^2 + 5y^2$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
17131	$y' + y - y^{1/4} = 0$	[_quadrature]	✓
17572	$\sqrt{-x^2 + 1}y' + \sqrt{1 - y^2} = 0$	[_separable]	✓
17573	$y' = \frac{2xy}{y^2 + x^2}$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
17574	$y' = \frac{y(1 + \ln(y) - \ln(x))}{x}$	[[_homogeneous, 'class A'], _dAlembert]	✓
17575	$y^2 + x^2y' = xyy'$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
17576	$(x + y)y' = y - x$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
17577	$x - y \cos\left(\frac{y}{x}\right) + x \cos\left(\frac{y}{x}\right)y' = 0$	[[_homogeneous, 'class A'], _dAlembert]	✓
17578	$3y - 7x + 7 = (3x - 7y - 3)y'$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
17579	$(x + 2y + 1)y' = 4y + 2x + 3$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
17580	$y' = \frac{2(y + 2)^2}{(y - 1 + x)^2}$	[[_homogeneous, 'class C'], _rational]	✓

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#	ODE	CAS classification	Solved?
17581	$(x + y)^2 y' = a^2$	[[_homogeneous, 'class C', _dAlembert]	✓
17582	$xy' - 4y = \sqrt{y}x^2$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
17584	$y' = 2xy - x^3 + x$	[_linear]	✓
17586	$(x - 2xy - y^2) y' + y^2 = 0$	[_rational, [_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓
17587	$xy' + y = xy^2 \ln(x)$	[_Bernoulli]	✓
17590	$x - y^2 + 2xyy' = 0$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
17591	$y' = \frac{y^2}{3} + \frac{2}{3x^2}$	[[_homogeneous, 'class G', _rational, [_Riccati, _special]]]	✓
17592	$y' + y^2 + \frac{y}{x} - \frac{4}{x^2} = 0$	[[_homogeneous, 'class G', _rational, _Riccati]	✓
17594	$y' = y^2 + \frac{1}{x^4}$	[_rational, [_Riccati, _special]]]	✓
17595	$(y - x) \sqrt{x^2 + 1} y' = (1 + y^2)^{3/2}$	['y=_G(x,y)']	✓
17597	$y' = \frac{x - y^2}{2y(x + y^2)}$	[[_homogeneous, 'class G', _rational]	✓
17598	$(x(x + y) + a^2) y' = y(x + y) + b^2$	[[_1st_order, _with_linear_symmetries], _rational, [_Abel, '2nd type', 'class B']]	✓
17601	$\frac{x + yy'}{\sqrt{1 + x^2 + y^2}} + \frac{y - xy'}{y^2 + x^2} = 0$	[[_1st_order, _with_linear_symmetries], _exact]	✓
17602	$\frac{2x}{y^3} + \frac{(y^2 - 3x^2) y'}{y^4} = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]	✓
17605	$y^3 + 2(x^2 - xy^2) y' = 0$	[[_homogeneous, 'class G', _rational]	✓
17606	$(y^2 x^2 - 1) y' + 2xy^3 = 0$	[[_homogeneous, 'class G', _rational]	✓
17607	$axy' + by + x^m y^n (\alpha xy' + \beta y) = 0$	[[_homogeneous, 'class G', _rational]	✓
17609	$y' = 2xy - x^3 + x$	[_linear]	✓

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#	ODE	CAS classification	Solved?
17610	$y - xy^2 \ln(x) + xy' = 0$	[_Bernoulli]	✓
17612	$yy'^2 + y'(x - y) - x = 0$	[_quadrature]	✓
17614	$y'^3 - (y^2 + xy + x^2)y'^2 + (x^3y + y^2x^2 + xy^3)y' - x^3y^3 = 0$	[_quadrature]	✓
17628	$y = 2xy' + y^2y'^3$	[[_1st_order, __with_linear_symmetries]]	✓
17631	$y' = \sqrt{y - x}$	[[_homogeneous, 'class C', _dAlembert]	✓
17632	$y' = \sqrt{y - x} + 1$	[[_homogeneous, 'class C', _dAlembert]	✓
17633	$y' = \sqrt{y}$	[_quadrature]	✓
17634	$y' = y \ln(y)$	[_quadrature]	✓
17635	$y' = y \ln(y)^2$	[_quadrature]	✓
17636	$y' = -x + \sqrt{x^2 + 2y}$	[[_1st_order, __with_linear_symmetries], _Clairaut]	✓
17637	$y' = -x - \sqrt{x^2 + 2y}$	[[_1st_order, __with_linear_symmetries], _Clairaut]	✓
17645	$y'^2 - yy' + e^x = 0$	[[_1st_order, __with_linear_symmetries]]	✓
17733	$xy' = 2y$	[_separable]	✓
17734	$yy' = e^{2x}$	[_separable]	✓
17735	$y' = ky$	[_quadrature]	✓
17740	$y' = \frac{xy}{y^2 + x^2}$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
17741	$2xyy' = y^2 + x^2$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
17743	$y' = \frac{y^2}{xy - x^2}$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
17744	$(y \cos(y) - \sin(y) + x)y' = y$	[[_1st_order, __with_linear_symmetries]]	✓
17745	$1 + y^2 + y^2y' = 0$	[_quadrature]	✓
17754	$xyy' = y - 1$	[_separable]	✓

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#	ODE	CAS classification	Solved?
17755	$x^5 y' + y^5 = 0$	[_separable]	✓
17757	$y' = 2xy$	[_separable]	✓
17760	$y' + y \tan(x) = 0$	[_separable]	✓
17761	$y' - y \tan(x) = 0$	[_separable]	✓
17762	$1 + y^2 + (x^2 + 1) y' = 0$	[_separable]	✓
17763	$y \ln(y) - xy' = 0$	[_separable]	✓
17770	$y' = e^{-2y+3x}$	[_separable]	✓
17772	$e^{-y} + (x^2 + 1) y' = 0$	[_separable]	✓
17779	$v' = g - \frac{kv^2}{m}$	[_quadrature]	✓
17780	$x^2 - 2y^2 + xyy' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
17781	$x^2 y' - 3xy - 2y^2 = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
17783	$x \sin\left(\frac{y}{x}\right) y' = y \sin\left(\frac{y}{x}\right) + x$	[[_homogeneous, 'class A', _dAlembert]	✓
17784	$xy' = y + 2x e^{-\frac{y}{x}}$	[[_homogeneous, 'class A', _dAlembert]	✓
17785	$x - y - (x + y) y' = 0$	[[_homogeneous, 'class A', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
17786	$xy' = 2x + 3y$	[_linear]	✓
17787	$xy' = \sqrt{y^2 + x^2}$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
17788	$x^2 y' = y^2 + 2xy$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
17789	$x^3 + y^3 - xy^2 y' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
17790	$y' = (x + y)^2$	[[_homogeneous, 'class C', _Riccati]	✓
17791	$y' = \sin(x + 1 - y)^2$	[[_homogeneous, 'class C', _dAlembert]	✓
17792	$y' = \frac{x + y + 4}{x - y - 6}$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓

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#	ODE	CAS classification	Solved?
17793	$y' = \frac{x+y+4}{x+y-6}$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
17794	$2x - 2y + (y - 1)y' = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
17795	$y' = \frac{y-1+x}{x+4y+2}$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
17796	$2x + 3y - 1 - 4(x+1)y' = 0$	[_linear]	✓
17797	$y' = \frac{1-xy^2}{2x^2y}$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
17798	$y' = \frac{2+3xy^2}{4x^2y}$	[[_homogeneous, 'class G'], _rational, _Bernoulli]	✓
17799	$y' = \frac{y-xy^2}{x+x^2y}$	[[_homogeneous, 'class G'], _rational, [_Abel, '2nd type', 'class B']]	✓
17800	$\left(x + \frac{2}{y}\right)y' + y = 0$	[[_homogeneous, 'class G'], _exact, _rational, [_Abel, '2nd type', 'class B']]	✓
17803	$y + y \cos(xy) + (x + x \cos(xy))y' = 0$	[_separable]	✓
17806	$-\frac{\sin\left(\frac{x}{y}\right)}{y} + \frac{x \sin\left(\frac{x}{y}\right)y'}{y^2} = 0$	[_separable]	✓
17807	$1 + y + (1-x)y' = 0$	[_separable]	✓
17812	$2x(1 + \sqrt{x^2 - y}) = \sqrt{x^2 - y}y'$	[_exact, [_1st_order, '_with_symmetry_[F(x),G(y)']]]	✓
17816	$\frac{x}{(y^2 + x^2)^{3/2}} + \frac{yy'}{(y^2 + x^2)^{3/2}} = 0$	[_separable]	✓
17818	$\frac{y-xy'}{(x+y)^2} + y' = 1$	[[_1st_order, _with_linear_symmetries], _exact, _rational]	✓
17819	$\frac{4y^2 - 2x^2}{4xy^2 - x^3} + \frac{(8y^2 - x^2)y'}{4y^3 - x^2y} = 0$	[[_homogeneous, 'class A'], _exact, _rational, _dAlembert]	✓

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#	ODE	CAS classification	Solved?
17820	$(3x^2 - y^2)y' - 2xy = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
17822	$xy' + y + 3x^3y^4y' = 0$	[[_homogeneous, 'class G', _rational]	✓
17825	$y + (x - 2x^2y^3)y' = 0$	[[_homogeneous, 'class G', _rational]	✓
17826	$x + 3y^2 + 2xyy' = 0$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
17831	$-y + xy' = (1 + y^2)y'$	[[_1st_order, _with_linear_symmetries], _rational]	✓
17832	$y - xy' = xy^3y'$	[_separable]	✓
17834	$(x + y)y' = y - x$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
17836	$y^2 - y + xy' = 0$	[_separable]	✓
17837	$-y + xy' = 2x^2 - 3$	[_linear]	✓
17838	$xy' + y = \sqrt{xy}y'$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
17840	$-y + xy' = x^2y^4(xy' + y)$	[[_homogeneous, 'class G', _rational]	✓
17841	$xy' + y + x^2y^5y' = 0$	[[_homogeneous, 'class G', _rational]	✓
17842	$2xy^2 - y + xy' = 0$	[[_homogeneous, 'class D', _rational, _Bernoulli]	✓
17844	$y' = \frac{2y}{x} + \frac{x^3}{y} + x \tan\left(\frac{y}{x^2}\right)$	[[_homogeneous, 'class G']]	✓
17845	$xy' - 3y = x^4$	[_linear]	✓
17848	$y' + y = 2xe^{-x} + x^2$	[[_linear, 'class A']]	✓
17850	$2y - x^3 = xy'$	[_linear]	✓
17852	$y' - 2xy = 6xe^{x^2}$	[_linear]	✓
17854	$y - 2xy - x^2 + x^2y' = 0$	[_linear]	✓
17855	$xy' + y = x^4y^3$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
17857	$xy' + y = xy^2$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓

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Table 2.19 first order ode lie symmetry  
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#	ODE	CAS classification	Solved?
17859	$y - xy' = y'y^2e^y$	[[_1st_order, __with_linear_symmetries]]	✓
17860	$xy' + 2 = x^3(y - 1)y'$	[[_1st_order, '_with_symmetry_[F(x)*G(y),0]'], [_Abel, '2nd type', 'class C']]	✓
17861	$xy' = 2x^2y + y \ln(y)$	[[_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]']]	✓
17876	$(1 - xy)y' = y^2$	[[_homogeneous, 'class G'], _rational, [_Abel, '2nd type', 'class B']]	✓
17877	$2x + 3y + 1 + (2y - 3x + 5)y' = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
17878	$xy' = \sqrt{y^2 + x^2}$		✓
17879	$y^2 = (x^3 - xy)y'$	[[_homogeneous, 'class G'], _rational, [_Abel, '2nd type', 'class B']]	✓
17880	$x^2y^3 + y = (x^3y^2 - x)y'$	[[_homogeneous, 'class G'], _rational]	✓
17882	$xy' + y = y^2 + x^2y'$	[_separable]	✓
17883	$xyy' = y^2 + x^2y'$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
17886	$y + x^2 = xy'$	[_linear]	✓
17888	$6x + 4y + 3 + (3x + 2y + 2)y' = 0$	[[_homogeneous, 'class C'], _rational, [_Abel, '2nd type', 'class A']]	✓
17889	$\cos(x + y) = x \sin(x + y) + x \sin(x + y)y'$	[[_1st_order, __with_linear_symmetries], _exact]	✓
17892	$y' \ln(x - y) = 1 + \ln(x - y)$	[[_homogeneous, 'class C'], _exact, _dAlembert]	✓
17893	$y' + 2xy = e^{-x^2}$	[_linear]	✓
17894	$y^2 - 3xy - 2x^2 = (x^2 - xy)y'$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
17895	$(x^2 + 1)y' + 2xy = 4x^3$	[_linear]	✓

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Table 2.19 first order ode lie symmetry  
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#	ODE	CAS classification	Solved?
17900	$x^2y^4 + x^6 - x^3y^3y' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
17902	$y' = 1 + \frac{y}{x} - \frac{y^2}{x^2}$	[[_homogeneous, 'class A', _rational, _Riccati]	✓
17903	$y' = \frac{2xy e^{\frac{x^2}{y^2}}}{y^2 + y^2 e^{\frac{x^2}{y^2}} + 2x^2 e^{\frac{x^2}{y^2}}}$	[[_homogeneous, 'class A', _dAlembert]	✓
17904	$y' = \frac{x + 2y + 2}{y - 2x}$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
17905	$3x^2 \ln(y) + \frac{x^3y'}{y} = 0$	[_separable]	✓
17907	$\frac{y-x}{(x+y)^3} - \frac{2xy'}{(x+y)^3} = 0$	[_linear]	✓
17908	$xy^2 + y + xy' = 0$	[[_homogeneous, 'class G', _rational, _Bernoulli]	✓
17910	$3x^2y - y^3 - (3xy^2 - x^3)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlembert]	✓
17912	$y' = \frac{-3x - 2y - 1}{2x + 3y - 1}$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
17913	$e^{x^2y}(1 + 2x^2y) + x^3e^{x^2y}y' = 0$	[_linear]	✓
17916	$3xy + y^2 + (3xy + x^2)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
17917	$x^2y' = y^2 + xy + x^2$	[[_homogeneous, 'class A', _rational, _Riccati]	✓
17918	$xy' + y = y^2 \ln(x)$	[_Bernoulli]	✓
17922	$x^2y' - y^2 = 2xy$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
18171	$x' = be^x$ i.c.	[_quadrature]	✓
18172	$x' = (x-1)^2$ i.c.	[_quadrature]	✓
18173	$x' = \sqrt{x^2 - 1}$ i.c.	[_quadrature]	✓

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Table 2.19 first order ode lie symmetry  
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#	ODE	CAS classification	Solved?
18174	$x' = 2\sqrt{x}$ i.c.	[_quadrature]	✓
18175	$x' = \tan(x)$ i.c.	[_quadrature]	✓
18177	$1 + 2x + (-t^2 + 4)x' = 0$	[_separable]	✓
18178	$x' = \cos\left(\frac{x}{t}\right)$	[[_homogeneous, 'class A', _dAlembert]	✓
18179	$(t^2 - x^2)x' = xt$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
18180	$e^{3t}x' + 3xe^{3t} = 2t$	[[_linear, 'class A']]	✓
18182	$x' + 2x = e^t$	[[_linear, 'class A']]	✓
18183	$x' + x \tan(t) = 0$	[_separable]	✓
18185	$t^3x' + (-3t^2 + 2)x = t^3$	[_linear]	✓
18190	$x' = -\lambda x$	[_quadrature]	✓
18208	$y' + cy = a$	[_quadrature]	✓
18215	$v' + \frac{2v}{u} = 3$	[_linear]	✓
18218	$y - xy' = b(1 + x^2y')$	[_separable]	✓
18219	$x' = k(A - nx)(M - mx)$	[_quadrature]	✓
18221	$y^2 = x(y - x)y'$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
18222	$2x^2y + y^3 - x^3y' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]	✓
18223	$2ax + by + (2cy + bx + e)y' = g$	[[_homogeneous, 'class C', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
18225	$x + yy' = my$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
18226	$\frac{2x}{y^3} + \left(\frac{1}{y^2} - \frac{3x^2}{y^4}\right)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlem- bert]	✓
18228	$y' + xy = x$	[_separable]	✓
18231	$p' = \frac{p + at^3 - 2pt^2}{t(-t^2 + 1)}$	[_linear]	✓

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Table 2.19 first order ode lie symmetry

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#	ODE	CAS classification	Solved?
18232	$(T \ln(t) - 1) T = tT'$	[_Bernoulli]	✓
18238	$\sqrt{t^2 + T} = T'$	[[_homogeneous, 'class G']]	✓
18240	$y' = (x + y)^2$	[[_homogeneous, 'class C'], _Riccati]	✓
18245	$y' = x(y^2a + b)$	[_separable]	✓
18246	$n' = (n^2 + 1)x$	[_separable]	✓
18247	$v' + \frac{2v}{u} = 3v$	[_separable]	✓
18250	$\frac{y'}{x} = y \sin(x^2 - 1) - \frac{2y}{\sqrt{x}}$	[_separable]	✓
18251	$y' = 1 + \frac{2y}{x - y}$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class A']]	✓
18252	$v' + 2uv = 2u$	[_separable]	✓
18253	$1 + v^2 + (u^2 + 1)vv' = 0$	[_separable]	✓
18255	$4yy'^3 - 2x^2y'^2 + 4xyy' + x^3 = 16y^2$	[[_1st_order, _with_linear_symmetries]]	✓
18295	$y' + \frac{y}{x} = -x^2 + 1$	[_linear]	✓
18297	$y' = x - y$	[[_linear, 'class A']]	✓
18300	$x(-x^2 + 1)y' + (x^2 - 1)y = x^3$	[_linear]	✓
18302	$x(-x^2 + 1)y' + (2x^2 - 1)y = ax^3$	[_linear]	✓
18303	$y' + \sin(x)y = y^2 \sin(x)$	[_separable]	✓
18304	$(-x^2 + 1)y' - xy = axy^2$	[_separable]	✓
18315	$x^2 + \ln(y) + \frac{xy'}{y} = 0$	[_exact, [_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)']]]	✓
18316	$x(x - 2y)y' + x^2 + 2y^2 = 0$	[[_homogeneous, 'class A'], _rational, [_Abel, '2nd type', 'class B']]	✓
18317	$5xyy' - y^2 - x^2 = 0$	[[_homogeneous, 'class A'], _rational, _Bernoulli]	✓
18318	$(x^2 + 3xy - y^2)y' - 3y^2 = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓

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Table 2.19 first order ode lie symmetry  
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#	ODE	CAS classification	Solved?
18319	$(x^2 + 2xy)y' - 3x^2 + 2xy - y^2 = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓
18320	$5xyy' - 4x^2 - y^2 = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
18321	$(x^2 - 2xy)y' + x^2 - 3xy + 2y^2 = 0$	[_linear]	✓
18322	$3x^2y' + 2x^2 - 3y^2 = 0$	[[_homogeneous, 'class A', _rational, _Riccati]]	✓
18323	$(3x + 2y - 7)y' = 2x - 3y + 6$	[[_homogeneous, 'class C', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
18324	$(6x - 5y + 4)y' = 2x - y + 1$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
18325	$(5x - 2y + 7)y' = x - 3y + 2$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
18326	$(x - 3y + 4)y' = 5x - 7y$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
18327	$(x - 3y + 4)y' = 2x - 6y + 7$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
18328	$(5x - 2y + 7)y' = 10x - 4y + 6$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
18329	$(2x - 2y + 5)y' = x - y + 3$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
18330	$(6x - 4y + 1)y' = 3x - 2y + 1$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]]	✓
18403	$(1 - x)y' - 1 - y = 0$	[_separable]	✓
18405	$y - xy' = a(y' + y^2)$	[_separable]	✓
18407	$x^2 + y^2 - 2xyy' = 0$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
18408	$y^2 + (xy + x^2)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]]	✓

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Table 2.19 first order ode lie symmetry  
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#	ODE	CAS classification	Solved?
18409	$x^2y - (x^3 + y^3)y' = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
18410	$(4y + 3x)y' + y - 2x = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]	✓
18411	$3y - 7x + 7 + (7y - 3x + 3)y' = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
18412	$(y - 3x + 3)y' = 2y - x - 4$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
18413	$x^2 - 4xy - 2y^2 + (y^2 - 4xy - 2x^2)y' = 0$	[[_homogeneous, 'class A', _exact, _rational, _dAlem- bert]	✓
18414	$x + yy' + \frac{-y + xy'}{y^2 + x^2} = 0$	[[_1st_order, __with_lin- ear_symmetries], _exact, _rational]	✓
18416	$2ax + by + g + (2cy + bx + e)y' = 0$	[[_homogeneous, 'class C', _exact, _rational, [_Abel, '2nd type', 'class A']]	✓
18418	$y - xy' + \ln(x) = 0$	[_linear]	✓
18419	$(xy + 1)y - (1 - xy)xy' = 0$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]	✓
18420	$a(xy' + 2y) = xyy'$	[_separable]	✓
18422	$y(2xy + e^x) - e^xy' = 0$	[_Bernoulli]	✓
18423	$x^2y - 2xy^2 - (x^3 - 3x^2y)y' = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
18424	$y(xy + 2y^2x^2) + x(xy - y^2x^2)y' = 0$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]	✓
18427	$3x^2y^4 + 2xy + (2x^3y^3 - x^2)y' = 0$	[[_homogeneous, 'class G', _rational]	✓
18429	$y^3 - 2x^2y + (2xy^2 - x^3)y' = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
18430	$2x^2y - 3y^4 + (3x^3 + 2xy^3)y' = 0$	[[_homogeneous, 'class G', _rational]	✓

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Table 2.19 first order ode lie symmetry  
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#	ODE	CAS classification	Solved?
18431	$y^2 + 2x^2y + (2x^3 - xy)y' = 0$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]]	✓
18432	$xy' - ay = x + 1$	[_linear]	✓
18433	$y' + y = e^{-x}$	[[_linear, 'class A']]]	✓
18437	$y' + \frac{y}{x} = x^2y^6$	[[_homogeneous, 'class G', _rational, _Bernoulli]]	✓
18439	$y' + \frac{2y}{x} = 3x^2y^{1/3}$	[[_homogeneous, 'class G', _rational, _Bernoulli]]	✓
18442	$(x + y)^2 y' = a^2$	[[_homogeneous, 'class C', _dAlembert]]	✓
18443	$-y + xy' = \sqrt{y^2 + x^2}$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
18447	$y' + \frac{(-2x + 1)y}{x^2} = 1$	[_linear]	✓
18449	$2x - y + 1 + (2y - x - 1)y' = 0$	[[_homogeneous, 'class C', _exact, _rational, [_Abel, '2nd type', 'class A']]]	✓
18451	$xy' + \frac{y^2}{x} = y$	[[_homogeneous, 'class A', _rational, _Bernoulli]]	✓
18453	$y' + \frac{4xy}{x^2 + 1} = \frac{1}{(x^2 + 1)^3}$	[_linear]	✓
18454	$x^2y - (x^3 + y^3)y' = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]]	✓
18455	$x(-x^2 + 1)y' + (2x^2 - 1)y = ax^3$	[_linear]	✓
18456	$x^2 + y^2 + 1 - 2xyy' = 0$	[_rational, _Bernoulli]	✓
18457	$x + yy' = m(-y + xy')$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓
18459	$(x + 1)y' + 1 = 2e^y$	[_separable]	✓
18461	$y + (ax^2y^n - 2x)y' = 0$	[[_homogeneous, 'class G', _rational]]	✓
18465	$yy' = ax$	[_separable]	✓
18467	$(x + y)y' + x - y = 0$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class A']]]	✓

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Table 2.19 first order ode lie symmetry

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#	ODE	CAS classification	Solved?
18469	$(y^2 - x^2)y' + 2xy = 0$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
18470	$y - xy' = b(1 + x^2y')$	[_separable]	✓
18471	$3y + 2x + 4 - (4x + 6y + 5)y' = 0$	[[_homogeneous, 'class C', _rational, [_Abel, '2nd type', 'class A']]	✓
18472	$(x^3y^3 + y^2x^2 + xy + 1)y$ $+ (x^3y^3 - y^2x^2 - xy + 1)xy' = 0$	[[_homogeneous, 'class G', _rational]	✓
18473	$2y^2x^2 + y - (x^3y - 3x)y' = 0$	[[_homogeneous, 'class G', _rational, [_Abel, '2nd type', 'class B']]	✓
18474	$y^2 + x^2y' = xyy'$	[[_homogeneous, 'class A', _rational, [_Abel, '2nd type', 'class B']]	✓
18475	$y' + \frac{ny}{x} = ax^{-n}$	[_linear]	✓
18476	$(x - y)^2y' = a^2$	[[_homogeneous, 'class C', _dAlembert]	✓
18477	$y'^3 + 2xy'^2 - y^2y'^2 - 2xy^2y' = 0$	[_quadrature]	✓
18479	$y'^3(x + 2y) + 3y'^2(x + y) + (2x + y)y' = 0$	[_quadrature]	✓
18481	$4y^2y'^2 + 2y'xy(3x + 1) + 3x^3 = 0$	[_separable]	✓
18497	$xy(y - xy') = x + yy'$	[_separable]	✓
18498	$y' + 2xy = y^2 + x^2$	[[_homogeneous, 'class C', _Riccati]	✓
18501	$xy^2(y'^2 + 2) = 2y'y^3 + x^3$	[_separable]	✓
18511	$(-y + xy')(x + yy') = h^2y'$	[_rational]	✓
18513	$\left(y'^2 - \frac{1}{a^2 - x^2}\right)\left(y' - \sqrt{\frac{y}{x}}\right) = 0$	[[_homogeneous, 'class A', _dAlembert]	✓
18515	$xyy'^2 + y'(3x^2 - 2y^2) - 6xy = 0$	[_separable]	✓
18516	$y'^3 - 4xyy' + 8y^2 = 0$	[[_1st_order, __with_lin- ear_symmetries]]	✓
18517	$y'^3 - (y^2 + xy + x^2)y'^2$ $+ (x^3y + y^2x^2 + xy^3)y' - x^3y^3 = 0$	[_quadrature]	✓
18523	$y = 2xy' + y^2y'^3$	[[_1st_order, __with_lin- ear_symmetries]]	✓

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Table 2.19 first order ode lie symmetry

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#	ODE	CAS classification	Solved?
18526	$y'\sqrt{x} = \sqrt{y}$	[_separable]	✓

## 2.3.18 first order ode ID 1

Table 2.20: first order ode ID 1

#	ODE	CAS classification	Solved?
67	$y' = 6e^{2x-y}$ i.c.	[_separable]	✓
702	$y' = 6e^{2x-y}$ i.c.	[_separable]	✓
1184	$y' = -1 + e^y$	[_quadrature]	✓
1185	$y' = -1 + e^{-y}$	[_quadrature]	✓
1237	$y' = e^{x+y}$	[_separable]	✓
2321	$y' = e^{3+t+y}$	[_separable]	✓
2492	$y' = e^{3+t+y}$	[_separable]	✓
2865	$y' = e^y$ i.c.	[_quadrature]	✓
3411	$y' = -xe^y$	[_separable]	✓
4095	$e^{2y} + (x+1)y' = 0$	[_separable]	✓
4102	$y' = e^{x-2y}$ i.c.	[_separable]	✓
4105	$e^{-y} + (x^2 + 1)y' = 0$ i.c.	[_separable]	✓
4215	$y' = e^y \sin(x)$	[_separable]	✓
4216	$y' = e^{x-y}$	[_separable]	✓
4226	$y' = xe^{-2y}$ i.c.	[_separable]	✓
4435	$y' - 6xe^{x-y} - 1 = 0$	[[_1st_order, __with_linear_symmetries]]	✓
4730	$y' = e^y + x$	[[_1st_order, ' __with_symmetry_[F(x),G(x)]']]]	✓
4731	$y' = e^{x+y}$	[_separable]	✓
5915	$y' - e^{x-y} + e^x = 0$	[_separable]	✓
6279	$y' = 8x^3e^{-2y}$ i.c.	[_separable]	✓
6466	$y' = e^{-2y+3x}$ i.c.	[_separable]	✓
7078	$y' = e^{x-y}$	[_separable]	✓
7410	$y' = \frac{e^{x-y}}{1+e^x}$	[_separable]	✓

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Table 2.20 first order ode ID 1

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#	ODE	CAS classification	Solved?
8658	$x^2 y' + e^{-y} = 0$	[_separable]	✓
8726	$y' = e^{x+y}$	[_separable]	✓
8727	$y' = 10 + e^{x+y}$	[[_homogeneous, 'class C'], _dAlembert]	✓
8728	$y' = 10 e^{x+y} + x^2$	[[_1st_order, '_with_symmetry_[F(x),G(x)]']]	✓
8729	$y' = x e^{x+y} + \sin(x)$	[[_1st_order, '_with_symmetry_[F(x),G(x)]']]	✓
8730	$y' = 5 e^{x^2+20y} + \sin(x)$	[[_1st_order, '_with_symmetry_[F(x),G(x)]']]	✓
9765	$y' - e^{x-y} + e^x = 0$	[_separable]	✓
12705	$x' = e^{-x}$	[_quadrature]	✓
12721 i.c.	$x' = e^{-2x}$	[_quadrature]	✓
12737 i.c.	$x' = t^2 e^{-x}$	[_separable]	✓
12739 i.c.	$x' = e^{t+x}$	[_separable]	✓
13531	$y' = e^{x-y}$	[_separable]	✓
14045	$y' = e^{x-y}$	[_separable]	✓
14086 i.c.	$y' = x e^{y-x^2}$	[_separable]	✓
14091 i.c.	$x e^y + y' = 0$	[_separable]	✓
14282	$y' = e^{-y}$	[_quadrature]	✓
14726	$y' = e^{2x-3y}$	[_separable]	✓
14745	$y' = e^{-y}$	[_quadrature]	✓
14746	$y' = e^{-y} + 1$	[_quadrature]	✓
14879	$y' = e^{4x+3y}$	[_separable]	✓
14881	$y' = e^{4x+3y}$	[_separable]	✓
15585	$y' = e^{2y+10t}$	[_separable]	✓
15586	$y' = e^{3y+2t}$	[_separable]	✓
15617 i.c.	$y' = e^{t-y}$	[_separable]	✓

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Table 2.20 first order ode ID 1

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#	ODE	CAS classification	Solved?
15623 i.c.	$y' = e^{x-y}$	[_separable]	✓
15624 i.c.	$y' = e^{2x-y}$	[_separable]	✓
15816	$y' = \frac{e^{8y}}{t}$	[_separable]	✓
16568	$y' - 1 = e^{x+2y}$	[[_homogeneous, 'class C'], _dAlembert]	✓
16995 i.c.	$y' = x^2 e^{-3y}$	[_separable]	✓
17770 i.c.	$y' = e^{-2y+3x}$	[_separable]	✓
17772 i.c.	$e^{-y} + (x^2 + 1)y' = 0$	[_separable]	✓
18171 i.c.	$x' = b e^x$	[_quadrature]	✓

## 2.3.19 first order ode differential

Table 2.21: first order ode differential

#	ODE	CAS classification	Solved?
746	$(x + y)y' = 0$	[_quadrature]	✓
3293	$y'^3 + (x + y - 2xy)y'^2 - 2y'xy(x + y) = 0$	[_quadrature]	✓
4360	$(\sin(y)^2 + x \cot(y))y' = 0$	[_quadrature]	✓
5002	$y'\sqrt{X} = 0$	[_quadrature]	✓
5386	$y'^2 - 2x^2y' + 2xy' = 0$	[_quadrature]	✓
5537	$(x^2 - ay)y'^2 - 2xyy' = 0$	[_quadrature]	✓
5614	$y'^3 + (2x - y^2)y'^2 - 2xy^2y' = 0$	[_quadrature]	✓
5637	$y'^3(x + 2y) + 3y'^2(x + y) + (2x + y)y' = 0$	[_quadrature]	✓
8397	$y' = 0$	[_quadrature]	✓
8412	$(x + y)y' = 0$	[_quadrature]	✓
8413	$xy' = 0$	[_quadrature]	✓
8414	$\frac{y'}{x + y} = 0$	[_quadrature]	✓
8415	$\frac{y'}{x} = 0$	[_quadrature]	✓
8416	$y' = 0$	[_quadrature]	✓
8661	$y' = 0$	[_quadrature]	✓
8672	$cy' = 0$	[_quadrature]	✓
8684	$a \sin(x) yxy' = 0$	[_quadrature]	✓
8685	$f(x) \sin(x) yxy' \pi = 0$	[_quadrature]	✓
8691	$xy' = 0$	[_quadrature]	✓
8692	$5y' = 0$	[_quadrature]	✓
8693	$ey' = 0$	[_quadrature]	✓
8694	$\pi y' = 0$	[_quadrature]	✓
8695	$\sin(x)y' = 0$	[_quadrature]	✓
8696	$f(x)y' = 0$	[_quadrature]	✓
8699	$(x - 1)y' = 0$	[_quadrature]	✓
8700	$yy' = 0$	[_quadrature]	✓
8701	$xyy' = 0$	[_quadrature]	✓

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Table 2.21 first order ode differential

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#	ODE	CAS classification	Solved?
8702	$xy \sin(x) y' = 0$	[_quadrature]	✓
8703	$\pi y \sin(x) y' = 0$	[_quadrature]	✓
8704	$x \sin(x) y' = 0$	[_quadrature]	✓
8796	$y^3 y''^2 + yy' = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓
8798	$yy''^3 + y'y^3 = 0$	[[_2nd_order, _missing_x]]	✓
11260	$x(ay' + by'' + cy''' + ey'''' ) y = 0$	[[_high_order, _missing_x]]	✓
11521	$2y'y''' - 3y'^2 = 0$	[[_3rd_order, _missing_x]]	✓
13549	$y'^3 - y'e^{2x} = 0$	[_quadrature]	✓
17091	$\frac{y'}{\frac{x}{y} - \sin(y)} = 0$	[_quadrature]	✓
18477	$y'^3 + 2xy'^2 - y^2y'^2 - 2xy^2y' = 0$	[_quadrature]	✓
18479	$y'^3(x + 2y) + 3y'^2(x + y) + (2x + y)y' = 0$	[_quadrature]	✓



## 2.3.20 first order ode nonlinear p but separable

Table 2.22: first order ode nonlinear p but separable

#	ODE	CAS classification	Solved?
5350	$y'^2 + f(x)(y-a)(y-b) = 0$	[[_1st_order, '_with_symme- try_[F(x),G(x)*y+H(x)']]]	✓
5351	$y'^2 + f(x)(y-a)^2(y-b) = 0$	[[_1st_order, '_with_symme- try_[F(x),G(x)*y+H(x)']]]	✓
5352	$y'^2 + f(x)(y-a)(y-b)(y-c) = 0$	[[_1st_order, '_with_symme- try_[F(x),G(x)*y+H(x)']]]	✓
5353	$y'^2 + f(x)(y-a)^2(y-b)(y-c) = 0$	[[_1st_order, '_with_symme- try_[F(x),G(x)*y+H(x)']]]	✓
5354	$y'^2 = f(x)^2(y-a)(y-b)(y-c)^2$	[_separable]	✓
5428	$xy'^2 = y$	[[_homogeneous, 'class A', _rational, _dAlembert]	✓
5457	$(x+1)y'^2 = y$	[[_homogeneous, 'class C', _rational, _dAlembert]	✓
5475	$x^2y'^2 + y^2 - y^4 = 0$	[_separable]	✓
5494	$(-x^2+1)y'^2 = 1 - y^2$	[_rational, [_1st_or- der, '_with_symme- try_[F(x),G(x)*y+H(x)']]]	✓
5515	$3x^4y'^2 - xy - y = 0$	[_rational, [_1st_or- der, '_with_symme- try_[F(x),G(x)*y+H(x)']]]	✓
5587	$y'^3 = (a + by + cy^2)f(x)$	[[_1st_order, '_with_symme- try_[F(x),G(x)*y+H(x)']]]	✓
5589	$y'^3 + f(x)(y-a)^2(y-b)^2 = 0$	[[_1st_order, '_with_symme- try_[F(x),G(x)*y+H(x)']]]	✓
5590	$y'^3 + f(x)(y-a)^2(y-b)^2(y-c)^2 = 0$	[[_1st_order, '_with_symme- try_[F(x),G(x)*y+H(x)']]]	✓
5646	$y'^4 + f(x)(y-a)^3(y-b)^2 = 0$	[[_1st_order, '_with_symme- try_[F(x),G(x)*y+H(x)']]]	✓
5647	$y'^4 + f(x)(y-a)^3(y-b)^3 = 0$	[[_1st_order, '_with_symme- try_[F(x),G(x)*y+H(x)']]]	✓

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Table 2.22 first order ode nonlinear p but separable  
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#	ODE	CAS classification	Solved?
5648	$y'^4 + f(x)(y-a)^3(y-b)^3(y-c)^2 = 0$	[[_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)']]]	✓
8432	$y = xy'^2$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
8711	$y'^2 = \frac{y}{x}$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
8713	$y'^2 = \frac{y^3}{x}$	[[_homogeneous, 'class G']]	✓
8714	$y'^3 = \frac{y^2}{x}$	[[_homogeneous, 'class G'], _rational]	✓
8715	$y'^2 = \frac{1}{xy}$	[[_homogeneous, 'class G']]	✓
8716	$y'^2 = \frac{1}{xy^3}$	[[_homogeneous, 'class G']]	✓
8717	$y'^2 = \frac{1}{x^2y^3}$	[_separable]	✓
8718	$y'^4 = \frac{1}{xy^3}$	[[_homogeneous, 'class G'], _rational]	✓
8719	$y'^2 = \frac{1}{x^3y^4}$	[_separable]	✓
10095	$xy'^2 - y = 0$	[[_homogeneous, 'class A'], _rational, _dAlembert]	✓
10119	$x^2y'^2 + y^2 - y^4 = 0$	[_separable]	✓
10135	$(x^2 - 1)y'^2 - y^2 + 1 = 0$	[_rational, [_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)']]]	✓
10206	$y'^3 - f(x)(y^2a + by + c)^2 = 0$	[[_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)']]]	✓
12581	$y = (x + 1)y'^2$	[[_homogeneous, 'class C'], _rational, _dAlembert]	✓
13643	$\sinh(x)y'^2 + 3y = 0$	['y=_G(x,y)']	✓
14007	$y'^2 - 9xy = 0$	[[_homogeneous, 'class G']]	✓
16498	$y'^3 + (x + 2)e^y = 0$	[[_1st_order, _with_exponential_symmetries]]	✓

## 2.3.21 first order ode riccati

Table 2.23: first order ode riccati

#	ODE	CAS classification	Solved?
50	$(x+1)^2 y' = (1+y)^2$	[_separable]	✓
58	$x^2 y' = 1 - x^2 + y^2 - y^2 x^2$	[_separable]	✓
60	$y' = 3x^2(1+y^2)$	[_separable]	✓
	<i>i.c.</i>		
121	$y' = (4x+y)^2$	[[_homogeneous, 'class C'], _Riccati]	✓
167	$y' + y^2 = x^2 + 1$	[_Riccati]	✓
168	$y' + 2xy = 1 + x^2 + y^2$	[[_homogeneous, 'class C'], _Riccati]	✓
188	$y' = 1 + x^2 + y^2 + y^2 x^2$	[_separable]	✓
194	$y' = x^2 - 2xy + y^2$	[[_homogeneous, 'class C'], _Riccati]	✓
686	$(x^2+1)y' = (1+y)^2$	[_separable]	✓
693	$x^2 y' = 1 - x^2 + y^2 - y^2 x^2$	[_separable]	✓
695	$y' = 3x^2(1+y^2)$	[_separable]	✓
	<i>i.c.</i>		
745	$y' = (4x+y)^2$	[[_homogeneous, 'class C'], _Riccati]	✓
780	$y' = 1 + x^2 + y^2 + y^2 x^2$	[_separable]	✓
786	$y' = x^2 - 2xy + y^2$	[[_homogeneous, 'class C'], _Riccati]	✓
1154	$y' = 2(x+1)(1+y^2)$	[_separable]	✓
	<i>i.c.</i>		
1158	$y' = \frac{y^2 + xy + x^2}{x^2}$	[[_homogeneous, 'class A'], _rational, _Riccati]	✓
1163	$x^2 + 3xy + y^2 - x^2 y' = 0$	[[_homogeneous, 'class A'], _rational, _Riccati]	✓
1181	$y' = t - 1 - y^2$	[_Riccati]	✓
1230	$y' = 1 + 2x + y^2 + 2xy^2$	[_separable]	✓
1522	$2y' + x(y^2 - 1) = 0$	[_separable]	✓
1523	$y' = x^2(1+y^2)$	[_separable]	✓
1532	$y' = x(1+y^2)$	[_separable]	✓
	<i>i.c.</i>		

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Table 2.23 first order ode riccati  
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#	ODE	CAS classification	Solved?
1577	$\frac{y'}{(1+y)^2} - \frac{1}{x(1+y)} = -\frac{3}{x^2}$	[[_homogeneous, 'class C', _rational, _Riccati]	✓
1583	$y' = x^2(1+y^2)$	[_separable]	✓
1585	$y' = (x-1)(y-1)(y-2)$	[_separable]	✓
1593	$y'(x^2+2) = 4x(y^2+2y+1)$	[_separable]	✓
1600	$y' = \frac{1+y^2}{x^2+1}$	[_separable]	✓
1627	$x^2y' = y^2 + xy - x^2$	[[_homogeneous, 'class A', _rational, _Riccati]	✓
1628 i.c.	$x^2y' = y^2 + xy - x^2$	[[_homogeneous, 'class A', _rational, _Riccati]	✓
1646	$x^2y' = y^2 + xy + x^2$	[[_homogeneous, 'class A', _rational, _Riccati]	✓
1652 i.c.	$y' = \frac{y^2 - 3xy - 5x^2}{x^2}$	[[_homogeneous, 'class A', _rational, _Riccati]	✓
1653 i.c.	$x^2y' = 2x^2 + y^2 + 4xy$	[[_homogeneous, 'class A', _rational, _Riccati]	✓
1662 i.c.	$x^2y' = y^2 + xy - 4x^2$	[[_homogeneous, 'class A', _rational, _Riccati]	✓
1671	$x^3y' = 2y^2 + 2x^2y - 2x^4$	[[_homogeneous, 'class G', _rational, _Riccati]	✓
1672	$y' = e^{-x}y^2 + 4y + 2e^x$	[[_1st_order, _with_linear_symmetries], _Riccati]	✓
1673	$y' = \frac{y^2 + y \tan(x) + \tan(x)^2}{\sin(x)^2}$	[_Riccati]	✓
1674	$x \ln(x)^2 y' = -4 \ln(x)^2 + y \ln(x) + y^2$	[[_1st_order, '_with_symmetry_[F(x),G(y)]', _Riccati]	✓
1679	$y' = 1 + x - (2x+1)y + xy^2$	[_Riccati]	✓
1799	$x^2(y' + y^2) - x(x+2)y + x + 2 = 0$	[_rational, [_1st_order, '_with_symmetry_[F(x),G(x)]', _Riccati]	✓
1800	$y' + y^2 + 4xy + 4x^2 + 2 = 0$	[[_homogeneous, 'class C', _Riccati]	✓
1801	$(2x+1)(y' + y^2) - 2y - 2x - 3 = 0$	[_rational, _Riccati]	✓
1802	$(3x-1)(y' + y^2) - (2+3x)y - 6x + 8 = 0$	[_rational, _Riccati]	✓

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Table 2.23 first order ode riccati  
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#	ODE	CAS classification	Solved?
1803	$x^2(y' + y^2) + xy + x^2 - \frac{1}{4} = 0$	[_rational, [_1st_order, '[_with_symmetry_[F(x),G(x)]'], _Riccati]	✓
1804	$x^2(y' + y^2) - 7xy + 7 = 0$	[[_homogeneous, 'class G'], _rational, _Riccati]	✓
2318	$(t^2 + 1)y' = 1 + y^2$	[_separable]	✓
2320	$y' = 1 - t + y^2 - ty^2$	[_separable]	✓
2489	$(t^2 + 1)y' = 1 + y^2$	[_separable]	✓
2491	$y' = 1 - t + y^2 - ty^2$	[_separable]	✓
2521	$y' = e^t + y^2$	[_Riccati]	✓
i.c.			
2522	$y' = y^2 + \cos(t)^2$	[_Riccati]	✓
i.c.			
2539	$y' = 1 - t + y^2$	[_Riccati]	✓
i.c.			
2843	$1 + y^2 + (x^2 + 1)y' = 0$	[_separable]	✓
2867	$1 + y^2 = \frac{y'}{x^3(x-1)}$	[_separable]	✓
i.c.			
2869	$(x^2 + x + 1)y' = y^2 + 2y + 5$	[_separable]	✓
i.c.			
2870	$(x^2 - 2x - 8)y' = y^2 + y - 2$	[_separable]	✓
i.c.			
3476	$y' - \frac{y^2}{x^2} = \frac{1}{4}$	[[_homogeneous, 'class A'], _rational, _Riccati]	✓
i.c.			
3477	$y' - \frac{y^2}{x^2} = \frac{1}{4}$	[[_homogeneous, 'class A'], _rational, _Riccati]	✓
3523	$y' = \frac{x(y^2 - 1)}{2(-2 + x)(x - 1)}$	[_separable]	✓
3526	$(x^2 + 1)y' + y^2 = -1$	[_separable]	✓
i.c.			
3545	$y' = \frac{(x + y)^2}{2x^2}$	[[_homogeneous, 'class A'], _rational, _Riccati]	✓
3553	$x^2y' = y^2 + 3xy + x^2$	[[_homogeneous, 'class A'], _rational, _Riccati]	✓

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Table 2.23 first order ode riccati  
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#	ODE	CAS classification	Solved?
3601	$y' = \frac{x(y^2 - 1)}{2(-2 + x)(x - 1)}$	[_separable]	✓
3604	$(x^2 + 1)y' + y^2 = -1$ i.c.	[_separable]	✓
3636	$y' = \frac{y^2 + xy + x^2}{x^2}$	[[_homogeneous, 'class A', _rational, _Riccati]	✓
3638	$y' = \frac{(x + y)^2}{2x^2}$	[[_homogeneous, 'class A', _rational, _Riccati]	✓
3646	$x^2y' = y^2 + 3xy + x^2$	[[_homogeneous, 'class A', _rational, _Riccati]	✓
3672	$y' = (-y + 9x)^2$ i.c.	[[_homogeneous, 'class C', _Riccati]	✓
3673	$y' = (4x + y + 2)^2$	[[_homogeneous, 'class C', _Riccati]	✓
3676	$y' = 2x(x + y)^2 - 1$ i.c.	[[_1st_order, __with_lin- ear_symmetries], _Riccati]	✓
3679	$y' + \frac{2y}{x} - y^2 = -\frac{2}{x^2}$	[[_homogeneous, 'class G', _rational, _Riccati]	✓
3680	$y' + \frac{7y}{x} - 3y^2 = \frac{3}{x^2}$	[[_homogeneous, 'class G', _rational, _Riccati]	✓
4090	$x^2y' = x(y - 1) + (y - 1)^2$	[[_homogeneous, 'class C', _rational, _Riccati]	✓
4103	$y' = \frac{y^2 + x^2}{2x^2}$	[[_homogeneous, 'class A', _rational, _Riccati]	✓
4232	$2xy' = 1 - y^2$ i.c.	[_separable]	✓
4235	$y' = e^x(1 + y^2)$	[_separable]	✓
4246	$y' = (x + y)^2$	[[_homogeneous, 'class C', _Riccati]	✓
4260	$1 = \frac{y}{1 - y^2x^2} + \frac{xy'}{1 - y^2x^2}$	[_exact, _rational, _Ric- cati]	✓
4266	$xy' = x^5 + x^3y^2 + y$	[[_homogeneous, 'class D', _rational, _Riccati]	✓
4268	$xy' = y + x^2 + 9y^2$	[[_homogeneous, 'class D', _rational, _Riccati]	✓
4325	$y' = (x + 1)^2 + (4y + 1)^2 + 8xy + 1$	[[_homogeneous, 'class C', _Riccati]	✓

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Table 2.23 first order ode riccati  
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#	ODE	CAS classification	Solved?
4346	$x^2 + y + y^2 - xy' = 0$	[[_homogeneous, 'class D', _rational, _Riccati]	✓
4374	$y' + y^2 = x^2 + 1$	[_Riccati]	✓
4648	$y' + f(x)^2 = f'(x) + y^2$	[_Riccati]	✓
4649	$y' + 1 - x = (x + y)y$	[_Riccati]	✓
4650	$y' = (x + y)^2$	[[_homogeneous, 'class C', _Riccati]	✓
4651	$y' = (x - y)^2$	[[_homogeneous, 'class C', _Riccati]	✓
4652	$y' = 3 - 3x + 3y + (x - y)^2$	[[_homogeneous, 'class C', _Riccati]	✓
4653	$y' = 2x - (x^2 + 1)y + y^2$	[_Riccati]	✓
4654	$y' = x(x^3 + 2) - (2x^2 - y)y$	[[_1st_order, _with_lin- ear_symmetries], _Riccati]	✓
4655	$y' = 1 + x(-x^3 + 2) + (2x^2 - y)y$	[[_1st_order, _with_lin- ear_symmetries], _Riccati]	✓
4656	$y' = \cos(x) - (\sin(x) - y)y$	[_Riccati]	✓
4657	$y' = \cos(2x) + (\sin(2x) + y)y$	[_Riccati]	✓
4658	$y' = f(x) + xf(x)y + y^2$	[_Riccati]	✓
4659	$y' = (3 + x - 4y)^2$	[[_homogeneous, 'class C', _Riccati]	✓
4660	$y' = (1 + 4x + 9y)^2$	[[_homogeneous, 'class C', _Riccati]	✓
4661	$y' = 3a + 3bx + 3by^2$	[_Riccati]	✓
4664	$y' = a + bx + cy^2$	[_Riccati]	✓
4665	$y' = ax^{n-1} + bx^{2n} + cy^2$	[_Riccati]	✓
4669	$y' = 1 + a(x - y)y$	[_Riccati]	✓
4672	$y' = 1 - x - x^3 + (2x^2 + 1)y - xy^2$	[_Riccati]	✓
4673	$y' = x(2 + x^2y - y^2)$	[_Riccati]	✓
4674	$y' = x + (-2x + 1)y - (1 - x)y^2$	[_Riccati]	✓
4676	$y' = x^n(a + by^2)$	[_separable]	✓
4677	$y' = ax^m + bx^ny^2$	[_Riccati]	✓

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Table 2.23 first order ode riccati

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#	ODE	CAS classification	Solved?
4680	$y' + 4 \csc(x) = (3 - \cot(x))y + y^2 \sin(x)$	[_Riccati]	✓
4682	$y' + \tan(x)(1 - y^2) = 0$	[_separable]	✓
4684	$y' = (a + by + cy^2)f(x)$	[_separable]	✓
4763	$xy' + x^2 + y^2 = 0$	[_rational, _Riccati]	✓
4764	$xy' = x^2 + y(1 + y)$	[[_homogeneous, 'class D'], _rational, _Riccati]	✓
4765	$xy' - y + y^2 = x^{2/3}$	[_rational, _Riccati]	✓
4766	$xy' = a + by^2$	[_separable]	✓
4767	$xy' = x^2a + y + by^2$	[[_homogeneous, 'class D'], _rational, _Riccati]	✓
4768	$xy' = ax^{2n} + (n + by)y$	[_rational, _Riccati]	✓
4769	$xy' = ax^n + by + cy^2$	[_rational, _Riccati]	✓
4770	$xy' = k + ax^n + by + cy^2$	[_rational, _Riccati]	✓
4776	$xy' = x^3 + (2x^2 + 1)y + xy^2$	[[_homogeneous, 'class D'], _rational, _Riccati]	✓
4778	$xy' + bx + (2 + axy)y = 0$	[_rational, [_1st_order, '_with_symmetry_[F(x),G(x)]'], _Riccati]	✓
4779	$xy' + a_0 + a_1x + (a_2 + a_3xy)y = 0$	[_rational, _Riccati]	✓
4780	$xy' + ax^2y^2 + 2y = b$	[_rational, _Riccati]	✓
4781	$xy' + x^m + \frac{(n-m)y}{2} + x^ny^2 = 0$	[_rational, _Riccati]	✓
4783	$xy' = ax^m - by - cx^ny^2$	[_rational, _Riccati]	✓
4784	$xy' = 2x - y + ax^n(x - y)^2$	[[_1st_order, _with_linear_symmetries], _rational, _Riccati]	✓
4786	$xy' = y + (x^2 - y^2)f(x)$	[[_homogeneous, 'class D'], _Riccati]	✓
4837	$2xy' + 1 = 4ixy + y^2$	[_rational, _Riccati]	✓
4846	$3xy' = 3x^{2/3} + (1 - 3y)y$	[_rational, _Riccati]	✓
4857	$x^2y' + x^2 + xy + y^2 = 0$	[[_homogeneous, 'class A'], _rational, _Riccati]	✓
4858	$x^2y' = (2x - y + 1)^2$	[[_homogeneous, 'class C'], _rational, _Riccati]	✓

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Table 2.23 first order ode riccati  
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#	ODE	CAS classification	Solved?
4859	$x^2y' = a + by^2$	[_separable]	✓
4862	$x^2y' + x^2a + bxy + cy^2 = 0$	[[_homogeneous, 'class A'], _rational, _Riccati]	✓
4863	$x^2y' = a + bx^n + y^2x^2$	[_rational, _Riccati]	✓
4864	$x^2y' + 2 + xy(4 + xy) = 0$	[[_homogeneous, 'class G'], _rational, _Riccati]	✓
4865	$x^2y' + 2 + ax(1 - xy) - y^2x^2 = 0$	[_rational, _Riccati]	✓
4867	$x^2y' = a + bx^n + cx^2y^2$	[_rational, _Riccati]	✓
4868	$x^2y' = a + bxy + cx^2y^2$	[[_homogeneous, 'class G'], _rational, _Riccati]	✓
4869	$x^2y' = a + bxy + cx^4y^2$	[_rational, _Riccati]	✓
4895	$(x^2 + 1)y' = 1 + y^2$	[_separable]	✓
4896	$(-x^2 + 1)y' = 1 - y^2$	[_separable]	✓
4897	$(-x^2 + 1)y' = 1 - (2x - y)y$	[_rational, [_1st_order, '_with_symmetry_[F(x),G(x)]'], _Riccati]	✓
4908	$(a^2 + x^2)y' = a^2 + 3xy - 2y^2$	[_rational, _Riccati]	✓
4921	$(x - a)^2y' + k(x + y - a)^2 + y^2 = 0$	[[_homogeneous, 'class C'], _rational, _Riccati]	✓
4925	$(x - a)(x - b)y' + k(y - a)(y - b) = 0$	[_separable]	✓
4926	$(x - a)(x - b)y' + k(x + y - a)(x + y - b) + y^2 = 0$	[_rational, [_1st_order, '_with_symmetry_[F(x),G(x)]'], _Riccati]	✓
4929	$2x^2y' + 1 + 2xy - y^2x^2 = 0$	[[_homogeneous, 'class G'], _rational, _Riccati]	✓
4933	$x(-2x + 1)y' = 4x - (1 + 4x)y + y^2$	[_rational, [_1st_order, '_with_symmetry_[F(x),G(x)]'], _Riccati]	✓
4935	$2x(1 - x)y' + x + (1 - x)y^2 = 0$	[_rational, _Riccati]	✓
4938	$ax^2y' = x^2 + axy + b^2y^2$	[[_homogeneous, 'class A'], _rational, _Riccati]	✓
4939	$(bx^2 + a)y' = A + By^2$	[_separable]	✓
4945	$x^3y' = x^4 + y^2$	[[_homogeneous, 'class G'], _rational, _Riccati]	✓

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Table 2.23 first order ode riccati

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#	ODE	CAS classification	Solved?
4947	$x^3y' = x^2(y-1) + y^2$	[[_homogeneous, 'class D', _rational, _Riccati]	✓
4949	$x^3y' + 20 + x^2y(1 - x^2y) = 0$	[[_homogeneous, 'class G', _rational, _Riccati]	✓
4950	$x^3y' + 3 + (3 - 2x)x^2y - x^6y^2 = 0$	[_rational, _Riccati]	✓
4963	$x(-x^2 + 1)y' + x^2 + (-x^2 + 1)y^2 = 0$	[_rational, _Riccati]	✓
4968	$x(cx^2 + bx + a)y' + x^2 - (cx^2 + bx + a)y = y^2$	[[_homogeneous, 'class D', _rational, _Riccati]	✓
4972	$(-x^4 + 1)y' = 2x(1 - y^2)$	[_separable]	✓
4974	$x(-x^3 + 1)y' = x^2 + (1 - 2xy)y$	[_rational, _Riccati]	✓
4977	$(cx^2 + bx + a)^2(y' + y^2) + A = 0$	[_rational, _Riccati]	✓
4979	$x(-x^4 + 1)y' = 2x(x^2 - y^2) + (-x^4 + 1)y$	[[_homogeneous, 'class D', _rational, _Riccati]	✓
4982	$x^n y' = x^{2n-1} - y^2$	[_Riccati]	✓
4983	$x^n y' + x^{-2+2n} + y^2 + (1 - n)x^{n-1} = 0$	[_Riccati]	✓
4984	$x^n y' = a^2 x^{-2+2n} + b^2 y^2$	[[_homogeneous, 'class G', _Riccati]	✓
4985	$x^n y' = x^{n-1}(ax^{2n} + ny - by^2)$	[_rational, _Riccati]	✓
4988	$y' \sqrt{-x^2 + 1} = 1 + y^2$	[_separable]	✓
5744	$xy' - ay + y^2 = x^{-2a}$	[_rational, _Riccati]	✓
5745	$xy' - ay + y^2 = x^{-\frac{2a}{3}}$	[_rational, _Riccati]	✓
5746	$u' + u^2 = \frac{c}{x^{4/3}}$	[_rational, [_Riccati, _spe- cial]]	✓
5747	$u' + bu^2 = \frac{c}{x^4}$	[_rational, [_Riccati, _spe- cial]]	✓
5748	$u' - u^2 = \frac{2}{x^{8/3}}$	[_rational, [_Riccati, _spe- cial]]	✓
5862	$y' = x^3 + \frac{2y}{x} - \frac{y^2}{x}$	[_rational, _Riccati]	✓
5863	$y' = 2 \tan(x) \sec(x) - y^2 \sin(x)$	[_Riccati]	✓
5864	$y' = \frac{1}{x^2} - \frac{y}{x} - y^2$	[[_homogeneous, 'class G', _rational, _Riccati]	✓

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#	ODE	CAS classification	Solved?
5865	$y' = 1 + \frac{y}{x} - \frac{y^2}{x^2}$	[[_homogeneous, 'class A', _rational, _Riccati]	✓
5882	$y' = (x + y)^2$	[[_homogeneous, 'class C', _Riccati]	✓
5886	$xy' - y^2 + 1 = 0$	[_separable]	✓
5896	$x^2y' + x^2 + xy + y^2 = 0$	[[_homogeneous, 'class A', _rational, _Riccati]	✓
6037	$y' = \frac{1 + y^2}{x^2 + 1}$	[_separable]	✓
6132	$y' = xy^2 - \frac{2y}{x} - \frac{1}{x^3}$	[[_homogeneous, 'class G', _rational, _Riccati]	✓
6133	$y' = \frac{2y^2}{x} + \frac{y}{x} - 2x$	[[_homogeneous, 'class D', _rational, _Riccati]	✓
6134	$y' = e^{-x}y^2 + y - e^x$	[[_1st_order, _with_lin- ear_symmetries], _Riccati]	✓
6272	$y' = (1 + y^2) \tan(x)$ i.c.	[_separable]	✓
6284	$y' = \sqrt{\sin(x) + 1} (1 + y^2)$ i.c.	[_separable]	✓
6420	$(x + 1)^2 y' = 1 + y^2$	[_separable]	✓
6473	$y' + x + xy^2 = 0$ i.c.	[_separable]	✓
6604	$y' = -2(2x + 3y)^2$	[[_homogeneous, 'class C', _Riccati]	✓
6633	$1 + y^2 = (x^2 + x) y'$	[_separable]	✓
7090	$y' = (x + y + 1)^2$	[[_homogeneous, 'class C', _Riccati]	✓
7108	$y^2 + xy + x^2 = x^2y'$	[[_homogeneous, 'class A', _rational, _Riccati]	✓
7178	$y' = x^2(1 + y^2)$	[_separable]	✓
7188	$y' = -\frac{2}{t} + \frac{y}{t} + \frac{y^2}{t}$	[_separable]	✓
7189	$y' = -\frac{y}{t} - 1 - y^2$	[_rational, _Riccati]	✓
7228	$\left(\phi' - \frac{\phi^2}{2}\right) \sin(\theta)^2 - \phi \sin(\theta) \cos(\theta) = \frac{\cos(2\theta)}{2} + 1$	[[_1st_order, '_with_sym- metry_[F(x),G(x)]', _Ric- cati]	✓

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Table 2.23 first order ode riccati  
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#	ODE	CAS classification	Solved?
7238	$-y + xy' = y^2 + x^2$	[[_homogeneous, 'class D', _rational, _Riccati]	✓
7411	$y' = y^2x^2 - 4x^2$	[_separable]	✓
7417	$y' = \frac{y^2 + xy + x^2}{x^2}$	[[_homogeneous, 'class A', _rational, _Riccati]	✓
7422	$y' = \frac{(y-1+x)^2}{2(x+2)^2}$	[[_homogeneous, 'class C', _rational, _Riccati]	✓
7456	$xy' = y + x^2 + y^2$	[[_homogeneous, 'class D', _rational, _Riccati]	✓
7486	$1 + y^2 + (x^2 + 1)y' = 0$	[_separable]	✓
7536	$\frac{y}{1-y^2x^2} + \frac{xy'}{1-y^2x^2} = 1$	[_exact, _rational, _Ric- cati]	✓
7538	$\frac{y + xy'}{1-y^2x^2} + x = 0$	[_exact, _rational, _Ric- cati]	✓
8374	$(x^2 + 1)y' + y^2 = -1$ <i>i.c.</i>	[_separable]	✓
8418	$y' = \frac{5x^2 - xy + y^2}{x^2}$	[[_homogeneous, 'class A', _rational, _Riccati]	✓
8424	$xy' - 2y + by^2 = cx^4$	[_rational, _Riccati]	✓
8425	$xy' - y + y^2 = x^{2/3}$	[_rational, _Riccati]	✓
8426	$u' + u^2 = \frac{1}{x^{4/5}}$	[_rational, _Riccati]	✓
8473	$y' = x^2 + y^2 - 1$	[_Riccati]	✓
8480	$y' - y^2 - x - x^2 = 0$	[_Riccati]	✓
8681	$cy' = \frac{ax + by^2}{rx}$	[_rational, _Riccati]	✓
8682	$cy' = \frac{ax + by^2}{rx^2}$	[_rational, _Riccati]	✓
8687	$y' = \sin(x) + y^2$	[_Riccati]	✓
8690	$y' = x + y + by^2$	[_Riccati]	✓
9703	$y' + y^2 - ax - b = 0$	[_Riccati]	✓
9705	$y' + y^2 - 2x^2y + x^4 - 2x - 1 = 0$	[[_1st_order, _with_lin- ear_symmetries], _Riccati]	✓
9706	$y' + y^2 + (xy - 1)f(x) = 0$	[_Riccati]	✓

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Table 2.23 first order ode riccati  
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#	ODE	CAS classification	Solved?
9708	$y' - y^2 - xy - x + 1 = 0$	[_Riccati]	✓
9709	$y' - (x + y)^2 = 0$	[[_homogeneous, 'class C'], _Riccati]	✓
9710	$y' - y^2 + (x^2 + 1)y - 2x = 0$	[_Riccati]	✓
9711	$y' - y^2 + \sin(x)y - \cos(x) = 0$	[_Riccati]	✓
9712	$y' - y^2 - y \sin(2x) - \cos(2x) = 0$	[_Riccati]	✓
9715	$y' + y^2 a - b x^{2\nu} - c x^{\nu-1} = 0$	[_Riccati]	✓
9717	$y' + ay(y - x) - 1 = 0$	[_Riccati]	✓
9718	$y' + xy^2 - x^3 y - 2x = 0$	[_Riccati]	✓
9720	$y' + x^{-a-1} y^2 - x^a = 0$	[_Riccati]	✓
9721	$y' - a x^n (1 + y^2) = 0$	[_separable]	✓
9722	$y' + y^2 \sin(x) - \frac{2 \sin(x)}{\cos(x)^2} = 0$	[_Riccati]	✓
9725	$y' + f(x)(y^2 + 2ay + b) = 0$	[_separable]	✓
9778	$2y' - 3y^2 - 4ay - b - c e^{-2ax} = 0$	[_Riccati]	✓
9785	$xy' + x^2 + y^2 = 0$	[_rational, _Riccati]	✓
9786	$xy' - y^2 + 1 = 0$	[_separable]	✓
9787	$xy' + y^2 a - y + b x^2 = 0$	[[_homogeneous, 'class D'], _rational, _Riccati]	✓
9788	$xy' + y^2 a - by + c x^{2b} = 0$	[_rational, _Riccati]	✓
9789	$xy' + y^2 a - by - c x^\beta = 0$	[_rational, _Riccati]	✓
9792	$xy' + xy^2 - y - a x^3 = 0$	[[_homogeneous, 'class D'], _rational, _Riccati]	✓
9793	$xy' + xy^2 - (2x^2 + 1)y - x^3 = 0$	[[_homogeneous, 'class D'], _rational, _Riccati]	✓
9794	$xy' + axy^2 + 2y + bx = 0$	[_rational, [_1st_order, '_with_symmetry_[F(x),G(x)]'], _Riccati]	✓
9795	$xy' + axy^2 + by + cx + d = 0$	[_rational, _Riccati]	✓
9796	$xy' + x^a y^2 + \frac{(-b+a)y}{2} + x^b = 0$	[_rational, _Riccati]	✓
9797	$xy' + a x^\alpha y^2 + by - c x^\beta = 0$	[_rational, _Riccati]	✓

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Table 2.23 first order ode riccati

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#	ODE	CAS classification	Solved?
9800	$xy' + f(x)(y^2 - x^2) - y = 0$	[[_homogeneous, 'class D'], _Riccati]	✓
9825	$x^2y' + x^2 + xy + y^2 = 0$	[[_homogeneous, 'class A'], _rational, _Riccati]	✓
9827	$x^2y' - y^2 - xy - x^2 = 0$	[[_homogeneous, 'class A'], _rational, _Riccati]	✓
9828	$x^2(y' + y^2) + ax^k - b(b-1) = 0$	[_rational, _Riccati]	✓
9829	$x^2(y' + y^2) + 4xy + 2 = 0$	[[_homogeneous, 'class G'], _rational, _Riccati]	✓
9830	$x^2(y' + y^2) + axy + b = 0$	[[_homogeneous, 'class G'], _rational, _Riccati]	✓
9831	$x^2(y' - y^2) - ax^2y + ax + 2 = 0$	[_rational, _Riccati]	✓
9833	$x^2(y' + y^2a) + bx^\alpha + c = 0$	[_rational, _Riccati]	✓
9844	$(x^2 - 1)y' + y^2 - 2xy + 1 = 0$	[_rational, [_1st_order, '_with_symmetry_[F(x),G(x)]'], _Riccati]	✓
9851	$(x-a)(x-b)y' + k(x+y-a)(x+y-b) + y^2 = 0$	[_rational, [_1st_order, '_with_symmetry_[F(x),G(x)]'], _Riccati]	✓
9852	$2x^2y' - 2y^2 - xy + 2a^2x = 0$	[_rational, _Riccati]	✓
9853	$2x^2y' - 2y^2 - 3xy + 2a^2x = 0$	[_rational, _Riccati]	✓
9854	$x(2x-1)y' + y^2 - (1+4x)y + 4x = 0$	[_rational, [_1st_order, '_with_symmetry_[F(x),G(x)]'], _Riccati]	✓
9855	$2x(x-1)y' + (x-1)y^2 - x = 0$	[_rational, _Riccati]	✓
9856	$3x^2y' - 7y^2 - 3xy - x^2 = 0$	[[_homogeneous, 'class A'], _rational, _Riccati]	✓
9857	$3(x^2-4)y' + y^2 - xy - 3 = 0$	[_rational, _Riccati]	✓
9859	$x^3y' - y^2 - x^4 = 0$	[[_homogeneous, 'class G'], _rational, _Riccati]	✓
9861	$x^3y' - x^4y^2 + x^2y + 20 = 0$	[[_homogeneous, 'class G'], _rational, _Riccati]	✓
9862	$x^3y' - x^6y^2 - (2x-3)x^2y + 3 = 0$	[_rational, _Riccati]	✓
9865	$x(x^2-1)y' + (x^2-1)y^2 - x^2 = 0$	[_rational, _Riccati]	✓
9867	$2x(x^2-1)y' + 2(x^2-1)y^2$ $- (3x^2-5)y + x^2 - 3 = 0$	[_rational, _Riccati]	✓

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Table 2.23 first order ode riccati  
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#	ODE	CAS classification	Solved?
9868	$3x(x^2 - 1)y' + xy^2 - (x^2 + 1)y - 3x = 0$	[_rational, _Riccati]	✓
9869	$(x^2a + bx + c)(-y + xy') - y^2 + x^2 = 0$	[[_homogeneous, 'class D'], _rational, _Riccati]	✓
9871	$x(x^3 - 1)y' - 2xy^2 + y + x^2 = 0$	[_rational, _Riccati]	✓
9873	$(x^2a + bx + c)^2(y' + y^2) + A = 0$	[_rational, _Riccati]	✓
9875	$x^n y' + y^2 - (n - 1)x^{n-1}y + x^{-2+2n} = 0$	[[_homogeneous, 'class G'], _Riccati]	✓
9876	$x^n y' - y^2 a - b x^{-2+2n} = 0$	[[_homogeneous, 'class G'], _Riccati]	✓
9883	$xy' \ln(x) - y^2 \ln(x) - (2 \ln(x)^2 + 1)y - \ln(x)^3 = 0$	[_Riccati]	✓
9884	$\sin(x)y' - y^2 \sin(x)^2 + (\cos(x) - 3 \sin(x))y + 4 = 0$	[_Riccati]	✓
9890	$2f(x)y' + 2f(x)y^2 - f'(x)y - 2f(x)^2 = 0$	[_Riccati]	✓
10314	$y' = \frac{(-1 + y \ln(x))^2}{x}$	[_Riccati]	✓
10316	$y' = \frac{(-1 + 2y \ln(x))^2}{x}$	[_Riccati]	✓
10362	$y' = \frac{y + x^3 a e^x + a x^4 + a x^3 - x y^2 e^x - y^2 x^2 - x y^2}{x}$	[[_homogeneous, 'class D'], _Riccati]	✓
10364	$y' = \frac{y + x^3 a \ln(x+1) + a x^4 + a x^3 - x y^2 \ln(x+1) - y^2 x^2 - x y^2}{x}$	[[_homogeneous, 'class D'], _Riccati]	✓
10366	$y' = \frac{y + x^3 \ln(x) + x^4 + x^3 + 7x y^2 \ln(x) + 7y^2 x^2 + 7x y^2}{x}$	[[_homogeneous, 'class D'], _Riccati]	✓
10368	$y' = \frac{y + x^3 b \ln(\frac{1}{x}) + x^4 b + b x^3 + x a y^2 \ln(\frac{1}{x}) + a x^2 y^2}{x}$	[[_homogeneous, 'class D'], _Riccati]	✓
10372	$y' = \frac{y + \ln((x-1)(x+1))x^3 + 7 \ln((x-1)(x+1))x y^2}{x}$	[[_homogeneous, 'class D'], _Riccati]	✓
10374	$y' = \frac{y - \ln(\frac{x+1}{x-1})x^3 + \ln(\frac{x+1}{x-1})x y^2}{x}$	[[_homogeneous, 'class D'], _Riccati]	✓
10375	$y' = \frac{y + e^{\frac{x+1}{x-1}}x^3 + e^{\frac{x+1}{x-1}}x y^2}{x}$	[[_homogeneous, 'class D'], _Riccati]	✓
10376	$y' = \frac{x y - y - e^{x+1}x^3 + e^{x+1}x y^2}{(x-1)x}$	[[_homogeneous, 'class D'], _Riccati]	✓

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Table 2.23 first order ode riccati

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#	ODE	CAS classification	Solved?
10382	$y' = \frac{y \ln(x-1) + x^4 + x^3 + y^2 x^2 + xy^2}{\ln(x-1)x}$	[[_homogeneous, 'class D', _Riccati]	✓
10383	$y' = \frac{y \ln(x-1) + e^{x+1}x^3 + 7e^{x+1}xy^2}{\ln(x-1)x}$	[[_homogeneous, 'class D', _Riccati]	✓
10389	$y' = \frac{-ye^x + xy - x^3 \ln(x) - x^3 - xy^2 \ln(x) - xy^2}{(-e^x + x)x}$	[[_homogeneous, 'class D', _Riccati]	✓
10391	$y' = \frac{y \ln(x)x - y + 2x^5b + 2x^3ay^2}{(x \ln(x) - 1)x}$	[[_homogeneous, 'class D', _Riccati]	✓
10408	$y' = \frac{(18x^{3/2} + 36y^2 - 12x^3y + x^6) \sqrt{x}}{36}$	[[_1st_order, '_with_symmetry_[F(x),G(x)]', _Riccati]	✓
10423	$y' = \frac{2x^2 + 2x + x^4 - 2x^2y - 1 + y^2}{x + 1}$	[_rational, [_1st_order, '_with_symmetry_[F(x),G(x)]', _Riccati]	✓
10473	$y' = \frac{y \ln(x) + \cosh(x) xay^2 + \cosh(x) x^3b}{x \ln(x)}$	[[_homogeneous, 'class D', _Riccati]	✓
10497	$y' = \frac{x + y + y^2 - 2y \ln(x)x + x^2 \ln(x)^2}{x}$	[[_1st_order, '_with_symmetry_[F(x),G(x)]', _Riccati]	✓
10509	$y' = \frac{(4e^{-x^2} - 4x^2e^{-x^2} + 4y^2 - 4x^2e^{-x^2}y + x^4e^{-2x^2})}{4}x$	[[_1st_order, '_with_symmetry_[F(x),G(x)]', _Riccati]	✓
10525	$y' = \frac{30x^3 + 25\sqrt{x} + 25y^2 - 20x^3y - 100\sqrt{x}y + 4x^6 + 40x^{7/2} + 100x}{25x}$	[_rational, _Riccati]	✓
10529	$y' = \frac{y + x^2 \ln(x)^3 + 2x^2 \ln(x)^2 y + x^2 \ln(x) y^2}{x \ln(x)}$	[_Riccati]	✓
10530	$y' = \frac{y + x^3 \ln(x)^3 + 2x^3 \ln(x)^2 y + x^3 \ln(x) y^2}{x \ln(x)}$	[_Riccati]	✓
10557	$y' = \frac{2xy^2 + 4y \ln(2x+1)x + 2 \ln(2x+1)^2 x + y^2 - 2}{2x+1}$	[[_1st_order, '_with_symmetry_[F(x),G(x)]', _Riccati]	✓
10593	$y' = \frac{-2 \cos(x)x + 2 \sin(x)x^2 + 2x + 2y^2 + 4y \cos(x)x}{2x}$	[[_1st_order, '_with_symmetry_[F(x),G(x)]', _Riccati]	✓

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Table 2.23 first order ode riccati

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#	ODE	CAS classification	Solved?
10633	$y' = \frac{2x^2 \cos(x) + 2 \sin(x) x^3 - 2x \sin(x) + 2x + 2y^2 x^2}{-4y \sin(x) x + 4y \cos(x) x^2 + 4xy + 3 - \cos(2x) - 2 \sin(2x)}$	[[_1st_order, 'with_symmetry_[F(x),G(x)]', 2x^2 Riccati]	✓
10673	$y' = -F(x)(-x^2 a + y^2) + \frac{y}{x}$	[[_homogeneous, 'class D', _Riccati]	✓
10674	$y' = -F(x)(-x^2 - 2xy + y^2) + \frac{y}{x}$	[[_homogeneous, 'class D', _Riccati]	✓
10675	$y' = -F(x)(-y^2 a - b x^2) + \frac{y}{x}$	[[_homogeneous, 'class D', _Riccati]	✓
10676	$y' = -F(x)(-y^2 + 2x^2 y + 1 - x^4) + 2x$	[[_1st_order, 'with_symmetry_[F(x),G(x)]', _Riccati]	✓
10677	$y' = -F(x)(x^2 + 2xy - y^2) + \frac{y}{x}$	[[_homogeneous, 'class D', _Riccati]	✓
10678	$y' = -F(x)(-7xy^2 - x^3) + \frac{y}{x}$	[[_homogeneous, 'class D', _Riccati]	✓
10679	$y' = -F(x)(-y^2 - 2y \ln(x) - \ln(x)^2) + \frac{y}{\ln(x)x}$	[_Riccati]	✓
10680	$y' = -x^3(-y^2 - 2y \ln(x) - \ln(x)^2) + \frac{y}{\ln(x)x}$	[_Riccati]	✓
10681	$y' = (y - e^x)^2 + e^x$	[[_1st_order, 'with_symmetry_[F(x),G(x)]', _Riccati]	✓
10682	$y' = \frac{(y - \text{Si}(x))^2 + \sin(x)}{x}$	[[_1st_order, 'with_symmetry_[F(x),G(x)]', _Riccati]	✓
10683	$y' = (y + \cos(x))^2 + \sin(x)$	[[_1st_order, 'with_symmetry_[F(x),G(x)]', _Riccati]	✓
10684	$y' = \frac{(y - \ln(x) - \text{Ci}(x))^2 + \cos(x)}{x}$	[[_1st_order, 'with_symmetry_[F(x),G(x)]', _Riccati]	✓
10685	$y' = \frac{(y - x + \ln(x+1))^2 + x}{x+1}$	[[_1st_order, 'with_linear_symmetries], _Riccati]	✓
10686	$y' = \frac{2x^2 y + x^3 + y \ln(x) x - y^2 - xy}{x^2(x + \ln(x))}$	[_Riccati]	✓
11683	$y' = y^2 a + bx + c$	[_Riccati]	✓

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Table 2.23 first order ode riccati  
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#	ODE	CAS classification	Solved?
11684	$y' = y^2 - a^2x^2 + 3a$	[_Riccati]	✓
11685	$y' = y^2 + a^2x^2 + bx + c$	[_Riccati]	✓
11688	$y' = y^2a + bx^{2n} + cx^{n-1}$	[_Riccati]	✓
11689	$y' = ax^ny^2 + bx^{-n-2}$	[[_homogeneous, 'class G'], _Riccati]	✓
11690	$y' = ax^ny^2 + bx^m$	[_Riccati]	✓
11693	$y' = (ax^{2n} + bx^{n-1})y^2 + c$	[_Riccati]	✓
11694	$(a_2x + b_2)(y' + \lambda y^2) + a_0x + b_0 = 0$	[_rational, _Riccati]	✓
11696	$x^2y' = y^2x^2 - a^2x^4 + a(-2b + 1)x^2 - b(b + 1)$	[_rational, _Riccati]	✓
11697	$x^2y' = ax^2y^2 + bx^n + c$	[_rational, _Riccati]	✓
11699	$(c_2x^2 + b_2x + a_2)(y' + \lambda y^2) + a_0 = 0$	[_rational, _Riccati]	✓
11701	$ax^2(x - 1)^2(y' + \lambda y^2) + bx^2 + cx + s = 0$	[_rational, _Riccati]	✓
11702	$(x^2a + bx + c)^2(y' + y^2) + A = 0$	[_rational, _Riccati]	✓
11703	$x^{n+1}y' = ax^{2n}y^2 + cx^m + d$	[_Riccati]	✓
11704	$(ax^n + b)y' = by^2 + ax^{n-2}$	[_rational, _Riccati]	✓
11705	$(ax^n + bx^m + c)(y' - y^2) + an(n - 1)x^{n-2} + bm(m - 1)x^{m-2} = 0$	[_rational, _Riccati]	✓
11706	$y' = y^2a + by + cx + k$	[_Riccati]	✓
11707	$y' = y^2 + ax^ny + ax^{n-1}$	[_Riccati]	✓
11708	$y' = y^2 + ax^ny + bx^{n-1}$	[_Riccati]	✓
11709	$y' = y^2 + (\alpha x + \beta)y + x^2a + bx + c$	[_Riccati]	✓
11713	$y' = ax^ny^2 - ax^n(bx^m + c)y + bmx^{m-1}$	[_Riccati]	✓
11714	$y' = -anx^{n-1}y^2 + cx^m(ax^n + b)y - cx^m$	[_Riccati]	✓
11716	$xy' = y^2a + by + cx^{2b}$	[_rational, _Riccati]	✓
11717	$xy' = y^2a + by + cx^n$	[_rational, _Riccati]	✓
11718	$xy' = y^2a + (n + bx^n)y + cx^{2n}$	[_rational, _Riccati]	✓
11719	$xy' = xy^2 + ay + bx^n$	[_rational, _Riccati]	✓
11720	$xy' + a_3xy^2 + a_2y + a_1x + a_0 = 0$	[_rational, _Riccati]	✓
11721	$xy' = ax^ny^2 + by + cx^{-n}$	[[_homogeneous, 'class G'], _rational, _Riccati]	✓

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Table 2.23 first order ode riccati

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#	ODE	CAS classification	Solved?
11722	$xy' = ax^ny^2 + my - ab^2x^{n+2m}$	[_rational, _Riccati]	✓
11723	$xy' = x^{2n}y^2 + (m - n)y + x^{2m}$	[_rational, _Riccati]	✓
11724	$xy' = ax^ny^2 + by + cx^m$	[_rational, _Riccati]	✓
11725	$xy' = ax^{2n}y^2 + (bx^n - n)y + c$	[_rational, _Riccati]	✓
11726	$xy' = ax^{2n+m}y^2 + (bx^{m+n} - n)y + cx^m$	[_rational, _Riccati]	✓
11727	$(a_2x + b_2)(y' + \lambda y^2) + (a_1x + b_1)y + a_0x + b_0 = 0$	[_rational, _Riccati]	✓
11728	$(ax + c)y' = \alpha(bx + ay)^2 + \beta(bx + ay) - bx + \gamma$	[[_1st_order, _with_linear_symmetries], _rational, _Riccati]	✓
11729	$2x^2y' = 2y^2 + xy - 2a^2x$	[_rational, _Riccati]	✓
11730	$2x^2y' = 2y^2 + 3xy - 2a^2x$	[_rational, _Riccati]	✓
11731	$x^2y' = ax^2y^2 + bxy + c$	[[_homogeneous, 'class G'], _rational, _Riccati]	✓
11732	$x^2y' = cx^2y^2 + (x^2a + bx)y + \alpha x^2 + \beta x + \gamma$	[_rational, _Riccati]	✓
11733	$x^2y' = ax^2y^2 + bxy + cx^n + s$	[_rational, _Riccati]	✓
11734	$x^2y' = ax^2y^2 + bxy + cx^{2n} + sx^n$	[_rational, _Riccati]	✓
11735	$x^2y' = cx^2y^2 + (ax^n + b)xy + \alpha x^{2n} + \beta x^n + \gamma$	[_rational, _Riccati]	✓
11738	$(x^2a + b)y' + \alpha y^2 + \beta xy + \frac{b(a + \beta)}{\alpha} = 0$	[_rational, _Riccati]	✓
11739	$(x^2a + b)y' + \alpha y^2 + \beta xy + \gamma = 0$	[_rational, _Riccati]	✓
11740	$(x^2a + b)y' + y^2 - 2xy + (-a + 1)x^2 - b = 0$	[_rational, [_1st_order, 'with_symmetry_[F(x),G(x)]'], _Riccati]	✓
11741	$(x^2a + bx + c)y' = y^2 + (2\lambda x + b)y + \lambda(\lambda - a)x^2 + \mu$	[_rational, [_1st_order, 'with_symmetry_[F(x),G(x)]'], _Riccati]	✓
11743	$(a_2x^2 + b_2x + c_2)y' = y^2 + (a_1x + b_1)y - \lambda(\lambda + a_1 - a_2)x^2 + \lambda(b_2 - b_1)x + \lambda c_2$	[_rational, _Riccati]	✓
11744	$(a_2x^2 + b_2x + c_2)y' = y^2 + (a_1x + b_1)y + a_0x^2 + b_0x + c_0$	[_rational, _Riccati]	✓
11745	$(x - a)(x - b)y' + k(x + y - a)(x + y - b) + y^2 = 0$	[_rational, [_1st_order, 'with_symmetry_[F(x),G(x)]'], _Riccati]	✓
11746	$(c_2x^2 + b_2x + a_2)(y' + \lambda y^2) + (b_1x + a_1)y + a_0 = 0$	[_rational, _Riccati]	✓

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#	ODE	CAS classification	Solved?
11747	$x^3 y' = x^3 a y^2 + (b x^2 + c) y + s x$	[_rational, _Riccati]	✓
11748	$x^3 y' = x^3 a y^2 + x(b x + c) y + \alpha x + \beta$	[_rational, _Riccati]	✓
11749	$x(x^2 + a)(y' + \lambda y^2) + (b x^2 + c) y + s x = 0$	[_rational, _Riccati]	✓
11750	$x^2(x + a)(y' + \lambda y^2) + x(b x + c) y + \alpha x + \beta = 0$	[_rational, _Riccati]	✓
11751	$(x^2 a + b x + e)(-y + x y') - y^2 + x^2 = 0$	[[_homogeneous, 'class D'], _rational, _Riccati]	✓
11752	$x^2(x^2 + a)(y' + \lambda y^2) + x(b x^2 + c) y + s = 0$	[_rational, _Riccati]	✓
11754	$x^{n+1} y' = a x^{2n} y^2 + b x^n y + c x^m + d$	[_Riccati]	✓
11755	$x(a x^k + b) y' = \alpha x^n y^2 + (\beta - a n x^k) y + \gamma x^{-n}$	[_rational, _Riccati]	✓
11756	$x^2(a x^n - 1)(y' + \lambda y^2) + (p x^n + q) x y + r x^n + s = 0$	[_rational, _Riccati]	✓
11760	$(a x^n + b x^m + c)(-y + x y') + s x^k (y^2 - \lambda x^2) = 0$	[[_homogeneous, 'class D'], _rational, _Riccati]	✓
11761	$y' = y^2 a + b e^{\lambda x}$	[_Riccati]	✓
11762	$y' = y^2 + a \lambda e^{\lambda x} - a^2 e^{2 \lambda x}$	[_Riccati]	✓
11763	$y' = \sigma y^2 + a + b e^{\lambda x} + c e^{2 \lambda x}$	[_Riccati]	✓
11764	$y' = \sigma y^2 + a y + b e^x + c$	[_Riccati]	✓
11765	$y' = y^2 + b y + a(\lambda - b) e^{\lambda x} - a^2 e^{2 \lambda x}$	[_Riccati]	✓
11766	$y' = y^2 + a e^{\lambda x} y - a b e^{\lambda x} - b^2$	[_Riccati]	✓
11767	$y' = y^2 + a e^{2 \lambda x} (e^{\lambda x} + b)^n - \frac{\lambda^2}{4}$	[_Riccati]	✓
11768	$y' = y^2 + a e^{8 \lambda x} + b e^{6 \lambda x} + c e^{4 \lambda x} - \lambda^2$	[_Riccati]	✓
11769	$y' = a e^{k x} y^2 + b e^{s x}$	[_Riccati]	✓
11771	$y' = a e^{\lambda x} y^2 + b y + c e^{-\lambda x}$	[[_1st_order, _with_linear_symmetries], _Riccati]	✓
11772	$y' = a e^{\mu x} y^2 + \lambda y - a b^2 e^{(\mu+2 \lambda) x}$	[_Riccati]	✓
11773	$y' = e^{\lambda x} y^2 + a e^{\mu x} y + a \lambda e^{(\mu-\lambda) x}$	[_Riccati]	✓
11774	$y' = -\lambda e^{\lambda x} y^2 + a e^{\mu x} y - a e^{(\mu-\lambda) x}$	[_Riccati]	✓
11776	$y' = a e^{k x} y^2 + b y + c e^{s x} + d e^{-k x}$	[_Riccati]	✓
11777	$y' = a e^{(\mu+2 \lambda) x} y^2 + (b e^{(\lambda+\mu) x} - \lambda) y + c e^{\mu x}$	[_Riccati]	✓

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#	ODE	CAS classification	Solved?
11779	$y' = e^{\mu x} (y - b e^{\lambda x})^2 + b \lambda e^{\lambda x}$	[[_1st_order, '_with_symmetry_[F(x),G(x)]'], _Riccati]	✓
11781	$(a e^{\lambda x} + b e^{\mu x} + c) (y' - y^2) + a \lambda^2 e^{\lambda x} + b \mu^2 e^{\mu x} = 0$	[_Riccati]	✓
11782	$y' = y^2 + a x e^{\lambda x} y + a e^{\lambda x}$	[_Riccati]	✓
11783	$y' = a e^{\lambda x} y^2 + b e^{-\lambda x}$	[[_1st_order, '_with_linear_symmetries], _Riccati]	✓
11786	$y' = -\lambda e^{\lambda x} y^2 + a x^n e^{\lambda x} y - a x^n$	[_Riccati]	✓
11787	$y' = a e^{\lambda x} y^2 - a b x^n e^{\lambda x} y + b n x^{n-1}$	[_Riccati]	✓
11789	$y' = a x^n y^2 + \lambda y - a b^2 x^n e^{2\lambda x}$	[_Riccati]	✓
11791	$y' = -(k+1) x^k y^2 + a x^{k+1} e^{\lambda x} y - a e^{\lambda x}$	[_Riccati]	✓
11793	$y' = a x^n e^{2\lambda x} y^2 + (b x^n e^{\lambda x} - \lambda) y + c x^n$	[_Riccati]	✓
11794	$y' = a e^{\lambda x} (y - b x^n - c)^2 + b n x^{n-1}$	[[_1st_order, '_with_symmetry_[F(x),G(x)]'], _Riccati]	✓
11795	$x y' = a e^{\lambda x} y^2 + k y + a b^2 x^{2k} e^{\lambda x}$	[_Riccati]	✓
11798	$y' = a e^{-\lambda x^2} y^2 + \lambda x y + b^2 a$	[_Riccati]	✓
11799	$y' = a x^n y^2 + \lambda x y + a b^2 x^n e^{\lambda x^2}$	[_Riccati]	✓
11800	$x^4 (y' - y^2) = a + b e^{\frac{k}{x}} + c e^{\frac{2k}{x}}$	[_Riccati]	✓
11801	$y' = y^2 - a^2 + a \lambda \sinh(\lambda x) - a^2 \sinh(\lambda x)^2$	[_Riccati]	✓
11802	$y' = y^2 + a \sinh(\beta x) y + a b \sinh(\beta x) - b^2$	[_Riccati]	✓
11803	$y' = y^2 + a x \sinh(bx)^m y + a \sinh(bx)^m$	[_Riccati]	✓
11804	$y' = \lambda \sinh(\lambda x) y^2 - \lambda \sinh(\lambda x)^3$	[_Riccati]	✓
11805	$y' = (a \sinh(\lambda x)^2 - \lambda) y^2 - a \sinh(\lambda x)^2 + \lambda - a$	[_Riccati]	✓
11807	$(a \sinh(\lambda x) + b) (y' - y^2) + a \lambda^2 \sinh(\lambda x) = 0$	[_Riccati]	✓
11808	$y' = \alpha y^2 + \beta + \gamma \cosh(x)$	[_Riccati]	✓
11809	$y' = y^2 + a \cosh(\beta x) y + a b \cosh(\beta x) - b^2$	[_Riccati]	✓
11810	$y' = y^2 + a x \cosh(bx)^m y + a \cosh(bx)^m$	[_Riccati]	✓
11811	$y' = (a \cosh(\lambda x)^2 - \lambda) y^2 + a + \lambda - a \cosh(\lambda x)^2$	[_Riccati]	✓
11812	$2y' = (a - \lambda + a \cosh(\lambda x)) y^2 + a + \lambda - a \cosh(\lambda x)$	[_Riccati]	✓

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#	ODE	CAS classification	Solved?
11814	$y' = a \sinh(\lambda x) y^2 + b \sinh(\lambda x) \cosh(\lambda x)^n$	[_Riccati]	✓
11815	$y' = a \cosh(\lambda x) y^2 + b \cosh(\lambda x) \sinh(\lambda x)^n$	[_Riccati]	✓
11817	$(a \cosh(\lambda x) + b)(y' - y^2) + a \lambda^2 \cosh(\lambda x) = 0$	[_Riccati]	✓
11818	$y' = y^2 + a\lambda - a(a + \lambda) \tanh(\lambda x)^2$	[_Riccati]	✓
11819	$y' = y^2 + 3a\lambda - \lambda^2 - a(a + \lambda) \tanh(\lambda x)^2$	[_Riccati]	✓
11820	$y' = y^2 + ax \tanh(bx)^m y + a \tanh(bx)^m$	[_Riccati]	✓
11822	$y' = y^2 + a\lambda - a(a + \lambda) \coth(\lambda x)^2$	[_Riccati]	✓
11823	$y' = y^2 - \lambda^2 + 3a\lambda - a(a + \lambda) \coth(\lambda x)^2$	[_Riccati]	✓
11824	$y' = y^2 + ax \coth(bx)^m y + a \coth(bx)^m$	[_Riccati]	✓
11826	$y' = y^2 - 2\lambda^2 \tanh(\lambda x)^2 - 2\lambda^2 \coth(\lambda x)^2$	[_Riccati]	✓
11827	$y' = y^2 + a\lambda + b\lambda - 2ab - a(a + \lambda) \tanh(\lambda x)^2 - b(b + \lambda) \coth(\lambda x)^2$	[_Riccati]	✓
11829	$xy' = y^2 a + b \ln(x) + c$	[_Riccati]	✓
11830	$xy' = y^2 a + b \ln(x)^k + c \ln(x)^{2k+2}$	[_Riccati]	✓
11834	$x^2 y' = y^2 x^2 + a \ln(x)^2 + b \ln(x) + c$	[_Riccati]	✓
11836	$x^2 \ln(ax)(y' - y^2) = 1$	[_Riccati]	✓
11837	$y' = y^2 + a \ln(\beta x) y - ab \ln(\beta x) - b^2$	[_Riccati]	✓
11838	$y' = y^2 + ax \ln(bx)^m y + a \ln(bx)^m$	[_Riccati]	✓
11839	$y' = a x^n y^2 - ab x^{n+1} \ln(x) y + b \ln(x) + b$	[_Riccati]	✓
11840	$y' = -(n+1) x^n y^2 + a x^{n+1} \ln(x)^m y - a \ln(x)^m$	[_Riccati]	✓
11842	$y' = a \ln(x)^k (y - b x^n - c)^2 + b n x^{n-1}$	[[_1st_order, '_with_symmetry_[F(x),G(x)]'], _Riccati]	✓
11844	$xy' = (ay + b \ln(x))^2$	[[_1st_order, '_with_linear_symmetries], _Riccati]	✓
11845	$xy' = a \ln(\lambda x)^m y^2 + ky + a b^2 x^{2k} \ln(\lambda x)^m$	[_Riccati]	✓
11846	$xy' = a x^n (y + b \ln(x))^2 - b$	[[_1st_order, '_with_symmetry_[F(x),G(x)]'], _Riccati]	✓
11847	$xy' = a x^{2n} \ln(x) y^2 + (b x^n \ln(x) - n) y + c \ln(x)$	[_Riccati]	✓
11848	$x^2 y' = a^2 x^2 y^2 - xy + b^2 \ln(x)^n$	[_Riccati]	✓

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#	ODE	CAS classification	Solved?
11851	$y' = \alpha y^2 + \beta + \gamma \sin(\lambda x)$	[_Riccati]	✓
11852	$y' = y^2 - a^2 + a\lambda \sin(\lambda x) + a^2 \sin(\lambda x)^2$	[_Riccati]	✓
11854	$y' = y^2 + a \sin(\beta x) y + ab \sin(\beta x) - b^2$	[_Riccati]	✓
11856	$y' = \lambda \sin(\lambda x) y^2 + \lambda \sin(\lambda x)^3$	[_Riccati]	✓
11857	$2y' = (\lambda + a - a \sin(\lambda x)) y^2 + \lambda - a - a \sin(\lambda x)$	[_Riccati]	✓
11858	$y' = (\lambda + a \sin(\lambda x)^2) y^2 + \lambda - a + a \sin(\lambda x)^2$	[_Riccati]	✓
11859	$y' = -(k+1)x^k y^2 + a x^{k+1} \sin(x)^m y - a \sin(x)^m$	[_Riccati]	✓
11860	$y' = a \sin(\lambda x + \mu)^k (y - b x^n - c)^2 + b n x^{n-1}$	[[_1st_order, '_with_symmetry_[F(x),G(x)]'], _Riccati]	✓
11861	$x y' = a \sin(\lambda x)^m y^2 + k y + a b^2 x^{2k} \sin(\lambda x)^m$	[_Riccati]	✓
11863	$(a \sin(\lambda x) + b) (y' - y^2) - a \lambda^2 \sin(\lambda x) = 0$	[_Riccati]	✓
11864	$y' = \alpha y^2 + \beta + \gamma \cos(\lambda x)$	[_Riccati]	✓
11865	$y' = y^2 - a^2 + a\lambda \cos(\lambda x) + a^2 \cos(\lambda x)^2$	[_Riccati]	✓
11867	$y' = y^2 + a \cos(\beta x) y + ab \cos(\beta x) - b^2$	[_Riccati]	✓
11869	$y' = \lambda \cos(\lambda x) y^2 + \lambda \cos(\lambda x)^3$	[_Riccati]	✓
11870	$2y' = (\lambda + a - a \cos(\lambda x)) y^2 + \lambda - a - a \cos(\lambda x)$	[_Riccati]	✓
11871	$y' = (\lambda + a \cos(\lambda x)^2) y^2 + \lambda - a + a \cos(\lambda x)^2$	[_Riccati]	✓
11872	$y' = -(k+1)x^k y^2 + a x^{k+1} \cos(x)^m y - a \cos(x)^m$	[_Riccati]	✓
11873	$y' = a \cos(\lambda x + \mu)^k (y - b x^n - c)^2 + b n x^{n-1}$	[[_1st_order, '_with_symmetry_[F(x),G(x)]'], _Riccati]	✓
11874	$x y' = a \cos(\lambda x)^m y^2 + k y + a b^2 x^{2k} \cos(\lambda x)^m$	[_Riccati]	✓
11876	$(a \cos(\lambda x) + b) (y' - y^2) - a \lambda^2 \cos(\lambda x) = 0$	[_Riccati]	✓
11877	$y' = y^2 + a\lambda + a(\lambda - a) \tan(\lambda x)^2$	[_Riccati]	✓
11878	$y' = y^2 + \lambda^2 + 3a\lambda + a(\lambda - a) \tan(\lambda x)^2$	[_Riccati]	✓
11879	$y' = y^2 a + b \tan(x) y + c$	[_Riccati]	✓
11880	$y' = y^2 a + 2ab \tan(x) y + b(ab - 1) \tan(x)^2$	[[_1st_order, '_with_symmetry_[F(x),G(x)]'], _Riccati]	✓

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Table 2.23 first order ode riccati

Continued from previous page

#	ODE	CAS classification	Solved?
11881	$y' = y^2 + a \tan(\beta x) y + ab \tan(\beta x) - b^2$	[_Riccati]	✓
11882	$y' = y^2 + ax \tan(bx)^m y + a \tan(bx)^m$	[_Riccati]	✓
11883	$y' = -(k+1)x^k y^2 + ax^{k+1} \tan(x)^m y - a \tan(x)^m$	[_Riccati]	✓
11884	$y' = a \tan(\lambda x)^n y^2 - ab^2 \tan(\lambda x)^{2+n} + b\lambda \tan(\lambda x)^2 + b\lambda$	[_Riccati]	✓
11885	$y' = a \tan(\lambda x + \mu)^k (y - bx^n - c)^2 + bn x^{n-1}$	[[_1st_order, '_with_symmetry_[F(x),G(x)]'], _Riccati]	✓
11886	$xy' = a \tan(\lambda x)^m y^2 + ky + ab^2 x^{2k} \tan(\lambda x)^m$	[_Riccati]	✓
11888	$y' = y^2 + a\lambda + a(\lambda - a) \cot(\lambda x)^2$	[_Riccati]	✓
11889	$y' = y^2 + \lambda^2 + 3a\lambda + a(\lambda - a) \cot(\lambda x)^2$	[_Riccati]	✓
11890	$y' = y^2 - 2ab \cot(ax) y + b^2 - a^2$	[_Riccati]	✓
11891	$y' = y^2 + a \cot(\beta x) y + ab \cot(\beta x) - b^2$	[_Riccati]	✓
11892	$y' = y^2 + ax \cot(bx)^m y + a \cot(bx)^m$	[_Riccati]	✓
11893	$y' = -(k+1)x^k y^2 + ax^{k+1} \cot(x)^m y - a \cot(x)^m$	[_Riccati]	✓
11895	$xy' = a \cot(\lambda x)^m y^2 + ky + ab^2 x^{2k} \cot(\lambda x)^m$	[_Riccati]	✓
11898	$y' = a \sin(\lambda x) y^2 + b \sin(\lambda x) \cos(\lambda x)^n$	[_Riccati]	✓
11900	$y' = a \cos(\lambda x) y^2 + b \cos(\lambda x) \sin(\lambda x)^n$	[_Riccati]	✓
11901	$y' = \lambda \sin(\lambda x) y^2 + ax^n \cos(\lambda x) y - ax^n$	[_Riccati]	✓
11903	$y' = y^2 - y \tan(x) + a(-a+1) \cot(x)^2$	[_Riccati]	✓
11904	$y' = y^2 - my \tan(x) + b^2 \cos(x)^{2m}$	[_Riccati]	✓
11905	$y' = y^2 + my \cot(x) + b^2 \sin(x)^{2m}$	[_Riccati]	✓
11907	$y' = y^2 + a\lambda + b\lambda + 2ab + a(\lambda - a) \tan(\lambda x)^2 + b(\lambda - b) \cot(\lambda x)^2$	[_Riccati]	✓
11908	$y' = y^2 - \frac{\lambda^2}{2} - \frac{3\lambda^2 \tan(\lambda x)^2}{4} + a \cos(\lambda x)^2 \sin(\lambda x)^n$	[_Riccati]	✓
11909	$y' = \lambda \sin(\lambda x) y^2 + a \sin(\lambda x) y - a \tan(\lambda x)$	[_Riccati]	✓
11910	$y' = y^2 + \lambda \arcsin(x)^n y - a^2 + a\lambda \arcsin(x)^n$	[_Riccati]	✓
11911	$y' = y^2 + \lambda x \arcsin(x)^n y + \lambda \arcsin(x)^n$	[_Riccati]	✓
11912	$y' = -(k+1)x^k y^2 + \lambda \arcsin(x)^n (x^{k+1} y - 1)$	[_Riccati]	✓

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Table 2.23 first order ode riccati

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#	ODE	CAS classification	Solved?
11917	$xy' = \lambda \arcsin(x)^n y^2 + ky + \lambda b^2 x^{2k} \arcsin(x)^n$	[_Riccati]	✓
11920	$y' = y^2 + \lambda x \arccos(x)^n y + \lambda \arccos(x)^n$	[_Riccati]	✓
11921	$y' = -(k+1)x^k y^2 + \lambda \arccos(x)^n (x^{k+1}y - 1)$	[_Riccati]	✓
11926	$xy' = \lambda \arccos(x)^n y^2 + ky + \lambda b^2 x^{2k} \arccos(x)^n$	[_Riccati]	✓
11928	$y' = y^2 + \lambda \arctan(x)^n y - a^2 + a\lambda \arctan(x)^n$	[_Riccati]	✓
11929	$y' = y^2 + \lambda x \arctan(x)^n y + \lambda \arctan(x)^n$	[_Riccati]	✓
11930	$y' = -(k+1)x^k y^2 + \lambda \arctan(x)^n (x^{k+1}y - 1)$	[_Riccati]	✓
11935	$xy' = \lambda \arctan(x)^n y^2 + ky + \lambda b^2 x^{2k} \arctan(x)^n$	[_Riccati]	✓
11937	$y' = y^2 + \lambda \operatorname{arccot}(x)^n y - a^2 + a\lambda \operatorname{arccot}(x)^n$	[_Riccati]	✓
11938	$y' = y^2 + \lambda x \operatorname{arccot}(x)^n y + \lambda \operatorname{arccot}(x)^n$	[_Riccati]	✓
11939	$y' = -(k+1)x^k y^2 + \lambda \operatorname{arccot}(x)^n (x^{k+1}y - 1)$	[_Riccati]	✓
11944	$xy' = \lambda \operatorname{arccot}(x)^n y^2 + ky + \lambda b^2 x^{2k} \operatorname{arccot}(x)^n$	[_Riccati]	✓
11946	$y' = y^2 + f(x)y - a^2 - af(x)$	[_Riccati]	✓
11947	$y' = f(x)y^2 - ay - ab - b^2 f(x)$	[_Riccati]	✓
11948	$y' = y^2 + xf(x)y + f(x)$	[_Riccati]	✓
11949	$y' = f(x)y^2 - ax^n f(x)y + an x^{n-1}$	[_Riccati]	✓
11951	$y' = -(n+1)x^n y^2 + x^{n+1} f(x)y - f(x)$	[_Riccati]	✓
11952	$xy' = f(x)y^2 + ny + ax^{2n} f(x)$	[_Riccati]	✓
11954	$y' = f(x)y^2 + g(x)y - a^2 f(x) - ag(x)$	[_Riccati]	✓
11957	$y' = ae^{\lambda x} y^2 + ae^{\lambda x} f(x)y + \lambda f(x)$	[_Riccati]	✓
11958	$y' = f(x)y^2 - ae^{\lambda x} f(x)y + a\lambda e^{\lambda x}$	[_Riccati]	✓
11960	$y' = f(x)y^2 + \lambda y + a^2 e^{2\lambda x} f(x)$	[_Riccati]	✓
11961	$y' = f(x)y^2 - f(x)(ae^{\lambda x} + b)y + a\lambda e^{\lambda x}$	[_Riccati]	✓
11962	$y' = e^{\lambda x} f(x)y^2 + (af(x) - \lambda)y + be^{-\lambda x} f(x)$	[_Riccati]	✓
11973	$y' = -a \ln(x)y^2 + af(x)(x \ln(x) - x)y - f(x)$	[_Riccati]	✓
11974	$y' = \lambda \sin(\lambda x)y^2 + f(x) \cos(\lambda x)y - f(x)$	[_Riccati]	✓
11979	$y' = y^2 - f(x)^2 + f'(x)$	[_Riccati]	✓
11980	$y' = f(x)y^2 - f(x)g(x)y + g'(x)$	[_Riccati]	✓

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Table 2.23 first order ode riccati  
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#	ODE	CAS classification	Solved?
11981	$y' = -f'(x)y^2 + f(x)g(x)y - g(x)$	[_Riccati]	✓
11982	$y' = g(x)(y - f(x))^2 + f'(x)$	[[_1st_order, '_with_symmetry_[F(x),G(x)]'], _Riccati]	✓
11985	$y' = f'(x)y^2 + ae^{\lambda x}f(x)y + ae^{\lambda x}$	[_Riccati]	✓
11986	$y' = f(x)y^2 + g'(x)y + af(x)e^{2g(x)}$	[_Riccati]	✓
11987	$y' = y^2 - \frac{f''(x)}{f(x)}$	[_Riccati]	✓
12492	$y + 2xy^2 - x^2y^3 + 2x^2yy' = 0$	[[_homogeneous, 'class G'], _rational, _Riccati]	✓
12513	$-y + xy' = y^2 + x^2$	[[_homogeneous, 'class D'], _rational, _Riccati]	✓
12522	$xy' - ay + by^2 = cx^{2a}$	[_rational, _Riccati]	✓
12561	$y' + 2xy = y^2 + x^2$	[[_homogeneous, 'class C'], _Riccati]	✓
12731	$R' = (t + 1)(1 + R^2)$	[_separable]	✓
12735 i.c.	$x' = (4t - x)^2$	[[_homogeneous, 'class C'], _Riccati]	✓
12740 i.c.	$T' = 2at(T^2 - a^2)$	[_separable]	✓
12773	$x' = (t + x)^2$	[[_homogeneous, 'class C'], _Riccati]	✓
12968	$2r(s^2 + 1) + (r^4 + 1)s' = 0$	[_separable]	✓
13024	$y' = (1 - x)y^2 + (2x - 1)y - x$	[_Riccati]	✓
13025	$y' = -y^2 + xy + 1$	[_Riccati]	✓
13026	$y' = -8xy^2 + 4x(1 + 4x)y - 8x^3 - 4x^2 + 1$	[[_1st_order, '_with_symmetry_[F(x),G(x)]'], _Riccati]	✓
13034	$2x^2 + xy + y^2 + 2x^2y' = 0$	[[_homogeneous, 'class A'], _rational, _Riccati]	✓
13396 i.c.	$y' = (1 + y^2)\tan(x)$	[_separable]	✓
13423	$xy + y^2 + x^2 - x^2y' = 0$	[[_homogeneous, 'class A'], _rational, _Riccati]	✓
13625	$x^2y' = 1 + y^2$	[_separable]	✓

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Table 2.23 first order ode riccati  
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#	ODE	CAS classification	Solved?
13844	$y' = \frac{1+y^2}{x^2+1}$	[_separable]	✓
13845	$1+s^2-\sqrt{t}s'=0$	[_separable]	✓
14308	$y' = (1+y^2)t$	[_separable]	✓
14320	$y' = \left(y + \frac{1}{2}\right)(y+t)$	[_Riccati]	✓
14468	$y' = (y-2)(y+1-\cos(t))$	[_Riccati]	✓
14703	$x^2y' + xy^2 = x$	[_separable]	✓
14709	$y' + (8-x)y - y^2 = -8x$	[_Riccati]	✓
14713	$xy' = (x-y)^2$	[_rational, _Riccati]	✓
14724	$y' = \frac{1+y^2}{x^2+1}$	[_separable]	✓
14743	$(x^2+1)y' = 1+y^2$	[_separable]	✓
14749	$y' - 3y^2x^2 = -3x^2$	[_separable]	✓
14750	$y' - 3y^2x^2 = 3x^2$	[_separable]	✓
14761	$y' - xy^2 = \sqrt{x}$	[_Riccati]	✓
14762	$y' = 1 + (xy + 3y)^2$	[_Riccati]	✓
14791	$y' = 1 + (y-x)^2$	[[_homogeneous, 'class C'], _Riccati]	✓
14812	$y' = (x-y+3)^2$	[[_homogeneous, 'class C'], _Riccati]	✓
14815	$y' = x\left(1 + \frac{2y}{x^2} + \frac{y^2}{x^4}\right)$	[[_homogeneous, 'class G'], _rational, _Riccati]	✓
14841	$y' = x^2 - 2xy + y^2$	[[_homogeneous, 'class C'], _Riccati]	✓
14860	$y' = xy^2 + 3y^2 + x + 3$	[_separable]	✓
15542	$y' = 4t^2 - ty^2$	[_Riccati]	✓
15600	$y' = t^2y^2 + y^2 - t^2 - 1$	[_separable]	✓
15602	$4(x-1)^2y' - 3(y+3)^2 = 0$	[_separable]	✓
15633	$y' = (x+y-4)^2$	[[_homogeneous, 'class C'], _Riccati]	✓

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Table 2.23 first order ode riccati

Continued from previous page

#	ODE	CAS classification	Solved?
16379	$1 + y^2 + (x^2 + 1)y' = 0$	[_separable]	✓
16382	$1 + y^2 = xy'$	[_separable]	✓
16396 i.c.	$a^2 + y^2 + 2x\sqrt{ax - x^2}y' = 0$	[_separable]	✓
16416	$x^2y' = y^2 - xy + x^2$	[[_homogeneous, 'class A', _rational, _Riccati]	✓
16418	$2x^2y' = y^2 + x^2$	[[_homogeneous, 'class A', _rational, _Riccati]	✓
16524	$y'e^{-x} + y^2 - 2ye^x = 1 - e^{2x}$	[[_1st_order, '_with_sym- metry_[F(x),G(x)]', _Ric- cati]	✓
16525	$y' + y^2 - 2\sin(x)y + \sin(x)^2 - \cos(x) = 0$	[[_1st_order, '_with_sym- metry_[F(x),G(x)]', _Ric- cati]	✓
16526	$xy' - y^2 + (2x + 1)y = x^2 + 2x$	[[_1st_order, __with_lin- ear_symmetries], _rational, _Riccati]	✓
16527	$x^2y' = y^2x^2 + xy + 1$	[[_homogeneous, 'class G', _rational, _Riccati]	✓
16543	$y' = (x - y)^2 + 1$	[[_homogeneous, 'class C', _Riccati]	✓
16996 i.c.	$y' = (1 + y^2)\tan(2x)$	[_separable]	✓
17009 i.c.	$y' = 2(x + 1)(1 + y^2)$	[_separable]	✓
17118	$y' + 3ty = 4 - 4t^2 + y^2$	[_Riccati]	✓
17592	$y' + y^2 + \frac{y}{x} - \frac{4}{x^2} = 0$	[[_homogeneous, 'class G', _rational, _Riccati]	✓
17593	$xy' - 3y + y^2 = 4x^2 - 4x$	[_rational, _Riccati]	✓
17739	$xy' = y + x^2 + y^2$	[[_homogeneous, 'class D', _rational, _Riccati]	✓
17762	$1 + y^2 + (x^2 + 1)y' = 0$	[_separable]	✓
17790	$y' = (x + y)^2$	[[_homogeneous, 'class C', _Riccati]	✓
17809	$1 = \frac{y}{1 - y^2x^2} + \frac{xy'}{1 - y^2x^2}$	[_exact, _rational, _Ric- cati]	✓

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Table 2.23 first order ode riccati  
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#	ODE	CAS classification	Solved?
17811	$\frac{y + xy'}{1 - y^2x^2} + x = 0$	[_exact, _rational, _Riccati]	✓
17833	$xy' = x^5 + x^3y^2 + y$	[[_homogeneous, 'class D'], _rational, _Riccati]	✓
17835	$xy' = y + x^2 + 9y^2$	[[_homogeneous, 'class D'], _rational, _Riccati]	✓
17902	$y' = 1 + \frac{y}{x} - \frac{y^2}{x^2}$	[[_homogeneous, 'class A'], _rational, _Riccati]	✓
17917	$x^2y' = y^2 + xy + x^2$	[[_homogeneous, 'class A'], _rational, _Riccati]	✓
18240	$y' = (x + y)^2$	[[_homogeneous, 'class C'], _Riccati]	✓
18245	$y' = x(y^2a + b)$	[_separable]	✓
18246	$n' = (n^2 + 1)x$	[_separable]	✓
18322	$3x^2y' + 2x^2 - 3y^2 = 0$	[[_homogeneous, 'class A'], _rational, _Riccati]	✓
18498	$y' + 2xy = y^2 + x^2$	[[_homogeneous, 'class C'], _Riccati]	✓

## 2.3.22 first order ode reduced riccati

Table 2.24: first order ode reduced riccati

#	ODE	CAS classification	Solved?
40	$y' = x + \frac{y^2}{2}$ i.c.	[[_Riccati, _special]]	✓
527	$y' = y^2 + x^2$	[[_Riccati, _special]]	✓
528	$y' = y^2 + x^2$ i.c.	[[_Riccati, _special]]	✓
676	$y' = x^2 - y^2$	[_Riccati]	✓
2349	$y' = t + y^2$ i.c.	[[_Riccati, _special]]	✓
2359	$y' = t^2 + y^2$ i.c.	[[_Riccati, _special]]	✓
2524	$y' = t + y^2$ i.c.	[[_Riccati, _special]]	✓
2534	$y' = t^2 + y^2$ i.c.	[[_Riccati, _special]]	✓
4647	$y' = x^2 - y^2$	[_Riccati]	✓
4663	$y' = ax + by^2$	[[_Riccati, _special]]	✓
4666	$y' = x^2a + by^2$	[[_Riccati, _special]]	✓
4771	$xy' + a + xy^2 = 0$	[_rational, [_Riccati, _special]]	✓
4866	$x^2y' = a + bx^2y^2$	[[_homogeneous, 'class G', _rational, [_Riccati, _special]]	✓
4970	$x^4y' + a^2 + x^4y^2 = 0$	[_rational, [_Riccati, _special]]	✓
4997	$x^{3/2}y' = a + bx^{3/2}y^2$	[_rational, [_Riccati, _special]]	✓
6075	$y' + y^2 = \frac{a^2}{x^4}$	[_rational, _Riccati]	✓
7889	$y' = y^2 - x$ i.c.	[[_Riccati, _special]]	✓
8469	$y' = y^2 + x^2$	[[_Riccati, _special]]	✓
8671	$y' = ax + by^2$	[[_Riccati, _special]]	✓
8679	$cy' = ax + by^2$	[[_Riccati, _special]]	✓
8680	$cy' = \frac{ax + by^2}{r}$	[[_Riccati, _special]]	✓

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Table 2.24 first order ode reduced riccati

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#	ODE	CAS classification	Solved?
8840	$y' = x - y^2$	[[_Riccati, _special]]	✓
9704	$y' + y^2 + ax^m = 0$	[[_Riccati, _special]]	✓
9714	$y' + y^2a - bx^v = 0$	[[_Riccati, _special]]	✓
9790	$xy' + a + xy^2 = 0$	[_rational, [_Riccati, _special]]	✓
9832	$x^2(y' + y^2a) - b = 0$	[[_homogeneous, 'class G', _rational, [_Riccati, _special]]	✓
9870	$x^4(y' + y^2) + a = 0$	[_rational, [_Riccati, _special]]	✓
11686	$y' = y^2a + bx^n$	[[_Riccati, _special]]	✓
11695	$x^2y' = ax^2y^2 + b$	[[_homogeneous, 'class G', _rational, [_Riccati, _special]]	✓
11700	$x^4y' = -x^4y^2 - a^2$	[_rational, [_Riccati, _special]]	✓
12711	$x' = x^2 + t^2$	[[_Riccati, _special]]	✓
12753	$x' = t - x^2$	[[_Riccati, _special]]	✓
13545 i.c.	$y' = x + y^2$	[[_Riccati, _special]]	✓
13547	$y' = x^2 - y^2$	[_Riccati]	✓
13551 i.c.	$y' = x - y^2$	[[_Riccati, _special]]	✓
13964 i.c.	$y' = x + y^2$	[[_Riccati, _special]]	✓
14035	$y' = x^2 - y^2$	[_Riccati]	✓
14036	$y' = y^2 - x^2$	[_Riccati]	✓
14342 i.c.	$y' = t - y^2$	[[_Riccati, _special]]	✓
14343 i.c.	$y' = y^2 - 4t$	[[_Riccati, _special]]	✓
14704	$y' - y^2 = x$	[[_Riccati, _special]]	✓
15537 i.c.	$y' + t^2 = y^2$	[_Riccati]	✓
15848 i.c.	$y' = y^2 - x$	[[_Riccati, _special]]	✓

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Table 2.24 first order ode reduced riccati

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#	ODE	CAS classification	Solved?
16340	$y' = y^2 + x^2$	[[_Riccati, _special]]	✓
16360	$y' = x^2 - y^2$	[_Riccati]	✓
16374	$y' = x^2 - y^2$ i.c.	[_Riccati]	✓
16375	$y' = x + y^2$ i.c.	[[_Riccati, _special]]	✓
17591	$y' = \frac{y^2}{3} + \frac{2}{3x^2}$	[[_homogeneous, 'class G', _rational, [_Riccati, _spe- cial]]	✓
17594	$y' = y^2 + \frac{1}{x^4}$	[_rational, [_Riccati, _spe- cial]]	✓
17600	$y' = y^2 - x^2$	[_Riccati]	✓



### 2.3.23 first order ode time varying using laplace

Table 2.25: first order ode time varying using laplace

#	ODE	CAS classification	Solved?
8734	<i>i.c.</i> $ty' + y = t$	[_linear]	✓
8735	<i>i.c.</i> $y' - ty = 0$	[_separable]	✓
8736	<i>i.c.</i> $ty' + y = 0$	[_separable]	✓
8737	<i>i.c.</i> $ty' + y = 0$	[_separable]	✓
8738	<i>i.c.</i> $ty' + y = 0$	[_separable]	✓
8739	$ty' + y = 0$	[_separable]	✓
8740	<i>i.c.</i> $ty' + y = 0$	[_separable]	✓
8741	<i>i.c.</i> $ty' + y = \sin(t)$	[_linear]	✗
8742	<i>i.c.</i> $ty' + y = t$	[_linear]	✓
8743	<i>i.c.</i> $ty' + y = t$	[_linear]	✓
8744	<i>i.c.</i> $y' + t^2y = 0$	[_separable]	✓
8745	<i>i.c.</i> $(at + 1)y' + y = t$	[_linear]	✓
8746	<i>i.c.</i> $y' + (at + tb)y = 0$	[_separable]	✓
8747	<i>i.c.</i> $y' + (at + tb)y = 0$	[_separable]	✓

## 2.3.24 first order ode constant coeff using laplace

Table 2.26: first order ode constant coeff using laplace

#	ODE	CAS classification	Solved?
3928	$y' - 2y = 6e^{5t}$ i.c.	[[_linear, 'class A']]	✓
3929	$y' + y = 8e^{3t}$ i.c.	[[_linear, 'class A']]	✓
3930	$y' + 3y = 2e^{-t}$ i.c.	[[_linear, 'class A']]	✓
3931	$y' + 2y = 4t$ i.c.	[[_linear, 'class A']]	✓
3932	$y' - y = 6\cos(t)$ i.c.	[[_linear, 'class A']]	✓
3933	$y' - y = 5\sin(2t)$ i.c.	[[_linear, 'class A']]	✓
3934	$y' + y = 5e^t \sin(t)$ i.c.	[[_linear, 'class A']]	✓
3956	$y' + 2y = 2\text{Heaviside}(t - 1)$ i.c.	[[_linear, 'class A']]	✓
3957	$y' - 2y = \text{Heaviside}(t - 2)e^{t-2}$ i.c.	[[_linear, 'class A']]	✓
3958	$y' - y = 4\text{Heaviside}\left(t - \frac{\pi}{4}\right)\sin\left(t + \frac{\pi}{4}\right)$ i.c.	[[_linear, 'class A']]	✓
3959	$y' + 2y = \text{Heaviside}(t - \pi)\sin(2t)$ i.c.	[[_linear, 'class A']]	✓
3960	$y' + 3y = \begin{cases} 1 & 0 \leq t < 1 \\ 0 & 1 \leq t \end{cases}$ i.c.	[[_linear, 'class A']]	✓
3961	$y' - 3y = \begin{cases} \sin(t) & 0 \leq t < \frac{\pi}{2} \\ 1 & \frac{\pi}{2} \leq t \end{cases}$ i.c.	[[_linear, 'class A']]	✓
3962	$y' - 3y = -10e^{-t+a}\sin(-2t+2a)\text{Heaviside}(t-a)$ i.c.	[[_linear, 'class A']]	✓
3971	$y' - y = \begin{cases} 2 & 0 \leq t < 1 \\ -1 & 1 \leq t \end{cases}$ i.c.	[[_linear, 'class A']]	✓
3972	$y' - y = \begin{cases} 2 & 0 \leq t < 1 \\ -1 & 1 \leq t \end{cases}$ i.c.	[[_linear, 'class A']]	✓
3973	$y' + y = \delta(t - 5)$ i.c.	[[_linear, 'class A']]	✓

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Table 2.26 first order ode constant coeff using laplace

*Continued from previous page*

#	ODE	CAS classification	Solved?
3974	$y' - 2y = \delta(t - 2)$ i.c.	[[_linear, 'class A']]	✓
3975	$y' + 4y = 3\delta(t - 1)$ i.c.	[[_linear, 'class A']]	✓
3976	$y' - 5y = 2e^{-t} + \delta(t - 3)$ i.c.	[[_linear, 'class A']]	✓
6544	$y' + 2y = 0$ i.c.	[_quadrature]	✓
6545	$y' + 2y = 2$ i.c.	[_quadrature]	✓
6546	$y' + 2y = e^x$ i.c.	[[_linear, 'class A']]	✓
7023	$y' + \frac{26y}{5} = \frac{97 \sin(2t)}{5}$ i.c.	[[_linear, 'class A']]	✓
7024	$y' + 2y = 0$ i.c.	[_quadrature]	✓
7035	$y' - 6y = 0$ i.c.	[_quadrature]	✓
7846	$Li' + Ri = E_0 \text{Heaviside}(t)$ i.c.	[[_linear, 'class A']]	✓
7847	$Li' + Ri = E_0 \delta(t)$ i.c.	[[_linear, 'class A']]	✓
7848	$Li' + Ri = E_0 \sin(\omega t)$ i.c.	[[_linear, 'class A']]	✓
8000	$y' - y = 1$ i.c.	[_quadrature]	✓
8001	$2y' + y = 0$ i.c.	[_quadrature]	✓
8002	$y' + 6y = e^{4t}$ i.c.	[[_linear, 'class A']]	✓
8003	$y' - y = 2 \cos(5t)$ i.c.	[[_linear, 'class A']]	✓
8010	$y' + y = e^{-3t} \cos(2t)$ i.c.	[[_linear, 'class A']]	✓
8012	$y' + 4y = e^{-4t}$ i.c.	[[_linear, 'class A']]	✓
8013	$y' - y = 1 + te^t$ i.c.	[[_linear, 'class A']]	✓

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Table 2.26 first order ode constant coeff using laplace

Continued from previous page

#	ODE	CAS classification	Solved?
8024	$y' + y = \begin{cases} 0 & 0 \leq t < 1 \\ 5 & 1 \leq t \end{cases}$ i.c.	[[_linear, 'class A']]	✓
8025	$y' + y = \begin{cases} 1 & 0 \leq t < 1 \\ -1 & 1 \leq t \end{cases}$ i.c.	[[_linear, 'class A']]	✓
8026	$y' + y = \begin{cases} t & 0 \leq t < 1 \\ 0 & 1 \leq t \end{cases}$ i.c.	[[_linear, 'class A']]	✓
8032	$y' + y = t \sin(t)$ i.c.	[[_linear, 'class A']]	✓
8033	$y' - y = t e^t \sin(t)$ i.c.	[[_linear, 'class A']]	✓
8041	$y' - 3y = \delta(t - 2)$ i.c.	[[_linear, 'class A']]	✓
8042	$y' + y = \delta(t - 1)$ i.c.	[[_linear, 'class A']]	✓
12860	$x' + 5x = \text{Heaviside}(t - 2)$ i.c.	[[_linear, 'class A']]	✓
12861	$x' + x = \sin(2t)$ i.c.	[[_linear, 'class A']]	✓
12869	$x' = 2x + \text{Heaviside}(t - 1)$ i.c.	[[_linear, 'class A']]	✓
12871	$x' = x - 2 \text{Heaviside}(t - 1)$ i.c.	[[_linear, 'class A']]	✓
12872	$x' = -x + \text{Heaviside}(t - 1) - \text{Heaviside}(t - 2)$ i.c.	[[_linear, 'class A']]	✓
12876	$x' + 3x = \delta(t - 1) + \text{Heaviside}(-4 + t)$ i.c.	[[_linear, 'class A']]	✓
13320	$y' - y = e^{3t}$ i.c.	[[_linear, 'class A']]	✓
13321	$y' + y = 2 \sin(t)$ i.c.	[[_linear, 'class A']]	✓
13729	$2y' + y = e^{-\frac{t}{2}}$ i.c.	[[_linear, 'class A']]	✓
13733	$y' - y = e^{2t}$ i.c.	[[_linear, 'class A']]	✓
13735	$y' + y = \text{Heaviside}(t) - \text{Heaviside}(t - 2)$ i.c.	[[_linear, 'class A']]	✓

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Table 2.26 first order ode constant coeff using laplace

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#	ODE	CAS classification	Solved?
13736	$y' - 2y = 4t(\text{Heaviside}(t) - \text{Heaviside}(t - 2))$ i.c.	[[_linear, 'class A']]	✓
13756	$10Q' + 100Q = \text{Heaviside}(t - 1) - \text{Heaviside}(t - 2)$ i.c.	[[_linear, 'class A']]	✓
14197	$y' - y = 0$	[_quadrature]	✓
14199	$y' + 2y = 4$	[_quadrature]	✓
14204	$y' = e^x$ i.c.	[_quadrature]	✓
14205	$y' - y = 2e^x$ i.c.	[[_linear, 'class A']]	✓
14211	$y' - 2y = 6$ i.c.	[_quadrature]	✓
14212	$y' + y = e^x$ i.c.	[[_linear, 'class A']]	✓
14219	$y' + 2y = \begin{cases} 2 & 0 \leq x < 1 \\ 1 & 1 \leq x \end{cases}$ i.c.	[[_linear, 'class A']]	✓
14226	$y' + 3y = \delta(-2 + x)$ i.c.	[[_linear, 'class A']]	✓
14227	$y' - 3y = \delta(x - 1) + 2\text{Heaviside}(-2 + x)$ i.c.	[[_linear, 'class A']]	✓
15261	$y' + 4y = 0$ i.c.	[_quadrature]	✓
15262	$y' - 2y = t^3$ i.c.	[[_linear, 'class A']]	✓
15263	$y' + 3y = \text{Heaviside}(-4 + t)$ i.c.	[[_linear, 'class A']]	✓
15296	$y' = \text{Heaviside}(t - 3)$ i.c.	[_quadrature]	✓
15297	$y' = \text{Heaviside}(t - 3)$ i.c.	[_quadrature]	✓
15301	$y' = \begin{cases} 0 & t < 1 \\ 1 & 1 < t < 3 \\ 0 & 3 < t \end{cases}$ i.c.	[_quadrature]	✓
15304	$y' = 3\delta(t - 2)$ i.c.	[_quadrature]	✓
15305	$y' = \delta(t - 2) - \delta(-4 + t)$ i.c.	[_quadrature]	✓

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Table 2.26 first order ode constant coeff using laplace

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#	ODE	CAS classification	Solved?
15308 i.c.	$y' + 2y = 4\delta(t - 1)$	[[_linear, 'class A']]	✓
15311 i.c.	$y' + 3y = \delta(t - 2)$	[[_linear, 'class A']]	✓
16959 i.c.	$x' + 3x = e^{-2t}$	[[_linear, 'class A']]	✓
16960 i.c.	$x' - 3x = 3t^3 + 3t^2 + 2t + 1$	[[_linear, 'class A']]	✓
16961 i.c.	$x' - x = \cos(t) - \sin(t)$	[[_linear, 'class A']]	✓
16962 i.c.	$2x' + 6x = t e^{-3t}$	[[_linear, 'class A']]	✓
16963 i.c.	$x' + x = 2 \sin(t)$	[[_linear, 'class A']]	✓
18128 i.c.	$y' + y = 3 e^{2x}$	[[_linear, 'class A']]	✓

## 2.3.25 first order ode flip role

Table 2.27: first order ode flip role

#	ODE	CAS classification	Solved?
3002	$1 + xy(1 + xy^2)y' = 0$ <i>i.c.</i>	[[_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓
4409	$y' = \frac{1}{xy + x^3y^3}$	[[_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓
5248	$x(x^3 - 3x^3y + 4y^2)y' = 6y^3$	[_rational, [_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓
5302	$(x + 2y + 2x^2y^3 + xy^4)y' + (1 + y^4)y = 0$	[_rational]	✓
5495	$(-x^2 + 1)y'^2 + 2xyy' + 4x^2 = 0$	[[_1st_order, '_with_symmetry_[F(x),G(y)]']]	✓
5542	$xyy'^2 + (a + x^2 - y^2)y' - xy = 0$	[_rational]	✓
10009	$(x^2y^3 + xy)y' - 1 = 0$	[[_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓
10016	$(x + 2y + 2x^2y^3 + xy^4)y' + y^5 + y = 0$	[_rational]	✓
10172	$axy'^2 - (y^2a + bx^2 + c)y' + bxy = 0$	[_rational]	✓
10249	$a(y^3 + 1)^{1/3} + bxy' - y = 0$	[_dAlembert]	✓
10387	$y' = \frac{1}{x(xy^2 + 1 + x)y}$	[[_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓
10457	$y' = \frac{2y^6}{y^3 + 2 + 16xy^2 + 32x^2y^4}$	[_rational]	✓
10523	$y' = \frac{y(x - y)(1 + y)}{x(xy + x - y)}$	[_rational, [_Abel, '2nd type', 'class C']]	✓
10531	$y' = \frac{y(x + y)(1 + y)}{x(xy + x + y)}$	[_rational, [_Abel, '2nd type', 'class C']]	✓
10597	$y' = -\left(-\frac{\ln(y)}{x} + \frac{\cos(x)\ln(y)}{\sin(x)} - F1(x)\right)y$	[[_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]']]	✓
10604	$y' = \frac{2y^8}{y^5 + 2y^6 + 2y^2 + 16xy^4 + 32y^6x^2 + 2 + 24xy^2 + 96x^2y^4 + 128x^3y^6}$	[_rational]	✓
10607	$y' = -\left(-\frac{\ln(y)}{x} + \frac{\ln(y)}{x\ln(x)} - F1(x)\right)y$	[[_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)]']]	✓

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Table 2.27 first order ode flip role  
Continued from previous page

#	ODE	CAS classification	Solved?
10610	$y' = -\frac{\left(-\frac{\ln(y)^2}{2x} - F1(x)\right)y}{\ln(y)}$	[NONE]	✓
10634	$y' = \frac{-216y^4 - 252y^3 - 396y^2 - 216y + 36x^2 - 72xy + 60y^5 - 36xy^3 - 72xy^2 - 24xy^4 + 4y^8 + 12y^7 + 33y^6}{216y}$	[_rational]	✓
10652	$y' = \frac{-216 + 216x^3 - 324x^2y^3 - 432xy + 216xy^2 - 1944y^4 - 648y^2x^2 - 126y^{10} - 315y^9 - 8y^{12} - 36y^{11} - 846y^7 + \dots}{216y}$	[_rational]	✓
13879	$(x^2y^3 + xy)y' = 1$	[[_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓
17589	$(x^2y^3 + xy)y' = 1$	[[_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓
18464	$(x^2y^3 + xy)y' = 1$	[[_1st_order, '_with_symmetry_[F(x)*G(y),0]']]	✓



## 2.3.26 first order ode chini

Table 2.28: first order ode chini

#	ODE	CAS classification	Solved?
1594	<i>i.c.</i> $y' = -2x(y^3 - 3y + 2)$	[_separable]	✓
6019	$-ay^3 - \frac{b}{x^{3/2}} + y' = 0$	[[_homogeneous, 'class G'], _rational, _Abel]	✓
9728	$-ay^3 - \frac{b}{x^{3/2}} + y' = 0$	[[_homogeneous, 'class G'], _rational, _Abel]	✓
9877	$x^{2n+1}y' - ay^3 - bx^{3n} = 0$	[[_homogeneous, 'class G'], _Abel]	✓
9878	$x^{m(n-1)+n}y' - ay^n - bx^{n(m+1)} = 0$	[[_homogeneous, 'class G']]	✓

## 2.4 Tables of second order ODEs broken by type of ODE

2.4.1	second order ode quadrature . . . . .	.2416
2.4.2	second order linear constant coeff . . . . .	.2420
2.4.3	second order euler ode . . . . .	.2525
2.4.4	second order nonlinear exact ode . . . . .	.2553
2.4.5	second order linear exact ode . . . . .	.2561
2.4.6	second order ode missing x . . . . .	.2581
2.4.7	second order ode missing y . . . . .	.2604
2.4.8	second order integrable as is . . . . .	.2625
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2.4.11	second order ode solved by an integrating factor . . . . .	.2692
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## 2.4.1 second order ode quadrature

Table 2.29: second order ode quadrature

#	ODE	CAS classification	Solved?
11	<i>i.c.</i> $x'' = 50$	[[_2nd_order, _quadrature]]	✓
12	<i>i.c.</i> $x'' = -20$	[[_2nd_order, _quadrature]]	✓
13	<i>i.c.</i> $x'' = 3t$	[[_2nd_order, _quadrature]]	✓
14	<i>i.c.</i> $x'' = 2t + 1$	[[_2nd_order, _quadrature]]	✓
15	<i>i.c.</i> $x'' = 4(3 + t)^2$	[[_2nd_order, _quadrature]]	✓
16	<i>i.c.</i> $x'' = \frac{1}{\sqrt{t+4}}$	[[_2nd_order, _quadrature]]	✓
17	<i>i.c.</i> $x'' = \frac{1}{(t+1)^3}$	[[_2nd_order, _quadrature]]	✓
18	<i>i.c.</i> $x'' = 50 \sin(5t)$	[[_2nd_order, _quadrature]]	✓
3089	$y'' = 0$	[[_2nd_order, _quadrature]]	✓
3244	$y'' = \cos(t)$	[[_2nd_order, _quadrature]]	✓
3249	$xy'' = x^2 + 1$	[[_2nd_order, _quadrature]]	✓
3272	<i>i.c.</i> $y'' = \sec(x) \tan(x)$	[[_2nd_order, _quadrature]]	✓
3584	$y'' = x e^x$	[[_2nd_order, _quadrature]]	✓
3585	$y'' = x^n$	[[_2nd_order, _quadrature]]	✓
3587	<i>i.c.</i> $y'' = \cos(x)$	[[_2nd_order, _quadrature]]	✓
3589	<i>i.c.</i> $y'' = x e^x$	[[_2nd_order, _quadrature]]	✓
4127	$y'' = 0$	[[_2nd_order, _quadrature]]	✓
5945	<i>i.c.</i> $y'' = 0$	[[_2nd_order, _quadrature]]	✓

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Table 2.29 second order ode quadrature  
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#	ODE	CAS classification	Solved?
6514	$y'' = 9x^2 + 2x - 1$	[[_2nd_order, _quadrature]]	✓
7257	$y'' = x + 2$	[[_2nd_order, _quadrature]]	✓
7265	$y'' = 3x + 1$	[[_2nd_order, _quadrature]]	✓
7291	$y'' = 0$	[[_2nd_order, _quadrature]]	✓
7729	<i>i.c.</i> $y'' = \tan(x)$	[[_2nd_order, _quadrature]]	✓
8442	$y'' = 0$	[[_2nd_order, _quadrature]]	✓
8443	$y'' = 1$	[[_2nd_order, _quadrature]]	✓
8444	$y'' = f(t)$	[[_2nd_order, _quadrature]]	✓
8445	$y'' = k$	[[_2nd_order, _quadrature]]	✓
8448	$y'' = 4 \sin(x) - 4$	[[_2nd_order, _quadrature]]	✓
8748	$y'' = 0$	[[_2nd_order, _quadrature]]	✓
8751	$ay'' = 0$	[[_2nd_order, _quadrature]]	✓
8754	$y'' = 1$	[[_2nd_order, _quadrature]]	✓
8756	$y'' = x$	[[_2nd_order, _quadrature]]	✓
10687	$y'' = 0$	[[_2nd_order, _quadrature]]	✓
12667	$y'' = x e^x$	[[_2nd_order, _quadrature]]	✓
12714	<i>i.c.</i> $x'' = -3\sqrt{t}$	[[_2nd_order, _quadrature]]	✓
14660	$y'' = \frac{x+1}{x-1}$	[[_2nd_order, _quadrature]]	✓
14661	$x^2 y'' = 1$	[[_2nd_order, _quadrature]]	✓

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Table 2.29 second order ode quadrature  
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#	ODE	CAS classification	Solved?
14674	$y'' = \sin(2x)$	[[_2nd_order, _quadrature]]	✓
14675	$y'' - 3 = x$	[[_2nd_order, _quadrature]]	✓
14683	$xy'' + 2 = \sqrt{x}$ i.c.	[[_2nd_order, _quadrature]]	✓
15126	$y'' = 6x e^x \sin(x)$	[[_2nd_order, _quadrature]]	✓
15882	$y'' = 0$	[[_2nd_order, _quadrature]]	✓
15937	$y'' = 3t^4 - 2t$	[[_2nd_order, _quadrature]]	✓
15959	$y'' = t^2 + e^t + \sin(t)$	[[_2nd_order, _quadrature]]	✓
16585	$(x - 1)y'' = 1$	[[_2nd_order, _quadrature]]	✓
16593	$y''(x + 2)^5 = 1$ i.c.	[[_2nd_order, _quadrature]]	✓
16594	$y'' = x e^x$ i.c.	[[_2nd_order, _quadrature]]	✓
16595	$y'' = 2x \ln(x)$	[[_2nd_order, _quadrature]]	✓
17569	$y'' = \sin(x)$	[[_2nd_order, _quadrature]]	✓
17931	$y'' = e^x$	[[_2nd_order, _quadrature]]	✓
18354	$ey'' = \frac{P(\frac{L}{2} - x)}{2}$	[[_2nd_order, _quadrature]]	✓
18355	$ey'' = \frac{w(\frac{L^2}{4} - x^2)}{2}$	[[_2nd_order, _quadrature]]	✓
18356	$ey'' = -\frac{(wL + P)x}{2} - \frac{wx^2}{2}$	[[_2nd_order, _quadrature]]	✓
18357	$ey'' = -P(L - x)$	[[_2nd_order, _quadrature]]	✓
18358	$ey'' = -PL + (wL + P)x - \frac{w(L^2 + x^2)}{2}$	[[_2nd_order, _quadrature]]	✓
18374	$y'' = \cos(x)$	[[_2nd_order, _quadrature]]	✓

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Table 2.29 second order ode quadrature

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#	ODE	CAS classification	Solved?
18375	$x^2 y'' = \ln(x)$	[[_2nd_order, _quadrature]]	✓

## 2.4.2 second order linear constant coeff

Table 2.30: second order linear constant coeff

#	ODE	CAS classification	Solved?
11	$x'' = 50$ i.c.	[[_2nd_order, _quadrature]]	✓
12	$x'' = -20$ i.c.	[[_2nd_order, _quadrature]]	✓
13	$x'' = 3t$ i.c.	[[_2nd_order, _quadrature]]	✓
14	$x'' = 2t + 1$ i.c.	[[_2nd_order, _quadrature]]	✓
15	$x'' = 4(3 + t)^2$ i.c.	[[_2nd_order, _quadrature]]	✓
16	$x'' = \frac{1}{\sqrt{t+4}}$ i.c.	[[_2nd_order, _quadrature]]	✓
17	$x'' = \frac{1}{(t+1)^3}$ i.c.	[[_2nd_order, _quadrature]]	✓
18	$x'' = 50 \sin(5t)$ i.c.	[[_2nd_order, _quadrature]]	✓
149	$y'' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
215	$y'' - y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
216	$y'' - 9y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
217	$y'' + 4y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
218	$y'' + 25y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
219	$y'' - 3y' + 2y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
220	$y'' + y' - 6y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
221	$y'' + y' = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
222	$y'' - 3y' = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
223	$y'' + 2y' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
224	$y'' - 10y' + 25y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓

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Table 2.30 second order linear constant coeff  
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#	ODE	CAS classification	Solved?
225	$y'' - 2y' + 2y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
226	$y'' + 6y' + 13y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
234	$y'' - 3y' + 2y = 0$	[[_2nd_order, _missing_x]]	✓
235	$y'' + 2y' - 15y = 0$	[[_2nd_order, _missing_x]]	✓
236	$y'' + 5y' = 0$	[[_2nd_order, _missing_x]]	✓
237	$2y'' + 3y' = 0$	[[_2nd_order, _missing_x]]	✓
238	$2y'' - y' - y = 0$	[[_2nd_order, _missing_x]]	✓
239	$4y'' + 8y' + 3y = 0$	[[_2nd_order, _missing_x]]	✓
240	$4y'' + 4y' + y = 0$	[[_2nd_order, _missing_x]]	✓
241	$9y'' - 12y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
242	$6y'' - 7y' - 20y = 0$	[[_2nd_order, _missing_x]]	✓
243	$35y'' - y' - 12y = 0$	[[_2nd_order, _missing_x]]	✓
257	$y'' + y = 3x$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
258	$y'' - 4y = 12$ i.c.	[[_2nd_order, _missing_x]]	✓
259	$y'' - 2y' - 3y = 6$ i.c.	[[_2nd_order, _missing_x]]	✓
260	$y'' - 2y' + 2y = 2x$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
261	$y'' + 2y = 4 + 6x$	[[_2nd_order, _with_linear_symmetries]]	✓
263	$y'' - 2y' - 5y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
271	$y'' - 4y = 0$	[[_2nd_order, _missing_x]]	✓
272	$2y'' - 3y' = 0$	[[_2nd_order, _missing_x]]	✓
273	$y'' + y' - 10y = 0$	[[_2nd_order, _missing_x]]	✓
274	$2y'' - 7y' + 3y = 0$	[[_2nd_order, _missing_x]]	✓
275	$y'' + 6y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓
276	$y'' + 5y' + 5y = 0$	[[_2nd_order, _missing_x]]	✓
277	$4y'' - 12y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓
278	$y'' - 6y' + 13y = 0$	[[_2nd_order, _missing_x]]	✓

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Table 2.30 second order linear constant coeff  
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#	ODE	CAS classification	Solved?
279	$y'' + 8y' + 25y = 0$	[[_2nd_order, _missing_x]]	✓
291	$y'' - 4y' + 3y = 0$	[[_2nd_order, _missing_x]]	✓
	<i>i.c.</i>		
292	$9y'' + 6y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
	<i>i.c.</i>		
293	$y'' - 6y' + 25y = 0$	[[_2nd_order, _missing_x]]	✓
	<i>i.c.</i>		
309	$y'' + 2iy' + 3y = 0$	[[_2nd_order, _missing_x]]	✓
310	$y'' - iy' + 6y = 0$	[[_2nd_order, _missing_x]]	✓
311	$y'' = (-2 + 2i\sqrt{3})y$	[[_2nd_order, _missing_x]]	✓
322	$y'' + 16y = e^{3x}$	[[_2nd_order, _with_linear_symmetries]]	✓
323	$y'' - y' + 2y = 3x + 4$	[[_2nd_order, _with_linear_symmetries]]	✓
324	$y'' - y' - 6y = 2\sin(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
325	$4y'' + 4y' + y = 3xe^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
326	$y'' + y' + y = \sin(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
327	$2y'' + 4y' + 7y = x^2$	[[_2nd_order, _with_linear_symmetries]]	✓
328	$y'' - 4y = \sinh(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
329	$y'' - 4y = \cosh(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
330	$y'' + 2y' - 3y = 1 + xe^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
331	$2y'' + 9y = 2\cos(3x) + 3\sin(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
334	$y'' + 2y' + 5y = e^x \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
337	$y'' + 9y = 2x^2e^{3x} + 5$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
338	$y'' + y = \sin(x) + \cos(x)x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
342	$y'' - 2y' + 2y = e^x \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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Table 2.30 second order linear constant coeff  
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#	ODE	CAS classification	Solved?
344	$y'' + 4y = 3x \cos(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
346	$y'' + 3y' + 2y = x(e^{-x} - e^{-2x})$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
347	$y'' - 6y' + 13y = x e^{3x} \sin(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
351	$y'' + 4y = 2x$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
352	$y'' + 3y' + 2y = e^x$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
353	$y'' + 9y = \sin(2x)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
354	$y'' + y = \cos(x)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
355	$y'' - 2y' + 2y = x + 1$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
358	$y'' + 2y' + 2y = \sin(3x)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
363	$y'' + y' + y = \sin(x) \sin(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
364	$y'' + 9y = \sin(x)^4$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
365	$y'' + y = x \cos(x)^3$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
366	$y'' + 3y' + 2y = 4e^x$	[[_2nd_order, _with_linear_symmetries]]	✓
367	$y'' - 2y' - 8y = 3e^{-2x}$	[[_2nd_order, _with_linear_symmetries]]	✓
368	$y'' - 4y' + 4y = 2e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓
369	$y'' - 4y = \sinh(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
370	$y'' + 4y = \cos(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
371	$y'' + 9y = \sin(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
372	$y'' + 9y = 2 \sec(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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Table 2.30 second order linear constant coeff  
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#	ODE	CAS classification	Solved?
373	$y'' + y = \csc(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
374	$y'' + 4y = \sin(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
375	$y'' - 4y = x e^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
382	$y'' + y = 2 \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
383	$x'' + 9x = 10 \cos(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
384	$x'' + 4x = 5 \sin(3t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
385	$x'' + 100x = 225 \cos(5t) + 300 \sin(5t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
386	$x'' + 25x = 90 \cos(4t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
387	$m x'' + kx = F_0 \cos(\omega t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
388	$x'' + 4x' + 4x = 10 \cos(3t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
389	$x'' + 3x' + 5x = -4 \cos(5t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
390	$2x'' + 2x' + x = 3 \sin(10t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
391	$x'' + 3x' + 3x = 8 \cos(10t) + 6 \sin(10t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
392	$x'' + 4x' + 5x = 10 \cos(3t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
393	$x'' + 6x' + 13x = 10 \sin(5t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
394	$x'' + 2x' + 26x = 600 \cos(10t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
395	$x'' + 8x' + 25x = 200 \cos(t) + 520 \sin(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
396	$x'' + 2x' + 2x = 2 \cos(\omega t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
397	$x'' + 4x' + 5x = 10 \cos(\omega t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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Table 2.30 second order linear constant coeff  
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#	ODE	CAS classification	Solved?
398	$x'' + 6x' + 45x = 50 \cos(\omega t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
399	$x'' + 10x' + 650x = 100 \cos(\omega t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
807	$y'' - y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
808	$y'' - 9y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
809	$y'' + 4y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
810	$y'' + 25y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
811	$y'' - 3y' + 2y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
812	$y'' + y' - 6y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
813	$y'' + y' = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
814	$y'' - 3y' = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
815	$y'' + 2y' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
816	$y'' - 10y' + 25y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
817	$y'' - 2y' + 2y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
818	$y'' + 6y' + 13y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
823	$y'' - 3y' + 2y = 0$	[[_2nd_order, _missing_x]]	✓
824	$y'' + 2y' - 15y = 0$	[[_2nd_order, _missing_x]]	✓
825	$y'' + 5y' = 0$	[[_2nd_order, _missing_x]]	✓
826	$2y'' + 3y' = 0$	[[_2nd_order, _missing_x]]	✓
827	$2y'' - y' - y = 0$	[[_2nd_order, _missing_x]]	✓
828	$4y'' + 8y' + 3y = 0$	[[_2nd_order, _missing_x]]	✓
829	$4y'' + 4y' + y = 0$	[[_2nd_order, _missing_x]]	✓
830	$9y'' - 12y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓

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Table 2.30 second order linear constant coeff

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#	ODE	CAS classification	Solved?
831	$6y'' - 7y' - 20y = 0$	[[_2nd_order, _missing_x]]	✓
832	$35y'' - y' - 12y = 0$	[[_2nd_order, _missing_x]]	✓
838	$y'' + y = 3x$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
839	$y'' - 4y = 12$ i.c.	[[_2nd_order, _missing_x]]	✓
840	$y'' - 2y' - 3y = 6$ i.c.	[[_2nd_order, _missing_x]]	✓
841	$y'' - 2y' + 2y = 2x$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
842	$y'' + 2y = 4$	[[_2nd_order, _missing_x]]	✓
843	$y'' + 2y = 6x$	[[_2nd_order, _with_linear_symmetries]]	✓
844	$y'' + 2y = 4 + 6x$	[[_2nd_order, _with_linear_symmetries]]	✓
845	$y'' - 4y = 0$	[[_2nd_order, _missing_x]]	✓
846	$2y'' - 3y' = 0$	[[_2nd_order, _missing_x]]	✓
847	$y'' + 3y' - 10y = 0$	[[_2nd_order, _missing_x]]	✓
848	$2y'' - 7y' + 3y = 0$	[[_2nd_order, _missing_x]]	✓
849	$y'' + 6y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓
850	$y'' + 5y' + 5y = 0$	[[_2nd_order, _missing_x]]	✓
851	$4y'' - 12y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓
852	$y'' - 6y' + 13y = 0$	[[_2nd_order, _missing_x]]	✓
853	$y'' + 8y' + 25y = 0$	[[_2nd_order, _missing_x]]	✓
854	$y'' - 4y' + 3y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
855	$9y'' + 6y' + 4y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
856	$y'' - 6y' + 25y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
857	$y'' - 2iy' + 3y = 0$	[[_2nd_order, _missing_x]]	✓
858	$y'' - iy' + 6y = 0$	[[_2nd_order, _missing_x]]	✓
859	$y'' = (-2 + 2i\sqrt{3})y$	[[_2nd_order, _missing_x]]	✓

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Table 2.30 second order linear constant coeff  
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#	ODE	CAS classification	Solved?
862	$\frac{x''}{2} + 3x' + 4x = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
863	$3x'' + 30x' + 63x = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
864	$x'' + 8x' + 16x = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
865	$2x'' + 12x' + 50x = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
866	$4x'' + 20x' + 169x = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
867	$2x'' + 16x' + 40x = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
868	$x'' + 10x' + 125x = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
869	$y'' + 16y = e^{3x}$	[[_2nd_order, _with_linear_symmetries]]	✓
870	$y'' - y' - 2y = 3x + 4$	[[_2nd_order, _with_linear_symmetries]]	✓
871	$y'' - y' - 6y = 2 \sin(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
872	$4y'' + 4y' + y = 3x e^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
873	$y'' + y' + y = \sin(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
874	$2y'' + 4y' + 7y = x^2$	[[_2nd_order, _with_linear_symmetries]]	✓
875	$y'' - 4y = \sinh(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
876	$y'' - 4y = \cosh(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
877	$y'' + 2y' - 3y = 1 + x e^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
878	$y'' + 9y = 2 \cos(3x) + 3 \sin(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
879	$y'' + 9y = 2x^2 e^{3x} + 5$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
880	$y'' - 2y' + 2y = e^x \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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Table 2.30 second order linear constant coeff  
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#	ODE	CAS classification	Solved?
881	$y'' + 4y = 3x \cos(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
882	$y'' + 3y' + 2y = x(e^{-x} - e^{-2x})$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
883	$y'' - 6y' + 13y = x e^{3x} \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
884	$y'' + 4y = 2x$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
885	$y'' + 3y' + 2y = e^x$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
886	$y'' + 9y = \sin(2x)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
887	$y'' + y = \cos(x)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
888	$y'' - 2y' + 2y = x + 1$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
889	$y'' + y' + y = \sin(x) \sin(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
890	$y'' + 9y = \sin(x)^4$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
891	$y'' + y = x \cos(x)^3$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
892	$y'' + 3y' + 2y = 4e^x$	[[_2nd_order, _with_linear_symmetries]]	✓
893	$y'' - 2y' - 8y = 3e^{-2x}$	[[_2nd_order, _with_linear_symmetries]]	✓
894	$y'' - 4y' + 4y = 2e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓
895	$y'' - 4y = \sinh(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
896	$y'' + 4y = \cos(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
897	$y'' + 9y = \sin(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
898	$y'' + 9y = 2 \sec(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
899	$y'' + y = \csc(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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Table 2.30 second order linear constant coeff  
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#	ODE	CAS classification	Solved?
900	$y'' + 4y = \sin(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
901	$y'' - 4y = x e^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
908	$x'' + 9x = 10 \cos(2t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
909	$x'' + 4x = 5 \sin(3t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
910	$x'' + 100x = 225 \cos(5t) + 300 \sin(5t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
911	$x'' + 25x = 90 \cos(4t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
912	$m x'' + kx = F_0 \cos(\omega t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
913	$x'' + 4x' + 4x = 10 \cos(3t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
914	$x'' + 3x' + 5x = -4 \cos(5t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
915	$2x'' + 2x' + x = 3 \sin(10t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
916	$x'' + 3x' + 3x = 8 \cos(10t) + 6 \sin(10t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
917	$x'' + 4x' + 5x = 10 \cos(3t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
918	$x'' + 6x' + 13x = 10 \sin(5t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
919	$x'' + 6x' + 13x = 10 \sin(5t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
920	$x'' + 2x' + 26x = 600 \cos(10t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
921	$x'' + 8x' + 25x = 200 \cos(t) + 520 \sin(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1249	$y'' + 2y' - 3y = 0$	[[_2nd_order, _missing_x]]	✓
1250	$y'' + 3y' + 2y = 0$	[[_2nd_order, _missing_x]]	✓
1251	$6y'' - y' - y = 0$	[[_2nd_order, _missing_x]]	✓
1252	$2y'' - 3y' + y = 0$	[[_2nd_order, _missing_x]]	✓
1253	$y'' + 5y' = 0$	[[_2nd_order, _missing_x]]	✓

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Table 2.30 second order linear constant coeff  
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#	ODE	CAS classification	Solved?
1254	$4y'' - 9y = 0$	[[_2nd_order, _missing_x]]	✓
1255	$y'' - 9y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓
1256	$y'' - 2y' - 2y = 0$	[[_2nd_order, _missing_x]]	✓
1257	$y'' + y' - 2y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
1258	$y'' + 4y' + 3y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
1259	$6y'' - 5y' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
1260	$y'' + 3y' = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
1261	$y'' + 5y' + 3y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
1262	$2y'' + y' - 4y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
1263	$y'' + 8y' - 9y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
1264	$4y'' - y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
1265	$y'' - y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
1266	$2y'' - 3y' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
1267	$y'' - y' - 2y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
1268	$4y'' - y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
1269	$y'' - (2\alpha - 1)y' + \alpha(\alpha - 1)y = 0$	[[_2nd_order, _missing_x]]	✓
1270	$y'' + (3 - \alpha)y' - 2(\alpha - 1)y = 0$	[[_2nd_order, _missing_x]]	✓
1271	$2y'' + 3y' - 2y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
1272	$y'' + 5y' + 6y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
1273	$y'' - 2y' + 2y = 0$	[[_2nd_order, _missing_x]]	✓
1274	$y'' - 2y' + 6y = 0$	[[_2nd_order, _missing_x]]	✓
1275	$y'' + 2y' - 8y = 0$	[[_2nd_order, _missing_x]]	✓

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Table 2.30 second order linear constant coeff  
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#	ODE	CAS classification	Solved?
1276	$y'' + 2y' + 2y = 0$	[[_2nd_order, _missing_x]]	✓
1277	$y'' + 6y' + 13y = 0$	[[_2nd_order, _missing_x]]	✓
1278	$4y'' + 9y = 0$	[[_2nd_order, _missing_x]]	✓
1279	$y'' + 2y' + \frac{5y}{4} = 0$	[[_2nd_order, _missing_x]]	✓
1280	$9y'' + 9y' - 4y = 0$	[[_2nd_order, _missing_x]]	✓
1281	$y'' + y' + \frac{5y}{4} = 0$	[[_2nd_order, _missing_x]]	✓
1282	$y'' + 4y' + \frac{25y}{4} = 0$	[[_2nd_order, _missing_x]]	✓
1283	$y'' + 4y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
1284	$y'' + 4y' + 5y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
1285	$y'' - 2y' + 5y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
1286	$y'' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
1287	$y'' + y' + \frac{5y}{4} = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
1288	$y'' + 2y' + 2y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
1289	$u'' - u' + 2u = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
1290	$5u'' + 2u' + 7u = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
1291	$y'' + 2y' + 6y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
1292	$y'' + 2ay' + (a^2 + 1)y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
1303	$y'' - 2y' + y = 0$	[[_2nd_order, _missing_x]]	✓
1304	$9y'' + 6y' + y = 0$	[[_2nd_order, _missing_x]]	✓
1305	$4y'' - 4y' - 3y = 0$	[[_2nd_order, _missing_x]]	✓
1306	$4y'' + 12y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓
1307	$y'' - 2y' + 10y = 0$	[[_2nd_order, _missing_x]]	✓
1308	$y'' - 6y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓

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Table 2.30 second order linear constant coeff  
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#	ODE	CAS classification	Solved?
1309	$4y'' + 17y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
1310	$16y'' + 24y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓
1311	$25y'' - 20y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
1312	$2y'' + 2y' + y = 0$	[[_2nd_order, _missing_x]]	✓
1313	$9y'' - 12y' + 4y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
1314	$y'' - 6y' + 9y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
1315	$9y'' + 6y' + 82y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
1316	$y'' + 4y' + 4y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
1317	$4y'' + 12y' + 9y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
1318	$y'' - y' + \frac{y}{4} = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
1333	$y'' - 5y' + 6y = 2e^t$	[[_2nd_order, _with_linear_symmetries]]	✓
1334	$y'' - y' - 2y = 2e^{-t}$	[[_2nd_order, _with_linear_symmetries]]	✓
1335	$y'' + 2y' + y = 3e^{-t}$	[[_2nd_order, _with_linear_symmetries]]	✓
1336	$4y'' - 4y' + y = 16e^{\frac{t}{2}}$	[[_2nd_order, _with_linear_symmetries]]	✓
1337	$y'' + y = \tan(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1338	$y'' + 9y = 9 \sec(3t)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1339	$y'' + 4y' + 4y = \frac{e^{-2t}}{t^2}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1340	$y'' + 4y = 3 \csc(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1341	$y'' + y = 2 \sec\left(\frac{t}{2}\right)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1342	$y'' - 2y' + y = \frac{e^t}{t^2 + 1}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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Table 2.30 second order linear constant coeff  
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#	ODE	CAS classification	Solved?
1343	$y'' - 5y' + 6y = g(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1344	$y'' + 4y = g(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1355	$u'' + 2u = 0$	[[_2nd_order, _missing_x]]	✓
1356	$u'' + \frac{u'}{4} + 2u = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
1357	$u'' + \frac{u'}{8} + 4u = 3 \cos\left(\frac{t}{4}\right)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1358	$u'' + \frac{u'}{8} + 4u = 3 \cos(2t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1359	$u'' + \frac{u'}{8} + 4u = 3 \cos(6t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1517	$y'' + 2y' + 2y = f(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1737	$y'' - 7y' + 10y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
1738	$y'' - 2y' + 2y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
1739	$y'' - 2y' + 2y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
1740	$y'' - 2y' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
1741	$y'' - 2y' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
1743	$y'' - 2y' - 3y = 0$	[[_2nd_order, _missing_x]]	✓
1744	$y'' - 6y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓
1745	$y'' - 2ay' + a^2y = 0$	[[_2nd_order, _missing_x]]	✓
1805	$y'' + 9y = \tan(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1806	$y'' + 4y = \sin(2x) \sec(2x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1807	$y'' - 3y' + 2y = \frac{4}{1 + e^{-x}}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1808	$y'' - 2y' + 2y = 3e^x \sec(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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Table 2.30 second order linear constant coeff  
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#	ODE	CAS classification	Solved?
1809	$y'' - 2y' + y = 14x^{3/2}e^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1810	$y'' - y = \frac{4e^{-x}}{1 - e^{-2x}}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2364	$y'' - y = 0$	[[_2nd_order, _missing_x]]	✓
2365	$6y'' - 7y' + y = 0$	[[_2nd_order, _missing_x]]	✓
2366	$y'' - 3y' + y = 0$	[[_2nd_order, _missing_x]]	✓
2367	$3y'' + 6y' + 3y = 0$	[[_2nd_order, _missing_x]]	✓
2368	$y'' - 3y' - 4y = 0$	[[_2nd_order, _missing_x]]	✓
2369	<i>i.c.</i> $2y'' + y' - 10y = 0$	[[_2nd_order, _missing_x]]	✓
2370	<i>i.c.</i> $5y'' + 5y' - y = 0$	[[_2nd_order, _missing_x]]	✓
2371	<i>i.c.</i> $y'' - 6y' + y = 0$	[[_2nd_order, _missing_x]]	✓
2372	<i>i.c.</i> $y'' + 5y' + 6y = 0$	[[_2nd_order, _missing_x]]	✓
2376	<i>i.c.</i> $y'' + 2y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
2377	$y'' + y' + y = 0$	[[_2nd_order, _missing_x]]	✓
2378	$2y'' + 3y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
2379	$y'' + 2y' + 3y = 0$	[[_2nd_order, _missing_x]]	✓
2380	$4y'' - y' + y = 0$	[[_2nd_order, _missing_x]]	✓
2381	<i>i.c.</i> $y'' + y' + 2y = 0$	[[_2nd_order, _missing_x]]	✓
2382	<i>i.c.</i> $y'' + 2y' + 5y = 0$	[[_2nd_order, _missing_x]]	✓
2383	<i>i.c.</i> $2y'' - y' + 3y = 0$	[[_2nd_order, _missing_x]]	✓
2384	<i>i.c.</i> $3y'' - 2y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
2387	$y'' - 6y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓
2388	$4y'' - 12y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓
2389	<i>i.c.</i> $9y'' + 6y' + y = 0$	[[_2nd_order, _missing_x]]	✓

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Table 2.30 second order linear constant coeff  
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#	ODE	CAS classification	Solved?
2390	$4y'' - 4y' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
2391	$y'' + 2y' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
2392	$9y'' - 12y' + 4y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
2402	$y'' + y = \sec(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2403	$y'' - 4y' + 4y = te^{2t}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2404	$2y'' - 3y' + y = (t^2 + 1)e^t$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2405	$y'' - 3y' + 2y = te^{3t} + 1$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2406	$3y'' + 4y' + y = \sin(t)e^{-t}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2407	$y'' + 4y' + 4y = t^{5/2}e^{-2t}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2408	$y'' - 3y' + 2y = \sqrt{t+1}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2409	$y'' - y = f(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2412	$my'' + cy' + ky = F_0 \cos(\omega t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2545	$y'' - y = 0$	[[_2nd_order, _missing_x]]	✓
2546	$6y'' - 7y' + y = 0$	[[_2nd_order, _missing_x]]	✓
2547	$y'' - 3y' + y = 0$	[[_2nd_order, _missing_x]]	✓
2548	$3y'' + 6y' + 2y = 0$	[[_2nd_order, _missing_x]]	✓
2549	$y'' - 3y' - 4y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
2550	$2y'' + y' - 10y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
2551	$5y'' + 5y' - y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
2552	$y'' - 6y' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
2553	$y'' + 5y' + 6y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓

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#	ODE	CAS classification	Solved?
2556	$y'' + y' + y = 0$	[[_2nd_order, _missing_x]]	✓
2557	$2y'' + 3y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
2558	$y'' + 2y' + 3y = 0$	[[_2nd_order, _missing_x]]	✓
2559	$4y'' - y' + y = 0$	[[_2nd_order, _missing_x]]	✓
2560	$y'' + y' + 2y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
2561	$y'' + 2y' + 5y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
2562	$2y'' - y' + 3y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
2563	$3y'' - 2y' + 4y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
2564	$y'' + w^2y = 0$	[[_2nd_order, _missing_x]]	✓
2567	$y'' - 6y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓
2568	$4y'' - 12y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓
2569	$9y'' + 6y' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
2570	$4y'' - 4y' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
2571	$6y'' + 2y' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
2572	$9y'' - 12y' + 4y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
2583	$y'' + y = \sec(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2584	$y'' - 4y' + 4y = t e^{2t}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2585	$2y'' - 3y' + y = (t^2 + 1) e^t$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2586	$y'' - 3y' + 2y = t e^{3t} + 1$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2587	$3y'' + 4y' + y = \sin(t) e^{-t}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2588	$y'' + 4y' + 4y = t^{5/2} e^{-2t}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2589	$y'' - 3y' + 2y = \sqrt{t+1}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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Table 2.30 second order linear constant coeff  
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#	ODE	CAS classification	Solved?
2590	$y'' - y = f(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2594	$y'' + 3y = t^3 - 1$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2595	$y'' + 4y' + 4y = t e^{\alpha t}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2596	$y'' - y = t^2 e^t$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2597	$y'' + y' + y = t^2 + t + 1$	[[_2nd_order, _with_linear_symmetries]]	✓
2598	$y'' + 2y' + y = e^{-t}$	[[_2nd_order, _with_linear_symmetries]]	✓
2599	$y'' + 5y' + 4y = t^2 e^{7t}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2600	$y'' + 4y = t \sin(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2601	$y'' - 6y' + 9y = (3t^7 - 5t^4) e^{3t}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2602	$y'' - 2y' + 5y = 2 \cos(t)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2603	$y'' - 2y' + 5y = 2 \cos(t)^2 e^t$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2604	$y'' + y' - 6y = \sin(t) + t e^{2t}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2605	$y'' + y' + 4y = t^2 + (2t + 3)(1 + \cos(t))$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2606	$y'' - 3y' + 2y = e^t + e^{2t}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2607	$y'' + 2y' = 1 + t^2 + e^{-2t}$	[[_2nd_order, _missing_y]]	✓
2608	$y'' + y = \cos(t) \cos(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2609	$y'' + y = \cos(t) \cos(2t) \cos(3t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2610	$y'' - 6y' + 9y = t^{3/2} e^{3t}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2835	$y'' + \lambda y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
2836	$y'' + \lambda y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓

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Table 2.30 second order linear constant coeff  
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#	ODE	CAS classification	Solved?
2837	$y'' - \lambda y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
2838	$y'' + \lambda y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
2839	$y'' - 2y' + (1 + \lambda)y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
2840	$y'' + \lambda y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
3059	$y'' - 4y = 0$	[[_2nd_order, _missing_x]]	✓
3060	$y'' + 7y' + 12y = 0$	[[_2nd_order, _missing_x]]	✓
3061	$y'' - 3y' + 2y = 0$	[[_2nd_order, _missing_x]]	✓
3062	$y'' - 7y' + 6y = 0$	[[_2nd_order, _missing_x]]	✓
3063	$2y'' + 3y' - 2y = 0$	[[_2nd_order, _missing_x]]	✓
3064	$y'' - 2y' - y = 0$	[[_2nd_order, _missing_x]]	✓
3065	$y'' - 2y' - 2y = 0$	[[_2nd_order, _missing_x]]	✓
3066	$y'' - 3y' + y = 0$	[[_2nd_order, _missing_x]]	✓
3067	$2y'' + 2y' - y = 0$	[[_2nd_order, _missing_x]]	✓
3088	$y'' - 2y' + y = 0$	[[_2nd_order, _missing_x]]	✓
3089	$y'' = 0$	[[_2nd_order, _quadrature]]	✓
3100	$y'' - 2y' + 3y = 0$	[[_2nd_order, _missing_x]]	✓
3111	$y'' - 4y = 3 \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3112	$y'' + y = \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3113	$y'' + y' - 2y = e^x$	[[_2nd_order, _with_linear_symmetries]]	✓
3114	$y'' + 3y' + 2y = e^{-2x}$	[[_2nd_order, _with_linear_symmetries]]	✓
3115	$y'' + y' + y = \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3116	$y'' + y' + y = x^2$	[[_2nd_order, _with_linear_symmetries]]	✓
3117	$y'' + 3y' + 2y = x e^{-x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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Table 2.30 second order linear constant coeff  
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#	ODE	CAS classification	Solved?
3119	$y'' - 4y = x + e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓
3120	$y'' - 9y = e^{3x} + \sin(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3121	$y'' - y' - 6y = x^3$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3122	$-2y'' + 3y = x e^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3123	$y'' + 4y = x \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3125	$y'' + y' + y = e^x \sin(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3128	$y'' + 4y' + 4y = x^3 e^{2x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3131	$y'' + 2ny' + n^2y = 5 \cos(6x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3132	$y'' + 9y = (1 + \sin(3x)) \cos(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3133	$y'' + 4y' + 5y = 2x - e^{-4x} + \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3135	$y'' + 4y = 8 \sin(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3137 i.c.	$y'' - 5y' - 6y = e^{3x}$	[[_2nd_order, _with_linear_symmetries]]	✓
3138 i.c.	$y'' + 4y = 12 \cos(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3139 i.c.	$y'' - 3y' + 2y = x e^{-x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3140 i.c.	$y'' + y = e^x \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3141 i.c.	$2y'' + y' = 8 \sin(2x) + e^{-x}$	[[_2nd_order, _missing_y]]	✓
3142 i.c.	$y'' + y = 3x \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3143 i.c.	$2y'' + 5y' - 3y = \sin(x) - 8x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3144 i.c.	$8y'' - y = x e^{-\frac{x}{2}}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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Table 2.30 second order linear constant coeff  
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#	ODE	CAS classification	Solved?
3145	$y'' + y = \sec(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3146	$y'' + 4y' + 4y = e^x$	[[_2nd_order, _with_linear_symmetries]]	✓
3147	$y'' + 4y = x^2$	[[_2nd_order, _with_linear_symmetries]]	✓
3148	$y'' - 2y' + y = e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓
3149	$y'' + y = 4 \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3150	$y'' + 4y = 2x - 2 \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3151	$y'' - y = 3x + 5e^x$	[[_2nd_order, _with_linear_symmetries]]	✓
3152	$y'' + 9y = e^x + \sin(4x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3155	$y'' + y = \tan(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3156	$y'' + a^2y = \sec(ax)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3160	$y'' - 2y' + y = \frac{e^x}{(1-x)^2}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3161	$y'' - 3y' + 2y = \sin(e^{-x})$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3162	$y'' + 4y = \sec(x) \tan(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3163	$y'' - 2y = e^{-x} \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3164	$y'' + 9y = \sec(x) \csc(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3165	$y'' + 9y = \csc(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3166	$y'' + y = \tan\left(\frac{x}{3}\right)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3168	$4y'' - 4y' + y = e^{\frac{x}{2}} \ln(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3170	$y'' - 6y' + 9y = e^{3x}$	[[_2nd_order, _with_linear_symmetries]]	✓

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Table 2.30 second order linear constant coeff  
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#	ODE	CAS classification	Solved?
3172	$y'' - 5y' + 6y = x^2$	[[_2nd_order, _with_linear_symmetries]]	✓
3173	$y'' + 4y = 2e^x$	[[_2nd_order, _with_linear_symmetries]]	✓
3174	$y'' + 3y = 3e^{-4x}$	[[_2nd_order, _with_linear_symmetries]]	✓
3175	$y'' + 4y' + 4y = \frac{e^x}{2} + \frac{e^{-x}}{2}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3176	$y'' + y' - 2y = e^{-2x}$	[[_2nd_order, _with_linear_symmetries]]	✓
3177	$y'' + 2y = \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3178	$y'' + 4y' + 4y = \frac{e^{3x}}{2} - \frac{e^{-3x}}{2}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3179	$y'' + 3y' - 2y = \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3180	$y'' + 3y' + 2y = e^x \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3184	$y'' + y = e^{3x}(1 + \sin(2x))$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3185	$y'' + 2n^2y' + n^4y = \sin(kx)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3186	$y'' + 4y' + 5y = \frac{e^x}{2} + \frac{e^{-x}}{2}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3187	$y'' + y' - 2y = xe^{-x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3188	$y'' + 4y = xe^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3189	$y'' + 2y = x^2e^{-x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3190	$y'' - y' - 2y = x^2 - 8$	[[_2nd_order, _with_linear_symmetries]]	✓
3205	$y'' + 4y = x \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3206	$y'' + y = x^2 \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3207	$y'' - y = x^2 \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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Table 2.30 second order linear constant coeff  
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#	ODE	CAS classification	Solved?
3210	$2y'' + 3y' - 2y = e^x x^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3214	$y'' + 3y' + 2y = x^2 \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3215	$y'' - 4y' + 3y = \sin(x) x^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3216	$y'' - y = \sin(2x) x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3217	$y'' + 2y' = x^3 \sin(2x)$	[[_2nd_order, _missing_y]]	✓
3218	$y'' - y' = x e^{2x} \sin(x)$	[[_2nd_order, _missing_y]]	✓
3219	$y'' - 4y = x e^{2x} \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3220	$y'' + 2y' = x^2 e^{-x} \sin(x)$	[[_2nd_order, _missing_y]]	✓
3244	$y'' = \cos(t)$	[[_2nd_order, _quadrature]]	✓
3245	$y'' = k^2 y$	[[_2nd_order, _missing_x]]	✓
3246	$x'' + k^2 x = 0$	[[_2nd_order, _missing_x]]	✓
3266	$y'' = y$	[[_2nd_order, _missing_x]]	✓
3272	$y'' = \sec(x) \tan(x)$	[[_2nd_order, _quadrature]]	✓
3282	$x'' - k^2 x = 0$	[[_2nd_order, _missing_x]]	✓
3484	$x'' + \omega_0^2 x = a \cos(\omega t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3485	$f'' + 2f' + 5f = 0$	[[_2nd_order, _missing_x]]	✓
3486	$f'' + 2f' + 5f = e^{-t} \cos(3t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3487	$f'' + 6f' + 9f = e^{-t}$	[[_2nd_order, _with_linear_symmetries]]	✓
3488	$f'' + 8f' + 12f = 12 e^{-4t}$	[[_2nd_order, _with_linear_symmetries]]	✓
3489	$f'' + 8f' + 12f = 12 e^{-4t}$	[[_2nd_order, _with_linear_symmetries]]	✓
3490	$y'' + 2y' + y = 4 e^{-x}$	[[_2nd_order, _with_linear_symmetries]]	✓

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Table 2.30 second order linear constant coeff  
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#	ODE	CAS classification	Solved?
3496	$y'' - y = x^n$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3497	$y'' - 2y' + y = 2x e^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3558	$y'' - 25y = 0$	[[_2nd_order, _missing_x]]	✓
3559	$y'' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
3560	$y'' + y' - 2y = 0$	[[_2nd_order, _missing_x]]	✓
3563	$y'' + 2y' + 5y = 0$	[[_2nd_order, _missing_x]]	✓
3564	$y'' - 9y = 0$	[[_2nd_order, _missing_x]]	✓
3570	$y'' - (a + b)y' + aby = 0$	[[_2nd_order, _missing_x]]	✓
3571	$y'' - 2ay' + a^2y = 0$	[[_2nd_order, _missing_x]]	✓
3572	$y'' - 2ay' + (a^2 + b^2)y = 0$	[[_2nd_order, _missing_x]]	✓
3573	$y'' - y' - 6y = 0$	[[_2nd_order, _missing_x]]	✓
3574	$y'' + 6y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓
3584	$y'' = x e^x$	[[_2nd_order, _quadrature]]	✓
3585	$y'' = x^n$	[[_2nd_order, _quadrature]]	✓
3587	$y'' = \cos(x)$ i.c.	[[_2nd_order, _quadrature]]	✓
3589	$y'' = x e^x$ i.c.	[[_2nd_order, _quadrature]]	✓
3590	$y'' + y' - 6y = 0$	[[_2nd_order, _missing_x]]	✓
3696	$y'' - 2y' - 3y = 0$	[[_2nd_order, _missing_x]]	✓
3697	$y'' + 7y' + 10y = 0$	[[_2nd_order, _missing_x]]	✓
3698	$y'' - 36y = 0$	[[_2nd_order, _missing_x]]	✓
3699	$y'' + 4y' = 0$	[[_2nd_order, _missing_x]]	✓
3711	$y'' + y' - 6y = 18e^{5x}$	[[_2nd_order, _with_linear_symmetries]]	✓
3712	$y'' + y' - 2y = 4x^2 + 5$	[[_2nd_order, _with_linear_symmetries]]	✓
3716	$y'' + y = 6e^x$	[[_2nd_order, _with_linear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
3717	$y'' + 4y' + 4y = 5x e^{-2x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3718	$y'' + 4y = 8 \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3719	$y'' - y' - 2y = 5 e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓
3720	$y'' + 2y' + 5y = 3 \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3724	$y'' + 9y = 5 \cos(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3725	$y'' - y = 9x e^{2x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3726	$y'' + y' - 2y = -10 \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3727	$y'' + y' - 2y = 4 \cos(x) - 2 \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3728	$y'' + \omega^2 y = \frac{F_0 \cos(\omega t)}{m}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3729	$y'' - 4y' + 6y = 7 e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓
3732	$y'' + 2y' - 3y = \sin(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3733	$y'' + 6y = \sin(x)^2 \cos(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3734	$y'' - 16y = 20 \cos(4x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3735	$y'' + 2y' + y = 50 \sin(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3736	$y'' - y = 10 e^{2x} \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3737	$y'' + 4y' + 4y = 169 \sin(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3738	$y'' - y' - 2y = 40 \sin(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3739	$y'' + y = 3 e^x \cos(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3740	$y'' + 2y' + 2y = 2 e^{-x} \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
3741	$y'' - 4y = 100x e^x \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3742	$y'' + 2y' + 5y = 4 e^{-x} \cos(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3743	$y'' - 2y' + 10y = 24 e^x \cos(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3744	$y'' + 16y = 34 e^x + 16 \cos(4x) - 8 \sin(4x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3745	$y'' - 6y' + 9y = 4 e^{3x} \ln(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3746	$y'' + 4y' + 4y = \frac{e^{-2x}}{x^2}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3747	$y'' + 9y = 18 \sec(3x)^3$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3748	$y'' + 6y' + 9y = \frac{2 e^{-3x}}{x^2 + 1}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3749	$y'' - 4y = \frac{8}{e^{2x} + 1}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3750	$y'' - 4y' + 5y = e^{2x} \tan(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3751	$y'' + 9y = \frac{36}{4 - \cos(3x)^2}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3752	$y'' - 10y' + 25y = \frac{2 e^{5x}}{x^2 + 4}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3753	$y'' - 6y' + 13y = 4 e^{3x} \sec(2x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3754	$y'' + y = \sec(x) + 4 e^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3755	$y'' + y = \csc(x) + 2x^2 + 5x + 1$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3756	$y'' - y = 2 \tanh(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3757	$y'' - 2my' + m^2y = \frac{e^{mx}}{x^2 + 1}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3758	$y'' - 2y' + y = \frac{4 e^x \ln(x)}{x^3}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
3759	$y'' + 2y' + y = \frac{e^{-x}}{\sqrt{-x^2 + 4}}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3760	$y'' + 2y' + 17y = \frac{64 e^{-x}}{3 + \sin(4x)^2}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3761	$y'' + 4y' + 4y = \frac{4 e^{-2x}}{x^2 + 1} + 2x^2 - 1$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3762	$y'' + 4y' + 4y = 15 e^{-2x} \ln(x) + 25 \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3767	$y'' - 9y = F(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3768	$y'' + 5y' + 4y = F(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3769	$y'' + y' - 2y = F(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3770	$y'' + 4y' - 12y = F(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3771	<i>i.c.</i> $y'' - 4y' + 4y = 5x e^{2x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3772	<i>i.c.</i> $y'' + y = \sec(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3797	$y'' + 6y' + 9y = 4 e^{-3x}$	[[_2nd_order, _with_linear_symmetries]]	✓
3798	$y'' + 6y' + 9y = 4 e^{-2x}$	[[_2nd_order, _with_linear_symmetries]]	✓
3802	$y'' - 4y = 5 e^x$	[[_2nd_order, _with_linear_symmetries]]	✓
3803	$y'' + 2y' + y = 2x e^{-x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3804	$y'' - y = 4 e^x$	[[_2nd_order, _with_linear_symmetries]]	✓
3806	$y'' + 4y = \ln(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3807	$y'' + 2y' - 3y = 5 e^x$	[[_2nd_order, _with_linear_symmetries]]	✓
3808	$y'' + y = \tan(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3809	$y'' + y = 4 \cos(2x) + 3 e^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
4118	$y'' + 8y' + 15y = 0$	[[_2nd_order, _missing_x]]	✓
4119	$y'' + 2y' - 15y = 0$	[[_2nd_order, _missing_x]]	✓
4120	$y'' + 6y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓
4121	$y'' + 6y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓
4122	$y'' - 3y' + 2y = 0$	[[_2nd_order, _missing_x]]	✓
4123	$y'' - 4y' + 13y = 0$	[[_2nd_order, _missing_x]]	✓
4124	$2y'' + 3y' = 0$	[[_2nd_order, _missing_x]]	✓
4125	$y'' + 25y = 0$	[[_2nd_order, _missing_x]]	✓
4126	$4y'' + y' + y = 0$	[[_2nd_order, _missing_x]]	✓
4127	$y'' = 0$	[[_2nd_order, _quadrature]]	✓
4128	$y'' - 6y' + 5y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
4129	$y'' - 4y' + 3y = 1$	[[_2nd_order, _missing_x]]	✓
4130	$y'' + y' - 2y = -2x^2 + 2x + 2$	[[_2nd_order, _with_linear_symmetries]]	✓
4131	$y'' + y = x^3 + x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4132	$y'' - 6y' + 9y = e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓
4133	$y'' + 2y = x + e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓
4134	$y'' + 2y = e^x + 2$	[[_2nd_order, _with_linear_symmetries]]	✓
4135	$y'' - y = 2e^x$	[[_2nd_order, _with_linear_symmetries]]	✓
4136	$y'' + y = \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4137	$y'' - y = 4xe^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4138	$y'' - 2y' + 3y = x^3 + \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4141	$y'' + 2ny' + n^2y = A \cos(xp)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4152	$y'' - 3y' + 2y = \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
4153	$y'' + 2y' - 2y = x^2 + 1$	[[_2nd_order, _with_linear_symmetries]]	✓
4154	$y'' + \frac{y'}{2} + \frac{y}{8} = \frac{\sin(x)}{8} - \frac{\cos(x)}{4}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4155	$y'' + 3y' + 2y = e^x - 2e^{2x} + \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4156	$y'' - 4y' + 4y = x^3e^{2x} + xe^{2x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4157	$y'' + 3y' + 2y = \sin(2x)x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4158	$y'' - 6y' + 9y = e^x \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4161	$y'' - 3y' + 2y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
4162	$y'' + 9y = 8 \sin(x)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4163	$25y'' - 30y' + 9y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
4164	$9y'' - 6y' + y = (4x^2 + 24x + 18)e^x$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4456	$y'' + 6y' + 10y = 3xe^{-3x} - 2e^{3x} \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4457	$y'' - 8y' + 17y = e^{4x}(x^2 - 3x \sin(x))$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4458	$y'' - 2y' + 2y = (x + e^x) \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4459	$y'' + 4y = \sinh(x) \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4460	$y'' + 2y' + 2y = \cosh(x) \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4470	$y'' - y' - 2y = 36xe^{2x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4474	$y'' + 3y' + 5y = 5e^{-x} \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4476	$y'' + 4y = 8 \sin(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4479	$y'' - 4y' + 4y = (x + 1)e^x + 2e^{2x} + 3e^{3x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
4480	$y'' - 2y' + 5y = 4e^x \cos(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4481	$y'' + 4y = 4 \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4482	$y'' - y = 12e^x x^2 + 3e^{2x} + 10 \cos(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4483	$y'' + y = 2 \sin(x) - 3 \cos(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4484	$y'' - y' = e^x(x^2 + 10)$	[[_2nd_order, _missing_y]]	✓
4485	$y'' - 4y = 96x^2 e^{2x} + 4e^{-2x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4486	$y'' + 2y' + 2y = 5 \cos(x) + 10 \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4487	$y'' - 2y' + 2y = 4x - 2 + 2e^x \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4488	$y'' - 4y' + 4y = 4x e^{2x} \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4497	$y'' - y = \frac{1}{x} - \frac{2}{x^3}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4498	$y'' - y = \frac{1}{\sinh(x)}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4499	$y'' - 2y' + y = \frac{e^x}{x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4500	$y'' + 3y' + 2y = \sin(e^x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4501	$y'' - 3y' + 2y = \sin(e^{-x})$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4502	$y'' + y = \sec(x)^3$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4503	$y'' - y = \frac{1}{\sqrt{1 - e^{2x}}}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4504	$y'' - y = e^{-2x} \sin(e^{-x})$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4505	$y'' + 2y' + y = 15e^{-x} \sqrt{x+1}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4506	$y'' + 4y = 2 \tan(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
4507	$y'' - 2y' + y = \frac{e^{2x}}{(1 + e^x)^2}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4508	$y'' + y' = \frac{1}{1 + e^x}$	[[_2nd_order, _missing_y]]	✓
5916	$y'' + 2y' = 0$	[[_2nd_order, _missing_x]]	✓
5917	$y'' - 3y' + 2y = 0$	[[_2nd_order, _missing_x]]	✓
5918	$y'' - y = 0$	[[_2nd_order, _missing_x]]	✓
5919	$6y'' - 11y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
5920	$y'' + 2y' - y = 0$	[[_2nd_order, _missing_x]]	✓
5925	$y'' - 2ky' - 2y = 0$	[[_2nd_order, _missing_x]]	✓
5926	$y'' + 4ky' - 12k^2y = 0$	[[_2nd_order, _missing_x]]	✓
5928	$y'' + 4y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
5931	$y'' - 2ay' + a^2y = 0$	[[_2nd_order, _missing_x]]	✓
5937	$y'' - 2y' + 5y = 0$	[[_2nd_order, _missing_x]]	✓
5938	$y'' - y' + y = 0$	[[_2nd_order, _missing_x]]	✓
5940	$y'' - 4y' + 20y = 0$	[[_2nd_order, _missing_x]]	✓
5945	$y'' = 0$	[[_2nd_order, _quadrature]]	✓
5946	<i>i.c.</i> $y'' + 4y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
5947	<i>i.c.</i> $y'' - 2y' + 5y = 0$	[[_2nd_order, _missing_x]]	✓
5948	<i>i.c.</i> $y'' - 4y' + 20y = 0$	[[_2nd_order, _missing_x]]	✓
5950	$y'' + 3y' + 2y = 4$	[[_2nd_order, _missing_x]]	✓
5951	$y'' + 3y' + 2y = 12e^x$	[[_2nd_order, _with_linear_symmetries]]	✓
5952	$y'' + 3y' + 2y = e^{ix}$	[[_2nd_order, _with_linear_symmetries]]	✓
5953	$y'' + 3y' + 2y = \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
5954	$y'' + 3y' + 2y = \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
5955	$y'' + 3y' + 2y = 8 + 6e^x + 2\sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
5956	$y'' + y' + y = x^2$	[[_2nd_order, __with_linear_symmetries]]	✓
5957	$y'' - 2y' - 8y = 9x e^x + 10e^{-x}$	[[_2nd_order, __linear, __nonhomogeneous]]	✓
5958	$y'' - 3y' = 2e^{2x} \sin(x)$	[[_2nd_order, __missing_y]]	✓
5959	$y'' + y' = x^2 + 2x$	[[_2nd_order, __missing_y]]	✓
5960	$y'' + y' = x + \sin(2x)$	[[_2nd_order, __missing_y]]	✓
5961	$y'' + y = 4x \sin(x)$	[[_2nd_order, __linear, __nonhomogeneous]]	✓
5962	$y'' + 4y = \sin(2x)x$	[[_2nd_order, __linear, __nonhomogeneous]]	✓
5963	$y'' + 2y' + y = x^2 e^{-x}$	[[_2nd_order, __linear, __nonhomogeneous]]	✓
5964	$y'' + 3y' + 2y = e^{-2x} + x^2$	[[_2nd_order, __linear, __nonhomogeneous]]	✓
5965	$y'' - 3y' + 2y = x e^{-x}$	[[_2nd_order, __linear, __nonhomogeneous]]	✓
5966	$y'' + y' - 6y = x + e^{2x}$	[[_2nd_order, __with_linear_symmetries]]	✓
5967	$y'' + y = \sin(x) + e^{-x}$	[[_2nd_order, __linear, __nonhomogeneous]]	✓
5968	$y'' + y = \sin(x)^2$	[[_2nd_order, __linear, __nonhomogeneous]]	✓
5969	$y'' + y = \sin(2x) \sin(x)$	[[_2nd_order, __linear, __nonhomogeneous]]	✓
5970	<i>i.c.</i> $y'' - 5y' - 6y = e^{3x}$	[[_2nd_order, __with_linear_symmetries]]	✓
5971	<i>i.c.</i> $y'' - y' - 2y = 5 \sin(x)$	[[_2nd_order, __linear, __nonhomogeneous]]	✓
5972	<i>i.c.</i> $y'' + 9y = 8 \cos(x)$	[[_2nd_order, __linear, __nonhomogeneous]]	✓
5973	<i>i.c.</i> $y'' - 5y' + 6y = e^x(2x - 3)$	[[_2nd_order, __linear, __nonhomogeneous]]	✓
5974	<i>i.c.</i> $y'' - 3y' + 2y = e^{-x}$	[[_2nd_order, __with_linear_symmetries]]	✓
5975	$y'' + y = \sec(x)$	[[_2nd_order, __linear, __nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
5976	$y'' + y = \cot(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
5977	$y'' + y = \sec(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
5978	$y'' - y = \sin(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
5979	$y'' + y = \sin(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
5980	$y'' + 3y' + 2y = 12e^x$	[[_2nd_order, _with_linear_symmetries]]	✓
5981	$y'' + 2y' + y = x^2e^{-x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
5982	$y'' + y = 4x \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
5983	$y'' + 2y' + y = e^{-x} \ln(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
5984	$y'' + y = \csc(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
5985	$y'' + y = \tan(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
5986	$y'' + 2y' + y = \frac{e^{-x}}{x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
5987	$y'' + y = \sec(x) \csc(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
5988	$y'' - 2y' + y = e^x \ln(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
5989	$y'' - 3y' + 2y = \cos(e^{-x})$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6135	$y'' + y' - 2y = 0$	[[_2nd_order, _missing_x]]	✓
6136	$y'' - 4y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
6137	$y'' + 9y' = 0$	[[_2nd_order, _missing_x]]	✓
6138	$y'' + 2y' + 2y = 0$	[[_2nd_order, _missing_x]]	✓
6139	$y'' - 2y' + 6y = 0$	[[_2nd_order, _missing_x]]	✓
6140	$y'' + 16y = 0$	[[_2nd_order, _missing_x]]	✓
6141	$y'' - 5y' + 6y = 0$	[[_2nd_order, _missing_x]]	✓
6142	$y'' + 5y' = 0$	[[_2nd_order, _missing_x]]	✓

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#	ODE	CAS classification	Solved?
6143	$y'' - 4y' + 13y = 0$	[[_2nd_order, _missing_x]]	✓
6144	$2y'' + y' - y = 0$	[[_2nd_order, _missing_x]]	✓
6145	$y'' + (1 + 2i)y' + (-1 + i)y = 0$	[[_2nd_order, _missing_x]]	✓
6146	$y'' + (1 + 2i)y' + (-1 + i)y = 0$	[[_2nd_order, _missing_x]]	✓
6151	$y'' - 4y' = 10$	[[_2nd_order, _missing_x]]	✓
6152	$y'' - 4y' + 4y = 16$	[[_2nd_order, _missing_x]]	✓
6153	$y'' + y' - 2y = e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓
6154	$y'' - 2y' - 3y = 24e^{-3x}$	[[_2nd_order, _with_linear_symmetries]]	✓
6155	$y'' + y = 2e^x$	[[_2nd_order, _with_linear_symmetries]]	✓
6156	$y'' + 6y' + 9y = 12e^{-x}$	[[_2nd_order, _with_linear_symmetries]]	✓
6157	$y'' - y' - 2y = 3e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓
6158	$y'' - 16y = 40e^{4x}$	[[_2nd_order, _with_linear_symmetries]]	✓
6159	$y'' + 2y' + y = 2e^{-x}$	[[_2nd_order, _with_linear_symmetries]]	✓
6160	$y'' - 6y' + 9y = 6e^{3x}$	[[_2nd_order, _with_linear_symmetries]]	✓
6161	$y'' + 2y' + 10y = 100 \cos(4x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6162	$y'' + 4y' + 12y = 80 \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6163	$y'' - 2y' + y = 2 \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6164	$y'' + 8y' + 25y = 120 \sin(5x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6165	$5y'' + 12y' + 20y = 120 \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6166	$y'' + 9y = 30 \sin(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6167	$y'' + 16y = 16 \cos(4x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
6168	$y'' + 2y' + 17y = 60e^{-4x} \sin(5x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6169	$4y'' + 4y' + 5y = 40e^{-\frac{3x}{2}} \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6170	$y'' + 4y' + 8y = 30e^{-\frac{x}{2}} \cos\left(\frac{5x}{2}\right)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6171	$5y'' + 6y' + 2y = x^2 + 6x$	[[_2nd_order, _with_linear_symmetries]]	✓
6172	$2y'' + y' = 2x$	[[_2nd_order, _missing_y]]	✓
6173	$y'' + y = 2xe^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6174	$y'' - 6y' + 9y = 12xe^{3x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6175	$y'' - 2y' - 3y = 16x^2e^{-x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6176	$y'' + y = 8x \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6177	$y'' + y = x^3 - 1 + 2 \cos(x) + (2 - 4x)e^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6178	$y'' - 5y' + 6y = 2e^x + 6x - 5$	[[_2nd_order, _with_linear_symmetries]]	✓
6179	$y'' - y = \sinh(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6180	$y'' + y = 2 \sin(x) + 4 \cos(x)x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6181	$y'' + 2y' + y = 4e^x + (1 - x)(-1 + e^{2x})$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6182	$y'' - 2y' = 9xe^{-x} - 6x^2 + 4e^{2x}$	[[_2nd_order, _missing_y]]	✓
6211	$r'' - 6r' + 9r = 0$	[[_2nd_order, _missing_x]]	✓
6213	$y'' + 2y' + 2y = 10e^x + 6e^{-x} \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6220	$y'' + 4y' + 5y = 26e^{3x}$	[[_2nd_order, _with_linear_symmetries]]	✓
6221	$y'' + 4y' + 5y = 2e^{-2x} \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6222	$y'' - 4y' + 4y = 6e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
6223	$y'' - 5y' + 6y = e^{2x}$	[[_2nd_order, __with_linear_symmetries]]	✓
6227	$y'' - 2y' + 5y = 5x + 4e^x(1 + \sin(2x))$	[[_2nd_order, __linear, __nonhomogeneous]]	✓
6234	$y'' + y' - 6y = 6$ i.c.	[[_2nd_order, __missing_x]]	✓
6243	$y'' = -4y$	[[_2nd_order, __missing_x]]	✓
6245	$y'' = y$	[[_2nd_order, __missing_x]]	✓
6247	$y'' - 2y' + y = 0$	[[_2nd_order, __missing_x]]	✓
6389	$x'' - \omega^2 x = 0$	[[_2nd_order, __missing_x]]	✓
6391	$x'' + 42x' + x = 0$ i.c.	[[_2nd_order, __missing_x]]	✓
6394	$x'' + 2\gamma x' + \omega_0 x = F \cos(\omega t)$	[[_2nd_order, __linear, __nonhomogeneous]]	✓
6395	$y'' - y' - 2y = e^{2x}$ i.c.	[[_2nd_order, __with_linear_symmetries]]	✓
6396	$y'' - 2y' + y = 2 \cos(x)$ i.c.	[[_2nd_order, __linear, __nonhomogeneous]]	✓
6397	$y'' + 16y = 16 \cos(4x)$ i.c.	[[_2nd_order, __linear, __nonhomogeneous]]	✓
6398	$y'' - y = \cosh(x)$ i.c.	[[_2nd_order, __linear, __nonhomogeneous]]	✓
6480	$y'' - y' - 2y = 8$	[[_2nd_order, __missing_x]]	✓
6481	$y'' - 4y = 10e^{3x}$	[[_2nd_order, __with_linear_symmetries]]	✓
6482	$y'' + 2y' + y = e^{-2x}$	[[_2nd_order, __with_linear_symmetries]]	✓
6483	$y'' + 25y = 5x^2 + x$	[[_2nd_order, __with_linear_symmetries]]	✓
6484	$y'' - 2y' + y = 4 \sin(x)$	[[_2nd_order, __linear, __nonhomogeneous]]	✓
6485	$y'' + 4y' + 5y = 2e^{-2x}$ i.c.	[[_2nd_order, __with_linear_symmetries]]	✓
6486	$3y'' - 2y' - y = 2x - 3$	[[_2nd_order, __with_linear_symmetries]]	✓
6487	$y'' - 6y' + 8y = 8e^{4x}$	[[_2nd_order, __with_linear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
6488	$2y'' - 7y' - 4y = e^{3x}$	[[_2nd_order, __with_linear_symmetries]]	✓
6489	$y'' - 6y' + 9y = 54x + 18$	[[_2nd_order, __with_linear_symmetries]]	✓
6490	$y'' - 5y' + 6y = 100 \sin(4x)$	[[_2nd_order, __linear, __nonhomogeneous]]	✓
6491	$y'' + 2y' + y = 4 \sinh(x)$	[[_2nd_order, __linear, __nonhomogeneous]]	✓
6492	$y'' + y' - 2y = 2 \cosh(2x)$	[[_2nd_order, __linear, __nonhomogeneous]]	✓
6493	$y'' - y' + 10y = 20 - e^{2x}$	[[_2nd_order, __with_linear_symmetries]]	✓
6494	$y'' + 4y' + 4y = 2 \cos(x)^2$	[[_2nd_order, __linear, __nonhomogeneous]]	✓
6495	$y'' - 4y' + 3y = x + e^{2x}$	[[_2nd_order, __with_linear_symmetries]]	✓
6496	$y'' - 2y' + 3y = x^2 - 1$	[[_2nd_order, __with_linear_symmetries]]	✓
6497	$y'' - 9y = e^{3x} + \sin(x)$	[[_2nd_order, __linear, __nonhomogeneous]]	✓
6498	$x'' + 4x' + 3x = e^{-3t}$	[[_2nd_order, __with_linear_symmetries]]	✓
	<i>i.c.</i>		
6499	$y'' + 4y' + 5y = 6 \sin(t)$	[[_2nd_order, __linear, __nonhomogeneous]]	✓
6500	$x'' - 3x' + 2x = \sin(t)$	[[_2nd_order, __linear, __nonhomogeneous]]	✓
	<i>i.c.</i>		
6501	$y'' + 3y' + 2y = 3 \sin(x)$	[[_2nd_order, __linear, __nonhomogeneous]]	✓
	<i>i.c.</i>		
6502	$y'' + 6y' + 10y = 50x$	[[_2nd_order, __with_linear_symmetries]]	✓
6503	$x'' + 2x' + 2x = 85 \sin(3t)$	[[_2nd_order, __linear, __nonhomogeneous]]	✓
	<i>i.c.</i>		
6504	$y'' = 3 \sin(x) - 4y$	[[_2nd_order, __linear, __nonhomogeneous]]	✓
	<i>i.c.</i>		
6505	$\frac{x''}{2} = -48x$	[[_2nd_order, __missing_x]]	✓
	<i>i.c.</i>		
6506	$x'' + 5x' + 6x = \cos(t)$	[[_2nd_order, __linear, __nonhomogeneous]]	✓
	<i>i.c.</i>		

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#	ODE	CAS classification	Solved?
6507	$y'' - y' - 2y = 4x^2$	[[_2nd_order, _with_linear_symmetries]]	✓
6508	$y'' - y' - 2y = e^{3x}$	[[_2nd_order, _with_linear_symmetries]]	✓
6509	$y'' - y' - 2y = \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6510	$y'' - 6y' + 25y = 2 \sin\left(\frac{t}{2}\right) - \cos\left(\frac{t}{2}\right)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6511	$y'' - 6y' + 25y = 64e^{-t}$	[[_2nd_order, _with_linear_symmetries]]	✓
6512	$y'' - 6y' + 25y = 50t^3 - 36t^2 - 63t + 18$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6514	$y'' = 9x^2 + 2x - 1$	[[_2nd_order, _quadrature]]	✓
6515	$y'' - 5y = 2e^{5x}$	[[_2nd_order, _with_linear_symmetries]]	✓
6519	$y'' - 2y' + y = x^2 - 1$	[[_2nd_order, _with_linear_symmetries]]	✓
6520	$y'' - 2y' + y = 4e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓
6521	$y'' - 2y' + y = 4 \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6522	$y'' - 2y' + y = 3e^x$	[[_2nd_order, _with_linear_symmetries]]	✓
6523	$y'' - 2y' + y = xe^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6530	$y'' - 2y' + y = \frac{e^x}{x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6531	$y'' - y' - 2y = e^{3x}$	[[_2nd_order, _with_linear_symmetries]]	✓
6532	$x'' + 4x = \sin(2t)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6536	$y'' - 2y' + y = \frac{e^x}{x^5}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6537	$y'' + y = \sec(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6538	$y'' - y' - 2y = e^{3x}$	[[_2nd_order, _with_linear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
6539	$y'' - 60y' - 900y = 5e^{10x}$	[[_2nd_order, _with_linear_symmetries]]	✓
6540	$y'' - 7y' = -3$	[[_2nd_order, _missing_x]]	✓
6574	$y'' - 2y' + y = 0$	[[_2nd_order, _missing_x]]	✓
6576	$y'' - y = 0$	[[_2nd_order, _missing_x]]	✓
6577	$y'' - y = 4 - x$	[[_2nd_order, _with_linear_symmetries]]	✓
6578	$y'' - 3y' + 2y = 0$	[[_2nd_order, _missing_x]]	✓
6579	$y'' - 3y' + 2y = 2e^x(1 - x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6692	$y'' + y' - 6y = 0$	[[_2nd_order, _missing_x]]	✓
6694	$y'' - 3y' + 2y = e^{5x}$	[[_2nd_order, _with_linear_symmetries]]	✓
6695	$y'' + 9y = \cos(x)x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6702	$y'' + 2y' - 15y = 0$	[[_2nd_order, _missing_x]]	✓
6704	$y'' + 6y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓
6706	$y'' - 4y' + 13y = 0$	[[_2nd_order, _missing_x]]	✓
6707	$y'' + 25y = 0$	[[_2nd_order, _missing_x]]	✓
6712	$y'' - 4y' + 3y = 1$	[[_2nd_order, _missing_x]]	✓
6713	$y'' - 4y' = 5$	[[_2nd_order, _missing_x]]	✓
6717	$y'' - 6y' + 9y = e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓
6718	$y'' + y' - 2y = -2x^2 + 2x + 2$	[[_2nd_order, _with_linear_symmetries]]	✓
6719	$y'' - y = 4xe^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6720	$y'' - y = \sin(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6721	$y'' - y = \frac{1}{(1 + e^{-x})^2}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6722	$y'' + y = \csc(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6723	$y'' - 3y' + 2y = \sin(e^{-x})$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
6724	$y'' + y = \csc(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6725	$y'' + 4y = 4 \sec(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6726	$y'' - 4y' + 3y = \frac{1}{1 + e^{-x}}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6727	$y'' - y = e^{-x} \sin(e^{-x}) + \cos(e^{-x})$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6728	$y'' - y = \frac{1}{(1 + e^{-x})^2}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6729	$y'' + 2y = e^x + 2$	[[_2nd_order, _with_linear_symmetries]]	✓
6730	$y'' - y = e^x \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6731	$y'' + 2y' + 2y = x^2 + \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6732	$y'' - 9y = x + e^{2x} - \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6734	$y'' + y = -2 \sin(x) + 4 \cos(x) x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6736	$y'' + y' + y = e^{3x} + 6e^x - 3e^{-2x} + 5$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6737	$y'' - y = e^x$	[[_2nd_order, _with_linear_symmetries]]	✓
6738	$y'' - 4y' + 4y = e^x + x e^{2x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6741	$y'' + 4y = \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6742	$y'' + 5y = \cos(\sqrt{5}x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6744	$y'' - y = x^2$	[[_2nd_order, _with_linear_symmetries]]	✓
6745	$y'' + 2y = x^3 + x^2 + e^{-2x} + \cos(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6746	$y'' - 2y' - y = e^x \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6747	$y'' - 4y' + 4y = \frac{e^{2x}}{x^2}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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Table 2.30 second order linear constant coeff  
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#	ODE	CAS classification	Solved?
6748	$y'' - y = x e^{3x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6749	$y'' + 5y' + 6y = e^{-2x} \sec(x)^2 (2 \tan(x) + 1)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7154	$y'' + 2y' - y = 0$	[[_2nd_order, _missing_x]]	✓
7193	$y'' - 2y' - 3y = 0$	[[_2nd_order, _missing_x]]	✓
7194	$s'' + 2s' + s = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
7195	$y'' - 2y' + 5y = 0$	[[_2nd_order, _missing_x]]	✓
7196	$y'' - 2y' - 3y = 3x + 1$	[[_2nd_order, _with_linear_symmetries]]	✓
7197	$y'' - 3y' + 2y = x e^{2x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7198	$y'' + y = 4 \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7212	$y'' + 6y' + 9y = 50 e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓
7213	$y'' - 4y' + 4y = 50 e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓
7214	$y'' + 3y' + 2y = \cos(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7216	$y'' + 4y = x^2$	[[_2nd_order, _with_linear_symmetries]]	✓
7217	$y'' - 4y' + 3y = x^3$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7257	$y'' = x + 2$	[[_2nd_order, _quadrature]]	✓
7261	$y'' - y = 0$	[[_2nd_order, _missing_x]]	✓
7262	$y'' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
7263	$y'' + k^2 y = 0$	[[_2nd_order, _missing_x]]	✓
7265	$y'' = 3x + 1$	[[_2nd_order, _quadrature]]	✓
7288	$y'' - 4y = 0$	[[_2nd_order, _missing_x]]	✓
7289	$3y'' + 2y = 0$	[[_2nd_order, _missing_x]]	✓
7290	$y'' + 16y = 0$	[[_2nd_order, _missing_x]]	✓

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Table 2.30 second order linear constant coeff  
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#	ODE	CAS classification	Solved?
7291	$y'' = 0$	[[_2nd_order, _quadrature]]	✓
7292	$y'' + 2iy' + y = 0$	[[_2nd_order, _missing_x]]	✓
7293	$y'' - 4y' + 5y = 0$	[[_2nd_order, _missing_x]]	✓
7294	$y'' + (-1 + 3i)y' - 3iy = 0$	[[_2nd_order, _missing_x]]	✓
7295	$y'' + y' - 6y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
7296	$y'' + y' - 6y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
7297	$y'' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
7298	$y'' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
7299	$y'' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
7300	$y'' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
7301	$y'' - 2y' - 3y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
7302	$y'' + (1 + 4i)y' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
7303	$y'' + (-1 + 3i)y' - 3iy = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
7304	$y'' + 10y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
7305	$y'' + 4y = \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7306	$y'' + 9y = \sin(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7307	$y'' + y = \tan(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7308	$y'' + 2iy' + y = x$	[[_2nd_order, _with_linear_symmetries]]	✓
7309	$y'' - 4y' + 5y = 3e^{-x} + 2x^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7310	$y'' - 7y' + 6y = \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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Table 2.30 second order linear constant coeff  
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#	ODE	CAS classification	Solved?
7311	$y'' + y = 2 \sin(2x) \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7312	$y'' + y = \sec(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7313	$4y'' - y = e^x$	[[_2nd_order, _with_linear_symmetries]]	✓
7314	$6y'' + 5y' - 6y = x$	[[_2nd_order, _with_linear_symmetries]]	✓
7315	$y'' + \omega^2 y = A \cos(\omega x)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7326	$y'' + y = 0$	[[_2nd_order, _missing_x]]	✓
7327	$y'' - y = 0$	[[_2nd_order, _missing_x]]	✓
7333	$y'' - 2iy' - y = 0$	[[_2nd_order, _missing_x]]	✓
7340	$y'' - 2iy' - y = e^{ix} - 2e^{-ix}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7341	$y'' + 4y = \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7342	$y'' + 4y = \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7343	$y'' - 4y = 3e^{2x} + 4e^{-x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7344	$y'' - y' - 2y = x^2 + \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7345	$y'' + 9y = x^2 e^{3x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7346	$y'' + y = x e^x \cos(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7347	$y'' + iy' + 2y = 2 \cosh(2x) + e^{-2x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7435	$y'' + y' = 1$	[[_2nd_order, _missing_x]]	✓
7438	$y'' + k^2 y = 0$	[[_2nd_order, _missing_x]]	✓
7453	$y'' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
7454	$y'' - 4y = 0$	[[_2nd_order, _missing_x]]	✓
7480	$y'' - 5y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
7583	$y'' - k^2 y = 0$	[[_2nd_order, _missing_x]]	✓
7613	$y'' + y' - 6y = 0$	[[_2nd_order, _missing_x]]	✓

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Table 2.30 second order linear constant coeff  
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#	ODE	CAS classification	Solved?
7614	$y'' + 2y' + y = 0$	[[_2nd_order, _missing_x]]	✓
7615	$y'' + 8y = 0$	[[_2nd_order, _missing_x]]	✓
7616	$2y'' - 4y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
7617	$y'' - 4y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
7618	$y'' - 9y' + 20y = 0$	[[_2nd_order, _missing_x]]	✓
7619	$2y'' + 2y' + 3y = 0$	[[_2nd_order, _missing_x]]	✓
7620	$4y'' - 12y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓
7621	$y'' + y = 0$	[[_2nd_order, _missing_x]]	✓
7622	$y'' - 6y' + 25y = 0$	[[_2nd_order, _missing_x]]	✓
7623	$4y'' + 20y' + 25y = 0$	[[_2nd_order, _missing_x]]	✓
7624	$y'' + 2y' + 3y = 0$	[[_2nd_order, _missing_x]]	✓
7625	$y'' = 4y$	[[_2nd_order, _missing_x]]	✓
7626	$4y'' - 8y' + 7y = 0$	[[_2nd_order, _missing_x]]	✓
7627	$2y'' + y' - y = 0$	[[_2nd_order, _missing_x]]	✓
7628	$y'' + 4y' + 5y = 0$	[[_2nd_order, _missing_x]]	✓
7629	$y'' + 4y' + 5y = 0$	[[_2nd_order, _missing_x]]	✓
7630	$y'' + 4y' - 5y = 0$	[[_2nd_order, _missing_x]]	✓
7631	$y'' - 5y' + 6y = 0$	[[_2nd_order, _missing_x]]	✓
	<i>i.c.</i>		
7632	$y'' - 6y' + 5y = 0$	[[_2nd_order, _missing_x]]	✓
	<i>i.c.</i>		
7633	$y'' - 6y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓
	<i>i.c.</i>		
7634	$y'' + 4y' + 5y = 0$	[[_2nd_order, _missing_x]]	✓
	<i>i.c.</i>		
7635	$y'' + 4y' + 2y = 0$	[[_2nd_order, _missing_x]]	✓
	<i>i.c.</i>		
7636	$y'' + 8y' - 9y = 0$	[[_2nd_order, _missing_x]]	✓
	<i>i.c.</i>		
7646	$y'' + 3y' - 10y = 6e^{4x}$	[[_2nd_order, _with_linear_symmetries]]	✓
7647	$y'' + 4y = 3\sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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Table 2.30 second order linear constant coeff  
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#	ODE	CAS classification	Solved?
7648	$y'' + 10y' + 25y = 14e^{-5x}$	[[_2nd_order, _with_linear_symmetries]]	✓
7649	$y'' - 2y' + 5y = 25x^2 + 12$	[[_2nd_order, _with_linear_symmetries]]	✓
7650	$y'' - y' - 6y = 20e^{-2x}$	[[_2nd_order, _with_linear_symmetries]]	✓
7651	$y'' - 3y' + 2y = 14\sin(2x) - 18\cos(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7652	$y'' + y = 2\cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7653	$y'' - 2y' = 12x - 10$	[[_2nd_order, _missing_y]]	✓
7654	$y'' - 2y' + y = 6e^x$	[[_2nd_order, _with_linear_symmetries]]	✓
7655	$y'' - 2y' + 2y = e^x \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7656	$y'' + y' = 10x^4 + 2$	[[_2nd_order, _missing_y]]	✓
7657	$y'' + 4y = 4\cos(2x) + 6\cos(x) + 8x^2 - 4x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7658	$y'' + 9y = 2\sin(3x) + 4\sin(x) - 26e^{-2x} + 27x^3$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7659	$y'' - 3y = e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓
7661	$y'' + 4y = \tan(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7662	$y'' + 2y' + y = e^{-x} \ln(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7663	$y'' - 2y' - 3y = 64xe^{-x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7664	$y'' + 2y' + 5y = e^{-x} \sec(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7665	$2y'' + 3y' + y = e^{-3x}$	[[_2nd_order, _with_linear_symmetries]]	✓
7666	$y'' - 3y' + 2y = \frac{1}{1 + e^{-x}}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7667	$y'' + y = \sec(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7668	$y'' + y = \cot(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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Table 2.30 second order linear constant coeff  
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#	ODE	CAS classification	Solved?
7669	$y'' + y = \cot(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7670	$y'' + y = \cos(x)x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7671	$y'' + y = \tan(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7672	$y'' + y = \sec(x)\tan(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7673	$y'' + y = \sec(x)\csc(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7674	$y'' - 2y' + y = 2x$	[[_2nd_order, _with_linear_symmetries]]	✓
7675	$y'' - y' - 6y = e^{-x}$	[[_2nd_order, _with_linear_symmetries]]	✓
7715	$y'' - 3y' + y = 0$	[[_2nd_order, _missing_x]]	✓
7716	$y'' + y' + y = 0$	[[_2nd_order, _missing_x]]	✓
7717	$y'' + 6y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓
7718	$y'' - y' + 6y = 0$	[[_2nd_order, _missing_x]]	✓
7719	$y'' - 2y' - 5y = x$	[[_2nd_order, _with_linear_symmetries]]	✓
7720	$y'' + y = e^x$	[[_2nd_order, _with_linear_symmetries]]	✓
7721	$y'' + y' + y = \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7722	$y'' - y = e^{3x}$	[[_2nd_order, _with_linear_symmetries]]	✓
7723	$y'' + 9y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
7724	$y'' - y' + 4y = x$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
7725	$y'' + 2y' + 5y = e^x$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
7726	$y'' + 3y' + 4y = \sin(x)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7727	$y'' + y = e^{-x}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
7728	$y'' - y = \cos(x)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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Table 2.30 second order linear constant coeff  
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#	ODE	CAS classification	Solved?
7729	$y'' = \tan(x)$ i.c.	[[_2nd_order, _quadrature]]	✓
7730	$y'' - 2y' = \ln(x)$ i.c.	[[_2nd_order, _missing_y]]	✓
7731	$y'' + 3y' + 2y = 2x - 1$	[[_2nd_order, _with_linear_symmetries]]	✓
7732	$y'' - 3y' + 2y = e^{-x}$	[[_2nd_order, _with_linear_symmetries]]	✓
7733	$y'' - y' - 2y = \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7734	$y'' + 2y' - y = x e^x \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7735	$y'' + 9y = \sec(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7736	$y'' + 4y' + 4y = x \ln(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7738	$y'' + 4y = \tan(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7744	$y'' + 9y = -3 \cos(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7746	$y'' = -3y$ i.c.	[[_2nd_order, _missing_x]]	✓
7895	$y'' + y = 0$	[[_2nd_order, _missing_x]]	✓
7897	$y'' - y = 0$	[[_2nd_order, _missing_x]]	✓
7899	$y'' - y' = 0$	[[_2nd_order, _missing_x]]	✓
7901	$y'' + 2y' = 0$	[[_2nd_order, _missing_x]]	✓
7983	$y'' + y = 0$	[[_2nd_order, _missing_x]]	✓
8176	$y'' + \beta^2 y = 0$	[[_2nd_order, _missing_x]]	✓
8205	$y'' + y = -\cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8206	$y'' - 6y' + 9y = e^x$	[[_2nd_order, _with_linear_symmetries]]	✓
8207	$y'' + 3y' + 2y = 12x^2$	[[_2nd_order, _with_linear_symmetries]]	✓
8208	$y'' + 3y' + 2y = x^2 + 2x + 1$	[[_2nd_order, _with_linear_symmetries]]	✓

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Table 2.30 second order linear constant coeff  
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#	ODE	CAS classification	Solved?
8381	$y'' - y' - 2y = 5e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓
8382	$y'' + 16y = 4 \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8383 i.c.	$y'' - 4y' + 3y = 9x^2 + 4$	[[_2nd_order, _with_linear_symmetries]]	✓
8384	$y'' + y = \tan(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8428	$y'' + 2y' + y = 0$	[[_2nd_order, _missing_x]]	✓
8429 i.c.	$5y'' + 2y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
8430	$y'' + y' + 4y = 1$	[[_2nd_order, _missing_x]]	✓
8431	$y'' + y' + 4y = \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8442	$y'' = 0$	[[_2nd_order, _quadrature]]	✓
8443	$y'' = 1$	[[_2nd_order, _quadrature]]	✓
8444	$y'' = f(t)$	[[_2nd_order, _quadrature]]	✓
8445	$y'' = k$	[[_2nd_order, _quadrature]]	✓
8448	$y'' = 4 \sin(x) - 4$	[[_2nd_order, _quadrature]]	✓
8471	$z'' + 3z' + 2z = 24e^{-3t} - 24e^{-4t}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8476 i.c.	$y'' + y' + y = 0$	[[_2nd_order, _missing_x]]	✓
8477 i.c.	$y'' + y' + y = 0$	[[_2nd_order, _missing_x]]	✓
8478 i.c.	$y'' + y' + y = 0$	[[_2nd_order, _missing_x]]	✓
8535	$y'' + cy' + ky = 0$	[[_2nd_order, _missing_x]]	✓
8537 i.c.	$y'' + y = \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8538 i.c.	$y'' + y = \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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Table 2.30 second order linear constant coeff  
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#	ODE	CAS classification	Solved?
8539	$y'' + y = \sin(x)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8540	$y'' + y = \sin(x)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8541	$y'' + y = \sin(x)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8542	$y'' + y = \sin(x)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8543	$y'' + y = \sin(x)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8544	$y'' + y = \sin(x)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8545	$y'' + y' + y = \sin(x)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8546	$y'' + y' + y = \sin(x)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8547	$y'' + y' + y = \sin(x)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8636	$y'' + 20y' + 500y = 100000 \cos(100x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8653	$y'' + 2y' - 24y = 16 - (x + 2)e^{4x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8748	$y'' = 0$	[[_2nd_order, _quadrature]]	✓
8751	$ay'' = 0$	[[_2nd_order, _quadrature]]	✓
8754	$y'' = 1$	[[_2nd_order, _quadrature]]	✓
8756	$y'' = x$	[[_2nd_order, _quadrature]]	✓
8759	$y'' + y' = 0$	[[_2nd_order, _missing_x]]	✓
8762	$y'' + y' = 1$	[[_2nd_order, _missing_x]]	✓
8765	$y'' + y' = x$	[[_2nd_order, _missing_y]]	✓
8768	$y'' + y' + y = 0$	[[_2nd_order, _missing_x]]	✓
8771	$y'' + y' + y = 1$	[[_2nd_order, _missing_x]]	✓
8772	$y'' + y' + y = x$	[[_2nd_order, _with_linear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
8773	$y'' + y' + y = x + 1$	[[_2nd_order, _with_linear_symmetries]]	✓
8774	$y'' + y' + y = x^2 + x + 1$	[[_2nd_order, _with_linear_symmetries]]	✓
8775	$y'' + y' + y = x^3 + x^2 + x + 1$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8776	$y'' + y' + y = \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8777	$y'' + y' + y = \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8778	$y'' + y' = 1$	[[_2nd_order, _missing_x]]	✓
8779	$y'' + y' = x$	[[_2nd_order, _missing_y]]	✓
8780	$y'' + y' = x + 1$	[[_2nd_order, _missing_y]]	✓
8781	$y'' + y' = x^2 + x + 1$	[[_2nd_order, _missing_y]]	✓
8782	$y'' + y' = x^3 + x^2 + x + 1$	[[_2nd_order, _missing_y]]	✓
8783	$y'' + y' = \sin(x)$	[[_2nd_order, _missing_y]]	✓
8784	$y'' + y' = \cos(x)$	[[_2nd_order, _missing_y]]	✓
8785	$y'' + y = 1$	[[_2nd_order, _missing_x]]	✓
8786	$y'' + y = x$	[[_2nd_order, _with_linear_symmetries]]	✓
8787	$y'' + y = x + 1$	[[_2nd_order, _with_linear_symmetries]]	✓
8788	$y'' + y = x^2 + x + 1$	[[_2nd_order, _with_linear_symmetries]]	✓
8789	$y'' + y = x^3 + x^2 + x + 1$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8790	$y'' + y = \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8791	$y'' + y = \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
10687	$y'' = 0$	[[_2nd_order, _quadrature]]	✓
10688	$y'' + y = 0$	[[_2nd_order, _missing_x]]	✓
10689	$y'' + y - \sin(nx) = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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Table 2.30 second order linear constant coeff  
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#	ODE	CAS classification	Solved?
10690	$y'' + y - \cos(bx) a = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
10691	$y'' + y - \sin(ax) \sin(bx) = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
10692	$y'' - y = 0$	[[_2nd_order, _missing_x]]	✓
10693	$y'' - 2y - 4x^2 e^{x^2} = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
10694	$y'' + a^2 y - \cot(ax) = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
10695	$y'' + ly = 0$	[[_2nd_order, _missing_x]]	✓
10720	$y'' + ay' + by = 0$	[[_2nd_order, _missing_x]]	✓
10721	$y'' + ay' + by - f(x) = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
10749	$y'' + ay' + \tan(x) + by = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12177	$y'' + ay = 0$	[[_2nd_order, _missing_x]]	✓
12187	$y'' + ay' + by = 0$	[[_2nd_order, _missing_x]]	✓
12595	$y'' - 3y' + 2y = 0$	[[_2nd_order, _missing_x]]	✓
12596	$y'' - 6y' + 25y = 0$	[[_2nd_order, _missing_x]]	✓
12606	$y'' + 3y' + 2y = e^{e^x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12608	$y'' - 2y' + y = \frac{e^x}{(1-x)^2}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12609	$y'' - 3y' + 2y = e^x$	[[_2nd_order, _with_linear_symmetries]]	✓
12611	$y'' + y = \sec(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12613	$y'' + y = \sec(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12614	$y'' + y = \tan(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12615	$y'' + 4y = x^2 + \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12616	$y'' - 2y' + y = 2x e^{2x} - \sin(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12617	$y'' + y = 2e^x + x^3 - x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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Table 2.30 second order linear constant coeff  
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#	ODE	CAS classification	Solved?
12618	$y'' + 2y' + y = 3e^{2x} - \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12622	$y'' - 2y' = e^{2x} + 1$	[[_2nd_order, _missing_y]]	✓
12628	$y'' - 5y' + 6y = \cos(x) - e^{2x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12630	$y'' + 2y' + y = 2x^3 - xe^{3x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12635	$y'' + 4y = \sin(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12636	$y'' + 4y = \sec(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12638	$y'' + y = \cos(x)x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12667	$y'' = xe^x$	[[_2nd_order, _quadrature]]	✓
12704	$x'' + 2x' + 2x = 0$	[[_2nd_order, _missing_x]]	✓
12709	$2x'' - 5x' - 3x = 0$	[[_2nd_order, _missing_x]]	✓
12714	$x'' = -3\sqrt{t}$	[[_2nd_order, _quadrature]]	✓
	i.c.		
12772	$x'' + x' = 3t$	[[_2nd_order, _missing_y]]	✓
12788	$x'' - 4x' + 4x = 0$	[[_2nd_order, _missing_x]]	✓
	i.c.		
12789	$x'' - 2x' = 0$	[[_2nd_order, _missing_x]]	✓
	i.c.		
12790	$\frac{x''}{2} + x' + \frac{x}{2} = 0$	[[_2nd_order, _missing_x]]	✓
	i.c.		
12791	$x'' + 4x' + 3x = 0$	[[_2nd_order, _missing_x]]	✓
	i.c.		
12792	$x'' - 4x' + 4x = 0$	[[_2nd_order, _missing_x]]	✓
	i.c.		
12793	$x'' - 2x' = 0$	[[_2nd_order, _missing_x]]	✓
	i.c.		
12794	$\frac{x''}{2} + x' + \frac{x}{2} = 0$	[[_2nd_order, _missing_x]]	✓
	i.c.		
12795	$x'' + 4x' + 3x = 0$	[[_2nd_order, _missing_x]]	✓
	i.c.		

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Table 2.30 second order linear constant coeff  
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#	ODE	CAS classification	Solved?
12796	$x'' + x' + 4x = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
12797	$x'' - 4x' + 6x = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
12798	$x'' + 9x = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
12799	$x'' - 12x = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
12800	$2x'' + 3x' + 3x = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
12801	$\frac{x''}{2} + \frac{5x'}{6} + \frac{2x}{9} = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
12802	$x'' + x' + x = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
12803	$x'' + \frac{x'}{8} + x = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
12804	$x'' + x' + x = 3t^3 - 1$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12805	$x'' + x' + x = 3 \cos(t) - 2 \sin(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12806	$x'' + x' + x = 12$	[[_2nd_order, _missing_x]]	✓
12807	$x'' + x' + x = t^2 e^{3t}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12808	$x'' + x' + x = 5 \sin(7t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12809	$x'' + x' + x = e^{2t} \cos(t) + t^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12810	$x'' + x' + x = t e^{-t} \sin(\pi t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12811	$x'' + x' + x = (t + 2) \sin(\pi t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12812	$x'' + x' + x = 4t + 5 e^{-t}$	[[_2nd_order, _with_linear_symmetries]]	✓
12813	$x'' + x' + x = 5 \sin(2t) + t e^t$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12814	$x'' + x' + x = t^3 + 1 - 4t \cos(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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Table 2.30 second order linear constant coeff  
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#	ODE	CAS classification	Solved?
12815	$x'' + x' + x = -6 + 2e^{2t} \sin(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12816	$x'' + 7x = te^{3t}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12817	$x'' - x' = 6 + e^{2t}$	[[_2nd_order, _missing_y]]	✓
12818	$x'' + x = t^2$	[[_2nd_order, _with_linear_symmetries]]	✓
12819	$x'' - 3x' - 4x = 2t^2$	[[_2nd_order, _with_linear_symmetries]]	✓
12820	$x'' + x = 9e^{-t}$	[[_2nd_order, _with_linear_symmetries]]	✓
12821	$x'' - 4x = \cos(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12822	$x'' + x' + 2x = t \sin(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12823 i.c.	$x'' - bx' + x = \sin(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12824 i.c.	$x'' - 3x' - 40x = 2e^{-t}$	[[_2nd_order, _with_linear_symmetries]]	✓
12825 i.c.	$x'' - 2x' = 4$	[[_2nd_order, _missing_x]]	✓
12826 i.c.	$x'' + 2x = \cos(\sqrt{2}t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12827 i.c.	$x'' + \frac{x'}{100} + 4x = \cos(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12828 i.c.	$x'' + w^2x = \cos(\beta t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12829 i.c.	$x'' + 3025x = \cos(45t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12839	$x'' + x = \tan(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12840	$x'' - x = te^t$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12841	$x'' - x = \frac{1}{t}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12843	$x'' + x = \frac{1}{t+1}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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Table 2.30 second order linear constant coeff  
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#	ODE	CAS classification	Solved?
12844	$x'' - 2x' + x = \frac{e^t}{2t}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12847	$x'' - x = \frac{e^t}{1 + e^t}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12923	$y'' - 7y' + 12y = 0$	[[_2nd_order, _missing_x]]	✓
12924	$y'' - 3y' + 2y = 4x^2$	[[_2nd_order, _with_linear_symmetries]]	✓
12930	$y'' - 2y' - 8y = 0$	[[_2nd_order, _missing_x]]	✓
12935	$y'' - 4y' + 4y = -8 \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12937 i.c.	$y'' + y' - 6y = 0$	[[_2nd_order, _missing_x]]	✓
12940 i.c.	$y'' - y' - 12y = 0$	[[_2nd_order, _missing_x]]	✓
12943 i.c.	$y'' + y = 0$	[[_2nd_order, _missing_x]]	✓
13065 i.c.	$y'' + 5y' + 6y = e^x$	[[_2nd_order, _with_linear_symmetries]]	✓
13066 i.c.	$y'' + 5y' + 6y = e^x$	[[_2nd_order, _with_linear_symmetries]]	✓
13068	$y'' - 4y' + 3y = 0$	[[_2nd_order, _missing_x]]	✓
13069 i.c.	$y'' - 2y' + y = 0$	[[_2nd_order, _missing_x]]	✓
13072	$y'' - 5y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
13081	$y'' - 3y' + 2y = 4x^2$	[[_2nd_order, _with_linear_symmetries]]	✓
13082	$y'' - 5y' + 6y = 2 - 12x + 6e^x$	[[_2nd_order, _with_linear_symmetries]]	✓
13083	$y'' - 5y' + 6y = 0$	[[_2nd_order, _missing_x]]	✓
13084	$y'' - 2y' - 3y = 0$	[[_2nd_order, _missing_x]]	✓
13085	$4y'' - 12y' + 5y = 0$	[[_2nd_order, _missing_x]]	✓
13086	$3y'' - 14y' - 5y = 0$	[[_2nd_order, _missing_x]]	✓
13089	$y'' - 8y' + 16y = 0$	[[_2nd_order, _missing_x]]	✓
13090	$4y'' + 4y' + y = 0$	[[_2nd_order, _missing_x]]	✓
13091	$y'' - 4y' + 13y = 0$	[[_2nd_order, _missing_x]]	✓

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Table 2.30 second order linear constant coeff  
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#	ODE	CAS classification	Solved?
13092	$y'' + 6y' + 25y = 0$	[[_2nd_order, _missing_x]]	✓
13093	$y'' + 9y = 0$	[[_2nd_order, _missing_x]]	✓
13094	$4y'' + y = 0$	[[_2nd_order, _missing_x]]	✓
13107	$y'' - y' - 12y = 0$	[[_2nd_order, _missing_x]]	✓
	<i>i.c.</i>		
13108	$y'' + 7y' + 10y = 0$	[[_2nd_order, _missing_x]]	✓
	<i>i.c.</i>		
13109	$y'' - 6y' + 8y = 0$	[[_2nd_order, _missing_x]]	✓
	<i>i.c.</i>		
13110	$3y'' + 4y' - 4y = 0$	[[_2nd_order, _missing_x]]	✓
	<i>i.c.</i>		
13111	$y'' + 6y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓
	<i>i.c.</i>		
13112	$4y'' - 12y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓
	<i>i.c.</i>		
13113	$y'' + 4y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
	<i>i.c.</i>		
13114	$9y'' - 6y' + y = 0$	[[_2nd_order, _missing_x]]	✓
	<i>i.c.</i>		
13115	$y'' - 4y' + 29y = 0$	[[_2nd_order, _missing_x]]	✓
	<i>i.c.</i>		
13116	$y'' + 6y' + 58y = 0$	[[_2nd_order, _missing_x]]	✓
	<i>i.c.</i>		
13117	$y'' + 6y' + 13y = 0$	[[_2nd_order, _missing_x]]	✓
	<i>i.c.</i>		
13118	$y'' + 2y' + 5y = 0$	[[_2nd_order, _missing_x]]	✓
	<i>i.c.</i>		
13119	$9y'' + 6y' + 5y = 0$	[[_2nd_order, _missing_x]]	✓
	<i>i.c.</i>		
13120	$4y'' + 4y' + 37y = 0$	[[_2nd_order, _missing_x]]	✓
	<i>i.c.</i>		
13127	$y'' - 3y' + 8y = 4x^2$	[[_2nd_order, _with_linear_symmetries]]	✓
13128	$y'' - 2y' - 8y = 4e^{2x} - 21e^{-3x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13129	$y'' + 2y' + 5y = 6\sin(2x) + 7\cos(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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Table 2.30 second order linear constant coeff  
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#	ODE	CAS classification	Solved?
13130	$y'' + 2y' + 2y = 10 \sin(4x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13131	$y'' + 2y' + 4y = \cos(4x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13132	$y'' - 3y' - 4y = 16x - 12e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓
13133	$y'' + 6y' + 5y = 2e^x + 10e^{5x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13134	$y'' + 2y' + 10y = 5xe^{-2x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13139	$y'' + y' - 6y = 10e^{2x} - 18e^{3x} - 6x - 11$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13140	$y'' + y' - 2y = 6e^{-2x} + 3e^x - 4x^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13147	$y'' + y = x \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13148	$y'' + 4y = 12x^2 - 16x \cos(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13151 i.c.	$y'' - 4y' + 3y = 9x^2 + 4$	[[_2nd_order, _with_linear_symmetries]]	✓
13152 i.c.	$y'' + 5y' + 4y = 16x + 20e^x$	[[_2nd_order, _with_linear_symmetries]]	✓
13153 i.c.	$y'' - 8y' + 15y = 9xe^{2x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13154 i.c.	$y'' + 7y' + 10y = 4xe^{-3x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13155 i.c.	$y'' + 8y' + 16y = 8e^{-2x}$	[[_2nd_order, _with_linear_symmetries]]	✓
13156 i.c.	$y'' + 6y' + 9y = 27e^{-6x}$	[[_2nd_order, _with_linear_symmetries]]	✓
13157 i.c.	$y'' + 4y' + 13y = 18e^{-2x}$	[[_2nd_order, _with_linear_symmetries]]	✓
13158 i.c.	$y'' - 10y' + 29y = 8e^{5x}$	[[_2nd_order, _with_linear_symmetries]]	✓
13159 i.c.	$y'' - 4y' + 13y = 8 \sin(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13160 i.c.	$y'' - y' - 6y = 8e^{2x} - 5e^{3x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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Table 2.30 second order linear constant coeff  
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#	ODE	CAS classification	Solved?
13161	$y'' - 2y' + y = 2x e^{2x} + 6e^x$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13162	$y'' - y = 3e^x x^2$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13163	$y'' + y = 3x^2 - 4\sin(x)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13164	$y'' + 4y = 8\sin(2x)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13167	$y'' - 6y' + 8y = x^3 + x + e^{-2x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13168	$y'' + 9y = e^{3x} + e^{-3x} + e^{3x} \sin(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13169	$y'' + 4y' + 5y = e^{-2x}(\cos(x) + 1)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13170	$y'' - 6y' + 9y = x^4 e^x + x^3 e^{2x} + x^2 e^{3x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13171	$y'' + 6y' + 13y = x e^{-3x} \sin(2x) + x^2 e^{-2x} \sin(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13181	$y'' + y = \cot(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13182	$y'' + y = \tan(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13183	$y'' + y = \sec(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13184	$y'' + y = \sec(x)^3$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13185	$y'' + 4y = \sec(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13186	$y'' + y = \sec(x) \tan(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13187	$y'' + 4y' + 5y = e^{-2x} \sec(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13188	$y'' - 2y' + 5y = e^x \tan(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13189	$y'' + 6y' + 9y = \frac{e^{-3x}}{x^3}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13190	$y'' - 2y' + y = x e^x \ln(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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Table 2.30 second order linear constant coeff  
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#	ODE	CAS classification	Solved?
13191	$y'' + y = \sec(x) \csc(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13192	$y'' + y = \tan(x)^3$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13193	$y'' + 3y' + 2y = \frac{1}{1 + e^x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13194	$y'' + 3y' + 2y = \frac{1}{e^{2x} + 1}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13195	$y'' + y = \frac{1}{\sin(x) + 1}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13196	$y'' - 2y' + y = e^x \arcsin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13197	$y'' + 3y' + 2y = \frac{e^{-x}}{x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13198	$y'' - 2y' + y = x \ln(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13354	$y'' + \lambda y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
13355	$y'' + \lambda y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
13356	$y'' + \lambda y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
13357	$y'' + \lambda y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
13426	$x'' - 3x' + 2x = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
13427	$y'' - 4y' + 4y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
13428	$z'' - 4z' + 13z = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
13429	$y'' + y' - 6y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
13430	$y'' - 4y' = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
13431	$\theta'' + 4\theta = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
13432	$y'' + 2y' + 10y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓

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Table 2.30 second order linear constant coeff  
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#	ODE	CAS classification	Solved?
13433	$2z'' + 7z' - 4z = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
13434	$y'' + 2y' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
13435	$x'' + 6x' + 10x = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
13436	$4x'' - 20x' + 21x = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
13437	$y'' + y' - 2y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
13438	$y'' - 4y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
13439	$y'' + 4y' + 4y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
13440	$y'' + \omega^2 y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
13441	$x'' - 4x = t^2$	[[_2nd_order, _with_linear_symmetries]]	✓
13442	$x'' - 4x' = t^2$	[[_2nd_order, _missing_y]]	✓
13443	$x'' + x' - 2x = 3e^{-t}$	[[_2nd_order, _with_linear_symmetries]]	✓
13444	$x'' + x' - 2x = e^t$	[[_2nd_order, _with_linear_symmetries]]	✓
13445	$x'' + 2x' + x = e^{-t}$	[[_2nd_order, _with_linear_symmetries]]	✓
13446	$x'' + \omega^2 x = \sin(\alpha t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13447	$x'' + \omega^2 x = \sin(\omega t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13448	$x'' + 2x' + 10x = e^{-t}$	[[_2nd_order, _with_linear_symmetries]]	✓
13449	$x'' + 2x' + 10x = e^{-t} \cos(3t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13450	$x'' + 6x' + 10x = e^{-2t} \cos(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13451	$x'' + 4x' + 4x = e^{2t}$	[[_2nd_order, _with_linear_symmetries]]	✓
13452	$x'' + x' - 2x = 12e^{-t} - 6e^t$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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Table 2.30 second order linear constant coeff  
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#	ODE	CAS classification	Solved?
13453	$x'' + 4x = 289t e^t \sin(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13454	$x'' + \omega^2 x = \cos(\alpha t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13455	$x'' + \omega^2 x = \cos(\omega t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13466	$y'' - y' - 6y = e^x$	[[_2nd_order, _with_linear_symmetries]]	✓
13467	$x'' - x = \frac{1}{t}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13468	$y'' + 4y = \cot(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13470	$x'' - 4x' = \tan(t)$	[[_2nd_order, _missing_y]]	✓
13482	$ay'' + (b - a)y' + cy = 0$	[[_2nd_order, _missing_x]]	✓
13576	$y'' - 6y' + 10y = 100$ i.c.	[[_2nd_order, _missing_x]]	✓
13577	$x'' + x = \sin(t) - \cos(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13579	$y'' + y = \frac{1}{\sin(x)^3}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13581	$y'' + y = \cosh(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13583	$x'' - 4x' + 4x = e^t + e^{2t} + 1$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13594	$y'' + y = 1 - \frac{1}{\sin(x)}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13598	$x'' + 9x = t \sin(3t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13599	$y'' + 2y' + y = \sinh(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13601	$y'' - 2y' + 2y = x e^x \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13611	$x'' + 10x' + 25x = 2^t + t e^{-5t}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13617	$y'' + y = \sin(3x) \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13649	$y'' = y + x^2$	[[_2nd_order, _with_linear_symmetries]]	✓

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Table 2.30 second order linear constant coeff  
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#	ODE	CAS classification	Solved?
13656	$y'' + 4y' + y = 0$	[[_2nd_order, _missing_x]]	✓
13658	$2y'' - 3y' - 2y = 0$	[[_2nd_order, _missing_x]]	✓
13768	$y'' + 2y' + y = 1$	[[_2nd_order, _missing_x]]	✓
13769	$y'' - 2y' + 5y = e^t$	[[_2nd_order, _with_linear_symmetries]]	✓
13770	$y'' - 3y' - 7y = 4$	[[_2nd_order, _missing_x]]	✓
13772	$3y'' + 5y' - 2y = 3t^2$	[[_2nd_order, _with_linear_symmetries]]	✓
13808	$y'' - 2y' + y = x^{3/2}e^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13809	$y'' + 4y = 2 \sec(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13811	$y'' + y = f(x)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13825	$y'' + \alpha^2 y = 0$	[[_2nd_order, _missing_x]]	✓
13826	$y'' - \alpha^2 y = 0$	[[_2nd_order, _missing_x]]	✓
13827	$y'' + \beta y' + \gamma y = 0$	[[_2nd_order, _missing_x]]	✓
13835	$y'' - 2ky' + k^2 y = e^x$	[[_2nd_order, _with_linear_symmetries]]	✓
13904	$y'' = a^2 y$	[[_2nd_order, _missing_x]]	✓
13913	$y'' = 9y$	[[_2nd_order, _missing_x]]	✓
13914	$y'' + y = 0$	[[_2nd_order, _missing_x]]	✓
13915	$y'' - y = 0$	[[_2nd_order, _missing_x]]	✓
13916	$y'' + 12y = 7y'$	[[_2nd_order, _missing_x]]	✓
13917	$y'' - 4y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
13918	$y'' + 2y' + 10y = 0$	[[_2nd_order, _missing_x]]	✓
13919	$y'' + 3y' - 2y = 0$	[[_2nd_order, _missing_x]]	✓
13920	$4y'' - 12y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓
13921	$y'' + y' + y = 0$	[[_2nd_order, _missing_x]]	✓
13930	$y'' - 7y' + 12y = x$	[[_2nd_order, _with_linear_symmetries]]	✓
13931	$s'' - a^2 s = t + 1$	[[_2nd_order, _with_linear_symmetries]]	✓

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Table 2.30 second order linear constant coeff  
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#	ODE	CAS classification	Solved?
13932	$y'' + y' - 2y = 8 \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13933	$y'' - y = 5x + 2$	[[_2nd_order, _with_linear_symmetries]]	✓
13934	$y'' - 2ay' + a^2y = e^x$	[[_2nd_order, _with_linear_symmetries]]	✓
13935	$y'' + 6y' + 5y = e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓
13936	$y'' + 9y = 6e^{3x}$	[[_2nd_order, _with_linear_symmetries]]	✓
13937	$y'' - 3y' = 2 - 6x$	[[_2nd_order, _missing_y]]	✓
13938	$y'' - 2y' + 3y = e^{-x} \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13939	$y'' + 4y = 2 \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13943 i.c.	$y'' + 2hy' + n^2y = 0$	[[_2nd_order, _missing_x]]	✓
13944 i.c.	$y'' + n^2y = h \sin(rx)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13945	$y'' - 7y' + 6y = \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13946	$y'' + y = \sec(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13947	$y'' + y = \frac{1}{\cos(2x)^{3/2}}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13954	$y'' + y = \sec(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13957	$y'' - 4y = e^{2x} \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13989	$y'' - 3y' + 2y = 0$	[[_2nd_order, _missing_x]]	✓
13999	$y'' - 3y' - 10y = 0$	[[_2nd_order, _missing_x]]	✓
14000	$y'' + 2y' + y = 0$	[[_2nd_order, _missing_x]]	✓
14011	$y'' - y' - 6y = 0$	[[_2nd_order, _missing_x]]	✓
14013	$y'' - y = 0$	[[_2nd_order, _missing_x]]	✓
14016 i.c.	$y'' - y' - 2y = 0$	[[_2nd_order, _missing_x]]	✓

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Table 2.30 second order linear constant coeff  
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#	ODE	CAS classification	Solved?
14017	$y'' - y' - 2y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
14018	$y'' - y' - 2y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
14019	$y'' - y' - 2y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
14156	$3y'' - 2y' + 4y = x$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
14162	$y'' - y = 0$	[[_2nd_order, _missing_x]]	✓
14163	$y'' + y = 0$	[[_2nd_order, _missing_x]]	✓
14166	$y'' - y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
14169	$y'' - 4y = 31$ i.c.	[[_2nd_order, _missing_x]]	✓
14170	$y'' + 9y = 27x + 18$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
14172	$4y'' + 4y' - 3y = 0$	[[_2nd_order, _missing_x]]	✓
14182	$y'' + \alpha y = 0$	[[_2nd_order, _missing_x]]	✓
14538	$y'' - 6y' - 7y = 0$	[[_2nd_order, _missing_x]]	✓
14539	$y'' - y' - 12y = 0$	[[_2nd_order, _missing_x]]	✓
14569	$y'' + 5y' + 6y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
14570	$y'' + 2y' + 5y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
14571	$y'' + 2y' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
14572	$y'' + 2y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
14573	$y'' - y' - 6y = e^{4t}$	[[_2nd_order, _with_linear_symmetries]]	✓
14574	$y'' + 6y' + 8y = 2e^{-3t}$	[[_2nd_order, _with_linear_symmetries]]	✓
14575	$y'' - y' - 2y = 5e^{3t}$	[[_2nd_order, _with_linear_symmetries]]	✓
14576	$y'' + 4y' + 13y = e^{-t}$	[[_2nd_order, _with_linear_symmetries]]	✓

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Table 2.30 second order linear constant coeff  
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#	ODE	CAS classification	Solved?
14577	$y'' + 4y' + 13y = -3e^{-2t}$	[[_2nd_order, _with_linear_symmetries]]	✓
14578	$y'' + 7y' + 10y = e^{-2t}$	[[_2nd_order, _with_linear_symmetries]]	✓
14579	$y'' - 5y' + 4y = e^{4t}$	[[_2nd_order, _with_linear_symmetries]]	✓
14580	$y'' + y' - 6y = 4e^{-3t}$	[[_2nd_order, _with_linear_symmetries]]	✓
14581	$y'' + 6y' + 8y = e^{-t}$	[[_2nd_order, _with_linear_symmetries]]	✓
14582	$y'' + 7y' + 12y = 3e^{-t}$	[[_2nd_order, _with_linear_symmetries]]	✓
14583	$y'' + 4y' + 13y = -3e^{-2t}$	[[_2nd_order, _with_linear_symmetries]]	✓
14584	$y'' + 7y' + 10y = e^{-2t}$	[[_2nd_order, _with_linear_symmetries]]	✓
14585	$y'' + 4y' + 3y = e^{-\frac{t}{2}}$	[[_2nd_order, _with_linear_symmetries]]	✓
14586	$y'' + 4y' + 3y = e^{-2t}$	[[_2nd_order, _with_linear_symmetries]]	✓
14587	$y'' + 4y' + 3y = e^{-4t}$	[[_2nd_order, _with_linear_symmetries]]	✓
14588	$y'' + 4y' + 20y = e^{-\frac{t}{2}}$	[[_2nd_order, _with_linear_symmetries]]	✓
14589	$y'' + 4y' + 20y = e^{-2t}$	[[_2nd_order, _with_linear_symmetries]]	✓
14590	$y'' + 4y' + 20y = e^{-4t}$	[[_2nd_order, _with_linear_symmetries]]	✓
14591	$y'' + 2y' + y = e^{-t}$	[[_2nd_order, _with_linear_symmetries]]	✓
14592	$y'' - 5y' + 4y = 5$	[[_2nd_order, _missing_x]]	✓
14593	$y'' + 5y' + 6y = 2$	[[_2nd_order, _missing_x]]	✓
14594	$y'' + 2y' + 10y = 10$	[[_2nd_order, _missing_x]]	✓
14595	$y'' + 4y' + 6y = -8$	[[_2nd_order, _missing_x]]	✓

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Table 2.30 second order linear constant coeff  
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#	ODE	CAS classification	Solved?
14596	$y'' + 9y = e^{-t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
14597	$y'' + 4y = 2e^{-2t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
14598	$y'' + 2y = -3$ i.c.	[[_2nd_order, _missing_x]]	✓
14599	$y'' + 4y = e^t$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
14600	$y'' + 9y = 6$ i.c.	[[_2nd_order, _missing_x]]	✓
14601	$y'' + 2y = -e^t$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
14602	$y'' + 4y = -3t^2 + 2t + 3$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
14603	$y'' + 2y' = 3t + 2$ i.c.	[[_2nd_order, _missing_y]]	✓
14604	$y'' + 4y' = 3t + 2$ i.c.	[[_2nd_order, _missing_y]]	✓
14605	$y'' + 3y' + 2y = t^2$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
14606	$y'' + 4y = t - \frac{1}{20}t^2$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
14607	$y'' + 5y' + 6y = 4 + e^{-t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
14608	$y'' + 3y' + 2y = e^{-t} - 4$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
14609	$y'' + 6y' + 8y = 2t + e^{-t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
14610	$y'' + 6y' + 8y = 2t + e^t$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
14611	$y'' + 4y = t + e^{-t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
14612	$y'' + 4y = 6 + t^2 + e^t$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
14613	$y'' + 3y' + 2y = \cos(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
14614	$y'' + 3y' + 2y = 5 \cos(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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Table 2.30 second order linear constant coeff  
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#	ODE	CAS classification	Solved?
14615	$y'' + 3y' + 2y = \sin(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
14616	$y'' + 3y' + 2y = 2 \sin(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
14617	$y'' + 6y' + 8y = \cos(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
14618	$y'' + 6y' + 8y = -4 \cos(3t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
14619	$y'' + 4y' + 13y = 3 \cos(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
14620	$y'' + 4y' + 20y = -\cos(5t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
14621	$y'' + 4y' + 20y = -3 \sin(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
14622	$y'' + 2y' + y = \cos(3t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
14623	<i>i.c.</i> $y'' + 6y' + 8y = \cos(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
14624	<i>i.c.</i> $y'' + 6y' + 8y = 2 \cos(3t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
14625	<i>i.c.</i> $y'' + 6y' + 20y = -3 \sin(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
14626	<i>i.c.</i> $y'' + 2y' + y = 2 \cos(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
14627	$y'' + 3y' + y = \cos(3t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
14628	$y'' + 4y' + 20y = 3 + 2 \cos(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
14629	$y'' + 4y' + 20y = e^{-t} \cos(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
14630	$y'' + 9y = \cos(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
14631	$y'' + 9y = 5 \sin(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
14632	$y'' + 4y = -\cos\left(\frac{t}{2}\right)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
14633	$y'' + 4y = 3 \cos(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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Table 2.30 second order linear constant coeff  
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#	ODE	CAS classification	Solved?
14634	$y'' + 9y = 2 \cos(3t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
14660	$y'' = \frac{x+1}{x-1}$	[[_2nd_order, _quadrature]]	✓
14663	$y'' + 3y' + 8y = e^{-x^2}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
14674	$y'' = \sin(2x)$	[[_2nd_order, _quadrature]]	✓
14675	$y'' - 3 = x$	[[_2nd_order, _quadrature]]	✓
14887	$y'' = y'$	[[_2nd_order, _missing_x]]	✓
14888	$y'' + 2y' = 8e^{2x}$	[[_2nd_order, _missing_y]]	✓
14897	$y'' = 2y' - 6$	[[_2nd_order, _missing_x]]	✓
14899	$y'' + 4y' = 9e^{-3x}$	[[_2nd_order, _missing_y]]	✓
14907	$y'' = y'$	[[_2nd_order, _missing_x]]	✓
14917	$y'' + 4y' = 9e^{-3x}$	[[_2nd_order, _missing_y]]	✓
14921	$y'' = y'$	[[_2nd_order, _missing_x]]	✓
14922	$y'' + 2y' = 8e^{2x}$	[[_2nd_order, _missing_y]]	✓
14945	$y'' = 2y' - 5y + 30e^{3x}$	[[_2nd_order, _with_linear_symmetries]]	✓
14972	$y'' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
14973	$y'' - 4y = 0$	[[_2nd_order, _missing_x]]	✓
14974	$y'' + y' - 6y = 0$	[[_2nd_order, _missing_x]]	✓
14975	$y'' - 4y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
14985	$y'' - 4y = 0$	[[_2nd_order, _missing_x]]	✓
14986	$y'' + 2y' - 3y = 0$	[[_2nd_order, _missing_x]]	✓
14987	$y'' - 10y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓

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Table 2.30 second order linear constant coeff  
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#	ODE	CAS classification	Solved?
14988	$y'' + 5y' = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
14991	$y'' - 7y' + 10y = 0$	[[_2nd_order, _missing_x]]	✓
14992	$y'' + 2y' - 24y = 0$	[[_2nd_order, _missing_x]]	✓
14993	$y'' - 25y = 0$	[[_2nd_order, _missing_x]]	✓
14994	$y'' + 3y' = 0$	[[_2nd_order, _missing_x]]	✓
14995	$4y'' - y = 0$	[[_2nd_order, _missing_x]]	✓
14996	$3y'' + 7y' - 6y = 0$	[[_2nd_order, _missing_x]]	✓
14997	$y'' - 8y' + 15y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
14998	$y'' - 8y' + 15y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
14999	$y'' - 8y' + 15y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
15000	$y'' - 9y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
15001	$y'' - 9y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
15002	$y'' - 9y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
15003	$y'' - 10y' + 25y = 0$	[[_2nd_order, _missing_x]]	✓
15004	$y'' + 2y' + y = 0$	[[_2nd_order, _missing_x]]	✓
15005	$4y'' - 4y' + y = 0$	[[_2nd_order, _missing_x]]	✓
15006	$25y'' - 10y' + y = 0$	[[_2nd_order, _missing_x]]	✓
15007	$16y'' - 24y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓
15008	$9y'' + 12y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
15009	$y'' - 8y' + 16y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
15010	$y'' - 8y' + 16y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
15011	$y'' - 8y' + 16y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
15012	$4y'' + 4y' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
15013	$4y'' + 4y' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓

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Table 2.30 second order linear constant coeff  
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#	ODE	CAS classification	Solved?
15014	$4y'' + 4y' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
15015	$y'' + 25y = 0$	[[_2nd_order, _missing_x]]	✓
15016	$y'' + 2y' + 5y = 0$	[[_2nd_order, _missing_x]]	✓
15017	$y'' - 2y' + 5y = 0$	[[_2nd_order, _missing_x]]	✓
15018	$y'' - 4y' + 29y = 0$	[[_2nd_order, _missing_x]]	✓
15019	$9y'' + 18y' + 10y = 0$	[[_2nd_order, _missing_x]]	✓
15020	$4y'' + y = 0$	[[_2nd_order, _missing_x]]	✓
15021	$y'' + 16y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
15022	$y'' + 16y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
15023	$y'' + 16y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
15024	$y'' - 4y' + 13y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
15025	$y'' - 4y' + 13y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
15026	$y'' - 4y' + 13y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
15027	$y'' - y' + \left(\frac{1}{4} + 4\pi^2\right)y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
15028	$y'' - y' + \left(\frac{1}{4} + 4\pi^2\right)y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
15087	$y'' + 4y = 24e^{2x}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
15088	$y'' + 4y = 24e^{2x}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
15089	$y'' + 2y' - 8y = 8x^2 - 3$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
15090	$y'' + 2y' - 8y = 8x^2 - 3$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
15091	$y'' - 9y = 36$ i.c.	[[_2nd_order, _missing_x]]	✓
15092	$y'' - 3y' - 10y = -6e^{4x}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓

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Table 2.30 second order linear constant coeff  
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#	ODE	CAS classification	Solved?
15093	$y'' - 3y' - 10y = 7e^{5x}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
15094	$y'' + 6y' + 9y = 169 \sin(2x)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15097	$y'' - 3y' - 10y = e^{4x}$	[[_2nd_order, _with_linear_symmetries]]	✓
15098	$y'' - 3y' - 10y = e^{5x}$	[[_2nd_order, _with_linear_symmetries]]	✓
15099	$y'' - 3y' - 10y = -18e^{4x} + 14e^{5x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15100	$y'' - 3y' - 10y = 35e^{5x} + 12e^{4x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15108	$y'' + 9y = 52e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓
15109	$y'' - 6y' + 9y = 27e^{6x}$	[[_2nd_order, _with_linear_symmetries]]	✓
15110	$y'' + 4y' - 5y = 30e^{-4x}$	[[_2nd_order, _with_linear_symmetries]]	✓
15111	$y'' + 3y' = e^{\frac{x}{2}}$	[[_2nd_order, _missing_y]]	✓
15112	$y'' - 3y' - 10y = -5e^{3x}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
15113	$y'' + 9y = 10 \cos(2x) + 15 \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15114	$y'' - 6y' + 9y = 25 \sin(6x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15115	$y'' + 3y' = 26 \cos\left(\frac{x}{3}\right) - 12 \sin\left(\frac{x}{3}\right)$	[[_2nd_order, _missing_y]]	✓
15116	$y'' + 4y' - 5y = \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15117	$y'' - 3y' - 10y = -4 \cos(x) + 7 \sin(x)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15118	$y'' - 3y' - 10y = -200$	[[_2nd_order, _missing_x]]	✓
15119	$y'' + 4y' - 5y = x^3$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15120	$y'' - 6y' + 9y = 18x^2 + 3x + 4$	[[_2nd_order, _with_linear_symmetries]]	✓
15121	$y'' + 9y = 9x^4 - 9$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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Table 2.30 second order linear constant coeff  
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#	ODE	CAS classification	Solved?
15122	$y'' + 9y = x^3$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15123	$y'' + 9y = 25x \cos(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15124	$y'' - 6y' + 9y = e^{2x} \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15125	$y'' + 9y = 54x^2 e^{3x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15126	$y'' = 6x e^x \sin(x)$	[[_2nd_order, _quadrature]]	✓
15127	$y'' - 2y' + y = (-6x - 8) \cos(2x) + (8x - 11) \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15128	$y'' - 2y' + y = (12x - 4) e^{-5x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15129	$y'' + 9y = 39x e^{2x}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15130	$y'' - 3y' - 10y = -3 e^{-2x}$	[[_2nd_order, _with_linear_symmetries]]	✓
15131	$y'' + 4y' = 20$	[[_2nd_order, _missing_x]]	✓
15132	$y'' + 4y' = x^2$	[[_2nd_order, _missing_y]]	✓
15133	$y'' + 9y = 3 \sin(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15134	$y'' - 6y' + 9y = 10 e^{3x}$	[[_2nd_order, _with_linear_symmetries]]	✓
15135	$y'' - 3y' - 10y = (72x^2 - 1) e^{2x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15136	$y'' - 3y' - 10y = 4x e^{6x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15137	$y'' - 10y' + 25y = 6 e^{5x}$	[[_2nd_order, _with_linear_symmetries]]	✓
15138	$y'' - 10y' + 25y = 6 e^{-5x}$	[[_2nd_order, _with_linear_symmetries]]	✓
15139	$y'' + 4y' + 5y = 24 \sin(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15140	$y'' + 4y' + 5y = 8 e^{-3x}$	[[_2nd_order, _with_linear_symmetries]]	✓
15141	$y'' - 4y' + 5y = e^{2x} \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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Table 2.30 second order linear constant coeff  
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#	ODE	CAS classification	Solved?
15142	$y'' - 4y' + 5y = e^{-x} \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15143	$y'' - 4y' + 5y = 100$	[[_2nd_order, _missing_x]]	✓
15144	$y'' - 4y' + 5y = e^{-x}$	[[_2nd_order, _with_linear_symmetries]]	✓
15145	$y'' - 4y' + 5y = 10x^2 + 4x + 8$	[[_2nd_order, _with_linear_symmetries]]	✓
15146	$y'' + 9y = e^{2x} \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15147	$y'' + y = 6 \cos(x) - 3 \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15148	$y'' + y = 6 \cos(2x) - 3 \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15149	$y'' - 4y' + 5y = x^3 e^{-x} \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15150	$y'' - 4y' + 5y = x^3 e^{2x} \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15151	$y'' - 5y' + 6y = x^2 e^{-7x} + 2 e^{-7x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15152	$y'' - 5y' + 6y = x^2$	[[_2nd_order, _with_linear_symmetries]]	✓
15153	$y'' - 5y' + 6y = 4 e^{-8x}$	[[_2nd_order, _with_linear_symmetries]]	✓
15154	$y'' - 5y' + 6y = 4 e^{3x}$	[[_2nd_order, _with_linear_symmetries]]	✓
15155	$y'' - 5y' + 6y = x^2 e^{3x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15156	$y'' - 5y' + 6y = x^2 \cos(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15157	$y'' - 5y' + 6y = x^2 e^{3x} \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15158	$y'' - 4y' + 20y = e^{4x} \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15159	$y'' - 4y' + 20y = e^{2x} \sin(4x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15160	$y'' - 4y' + 20y = x^3 \sin(4x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15161	$y'' - 10y' + 25y = 3x^2 e^{5x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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Table 2.30 second order linear constant coeff  
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#	ODE	CAS classification	Solved?
15162	$y'' - 10y' + 25y = 3x^4$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15177	$y'' - 6y' + 9y = 27e^{6x} + 25\sin(6x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15178	$y'' + 9y = 25x\cos(2x) + 3\sin(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15179	$y'' - 4y' + 5y = 5\sin(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15180	$y'' - 4y' + 5y = 20\sinh(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15190	$y'' + y = \cot(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15191	$y'' + 4y = \csc(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15192	$y'' - 7y' + 10y = 6e^{3x}$	[[_2nd_order, _with_linear_symmetries]]	✓
15193	$y'' - 4y' + 4y = (24x^2 + 2)e^{2x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15194	$y'' + 4y' + 4y = \frac{e^{-2x}}{x^2 + 1}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15204	$y'' - y' - 6y = 12e^{2x}$ <i>i.c.</i>	[[_2nd_order, _with_linear_symmetries]]	✓
15211	$y'' + 36y = 0$	[[_2nd_order, _missing_x]]	✓
15212	$y'' - 12y' + 36y = 0$	[[_2nd_order, _missing_x]]	✓
15214	$y'' - 36y = 0$	[[_2nd_order, _missing_x]]	✓
15215	$y'' - 9y' + 14y = 0$	[[_2nd_order, _missing_x]]	✓
15219	$y'' + 6y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓
15220	$y'' + 3y = 0$	[[_2nd_order, _missing_x]]	✓
15225	$y'' - 6y' + 25y = 0$	[[_2nd_order, _missing_x]]	✓
15228	$y'' - 8y' + 25y = 0$	[[_2nd_order, _missing_x]]	✓
15230	$y'' + y' - 30y = 0$	[[_2nd_order, _missing_x]]	✓
15231	$16y'' - 8y' + y = 0$	[[_2nd_order, _missing_x]]	✓
15237	$2y'' - 7y' + 3 = 0$	[[_2nd_order, _missing_x]]	✓
15238	$y'' + 20y' + 100y = 0$	[[_2nd_order, _missing_x]]	✓
15240	$y'' - 5y' = 0$	[[_2nd_order, _missing_x]]	✓

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Table 2.30 second order linear constant coeff  
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#	ODE	CAS classification	Solved?
15241	$y'' - 9y' + 14y = 98x^2$	[[_2nd_order, _with_linear_symmetries]]	✓
15242	$y'' - 12y' + 36y = 25 \sin(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15243	$y'' - 9y' + 14y = 576x^2e^{-x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15244	$y'' - 12y' + 36y = 81e^{3x}$	[[_2nd_order, _with_linear_symmetries]]	✓
15246	$y'' - 12y' + 36y = 3xe^{6x} - 2e^{6x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15247	$y'' + 36y = 6 \sec(6x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15249	$y'' + 6y' + 9y = 10e^{-3x}$	[[_2nd_order, _with_linear_symmetries]]	✓
15251	$y'' + 6y' + 9y = 2 \cos(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15255	$4y'' - 12y' + 9y = xe^{\frac{3x}{2}}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15256	$3y'' + 8y' - 3y = 123x \sin(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15457	$y'' + y' - 2y = x^3$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15469	$y'' - y' - 12y = 0$	[[_2nd_order, _missing_x]]	✓
15470	$y'' + 9y' = 0$	[[_2nd_order, _missing_x]]	✓
15471	$x'' + 2x' - 10x = 0$	[[_2nd_order, _missing_x]]	✓
15472	$x'' + x = t \cos(t) - \cos(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15473	$y'' - 12y' + 40y = 0$	[[_2nd_order, _missing_x]]	✓
15498	$y'' - y' - 12y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
15499	$y'' + 9y' = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
15511	$16y'' + 24y' + 153y = 0$	[[_2nd_order, _missing_x]]	✓
15520	$y'' + 4y' - 5y = 0$	[[_2nd_order, _missing_x]]	✓
15521	$y'' - 6y' + 45y = 0$	[[_2nd_order, _missing_x]]	✓
15524	$y'' + 2y' + 2y = x$	[[_2nd_order, _with_linear_symmetries]]	✓

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Table 2.30 second order linear constant coeff  
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#	ODE	CAS classification	Solved?
15525	$y'' - 7y' + 12y = 2$	[[_2nd_order, _missing_x]]	✓
15533	$y'' + 4y = t$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
15853	$y'' - y = 0$	[[_2nd_order, _missing_x]]	✓
15854	$y'' + 2y' + y = 0$	[[_2nd_order, _missing_x]]	✓
15856	$y'' + 9y = 0$	[[_2nd_order, _missing_x]]	✓
15857	$y'' - y' - 2y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
15858	$y'' + 9y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
15861	$y'' + y = 2 \cos(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15862	$y'' + 10y' + 24y = 0$	[[_2nd_order, _missing_x]]	✓
15863	$y'' + 16y = 0$	[[_2nd_order, _missing_x]]	✓
15864	$y'' + 6y' + 18y = 0$	[[_2nd_order, _missing_x]]	✓
15876	$ay'' + by' + cy = 0$	[[_2nd_order, _missing_x]]	✓
15882	$y'' = 0$	[[_2nd_order, _quadrature]]	✓
15883	$y'' - 4y' - 12y = 0$	[[_2nd_order, _missing_x]]	✓
15884	$y'' + y' = 0$	[[_2nd_order, _missing_x]]	✓
15885	$y'' + 3y' - 4y = 0$	[[_2nd_order, _missing_x]]	✓
15886	$y'' + 8y' + 12y = 0$	[[_2nd_order, _missing_x]]	✓
15887	$y'' + 5y' + y = 0$	[[_2nd_order, _missing_x]]	✓
15888	$8y'' + 6y' + y = 0$	[[_2nd_order, _missing_x]]	✓
15889	$4y'' + 9y = 0$	[[_2nd_order, _missing_x]]	✓
15890	$y'' + 16y = 0$	[[_2nd_order, _missing_x]]	✓
15891	$y'' + 8y = 0$	[[_2nd_order, _missing_x]]	✓
15892	$y'' + 7y = 0$	[[_2nd_order, _missing_x]]	✓
15893	$4y'' + 21y' + 5y = 0$	[[_2nd_order, _missing_x]]	✓
15894	$7y'' + 4y' - 3y = 0$	[[_2nd_order, _missing_x]]	✓
15895	$4y'' + 4y' + y = 0$	[[_2nd_order, _missing_x]]	✓
15896	$y'' - 6y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓

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Table 2.30 second order linear constant coeff  
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#	ODE	CAS classification	Solved?
15897	$y'' - y' = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
15898	$3y'' - y' = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
15899	$y'' + y' - 12y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
15900	$y'' - 7y' + 12y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
15901	$2y'' - 7y' - 4y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
15902	$y'' - 7y' + 10y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
15903	$y'' + 36y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
15904	$y'' + 100y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
15905	$y'' - 2y' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
15906	$y'' + 4y' + 4y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
15907	$y'' + 2y' + 5y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
15908	$y'' + 4y' + 20y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
15909	$y'' + y' - y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
15910	$y'' + y' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
15911	$y'' - y' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
15912	$y'' - y' - y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
15913	$6y'' + 5y' + y = 0$	[[_2nd_order, _missing_x]]	✓
15914	$9y'' + 6y' + y = 0$	[[_2nd_order, _missing_x]]	✓
15915	$y'' + 4y' + 20y = 0$	[[_2nd_order, _missing_x]]	✓
15918	$ay'' + 2by' + cy = 0$	[[_2nd_order, _missing_x]]	✓
15919	$y'' + 6y' + 2y = 0$	[[_2nd_order, _missing_x]]	✓
15920	$y'' - 5y' + 6y = 0$	[[_2nd_order, _missing_x]]	✓

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#	ODE	CAS classification	Solved?
15921	$y'' - 6y' - 16y = 0$	[[_2nd_order, _missing_x]]	✓
15922	$y'' - 16y = 0$	[[_2nd_order, _missing_x]]	✓
15923	$y'' + 2y' + 5y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
15926	$y'' + 4y' + 3y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
15927	$y'' + y = 8e^{2t}$	[[_2nd_order, _with_linear_symmetries]]	✓
15928	$y'' - 4y' + 3y = -e^{-9t}$	[[_2nd_order, _with_linear_symmetries]]	✓
15929	$y'' - 4y' + 3y = 2e^{3t}$	[[_2nd_order, _with_linear_symmetries]]	✓
15930	$y'' - y = 2t - 4$	[[_2nd_order, _with_linear_symmetries]]	✓
15931	$y'' - 2y' + y = t^2$	[[_2nd_order, _with_linear_symmetries]]	✓
15932	$y'' + 2y' = 3 - 4t$	[[_2nd_order, _missing_y]]	✓
15933	$y'' + y = \cos(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15934	$y'' + 4y = 4\cos(t) - \sin(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15935	$y'' + 4y = \cos(2t) + t$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15936	$y'' + 4y = 3te^{-t}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15937	$y'' = 3t^4 - 2t$	[[_2nd_order, _quadrature]]	✓
15938	$y'' - 4y' + 13y = 2te^{-2t}\sin(3t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15939	$y'' + y' - 2y = -1$	[[_2nd_order, _missing_x]]	✓
15940	$5y'' + y' - 4y = -3$	[[_2nd_order, _missing_x]]	✓
15941	$y'' - 2y' - 8y = 32t$	[[_2nd_order, _with_linear_symmetries]]	✓
15942	$16y'' - 8y' - 15y = 75t$	[[_2nd_order, _with_linear_symmetries]]	✓
15943	$y'' + 2y' + 26y = -338t$	[[_2nd_order, _with_linear_symmetries]]	✓

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Table 2.30 second order linear constant coeff  
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#	ODE	CAS classification	Solved?
15944	$y'' + 3y' - 4y = -32t^2$	[[_2nd_order, _with_linear_symmetries]]	✓
15945	$8y'' + 6y' + y = 5t^2$	[[_2nd_order, _with_linear_symmetries]]	✓
15946	$y'' - 6y' + 8y = -256t^3$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15947	$y'' - 2y' = 52 \sin(3t)$	[[_2nd_order, _missing_y]]	✓
15948	$y'' - 6y' + 13y = 25 \sin(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15949	$y'' - 9y = 54t \sin(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15950	$y'' - 5y' + 6y = -78 \cos(3t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15951	$y'' + 4y' + 4y = -32t^2 \cos(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15952	$y'' - y' - 20y = -2e^t$	[[_2nd_order, _with_linear_symmetries]]	✓
15953	$y'' - 4y' - 5y = -648t^2 e^{5t}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15954	$y'' - 7y' + 12y = -2t^3 e^{4t}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15955	$y'' + 4y' = 8e^{4t} - 4e^{-4t}$	[[_2nd_order, _missing_y]]	✓
15956	$y'' - 3y' = t^2 - e^{3t}$	[[_2nd_order, _missing_y]]	✓
15957	$y'' + 4y' = -24t - 6 - 4te^{-4t} + e^{-4t}$	[[_2nd_order, _missing_y]]	✓
15958	$y'' - 3y' = t^2 - e^{3t}$	[[_2nd_order, _missing_y]]	✓
15959	$y'' = t^2 + e^t + \sin(t)$	[[_2nd_order, _quadrature]]	✓
15960	$y'' + 3y' = 18$ i.c.	[[_2nd_order, _missing_x]]	✓
15961	$y'' - y = 4$ i.c.	[[_2nd_order, _missing_x]]	✓
15962	$y'' - 4y = 32t$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
15963	$y'' + 2y' - 3y = -2$ i.c.	[[_2nd_order, _missing_x]]	✓
15964	$y'' + y' - 6y = 3t$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
15965	$y'' + 8y' + 16y = 4$ i.c.	[[_2nd_order, _missing_x]]	✓
15966	$y'' + 7y' + 10y = te^{-t}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15967	$y'' + 6y' + 25y = -1$ i.c.	[[_2nd_order, _missing_x]]	✓
15968	$y'' - 3y' = -e^{3t} - 2t$ i.c.	[[_2nd_order, _missing_y]]	✓
15969	$y'' - y' = -3t - 4t^2e^{2t}$ i.c.	[[_2nd_order, _missing_y]]	✓
15970	$y'' - 2y' = 2t^2$ i.c.	[[_2nd_order, _missing_y]]	✓
15971	$y'' + 4y' = -24t - 6 - 4te^{-4t} + e^{-4t}$ i.c.	[[_2nd_order, _missing_y]]	✓
15972	$y'' - 3y' = e^{-3t} - e^{3t}$ i.c.	[[_2nd_order, _missing_y]]	✓
15973	$y'' + 9y = \begin{cases} 2t & 0 \leq t < \pi \\ 0 & \pi \leq t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15974	$y'' + 9\pi^2y = \begin{cases} 2t & 0 \leq t < \pi \\ 2t - 2\pi & \pi \leq t < 2\pi \\ 0 & 2\pi \leq t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15975	$y'' + 4y = \begin{cases} 0 & 0 \leq t < \pi \\ 10 & \pi \leq t < 2\pi \\ 0 & 2\pi \leq t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15981	$y'' + y' - 2y = f(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15982	$x'' + 9x = \sin(3t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15983	$4y'' + 4y' + 37y = \cos(3t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15984	$y'' + 4y = 1$	[[_2nd_order, _missing_x]]	✓
15985	$y'' + 16y' = t$	[[_2nd_order, _missing_y]]	✓
15986	$y'' - 7y' + 10y = e^{3t}$	[[_2nd_order, _with_linear_symmetries]]	✓
15987	$y'' + 16y = 2\cos(4t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
15988	$y'' + 4y' + 20y = 2t e^{-2t}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15989	$y'' + \frac{y}{4} = \sec\left(\frac{t}{2}\right) + \csc\left(\frac{t}{2}\right)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15990	$y'' + 16y = \csc(4t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15991	$y'' + 16y = \cot(4t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15992	$y'' + 2y' + 50y = e^{-t} \csc(7t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15993	$y'' + 6y' + 25y = e^{-3t}(\sec(4t) + \csc(4t))$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15994	$y'' - 2y' + 26y = e^t(\sec(5t) + \csc(5t))$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15995	$y'' + 12y' + 37y = e^{-6t} \csc(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15996	$y'' - 6y' + 34y = e^{3t} \tan(5t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15997	$y'' - 10y' + 34y = e^{5t} \cot(3t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15998	$y'' - 12y' + 37y = e^{6t} \sec(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15999	$y'' - 8y' + 17y = e^{4t} \sec(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16000	$y'' - 9y = \frac{1}{1 + e^{3t}}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16001	$y'' - 25y = \frac{1}{1 - e^{5t}}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16002	$y'' - y = 2 \sinh(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16003	$y'' - 2y' + y = \frac{e^t}{t}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16004	$y'' - 4y' + 4y = \frac{e^{2t}}{t^2}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16005	$y'' + 8y' + 16y = \frac{e^{-4t}}{t^4}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
16006	$y'' + 6y' + 9y = \frac{e^{-3t}}{t}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16007	$y'' + 6y' + 9y = e^{-3t} \ln(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16008	$y'' + 3y' + 2y = \cos(e^t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16009	$y'' + 4y' + 4y = e^{-2t} \sqrt{-t^2 + 1}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16010	$y'' - 2y' + y = e^t \sqrt{-t^2 + 1}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16011	$y'' - 10y' + 25y = e^{5t} \ln(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16012	$y'' - 4y' + 4y = e^{2t} \arctan(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16013	$y'' + 8y' + 16y = \frac{e^{-4t}}{t^2 + 1}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16014	$y'' + y = \sec\left(\frac{t}{2}\right) + \csc\left(\frac{t}{2}\right)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16015	$y'' + 9y = \tan(3t)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16016	$y'' + 9y = \sec(3t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16017	$y'' + 9y = \tan(3t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16018	$y'' + 4y = \tan(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16019	$y'' + 16y = \tan(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16020	$y'' + 4y = \tan(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16021	$y'' + 9y = \sec(3t) \tan(3t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16022	$y'' + 4y = \sec(2t) \tan(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16023	$y'' + 9y = \frac{\csc(3t)}{2}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16024	$y'' + 4y = \sec(2t)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
16025	$y'' - 16y = 16t e^{-4t}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16026	$y'' + y = \tan(t)^2$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16027	$y'' + 4y = \sec(2t) + \tan(2t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16028	$y'' + 9y = \csc(3t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16029	$y'' + 4y' + 3y = 65 \cos(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16033	$4y'' + 4y' + y = e^{-\frac{t}{2}}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
16034	$y'' + 4y = f(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16234	$y'' - 7y' + 10y = 0$	[[_2nd_order, _missing_x]]	✓
16235	$y'' - y' - 2y = 0$	[[_2nd_order, _missing_x]]	✓
16236	$y'' - 2y' + 2y = 0$	[[_2nd_order, _missing_x]]	✓
16239	$y'' + 7y' + 10y = 0$	[[_2nd_order, _missing_x]]	✓
16240	$6y'' + 5y' - 4y = 0$	[[_2nd_order, _missing_x]]	✓
16241	$y'' + 2y' + y = 0$	[[_2nd_order, _missing_x]]	✓
16242	$y'' + 3y' + 2y = 0$	[[_2nd_order, _missing_x]]	✓
16243	$y'' - 10y' + 34y = 0$	[[_2nd_order, _missing_x]]	✓
16244	$2y'' - 5y' + 2y = 0$	[[_2nd_order, _missing_x]]	✓
16245	$15y'' - 11y' + 2y = 0$	[[_2nd_order, _missing_x]]	✓
16246	$20y'' + y' - y = 0$	[[_2nd_order, _missing_x]]	✓
16247	$12y'' + 8y' + y = 0$	[[_2nd_order, _missing_x]]	✓
16251	$y'' - 2y' - 8y = -t$	[[_2nd_order, _with_linear_symmetries]]	✓
16252	$y'' + 5y' = 5t^2$	[[_2nd_order, _missing_y]]	✓
16253	$y'' - 4y' = -3 \sin(t)$	[[_2nd_order, _missing_y]]	✓
16254	$y'' + 2y' + 5y = 3 \sin(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16255	$y'' - 9y = \frac{1}{1 + e^{3t}}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
16256	$y'' - 2y' = \frac{1}{1 + e^{2t}}$	[[_2nd_order, _missing_y]]	✓
16257	$y'' - 3y' + 2y = -4e^{-2t}$	[[_2nd_order, _with_linear_symmetries]]	✓
16258	$y'' - 6y' + 13y = 3e^{-2t}$	[[_2nd_order, _with_linear_symmetries]]	✓
16259	$y'' + 9y' + 20y = -2te^t$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16260	$y'' + 7y' + 12y = 3t^2e^{-4t}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16265 i.c.	$y'' + 5y' + 6y = 0$	[[_2nd_order, _missing_x]]	✓
16266 i.c.	$y'' + 10y' + 16y = 0$	[[_2nd_order, _missing_x]]	✓
16267 i.c.	$y'' + 16y = 0$	[[_2nd_order, _missing_x]]	✓
16268 i.c.	$y'' + 25y = 0$	[[_2nd_order, _missing_x]]	✓
16269 i.c.	$y'' - 4y = t$	[[_2nd_order, _with_linear_symmetries]]	✓
16270 i.c.	$y'' + 3y' - 4y = e^t$	[[_2nd_order, _with_linear_symmetries]]	✓
16271 i.c.	$y'' + 9y = \sin(3t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16272 i.c.	$y'' + y = \cos(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16273	$y'' + 4y = \tan(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16274	$y'' + y = \csc(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16275	$y'' - 8y' + 16y = \frac{e^{4t}}{t^3}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16276	$y'' - 8y' + 16y = \frac{e^{4t}}{t^3}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16277	$y'' - 2y' + y = e^t \ln(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16278 i.c.	$y'' - 2y' + y = e^t \ln(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16280	$y'' + 3y' - 4y = 0$	[[_2nd_order, _missing_x]]	✓

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#	ODE	CAS classification	Solved?
16281	$y'' + 4y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
16299	$4x'' + 9x = 0$	[[_2nd_order, _missing_x]]	✓
16300	$9x'' + 4x = 0$	[[_2nd_order, _missing_x]]	✓
16301	$x'' + 64x = 0$	[[_2nd_order, _missing_x]]	✓
16302	$x'' + 100x = 0$	[[_2nd_order, _missing_x]]	✓
16303	$x'' + x = 0$	[[_2nd_order, _missing_x]]	✓
16304	$x'' + 4x = 0$	[[_2nd_order, _missing_x]]	✓
16305	$x'' + 16x = 0$	[[_2nd_order, _missing_x]]	✓
16306	$x'' + 256x = 0$	[[_2nd_order, _missing_x]]	✓
16307	$x'' + 9x = 0$	[[_2nd_order, _missing_x]]	✓
16308	$10x'' + \frac{x}{10} = 0$	[[_2nd_order, _missing_x]]	✓
16309	$x'' + 4x' + 3x = 0$	[[_2nd_order, _missing_x]]	✓
16310	$\frac{x''}{32} + 2x' + x = 0$	[[_2nd_order, _missing_x]]	✓
16311	$\frac{x''}{4} + 2x' + x = 0$	[[_2nd_order, _missing_x]]	✓
16312	$4x'' + 2x' + 8x = 0$	[[_2nd_order, _missing_x]]	✓
16313	$x'' + 4x' + 13x = 0$	[[_2nd_order, _missing_x]]	✓
16314	$x'' + 4x' + 20x = 0$	[[_2nd_order, _missing_x]]	✓
16315	$x'' + x = \begin{cases} 1 & 0 \leq t < \pi \\ 0 & \pi \leq t \end{cases}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
16317	$x'' + x = \begin{cases} t & 0 \leq t < 1 \\ 2-t & 1 \leq t < 2 \\ 0 & 2 \leq t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16318	$x'' + 4x' + 13x = \begin{cases} 1 & 0 \leq t < \pi \\ -t+1 & \pi \leq t < 2\pi \\ 0 & 2\pi \leq t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16319	$x'' + x = \cos(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16320	$x'' + x = \cos(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16321	$x'' + x = \cos\left(\frac{9t}{10}\right)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16322	$x'' + x = \cos\left(\frac{7t}{10}\right)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16323	$x'' + \frac{x'}{10} + x = 3 \cos(2t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16336	$x'' - 3x' + 4x = 0$	[[_2nd_order, _missing_x]]	✓
16337	$x'' + 6x' + 9x = 0$	[[_2nd_order, _missing_x]]	✓
16338	$x'' + 16x = t \sin(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16339	$x'' + x = e^t$	[[_2nd_order, _with_linear_symmetries]]	✓
16582	$y'' + y = 2 \cos(x) + 2 \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16587	$y'' + y = 0$	[[_2nd_order, _missing_x]]	✓
16588	$y'' - 3y' + 2y = 2$	[[_2nd_order, _missing_x]]	✓
16594	$y'' = x e^x$ i.c.	[[_2nd_order, _quadrature]]	✓
16595	$y'' = 2x \ln(x)$	[[_2nd_order, _quadrature]]	✓
16611	$y'' + y' + 2 = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
16628	$y'' - y = 0$	[[_2nd_order, _missing_x]]	✓
16629	$3y'' - 2y' - 8y = 0$	[[_2nd_order, _missing_x]]	✓

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#	ODE	CAS classification	Solved?
16631	$y'' + 2y' + y = 0$	[[_2nd_order, _missing_x]]	✓
16632	$y'' - 4y' + 3y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
16634	$y'' - 2y' - 2y = 0$	[[_2nd_order, _missing_x]]	✓
16636	$4y'' - 8y' + 5y = 0$	[[_2nd_order, _missing_x]]	✓
16639	$y'' - 2y' + 2y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
16640	$y'' - 2y' + 3y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
16650	$y'' + 3y' = 3$	[[_2nd_order, _missing_x]]	✓
16651	$y'' - 7y' = (x - 1)^2$	[[_2nd_order, _missing_y]]	✓
16652	$y'' + 3y' = e^x$	[[_2nd_order, _missing_y]]	✓
16653	$y'' + 7y' = e^{-7x}$	[[_2nd_order, _missing_y]]	✓
16654	$y'' - 8y' + 16y = (1 - x)e^{4x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16655	$y'' - 10y' + 25y = e^{5x}$	[[_2nd_order, _with_linear_symmetries]]	✓
16656	$4y'' - 3y' = xe^{\frac{3x}{4}}$	[[_2nd_order, _missing_y]]	✓
16657	$y'' - 4y' = xe^{4x}$	[[_2nd_order, _missing_y]]	✓
16658	$y'' + 25y = \cos(5x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16659	$y'' + y = \sin(x) - \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16660	$y'' + 16y = \sin(4x + \alpha)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16661	$y'' + 4y' + 8y = e^{2x}(\sin(2x) + \cos(2x))$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16662	$y'' - 4y' + 8y = e^{2x}(\sin(2x) - \cos(2x))$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16663	$y'' + 6y' + 13y = e^{-3x} \cos(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16664	$y'' + k^2y = k \sin(kx + \alpha)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16665	$y'' + k^2y = k$	[[_2nd_order, _missing_x]]	✓
16686	$y'' + 2y' + y = -2$	[[_2nd_order, _missing_x]]	✓

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Table 2.30 second order linear constant coeff  
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#	ODE	CAS classification	Solved?
16687	$y'' + 2y' = -2$	[[_2nd_order, _missing_x]]	✓
16688	$y'' + 9y = 9$	[[_2nd_order, _missing_x]]	✓
16694	$y'' - 4y' + 4y = x^2$	[[_2nd_order, _with_linear_symmetries]]	✓
16695	$y'' + 8y' = 8x$	[[_2nd_order, _missing_y]]	✓
16696	$y'' - 2ky' + k^2y = e^x$	[[_2nd_order, _with_linear_symmetries]]	✓
16697	$y'' + 4y' + 4y = 8e^{-2x}$	[[_2nd_order, _with_linear_symmetries]]	✓
16698	$y'' + 4y' + 3y = 9e^{-3x}$	[[_2nd_order, _with_linear_symmetries]]	✓
16699	$7y'' - y' = 14x$	[[_2nd_order, _missing_y]]	✓
16700	$y'' + 3y' = 3xe^{-3x}$	[[_2nd_order, _missing_y]]	✓
16701	$y'' + 5y' + 6y = 10(1-x)e^{-2x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16702	$y'' + 2y' + 2y = x + 1$	[[_2nd_order, _with_linear_symmetries]]	✓
16703	$y'' + y' + y = (x^2 + x)e^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16704	$y'' + 4y' - 2y = 8\sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16705	$y'' + y = 4\cos(x)x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16706	$y'' - 2my' + m^2y = \sin(nx)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16707	$y'' + 2y' + 5y = e^{-x}\sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16708	$y'' + a^2y = 2\cos(mx) + 3\sin(mx)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16709	$y'' - y' = e^x\sin(x)$	[[_2nd_order, _missing_y]]	✓
16710	$y'' + 2y' = 4e^x(\cos(x) + \sin(x))$	[[_2nd_order, _missing_y]]	✓
16711	$y'' + 4y' + 5y = 10e^{-2x}\cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16712	$4y'' + 8y' = x\sin(x)$	[[_2nd_order, _missing_y]]	✓
16713	$y'' - 3y' + 2y = xe^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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Table 2.30 second order linear constant coeff  
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#	ODE	CAS classification	Solved?
16714	$y'' + y' - 2y = x^2 e^{4x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16715	$y'' - 3y' + 2y = (x^2 + x) e^{3x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16718	$y'' - 2y' + y = x^3$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16720	$y'' + y = x^2 \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16721	$y'' + 2y' + y = x^2 e^{-x} \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16725	$y'' - 4y' + 5y = e^{2x}(\sin(x) + 2 \cos(x))$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16726	$y'' - y' - 2y = e^x + e^{-2x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16727	$y'' + 4y' = x + e^{-4x}$	[[_2nd_order, _missing_y]]	✓
16728	$y'' - y = x + \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16729	$y'' - 2y' + 2y = (\sin(x) + 1) e^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16732	$y'' + 4y = \sin(2x) \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16733	$y'' - 4y' = 2 \cos(4x)^2$	[[_2nd_order, _missing_y]]	✓
16734	$y'' - y' - 2y = 4x - 2 e^x$	[[_2nd_order, _with_linear_symmetries]]	✓
16735	$y'' - 3y' = 18x - 10 \cos(x)$	[[_2nd_order, _missing_y]]	✓
16736	$y'' - 2y' + y = 2 + e^x \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16737	$y'' + 2y' + 2y = (5x + 4) e^x + e^{-x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16738	$y'' + 2y' + 5y = 4 e^{-x} + 17 \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16739	$2y'' - 3y' - 2y = 5 e^x \cosh(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16740	$y'' + 4y = x \sin(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16742	$y'' + y' = \cos(x)^2 + e^x + x^2$	[[_2nd_order, _missing_y]]	✓
16744	$y'' - 2y' + 5y = 10 \sin(x) + 17 \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
16745	$y'' + y' = x^2 - e^{-x} + e^x$	[[_2nd_order, _missing_y]]	✓
16746	$y'' - 2y' - 3y = 2x + e^{-x} - 2e^{3x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16747	$y'' + 4y = e^x + 4 \sin(2x) + 2 \cos(x)^2 - 1$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16748	$y'' + 3y' + 2y = 6x e^{-x} (1 - e^{-x})$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16749	$y'' + y = \cos(2x)^2 + \sin\left(\frac{x}{2}\right)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16750	$y'' - 4y' + 5y = 1 + 8 \cos(x) + e^{2x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16751	$y'' - 2y' + 2y = e^x \sin\left(\frac{x}{2}\right)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16752	$y'' - 3y' = 1 + e^x + \cos(x) + \sin(x)$	[[_2nd_order, _missing_y]]	✓
16753	$y'' - 2y' + 5y = e^x (1 - 2 \sin(x)^2) + 10x + 1$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16754	$y'' - 4y' + 4y = 4x + \sin(x) + \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16755	$y'' + 2y' + y = 1 + 2 \cos(x) + \cos(2x) - \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16756	$y'' + y' + y + 1 = \sin(x) + x + x^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16757	$y'' + 6y' + 9y = 18e^{-3x} + 8 \sin(x) + 6 \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16758	$y'' + 2y' + 1 = 3 \sin(2x) + \cos(x)$	[[_2nd_order, _missing_y]]	✓
16760	$y'' + y = 2 \sin(2x) \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16765	$y'' + y = 2 - 2x$	[[_2nd_order, _with_linear_symmetries]]	✓
16766	$y'' - 6y' + 9y = 9x^2 - 12x + 2$	[[_2nd_order, _with_linear_symmetries]]	✓
16767	$y'' + 9y = 36e^{3x}$	[[_2nd_order, _with_linear_symmetries]]	✓
16768	$y'' - 4y' + 4y = 2e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓
16769	$y'' - 5y' + 6y = (12x - 7)e^{-x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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Table 2.30 second order linear constant coeff  
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#	ODE	CAS classification	Solved?
16770	$y'' + y' = e^{-x}$ i.c.	[[_2nd_order, _missing_y]]	✓
16771	$y'' + 6y' + 9y = 10 \sin(x)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16772	$y'' + y = 2 \cos(x)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16773	$y'' + 4y = \sin(x)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16774	$y'' + y = 4 \cos(x) x$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16775	$y'' - 4y' + 5y = 2 e^x x^2$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16776	$y'' - 6y' + 9y = 16 e^{-x} + 9x - 6$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
16777	$y'' - y' = -5 e^{-x} (\cos(x) + \sin(x))$ i.c.	[[_2nd_order, _missing_y]]	✓
16778	$y'' - 2y' + 2y = 4 e^x \cos(x)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16783	$y'' - 4y' + 5y = \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16784	$y'' + 2y' + 5y = 4 \cos(2x) + \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16785	$y'' - y = 1$	[[_2nd_order, _missing_x]]	✓
16786	$y'' - y = -2 \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16789	$y'' - y' - 5y = 1$ i.c.	[[_2nd_order, _missing_x]]	✓
16791	$y'' - 5y' + 6y = 2 e^{-2x} (9 \sin(2x) + 4 \cos(2x))$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16824	$y'' + y = \frac{1}{\sin(x)}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16825	$y'' + y' = \frac{1}{1 + e^x}$	[[_2nd_order, _missing_y]]	✓
16826	$y'' + y = \frac{1}{\cos(x)^3}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16827	$y'' + y = \frac{1}{\sqrt{\sin(x)^5 \cos(x)}}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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Table 2.30 second order linear constant coeff  
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#	ODE	CAS classification	Solved?
16828	$y'' - 2y' + y = \frac{e^x}{x^2 + 1}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16829	$y'' + 2y' + 2y = \frac{e^{-x}}{\sin(x)}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16830	$y'' + y = \frac{2}{\sin(x)^3}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16831	$y'' + y' = e^{2x} \cos(e^x)$	[[_2nd_order, _missing_y]]	✓
16846	$x'' + x' + x = 0$	[[_2nd_order, _missing_x]]	✓
16847	$x'' + 2x' + 6x = 0$	[[_2nd_order, _missing_x]]	✓
16848	$x'' + 2x' + x = 0$	[[_2nd_order, _missing_x]]	✓
16856	$y'' + \lambda y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
16857	$y'' + \lambda y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
16858	$y'' - y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
16861	$y'' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
16862	$y'' - y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
16863	$y'' - 2y' + 2y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
16864	$y'' + \alpha y' = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
16865	$y'' + \alpha^2 y = 1$ i.c.	[[_2nd_order, _missing_x]]	✓
16866	$y'' + y = 1$ i.c.	[[_2nd_order, _missing_x]]	✓
16867	$y'' + \lambda^2 y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
16868	$y'' + \lambda^2 y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
16900	$y'' + 4y = \cos(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16901	$y'' - 4y' + 4y = \pi^2 - x^2$	[[_2nd_order, _with_linear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
16902	$y'' - 4y = \cos(\pi x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16903	$y'' - 4y' + 4y = \arcsin(\sin(x))$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16904	$y'' + 9y = \sin(x)^3$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17228	$y'' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
17229	$y'' + 9y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
17230	$y'' + y' + 16y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
17231	$y'' + 3y' + 4y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
17232	$y'' - y' + 4y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
17243	$y'' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
17244	$y'' - 2y' + y = 0$	[[_2nd_order, _missing_x]]	✓
17247	$y'' - y' - 2y = 0$	[[_2nd_order, _missing_x]]	✓
17259	$y'' + 2y' - 3y = 0$	[[_2nd_order, _missing_x]]	✓
17260	$y'' + 3y' + 2y = 0$	[[_2nd_order, _missing_x]]	✓
17261	$y'' - 4y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
17262	$9y'' + 6y' + y = 0$	[[_2nd_order, _missing_x]]	✓
17263	$y'' - 2y' + 2y = 0$	[[_2nd_order, _missing_x]]	✓
17264	$y'' - 2y' + 6y = 0$	[[_2nd_order, _missing_x]]	✓
17265	$4y'' - 4y' + y = 0$	[[_2nd_order, _missing_x]]	✓
17266	$2y'' - 3y' + y = 0$	[[_2nd_order, _missing_x]]	✓
17267	$6y'' - y' - y = 0$	[[_2nd_order, _missing_x]]	✓
17268	$9y'' + 12y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
17269	$y'' + 2y' - 8y = 0$	[[_2nd_order, _missing_x]]	✓
17270	$y'' + 2y' + 2y = 0$	[[_2nd_order, _missing_x]]	✓
17271	$y'' + 5y' = 0$	[[_2nd_order, _missing_x]]	✓
17272	$4y'' - 9y = 0$	[[_2nd_order, _missing_x]]	✓

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Table 2.30 second order linear constant coeff  
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#	ODE	CAS classification	Solved?
17273	$25y'' - 20y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
17274	$y'' - 4y' + 16y = 0$	[[_2nd_order, _missing_x]]	✓
17275	$y'' + 6y' + 13y = 0$	[[_2nd_order, _missing_x]]	✓
17276	$y'' + 2y' + \frac{5y}{4} = 0$	[[_2nd_order, _missing_x]]	✓
17277	$y'' - 9y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓
17278	$y'' - 2y' - 2y = 0$	[[_2nd_order, _missing_x]]	✓
17279	$y'' + 4y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
17280	$9y'' - 24y' + 16y = 0$	[[_2nd_order, _missing_x]]	✓
17281	$4y'' + 9y = 0$	[[_2nd_order, _missing_x]]	✓
17282	$4y'' + 9y' - 9y = 0$	[[_2nd_order, _missing_x]]	✓
17283	$y'' + y' + \frac{5y}{4} = 0$	[[_2nd_order, _missing_x]]	✓
17284	$y'' + 4y' + \frac{25y}{4} = 0$	[[_2nd_order, _missing_x]]	✓
17285	$y'' + y' - 2y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
17286	$y'' + 16y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
17287	$9y'' - 12y' + 4y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
17288	$y'' + 3y' + 2y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
17289	$y'' + 4y' + 5y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
17290	$6y'' - 5y' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
17291	$y'' + 6y' + 9y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
17292	$y'' - 2y' + 5y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
17293	$y'' + 3y' = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
17294	$y'' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
17295	$y'' + 4y' + 4y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓

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Table 2.30 second order linear constant coeff  
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#	ODE	CAS classification	Solved?
17296	$y'' + 6y' + 3y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
17297	$y'' + y' + \frac{5y}{4} = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
17298	$2y'' + y' - 4y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
17299	$y'' + 8y' - 9y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
17300	$y'' + 2y' + 2y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
17301	$4y'' - y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
17315	$y'' + 2y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
17316	$y'' + \frac{y'}{4} + 2y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
17317	$my'' + ky = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
17318	$y'' - 2y' - 3y = 3e^{2t}$	[[_2nd_order, _with_linear_symmetries]]	✓
17319	$y'' + 2y' + 5y = 3 \sin(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17320	$y'' - 2y' - 3y = -3te^{-t}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17321	$y'' + 2y' = 3 + 4 \sin(2t)$	[[_2nd_order, _missing_y]]	✓
17322	$y'' + 9y = t^2e^{3t} + 6$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17323	$y'' + 2y' + y = 2e^{-t}$	[[_2nd_order, _with_linear_symmetries]]	✓
17324	$y'' - 5y' + 4y = 2e^t$	[[_2nd_order, _with_linear_symmetries]]	✓
17325	$y'' - y' - 2y = 2e^{-t}$	[[_2nd_order, _with_linear_symmetries]]	✓
17326	$y'' + 2y' + y = 3e^{-t}$	[[_2nd_order, _with_linear_symmetries]]	✓
17327	$4y'' - 4y' + y = 16e^{\frac{t}{2}}$	[[_2nd_order, _with_linear_symmetries]]	✓

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Table 2.30 second order linear constant coeff  
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#	ODE	CAS classification	Solved?
17328	$2y'' + 3y' + y = t^2 + 3 \sin(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17329	$y'' + y = 3 \sin(2t) + t \cos(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17330	$u'' + w_0^2 u = \cos(wt)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17331	$y'' + y' + 4y = 2 \sinh(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17332	$y'' - y' - 2y = \cosh(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17333 i.c.	$y'' + y' - 2y = 2t$	[[_2nd_order, _with_linear_symmetries]]	✓
17334 i.c.	$y'' + 4y = t^2 + 3e^t$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17335 i.c.	$y'' - 2y' + y = te^t + 4$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17336 i.c.	$y'' - 2y' - 3y = 3te^{2t}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17337 i.c.	$y'' + 4y = 3 \sin(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17338 i.c.	$y'' + 2y' + 5y = 4e^{-t} \cos(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17339	$y'' + 3y' = 2t^4 + t^2 e^{-3t} + \sin(3t)$	[[_2nd_order, _missing_y]]	✓
17340	$y'' + y = t(1 + \sin(t))$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17341	$y'' - 5y' + 6y = e^t \cos(2t) + e^{2t}(3t + 4) \sin(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17342	$y'' + 2y' + 2y = 3e^{-t} + 2e^{-t} \cos(t) + 4e^{-t} t^2 \sin(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17343	$y'' - 4y' + 4y = 2t^2 + 4te^{2t} + t \sin(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17344	$y'' + 4y = t^2 \sin(2t) + (6t + 7) \cos(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17345	$y'' + 3y' + 2y = e^t(t^2 + 1) \sin(2t) + 3e^{-t} \cos(t) + 4e^t$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17346	$y'' + 2y' + 5y = 3te^{-t} \cos(2t) - 2te^{-2t} \cos(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17347	$y'' - 3y' - 4y = 2e^{-t}$	[[_2nd_order, _with_linear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
17352	$y'' + y = \begin{cases} t & 0 \leq t \leq \pi \\ \pi e^{-t+\pi} & \pi < t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17353	$y'' + 2y' + 5y = \begin{cases} 1 & 0 \leq t \leq \frac{\pi}{2} \\ 0 & \frac{\pi}{2} < t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17354	$y'' + y = \begin{cases} At & 0 \leq t \leq \pi \\ A(2\pi - t) & \pi < t \leq 2\pi \\ 0 & 2\pi < t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17355	$y'' + \frac{y'}{4} + 2y = 2 \cos(wt)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17356	$y'' + y = 2 \cos(wt)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17357	$y'' + y = 3 \cos(wt)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17358	$y'' + \frac{y'}{8} + 4y = 3 \cos\left(\frac{t}{4}\right)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17359	$y'' + \frac{y'}{8} + 4y = 3 \cos(2t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17360	$y'' + \frac{y'}{8} + 4y = 3 \cos(6t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17363	$y'' - 5y' + 6y = 2e^t$	[[_2nd_order, _with_linear_symmetries]]	✓
17364	$y'' - y' - 2y = 2e^{-t}$	[[_2nd_order, _with_linear_symmetries]]	✓
17365	$y'' + 2y' + y = 3e^{-t}$	[[_2nd_order, _with_linear_symmetries]]	✓
17366	$4y'' - 4y' + y = 16e^{\frac{t}{2}}$	[[_2nd_order, _with_linear_symmetries]]	✓
17367	$y'' + y = \tan(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17368	$y'' + 4y = 3 \sec(2t)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17369	$y'' + 4y' + 4y = \frac{e^{2t}}{t^2}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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Table 2.30 second order linear constant coeff  
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#	ODE	CAS classification	Solved?
17370	$y'' + 4y = 2 \csc\left(\frac{t}{2}\right)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17371	$4y'' + y = 2 \sec(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17372	$y'' - 2y' + y = \frac{e^t}{t^2 + 1}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17373	$y'' - 5y' + 6y = g(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17374	$y'' + 4y = g(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17385	<i>i.c.</i> $y'' + y = g(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17569	$y'' = \sin(x)$	[[_2nd_order, _quadrature]]	✓
17681	$y'' + y = 0$	[[_2nd_order, _missing_x]]	✓
17683	$y'' + p_1y' + p_2y = 0$	[[_2nd_order, _missing_x]]	✓
17690	$2y'' + y' - y = 0$	[[_2nd_order, _missing_x]]	✓
17692	$y'' - 4y' + 4y = x^2$	[[_2nd_order, _with_linear_symmetries]]	✓
17693	$y'' - 6y' + 8y = e^x + e^{2x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17696	$y'' + 4y = x \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17697	$y'' + y' + y = e^{-\frac{x}{2}} \sin\left(\frac{\sqrt{3}x}{2}\right)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17698	$y'' - y = \frac{e^x - e^{-x}}{e^x + e^{-x}}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17699	$y'' - 2y = 4x^2 e^{x^2}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17700	$y'' + y = \sin(2x) \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17701	$y'' + 9y = \ln\left(2 \sin\left(\frac{x}{2}\right)\right)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17736	$y'' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
17737	$y'' - 4y = 0$	[[_2nd_order, _missing_x]]	✓
17777	$y'' - 5y' + 6y = 0$	[[_2nd_order, _missing_x]]	✓

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#	ODE	CAS classification	Solved?
17865	$y'' - ky = 0$	[[_2nd_order, _missing_x]]	✓
17927	$y'' - y' - 2y = 4x$	[[_2nd_order, _with_linear_symmetries]]	✓
17929	$y'' - 2y' = 6$	[[_2nd_order, _missing_x]]	✓
17930	$y'' - 2y = \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17931	$y'' = e^x$	[[_2nd_order, _quadrature]]	✓
17932	$y'' - 2y' = 4$	[[_2nd_order, _missing_x]]	✓
17933	$y'' - y = \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17935	$y'' + 2y' = 6e^x$	[[_2nd_order, _missing_y]]	✓
17938	$y'' - y = 0$	[[_2nd_order, _missing_x]]	✓
17940	$y'' - 3y' + 2y = 0$	[[_2nd_order, _missing_x]]	✓
	i.c.		
17941	$y'' - 4y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
17943	$y'' + y' - 2y = 0$	[[_2nd_order, _missing_x]]	✓
	i.c.		
17944	$y'' + 5y' + 6y = 0$	[[_2nd_order, _missing_x]]	✓
	i.c.		
17945	$y'' + y' = 0$	[[_2nd_order, _missing_x]]	✓
	i.c.		
17964	$y'' + y' - 6y = 0$	[[_2nd_order, _missing_x]]	✓
17965	$y'' + 2y' + y = 0$	[[_2nd_order, _missing_x]]	✓
17966	$y'' + 8y = 0$	[[_2nd_order, _missing_x]]	✓
17967	$2y'' - 4y' + 8y = 0$	[[_2nd_order, _missing_x]]	✓
17968	$y'' - 4y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
17969	$y'' - 9y' + 20y = 0$	[[_2nd_order, _missing_x]]	✓
17970	$2y'' + 2y' + 3y = 0$	[[_2nd_order, _missing_x]]	✓
17971	$4y'' - 12y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓
17972	$y'' + y' = 0$	[[_2nd_order, _missing_x]]	✓
17973	$y'' - 6y' + 25y = 0$	[[_2nd_order, _missing_x]]	✓
17974	$4y'' + 20y' + 25y = 0$	[[_2nd_order, _missing_x]]	✓
17975	$y'' + 2y' + 3y = 0$	[[_2nd_order, _missing_x]]	✓

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#	ODE	CAS classification	Solved?
17976	$y'' = 4y$	[[_2nd_order, _missing_x]]	✓
17977	$4y'' - 8y' + 7y = 0$	[[_2nd_order, _missing_x]]	✓
17978	$2y'' + y' - y = 0$	[[_2nd_order, _missing_x]]	✓
17979	$16y'' - 8y' + y = 0$	[[_2nd_order, _missing_x]]	✓
17980	$y'' + 4y' + 5y = 0$	[[_2nd_order, _missing_x]]	✓
17981	$y'' + 4y' - 5y = 0$	[[_2nd_order, _missing_x]]	✓
17982	$y'' - 5y' + 6y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
17983	$y'' - 6y' + 5y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
17984	$y'' - 6y' + 9y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
17985	$y'' + 4y' + 5y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
17986	$y'' + 4y' + 2y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
17987	$y'' + 8y' - 9y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
17999	$y'' + 3y' - 10y = 6e^{4x}$	[[_2nd_order, _with_linear_symmetries]]	✓
18000	$y'' + 4y = 3\sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18001	$y'' + 10y' + 25y = 14e^{-5x}$	[[_2nd_order, _with_linear_symmetries]]	✓
18002	$y'' - 2y' + 5y = 25x^2 + 12$	[[_2nd_order, _with_linear_symmetries]]	✓
18003	$y'' - y' - 6y = 20e^{-2x}$	[[_2nd_order, _with_linear_symmetries]]	✓
18004	$y'' - 3y' + 2y = 14\sin(2x) - 18\cos(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18005	$y'' + y = 2\cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18006	$y'' - 2y' = 12x - 10$	[[_2nd_order, _missing_y]]	✓
18007	$y'' - 2y' + y = 6e^x$	[[_2nd_order, _with_linear_symmetries]]	✓
18008	$y'' - 2y' + 2y = e^x \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
18009	$y'' + y' = 10x^4 + 2$	[[_2nd_order, _missing_y]]	✓
18010	$y'' + k^2y = \sin(bx)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18011	$y'' + 4y = 4 \cos(2x) + 6 \cos(x) + 8x^2 - 4x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18012	$y'' + 9y = 2 \sin(3x) + 4 \sin(x) - 26e^{-2x} + 27x^3$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18013	$y'' - 2y' + y = 2x$	[[_2nd_order, _with_linear_symmetries]]	✓
18014	$y'' - y' - 6y = e^{-x}$	[[_2nd_order, _with_linear_symmetries]]	✓
18015	$y'' + 4y = \tan(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18016	$y'' + 2y' + y = e^{-x} \ln(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18017	$y'' - 2y' - 3y = 64xe^{-x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18018	$y'' + 2y' + 5y = e^{-x} \sec(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18019	$2y'' + 3y' + y = e^{-3x}$	[[_2nd_order, _with_linear_symmetries]]	✓
18020	$y'' - 3y' + 2y = \frac{1}{1 + e^{-x}}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18021	$y'' + y = \sec(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18022	$y'' + y = \cot(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18023	$y'' + y = \cot(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18024	$y'' + y = \cos(x)x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18025	$y'' + y = \tan(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18026	$y'' + y = \sec(x) \tan(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18027	$y'' + y = \sec(x) \csc(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18056	$y'' - 4y = e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
18057	$y'' - y = x^2 e^{2x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18058	$y'' + 4y' + 4y = 10x^3 e^{-2x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18059	$y'' - 2y' + y = e^x$	[[_2nd_order, _with_linear_symmetries]]	✓
18060	$y'' - y = e^{-x}$	[[_2nd_order, _with_linear_symmetries]]	✓
18061	$y'' - 2y' - 3y = 6e^{5x}$	[[_2nd_order, _with_linear_symmetries]]	✓
18062	$y'' - y' + y = x^3 - 3x^2 + 1$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18064	$4y'' + y = x^4$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18067	$y'' + y' - y = -x^4 + 3x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18068	$y'' + y = x^4$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18071	$y'' - 4y' + 3y = x^3 e^{2x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18072	$y'' - 7y' + 12y = e^{2x}(x^3 - 5x^2)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18073	$y'' + 2y' + y = 2x^2 e^{-2x} + 3e^{2x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18082	$y'' - 4y' + 4y = e^{2x} \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18193	$x'' - 5x' + 6x = 0$	[[_2nd_order, _missing_x]]	✓
18194	$x'' - 4x' + 4x = 0$	[[_2nd_order, _missing_x]]	✓
18195	$x'' - 4x' + 5x = 0$	[[_2nd_order, _missing_x]]	✓
18196	$x'' + 3x' = 0$	[[_2nd_order, _missing_x]]	✓
18197	$x'' - 3x' + 2x = 0$	[[_2nd_order, _missing_x]]	✓
18198	$x'' + x = 0$	[[_2nd_order, _missing_x]]	✓
18199	$x'' + 2x' + x = 0$	[[_2nd_order, _missing_x]]	✓
18200	$x'' - 2x' + 2x = 0$	[[_2nd_order, _missing_x]]	✓

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Table 2.30 second order linear constant coeff  
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#	ODE	CAS classification	Solved?
18201	$x'' - x = t^2$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
18202	$x'' - x = e^t$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
18203	$x'' + 2x' + 4x = e^t \cos(2t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18204	$x'' - x' + x = \sin(2t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18205	$x'' + 4x' + 3x = t \sin(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18206	$x'' + x = \cos(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18241	$\theta'' = -p^2\theta$	[[_2nd_order, _missing_x]]	✓
18256	$\theta'' - p^2\theta = 0$	[[_2nd_order, _missing_x]]	✓
18257	$y'' + y = 0$	[[_2nd_order, _missing_x]]	✓
18258	$y'' + 12y = 7y'$	[[_2nd_order, _missing_x]]	✓
18259	$r'' - a^2r = 0$	[[_2nd_order, _missing_x]]	✓
18261	$v'' - 6v' + 13v = e^{-2u}$	[[_2nd_order, _with_linear_symmetries]]	✓
18262	$y'' + 4y' - y = \sin(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18263	$y'' + 3y = \sin(x) + \frac{\sin(3x)}{3}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18275	$y'' = -m^2y$	[[_2nd_order, _missing_x]]	✓
18283	$y'' + 4y' + 3y = 2e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓
18331	$y'' + 3y' + 2y = 0$	[[_2nd_order, _missing_x]]	✓
18332	$y'' + 2y' - 2y = 0$	[[_2nd_order, _missing_x]]	✓
18340	$y'' + 4y' + 3y = 2e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓
18342	$y'' - 4y' + 2y = x$	[[_2nd_order, _with_linear_symmetries]]	✓
18343	$y'' + 3y' - y = e^x$	[[_2nd_order, _with_linear_symmetries]]	✓
18346	$y'' - 2y' + y = e^x$	[[_2nd_order, _with_linear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
18347	$y'' - 2y' + y = x$	[[_2nd_order, _with_linear_symmetries]]	✓
18348	$y'' + y = \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18350	$y'' + y = \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18354	$ey'' = \frac{P(\frac{L}{2} - x)}{2}$	[[_2nd_order, _quadrature]]	✓
18355	$ey'' = \frac{w(\frac{L^2}{4} - x^2)}{2}$	[[_2nd_order, _quadrature]]	✓
18356	$ey'' = -\frac{(wL + P)x}{2} - \frac{wx^2}{2}$	[[_2nd_order, _quadrature]]	✓
18357	$ey'' = -P(L - x)$	[[_2nd_order, _quadrature]]	✓
18358	$ey'' = -PL + (wL + P)x - \frac{w(L^2 + x^2)}{2}$	[[_2nd_order, _quadrature]]	✓
18359	$ey'' = P(-y + a)$	[[_2nd_order, _missing_x]]	✓
18374	$y'' = \cos(x)$	[[_2nd_order, _quadrature]]	✓
18376	$y'' = -a^2y$	[[_2nd_order, _missing_x]]	✓
18382	$x = y'' + y'$	[[_2nd_order, _missing_y]]	✓
18402	$y'' - k^2y = 0$	[[_2nd_order, _missing_x]]	✓
18543	$y'' + 3y' - 54y = 0$	[[_2nd_order, _missing_x]]	✓
18544	$y'' - m^2y = 0$	[[_2nd_order, _missing_x]]	✓
18545	$2y'' + 5y' - 12y = 0$	[[_2nd_order, _missing_x]]	✓
18546	$9y'' + 18y' - 16y = 0$	[[_2nd_order, _missing_x]]	✓
18549	$y'' + 8y' + 25y = 0$	[[_2nd_order, _missing_x]]	✓
18552	$y'' - 5y' + 6y = e^{4x}$	[[_2nd_order, _with_linear_symmetries]]	✓
18553	$y'' - y = 5x + 2$	[[_2nd_order, _with_linear_symmetries]]	✓
18554	$y'' + 2y' + y = 2e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓
18558	$y'' - 2y' + y = 3e^{\frac{5x}{2}}$	[[_2nd_order, _with_linear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
18562	$y'' + a^2y = \cos(ax)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18563	$y'' - 4y = 2 \sin\left(\frac{x}{2}\right)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18566	$y'' + 3y' + 2y = e^{2x} \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18567	$y'' + 2y = x^2 e^{3x} + e^x \cos(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18568	$y'' + 4y = x \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18569	$y'' - y = x^2 \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18573	$y'' + 4y = \sin(3x) + e^x + x^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18574	$y'' - 5y' + 6y = x + e^{mx}$	[[_2nd_order, _with_linear_symmetries]]	✓
18575	$y'' - a^2y = e^{ax} + e^{nx}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18581	$y'' + a^2y = \sec(ax)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18582	$y'' - 2y' + y = x^2 e^{3x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18583	$y'' + n^2y = e^x x^4$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18587	$y'' + y' + y = \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18589	$y'' - 2y' + 4y = e^x \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18593	$y'' - y = x \sin(x) + (x^2 + 1) e^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18594	$y'' - 4y' + 3y = e^x \cos(2x) + \cos(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18596	$y'' - 9y' + 20y = 20x$	[[_2nd_order, _with_linear_symmetries]]	✓

## 2.4.3 second order euler ode

Table 2.31: second order euler ode

#	ODE	CAS classification	Solved?
152	$x^2y'' + 3xy' = 2$	[[_2nd_order, _missing_y]]	✓
227	$x^2y'' - 2xy' + 2y = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
228	$x^2y'' + 2xy' - 6y = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
229	$x^2y'' - xy' + y = 0$ i.c.	[[_Emden, _Fowler]]	✓
230	$x^2y'' + xy' + y = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
244	$x^2y'' + xy' - y = 0$	[[_2nd_order, _exact, _lin- ear, _homogeneous]]	✓
245	$x^2y'' + 2xy' - 12y = 0$	[[_Emden, _Fowler]]	✓
246	$4x^2y'' + 8xy' - 3y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
247	$x^2y'' + xy' = 0$	[[_2nd_order, _missing_y]]	✓
248	$x^2y'' - 3xy' + 4y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
262	$x^2y'' - 2xy' + 2y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
315	$x^2y'' + xy' + 9y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
316	$x^2y'' + 7xy' + 25y = 0$	[[_Emden, _Fowler]]	✓
376	$x^2y'' + xy' - y = 72x^5$	[[_2nd_order, _exact, _lin- ear, _nonhomogeneous]]	✓
377	$x^2y'' - 4xy' + 6y = x^3$	[[_2nd_order, _with_lin- ear_symmetries]]	✓

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Table 2.31 second order euler ode  
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#	ODE	CAS classification	Solved?
378	$x^2y'' - 3xy' + 4y = x^4$	[[_2nd_order, _with_linear_symmetries]]	✓
379	$4x^2y'' - 4xy' + 3y = 8x^{4/3}$	[[_2nd_order, _with_linear_symmetries]]	✓
380	$x^2y'' + xy' + y = \ln(x)$	[[_2nd_order, _with_linear_symmetries]]	✓
819	<i>i.c.</i> $x^2y'' - 2xy' + 2y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
820	<i>i.c.</i> $x^2y'' + 2xy' - 6y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
821	<i>i.c.</i> $x^2y'' - xy' + y = 0$	[[_Emden, _Fowler]]	✓
822	<i>i.c.</i> $x^2y'' + xy' + y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
833	$x^2y'' + xy' - y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
834	$x^2y'' + 2xy' - 12y = 0$	[[_Emden, _Fowler]]	✓
835	$4x^2y'' + 8xy' - 3y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
836	$x^2y'' + xy' = 0$	[[_2nd_order, _missing_y]]	✓
837	$x^2y'' - 3xy' + 4y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
860	$x^2y'' + xy' + 9y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
861	$x^2y'' + 7xy' + 25y = 0$	[[_Emden, _Fowler]]	✓
902	$x^2y'' + xy' - y = 72x^5$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
903	$x^2y'' - 4xy' + 6y = x^3$	[[_2nd_order, _with_linear_symmetries]]	✓

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Table 2.31 second order euler ode  
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#	ODE	CAS classification	Solved?
904	$x^2y'' - 3xy' + 4y = x^4$	[[_2nd_order, __with_linear_symmetries]]	✓
905	$4x^2y'' - 4xy' + 3y = 8x^{4/3}$	[[_2nd_order, __with_linear_symmetries]]	✓
906	$x^2y'' + xy' + y = \ln(x)$	[[_2nd_order, __with_linear_symmetries]]	✓
1293	$t^2y'' + ty' + y = 0$	[[_Emden, __Fowler], [_2nd_order, __linear, __with_symmetry_[0,F(x)]]]	✓
1294	$t^2y'' + 4ty' + 2y = 0$	[[_2nd_order, __exact, __linear, __homogeneous]]	✓
1295	$t^2y'' + 3ty' + \frac{5y}{4} = 0$	[[_Emden, __Fowler]]	✓
1296	$t^2y'' - 4ty' - 6y = 0$	[[_2nd_order, __exact, __linear, __homogeneous]]	✓
1297	$t^2y'' - 4ty' + 6y = 0$	[[_Emden, __Fowler], [_2nd_order, __linear, __with_symmetry_[0,F(x)]]]	✓
1298	$t^2y'' - ty' + 5y = 0$	[[_Emden, __Fowler]]	✓
1299	$t^2y'' + 3ty' - 3y = 0$	[[_Emden, __Fowler]]	✓
1300	$t^2y'' + 7ty' + 10y = 0$	[[_Emden, __Fowler]]	✓
1327	$t^2y'' - 3ty' + 4y = 0$	[[_Emden, __Fowler], [_2nd_order, __linear, __with_symmetry_[0,F(x)]]]	✓
1328	$t^2y'' + 2ty' + \frac{y}{4} = 0$	[[_Emden, __Fowler]]	✓
1329	$2t^2y'' - 5ty' + 5y = 0$	[[_Emden, __Fowler]]	✓
1330	$t^2y'' + 3ty' + y = 0$	[[_2nd_order, __exact, __linear, __homogeneous]]	✓
1331	$4t^2y'' - 8ty' + 9y = 0$	[[_Emden, __Fowler]]	✓
1332	$t^2y'' + 5ty' + 13y = 0$	[[_Emden, __Fowler]]	✓
1349	$x^2y'' - 3xy' + 4y = x^2 \ln(x)$	[[_2nd_order, __linear, __nonhomogeneous]]	✓
1351	$t^2y'' - 2ty' + 2y = 4t^2$	[[_2nd_order, __with_linear_symmetries]]	✓

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Table 2.31 second order euler ode  
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#	ODE	CAS classification	Solved?
1352	$t^2y'' + 7ty' + 5y = t$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
1746	$x^2y'' + xy' - y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
1747	$x^2y'' - xy' + y = 0$	[[_Emden, _Fowler]]	✓
1748	$x^2y'' - (2a - 1)xy' + a^2y = 0$	[[_Emden, _Fowler]]	✓
1811	$x^2y'' + xy' - y = 2x^2 + 2$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
1815	$x^2y'' - 4xy' + 6y = x^{5/2}$	[[_2nd_order, _with_linear_symmetries]]	✓
1816	$x^2y'' - 3xy' + 3y = 2x^4 \sin(x)$	[[_2nd_order, _with_linear_symmetries]]	✓
1820	$x^2y'' - (2a - 1)xy' + a^2y = x^{a+1}$	[[_2nd_order, _with_linear_symmetries]]	✓
1828	$x^2y'' - xy' - 3y = x^{3/2}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
1835	$(x - 1)^2 y'' - 2(x - 1)y' + 2y = (x - 1)^2$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
1838	$x^2y'' + 2xy' - 2y = -2x^2$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
2362	$2t^2y'' + 3ty' - y = 0$ i.c.	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
2373	$t^2y'' + \alpha ty' + \beta y = 0$	[[_Emden, _Fowler]]	✓
2374	$t^2y'' + 5ty' - 5y = 0$	[[_Emden, _Fowler]]	✓
2375	$t^2y'' - ty' - 2y = 0$ i.c.	[[_Emden, _Fowler]]	✓
2385	$t^2y'' + ty' + y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, 'with_symmetry_[0,F(x)]']]	✓
2386	$t^2y'' + 2ty' + 2y = 0$	[[_Emden, _Fowler]]	✓
2400	$t^2y'' + 3ty' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
2401	$t^2y'' - ty' + y = 0$	[[_Emden, _Fowler]]	✓
2431	$t^2y'' - 5ty' + 9y = 0$	[[_Emden, _Fowler]]	✓
2432	$t^2y'' + 5ty' - 5y = 0$	[[_Emden, _Fowler]]	✓

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Table 2.31 second order euler ode  
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#	ODE	CAS classification	Solved?
2433	$2t^2y'' + 3ty' - y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
2434	$(t - 1)^2 y'' - 2(t - 1) y' + 2y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
2435	$t^2y'' + 3ty' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
2436	$t^2y'' - ty' + y = 0$	[[_Emden, _Fowler]]	✓
2437	$(t - 2)^2 y'' + 5(t - 2) y' + 4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
2438	$t^2y'' + ty' + y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
2439	<i>i.c.</i> $t^2y'' - ty' + 2y = 0$	[[_Emden, _Fowler]]	✓
2440	<i>i.c.</i> $t^2y'' - 3ty' + 4y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
2543	<i>i.c.</i> $2t^2y'' + 3ty' - y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
2554	$t^2y'' + \alpha ty' + \beta y = 0$	[[_Emden, _Fowler]]	✓
2555	<i>i.c.</i> $t^2y'' + 5ty' - 2y = 0$	[[_Emden, _Fowler]]	✓
2565	$t^2y'' + ty' + y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
2566	$t^2y'' + 2ty' + 2y = 0$	[[_Emden, _Fowler]]	✓
2581	$t^2y'' + 3ty' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
2582	$t^2y'' - ty' + y = 0$	[[_Emden, _Fowler]]	✓
2628	$t^2y'' + 5ty' - 5y = 0$	[[_Emden, _Fowler]]	✓
2629	$2t^2y'' + 3ty' - y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓

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Table 2.31 second order euler ode  
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#	ODE	CAS classification	Solved?
2630	$(t-1)^2 y'' - 2(t-1)y' + 2y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
2631	$t^2 y'' + 3ty' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
2632	$t^2 y'' - ty' + y = 0$	[[_Emden, _Fowler]]	✓
2633	$(t-2)^2 y'' + 5(t-2)y' + 4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
2634	$t^2 y'' + ty' + y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
2635	$t^2 y'' + 3ty' + 2y = 0$	[[_Emden, _Fowler]]	✓
2636	$t^2 y'' - ty' - 2y = 0$	[[_Emden, _Fowler]]	✓
2637	<i>i.c.</i> $t^2 y'' - 3ty' + 4y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
3221	$x^2 y'' - 4xy' + y = 0$	[[_Emden, _Fowler]]	✓
3222	$x^2 y'' + xy' + 16y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
3223	$4x^2 y'' - 16xy' + 25y = 0$	[[_Emden, _Fowler]]	✓
3224	$x^2 y'' + 5xy' + 10y = 0$	[[_Emden, _Fowler]]	✓
3225	$2x^2 y'' - 3xy' - 18y = \ln(x)$	[[_2nd_order, _with_linear_symmetries]]	✓
3226	$2x^2 y'' - 3xy' + 2y = \ln(x^2)$	[[_2nd_order, _with_linear_symmetries]]	✓
3227	$x^2 y'' - 3xy' + 4y = x^3$	[[_2nd_order, _with_linear_symmetries]]	✓
3228	$x^2 y'' + 3xy' + y = 1 - x$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
3230	$x^2 y'' - 2xy' + 2y = 4x + \sin(\ln(x))$	[[_2nd_order, _with_linear_symmetries]]	✓
3231	$x^2 y'' - xy' + 2y = x^2 \ln(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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Table 2.31 second order euler ode  
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#	ODE	CAS classification	Solved?
3232	$x^2y'' + 4xy' + 3y = (x - 1) \ln(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3255	$x^2y'' = xy' + 1$	[[_2nd_order, _missing_y]]	✓
3493	$x^2y'' - xy' + y = x$	[[_2nd_order, _with_linear_symmetries]]	✓
3494	$(x + 1)^2y'' + 3(x + 1)y' + y = x^2$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
3565	$x^2y'' + 5xy' + 3y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
3566	$x^2y'' - 3xy' + 4y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]]']]	✓
3567	$x^2y'' - 3xy' + 13y = 0$	[[_Emden, _Fowler]]	✓
3568	$2x^2y'' - xy' + y = 9x^2$	[[_2nd_order, _with_linear_symmetries]]	✓
3569	$x^2y'' - 4xy' + 6y = x^4 \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3575	$x^2y'' + xy' - y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
3576	$x^2y'' + 5xy' + 4y = 0$	[[_Emden, _Fowler]]	✓
3591	$x^2y'' - xy' - 8y = 0$	[[_Emden, _Fowler]]	✓
3592	$x^2y'' - 3xy' + 4y = x^2 \ln(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3707	$x^2y'' + 3xy' - 8y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]]']]	✓
3708	$2x^2y'' + 5xy' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
3773	$x^2y'' + 4xy' + 2y = 4 \ln(x)$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
3774	$x^2y'' + 4xy' + 2y = \cos(x)$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
3775	$x^2y'' + xy' + 9y = 9 \ln(x)$	[[_2nd_order, _with_linear_symmetries]]	✓
3776	$x^2y'' - xy' + 5y = 8x \ln(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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Table 2.31 second order euler ode  
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#	ODE	CAS classification	Solved?
3777	$x^2y'' - 4xy' + 6y = x^4 \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3778	$x^2y'' + 6xy' + 6y = 4e^{2x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3779	$x^2y'' - 3xy' + 4y = \frac{x^2}{\ln(x)}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3780	$x^2y'' - (2m - 1)xy' + m^2y = x^m \ln(x)^k$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3781	$x^2y'' - xy' + 5y = 0$ i.c.	[[_Emden, _Fowler]]	✓
3782	$t^2y'' + ty' + 25y = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
4140	$x^2y'' - 2xy' + 2y = x^2 + 2$	[[_2nd_order, _with_linear_symmetries]]	✓
4509	$x^2y'' - xy' + y = \ln(x)$	[[_2nd_order, _with_linear_symmetries]]	✓
4510	$x^2y'' + 3xy' + 5y = \frac{5 \ln(x)}{x^2}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4512	$(-2 + x)^2 y'' - 3(-2 + x)y' + 4y = x$	[[_2nd_order, _with_linear_symmetries]]	✓
5990	$x^2y'' - xy' + y = x$	[[_2nd_order, _with_linear_symmetries]]	✓
5991	$y'' - \frac{2y'}{x} + \frac{2y}{x^2} = x \ln(x)$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
5992	$x^2y'' + xy' - 4y = x^3$	[[_2nd_order, _with_linear_symmetries]]	✓
5993	$x^2y'' + xy' - y = x^2e^{-x}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
5994	$2x^2y'' + 3xy' - y = \frac{1}{x}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
5998	$x^2y'' + xy' = 1$	[[_2nd_order, _missing_y]]	✓
6014	$x^2y'' + xy' = 1$ i.c.	[[_2nd_order, _missing_y]]	✓

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Table 2.31 second order euler ode  
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#	ODE	CAS classification	Solved?
6026	$x^2y'' - 2xy' + 2y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
6192	$x^2y'' + 3xy' - 3y = 0$	[[_Emden, _Fowler]]	✓
6193	$x^2y'' + xy' - 4y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
6194	$x^2y'' + 7xy' + 9y = 0$	[[_Emden, _Fowler]]	✓
6195	$x^2y'' - xy' + 6y = 0$	[[_Emden, _Fowler]]	✓
6196	$x^2y'' + xy' - 16y = 8x^4$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
6197	$x^2y'' + xy' - y = x - \frac{1}{x}$	[[_2nd_order, _exact, _lin- ear, _nonhomogeneous]]	✓
6198	$x^2y'' - 5xy' + 9y = 2x^3$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
6199	$x^2y'' - 3xy' + 4y = 6x^2 \ln(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6201	$x^2y'' + xy' + y = 2x$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
6215	$x^2y'' - xy' + y = x$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
6249	$x^2y'' - 3xy' + 3y = 0$	[[_Emden, _Fowler]]	✓
6410	$x^2y'' + xy' - 9y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
6412	$x^2y'' - xy' + y = 0$	[[_Emden, _Fowler]]	✓
6533	$t^2N'' - 2tN' + 2N = t \ln(t)$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
6541	$y'' + \frac{y'}{x} - \frac{y}{x^2} = \ln(x)$	[[_2nd_order, _exact, _lin- ear, _nonhomogeneous]]	✓
6542	$x^2y'' - xy' = x^3e^x$	[[_2nd_order, _missing_y]]	✓
6696	$x^2y'' - 3xy' + 4y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓

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Table 2.31 second order euler ode  
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#	ODE	CAS classification	Solved?
6750	$x^2y'' - 3xy' + 4y = x + x^2 \ln(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6751	$x^2y'' - 2xy' + 2y = \ln(x)^2 - \ln(x^2)$	[[_2nd_order, _with_linear_symmetries]]	✓
6754	$(x+1)^2y'' + (x+1)y' - y = \ln(x+1)^2 + x - 1$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
6755	$(2x+1)^2y'' - 2(2x+1)y' - 12y = 6x$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
6768	$xy'' - 3y' + \frac{3y}{x} = x + 2$	[[_2nd_order, _with_linear_symmetries]]	✓
7155	$y'' + \frac{y'}{x} - \frac{y}{x^2} = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
7163	$x^2y'' + 2xy' + 4y = 0$	[[_Emden, _Fowler]]	✓
7168	$x^2y'' + xy' - y = x^2 + 2x$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
7200	$px^2u'' + qxu' + ru = f(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7350	$y'' + \frac{y'}{x} - \frac{y}{x^2} = 0$ i.c.	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
7351	$y'' + \frac{y'}{x} - \frac{y}{x^2} = 0$ i.c.	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
7352	$(3x-1)^2y'' + (9x-3)y' - 9y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
7375	$x^2y'' + 2xy' - 6y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]]]	✓
7376	$2x^2y'' + xy' - y = 0$	[[_Emden, _Fowler]]	✓
7377	$x^2y'' + xy' - 4y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]]]	✓
7378	$x^2y'' - 5xy' + 9y = x^2$	[[_2nd_order, _with_linear_symmetries]]	✓
7380	$x^2y'' + xy' + 4y = 1$	[[_2nd_order, _with_linear_symmetries]]	✓
7381	$x^2y'' - 3xy' + 5y = 0$	[[_Emden, _Fowler]]	✓

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#	ODE	CAS classification	Solved?
7382	$x^2y'' + (-2 - i)xy' + 3iy = 0$	[[_Emden, _Fowler]]	✓
7383	$x^2y'' + xy' - 4\pi y = x$	[[_2nd_order, _with_linear_symmetries]]	✓
7637	$x^2y'' + 3xy' + 10y = 0$	[[_Emden, _Fowler]]	✓
7638	$2x^2y'' + 10xy' + 8y = 0$	[[_Emden, _Fowler]]	✓
7639	$x^2y'' + 2xy' - 12y = 0$	[[_Emden, _Fowler]]	✓
7641	$x^2y'' - 3xy' + 4y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
7642	$x^2y'' + 2xy' - 6y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
7643	$x^2y'' + 2xy' + 3y = 0$	[[_Emden, _Fowler]]	✓
7644	$x^2y'' + xy' - 2y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
7645	$x^2y'' + xy' - 16y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
7680	$x^2y'' - 2xy' + 2y = xe^{-x}$	[[_2nd_order, _with_linear_symmetries]]	✓
7737	$x^2y'' + 3xy' + y = \frac{2}{x}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
7743	<i>i.c.</i> $x^2y'' - 2xy' + 2y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
8282	$2x^2y'' + xy' - y = 0$	[[_Emden, _Fowler]]	✓
8283	$2x^2y'' - 3xy' + 2y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
8285	$2x^2y'' + 5xy' - 2y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓

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#	ODE	CAS classification	Solved?
8286	$x^2y'' + 2xy' - 12y = 0$	[[_Emden, _Fowler]]	✓
8287	$x^2y'' + xy' - 9y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]]	✓
8288	$x^2y'' - 3xy' + 4y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]]	✓
8289	$x^2y'' - 5xy' + 9y = 0$	[[_Emden, _Fowler]]	✓
8290	$x^2y'' + 5xy' + 5y = 0$	[[_Emden, _Fowler]]	✓
8437	$t^2y'' - 3ty' + 5y = 0$	[[_Emden, _Fowler]]	✓
8551	$x^2y'' + xy' - 4y = x$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
8818	$x^2y'' - 3xy' + 3y = 2x^3 - x^2$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
8845	$x^2y'' - 4xy' + 6y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]]	✓
10841	$x^2y'' + xy' - y - x^2a = 0$	[[_2nd_order, _exact, _lin- ear, _nonhomogeneous]]	✓
10842	$x^2y'' + xy' + ay = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]]	✓
10848	$x^2y'' - xy' + y - 3x^3 = 0$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
10850	$x^2y'' + 2xy' = 0$	[[_2nd_order, _missing_y]]	✓
10856	$x^2y'' - 2xy' + 2y - x^5 \ln(x) = 0$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
10857	$x^2y'' - 2xy' - 4y - x \sin(x) - (x^2a + 12a + 4) \cos(x) = 0$	[[_2nd_order, _exact, _lin- ear, _nonhomogeneous]]	✓
10864	$x^2y'' - 3xy' + 4y - 5x = 0$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
10865	$x^2y'' - 3xy' - 5y - x^2 \ln(x) = 0$	[[_2nd_order, _exact, _lin- ear, _nonhomogeneous]]	✓
10866	$x^2y'' - 4xy' + 6y - x^4 + x^2 = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
10868	$x^2 y'' - 5xy' + 8y - \sin(x)x^3 = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
10869	$x^2 y'' + axy' + by = 0$	[[_Emden, _Fowler]]	✓
10947	$(-2 + x)^2 y'' - (-2 + x)y' - 3y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
10960	$4x^2 y'' + 5xy' - y - \ln(x) = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10965	$(2x + 1)^2 y'' - 2(2x + 1)y' - 12y - 3x - 1 = 0$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
10967	$(3x - 1)^2 y'' + 3(3x - 1)y' - 9y - \ln(3x - 1)^2 = 0$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
12299	$x^2 y'' + axy' + by = 0$	[[_Emden, _Fowler]]	✓
12626	$x^2 y'' + 3xy' + y = \frac{1}{(1-x)^2}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
12627	$(x + 1)^2 y'' - (x + 1)y' + 6y = x$	[[_2nd_order, _with_linear_symmetries]]	✓
12676	$x^2 y'' + 3xy' + y = x$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
12677	$(x - 1)^2 y'' + 4(x - 1)y' + 2y = \cos(x)$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
12832	$t^2 x'' + 3tx' + x = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
12833	$tx'' + 4x' + \frac{2x}{t} = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
12834	$t^2 x'' - 7tx' + 16x = 0$	[[_Emden, _Fowler]]	✓
12835	$t^2 x'' + 3tx' - 8x = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
12836	$t^2 x'' + tx' = 0$ i.c.	[[_2nd_order, _missing_y]]	✓
12837	$t^2 x'' - tx' + 2x = 0$ i.c.	[[_Emden, _Fowler]]	✓
12846	$t^2 x'' - 3tx' + 3x = 4t^7$	[[_2nd_order, _with_linear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
13070	$x^2y'' - 2xy' + 2y = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
13071	$x^2y'' + xy' - 4y = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
13199	$x^2y'' - 6xy' + 10y = 3x^4 + 6x^3$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13200	$(x + 1)^2 y'' - 2(x + 1) y' + 2y = 1$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
13207	$x^2y'' - 3xy' + 3y = 0$	[[_Emden, _Fowler]]	✓
13208	$x^2y'' + xy' - 4y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
13209	$4x^2y'' - 4xy' + 3y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
13210	$x^2y'' - 3xy' + 4y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
13211	$x^2y'' + xy' + 4y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
13212	$x^2y'' - 3xy' + 13y = 0$	[[_Emden, _Fowler]]	✓
13213	$3x^2y'' - 4xy' + 2y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
13214	$x^2y'' + xy' + 9y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
13215	$9x^2y'' + 3xy' + y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓

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#	ODE	CAS classification	Solved?
13216	$x^2y'' - 5xy' + 10y = 0$	[[_Emden, _Fowler]]	✓
13220	$x^2y'' - 4xy' + 6y = 4x - 6$	[[_2nd_order, _with_linear_symmetries]]	✓
13221	$x^2y'' - 5xy' + 8y = 2x^3$	[[_2nd_order, _with_linear_symmetries]]	✓
13222	$x^2y'' + 4xy' + 2y = 4 \ln(x)$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
13223	$x^2y'' + xy' + 4y = 2x \ln(x)$	[[_2nd_order, _with_linear_symmetries]]	✓
13224	$x^2y'' + xy' + 4y = 4 \sin(\ln(x))$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13226	$x^2y'' - 2xy' - 10y = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
13227	$x^2y'' - 4xy' + 6y = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
13228	$x^2y'' + 5xy' + 3y = 0$ i.c.	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
13230	$x^2y'' - 4xy' + 4y = -6x^3 + 4x^2$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
13231	$x^2y'' + 2xy' - 6y = 10x^2$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
13232	$x^2y'' - 5xy' + 8y = 2x^3$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
13234	$(x+2)^2y'' - (x+2)y' - 3y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
13235	$(2x-3)^2y'' - 6(2x-3)y' + 12y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
13342	$t^2x'' + 3tx' + 3x = 0$	[[_Emden, _Fowler]]	✓
13349	$t^2x'' + tx' + x = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
13358	$y' + xy'' + \frac{\lambda y}{x} = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓

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#	ODE	CAS classification	Solved?
13359	$y' + xy'' + \frac{\lambda y}{x} = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
13472	$x^2y'' - 4xy' + 6y = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
13474	$t^2x'' - 5tx' + 10x = 0$ i.c.	[[_Emden, _Fowler]]	✓
13475	$t^2x'' + tx' - x = 0$ i.c.	[[_2nd_order, _exact, _lin- ear, _homogeneous]]	✓
13476	$x^2z'' + 3xz' + 4z = 0$ i.c.	[[_Emden, _Fowler]]	✓
13477	$x^2y'' - xy' - 3y = 0$ i.c.	[[_2nd_order, _exact, _lin- ear, _homogeneous]]	✓
13478	$4t^2x'' + 8tx' + 5x = 0$ i.c.	[[_Emden, _Fowler]]	✓
13479	$x^2y'' - 5xy' + 5y = 0$ i.c.	[[_Emden, _Fowler]]	✓
13480	$3x^2z'' + 5xz' - z = 0$ i.c.	[[_2nd_order, _exact, _lin- ear, _homogeneous]]	✓
13481	$t^2x'' + 3tx' + 13x = 0$ i.c.	[[_Emden, _Fowler]]	✓
13580	$x^2y'' - 4xy' + 6y = 2$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
13607	$(x + 1)^2 y'' + (x + 1) y' + y = 2 \cos(\ln(x + 1))$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13763	$t^2y'' + 3ty' + y = t^7$	[[_2nd_order, _exact, _lin- ear, _nonhomogeneous]]	✓
13986	$x^2y'' + xy' - y = 0$	[[_2nd_order, _exact, _lin- ear, _homogeneous]]	✓
13988	$2x^2y'' + 3xy' - y = 0$	[[_2nd_order, _exact, _lin- ear, _homogeneous]]	✓
13996	$2x^2y'' + xy' - y = 0$	[[_Emden, _Fowler]]	✓
14003	$x^2y'' - xy' = 0$	[[_2nd_order, _missing_y]]	✓
14004	$x^2y'' + 6xy' + 4y = 0$	[[_2nd_order, _exact, _lin- ear, _homogeneous]]	✓
14005	$x^2y'' - 5xy' + 9y = 0$	[[_Emden, _Fowler]]	✓

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#	ODE	CAS classification	Solved?
14021	$x^2y'' - 4xy' + 6y = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
14022	$x^2y'' - 4xy' + 6y = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
14023	$x^2y'' - 4xy' + 6y = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
14024	$x^2y'' - 4xy' + 6y = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
14025	$x^2y'' - 4xy' + 6y = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
14164	$x^2y'' + 2xy' - 2y = 0$	[[_Emden, _Fowler]]	✓
14168	$x^2y'' - xy' + y = 0$ i.c.	[[_Emden, _Fowler]]	✓
14171	$x^2y'' + xy' - 4y = -3x - \frac{3}{x}$ i.c.	[[_2nd_order, _with_lin- ear_symmetries]]	✓
14664	$x^2y'' + 3xy' = 0$	[[_2nd_order, _missing_y]]	✓
14976	$x^2y'' - 4xy' + 6y = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
14977	$4x^2y'' + 4xy' - y = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
14978	$x^2y'' - xy' + y = 0$ i.c.	[[_Emden, _Fowler]]	✓
14980	$(x+1)^2y'' - 2(x+1)y' + 2y = 0$ i.c.	[[_2nd_order, _with_lin- ear_symmetries], [_2nd_or- der, _linear, '_with_sym- metry_[0,F(x)]']]	✓

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#	ODE	CAS classification	Solved?
14981	$x^2y'' - 4xy' + 6y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]]	✓
15055	$x^2y'' - 5xy' + 8y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]]	✓
15057	$x^2y'' - 2xy' = 0$	[[_2nd_order, _missing_y]]	✓
15058	$2x^2y'' - xy' + y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]]	✓
15059	$x^2y'' - 5xy' + 9y = 0$	[[_Emden, _Fowler]]	✓
15060	$x^2y'' + 5xy' + 4y = 0$	[[_Emden, _Fowler]]	✓
15062	$x^2y'' - 19xy' + 100y = 0$	[[_Emden, _Fowler]]	✓
15063	$x^2y'' - 5xy' + 29y = 0$	[[_Emden, _Fowler]]	✓
15064	$x^2y'' - xy' + 10y = 0$	[[_Emden, _Fowler]]	✓
15065	$x^2y'' + 5xy' + 29y = 0$	[[_Emden, _Fowler]]	✓
15066	$x^2y'' + xy' + y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]]	✓
15067	$2x^2y'' + 5xy' + y = 0$	[[_2nd_order, _exact, _lin- ear, _homogeneous]]	✓
15069	$x^2y'' + xy' = 0$	[[_2nd_order, _missing_y]]	✓
15070	$x^2y'' + xy' - 25y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]]	✓
15071	$4x^2y'' + 8xy' + 5y = 0$	[[_Emden, _Fowler]]	✓
15072	$3x^2y'' - 7xy' + 3y = 0$	[[_Emden, _Fowler]]	✓
15073	<i>i.c.</i> $x^2y'' - 2xy' - 10y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]]	✓

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#	ODE	CAS classification	Solved?
15074	$4x^2y'' + 4xy' - y = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _lin- ear, _with_symme- try_[0,F(x)]]]	✓
15075	$x^2y'' - 11xy' + 36y = 0$ i.c.	[[_Emden, _Fowler]]	✓
15076	$x^2y'' - xy' + y = 0$ i.c.	[[_Emden, _Fowler]]	✓
15077	$x^2y'' - xy' + 2y = 0$ i.c.	[[_Emden, _Fowler]]	✓
15078	$x^2y'' - 3xy' + 13y = 0$ i.c.	[[_Emden, _Fowler]]	✓
15095	$x^2y'' - 4xy' + 6y = 10x + 12$ i.c.	[[_2nd_order, _with_lin- ear_symmetries]]	✓
15101	$x^2y'' - 4xy' + 6y = 1$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
15102	$x^2y'' - 4xy' + 6y = x$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
15103	$x^2y'' - 4xy' + 6y = 22x + 24$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
15104	$x^2y'' - 7xy' + 15y = x^2$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
15105	$x^2y'' - 7xy' + 15y = x$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
15106	$x^2y'' - 7xy' + 15y = 1$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
15107	$x^2y'' - 7xy' + 15y = 4x^2 + 2x + 3$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
15181	$x^2y'' - 5xy' + 8y = \frac{5}{x^3}$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
15182	$2x^2y'' - xy' + y = \frac{50}{x^3}$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
15183	$2x^2y'' + 5xy' + y = 85 \cos(2 \ln(x))$	[[_2nd_order, _exact, _lin- ear, _nonhomogeneous]]	✓
15185	$3x^2y'' - 7xy' + 3y = 4x^3$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
15186	$2x^2y'' + 5xy' + y = \frac{10}{x}$	[[_2nd_order, _exact, _lin- ear, _nonhomogeneous]]	✓

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Table 2.31 second order euler ode  
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#	ODE	CAS classification	Solved?
15187	$x^2y'' - 5xy' + 9y = 6x^3$	[[_2nd_order, _with_linear_symmetries]]	✓
15188	$x^2y'' + 5xy' + 4y = 64x^2 \ln(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15189	$x^2y'' - 2xy' + 2y = 3\sqrt{x}$	[[_2nd_order, _with_linear_symmetries]]	✓
15195	$x^2y'' + xy' - y = \sqrt{x}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
15196	$x^2y'' + xy' - 9y = 12x^3$	[[_2nd_order, _with_linear_symmetries]]	✓
15197	$x^2y'' - 3xy' + 4y = x^2$	[[_2nd_order, _with_linear_symmetries]]	✓
15198	$x^2y'' + 5xy' + 4y = \ln(x)$	[[_2nd_order, _with_linear_symmetries]]	✓
15203	$x^2y'' - 2xy' - 4y = \frac{10}{x}$ i.c.	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
15213	$x^2y'' + xy' - 9y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
15216	$x^2y'' - 7xy' + 16y = 0$	[[_Emden, _Fowler]]	✓
15221	$x^2y'' + 7xy' + 9y = 0$	[[_Emden, _Fowler]]	✓
15227	$x^2y'' + xy' + 9y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
15229	$x^2y'' + 2xy' - 30y = 0$	[[_Emden, _Fowler]]	✓
15232	$4x^2y'' + 8xy' + y = 0$	[[_Emden, _Fowler]]	✓
15234	$2x^2y'' - 3xy' + 2y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
15235	$9x^2y'' + 3xy' + y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
15245	$x^2y'' + xy' - 9y = 3\sqrt{x}$	[[_2nd_order, _with_linear_symmetries]]	✓

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Table 2.31 second order euler ode  
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#	ODE	CAS classification	Solved?
15248	$x^2y'' + 2xy' - 6y = 18 \ln(x)$	[[_2nd_order, _with_linear_symmetries]]	✓
15250	$2x^2y'' - xy' - 2y = 10x^2$	[[_2nd_order, _with_linear_symmetries]]	✓
15253	$x^2y'' + 3xy' + 2y = 6$	[[_2nd_order, _with_linear_symmetries]]	✓
15254	$x^2y'' + xy' - y = \frac{1}{x^2 + 1}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
15259	$x^2y'' + 3xy' + y = \frac{1}{(x + 1)^2}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
15260	$x^2y'' + 3xy' + y = \frac{1}{x}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
15461	$t^2y'' + ty' + 2y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
15476	$x^2y'' - 12xy' + 42y = 0$	[[_Emden, _Fowler]]	✓
15477	$t^2y'' + 3ty' + 5y = 0$	[[_Emden, _Fowler]]	✓
15502	$t^2y'' - 12ty' + 42y = 0$ i.c.	[[_Emden, _Fowler]]	✓
15503	$x^2y'' + 3xy' + 5y = 0$ i.c.	[[_Emden, _Fowler]]	✓
15522	$x^2y'' - xy' - 16y = 0$	[[_Emden, _Fowler]]	✓
15523	$x^2y'' + 3xy' + 2y = 0$	[[_Emden, _Fowler]]	✓
15534	$x^2y'' + 5xy' + 4y = 0$ i.c.	[[_Emden, _Fowler]]	✓
15677	$y'' - \frac{y'}{t} + \frac{y}{t^2} = \frac{1}{t}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
15855	$2t^2y'' - 3ty' - 3y = 0$	[[_Emden, _Fowler]]	✓
15859	$3t^2y'' - 5ty' - 3y = 0$ i.c.	[[_Emden, _Fowler]]	✓
15860	$t^2y'' + 7ty' - 7y = 0$ i.c.	[[_Emden, _Fowler]]	✓
15865	$t^2y'' + ty' - y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
15877	$t^2y'' + aty' + by = 0$	[[_Emden, _Fowler]]	✓

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Table 2.31 second order euler ode  
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#	ODE	CAS classification	Solved?
15916	$3t^2y'' - 2ty' + 2y = 0$	[[_Emden, _Fowler]]	✓
15917	$t^2y'' - ty' + y = 0$	[[_Emden, _Fowler]]	✓
16030	$t^2y'' + 3ty' + y = \ln(t)$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
16031	$t^2y'' + ty' + 4y = t$	[[_2nd_order, _with_linear_symmetries]]	✓
16032	$t^2y'' - 4ty' - 6y = 2\ln(t)$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
16116	$4x^2y'' - 8xy' + 5y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]]]	✓
16117	$3x^2y'' - 4xy' + 2y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]]]	✓
16118	$2x^2y'' - 8xy' + 8y = 0$	[[_Emden, _Fowler]]	✓
16119	$2x^2y'' - 7xy' + 7y = 0$	[[_Emden, _Fowler]]	✓
16121	$9x^2y'' - 9xy' + 10y = 0$	[[_Emden, _Fowler]]	✓
16122	$2x^2y'' - 2xy' + 20y = 0$	[[_Emden, _Fowler]]	✓
16123	$x^2y'' - 5xy' + 10y = 0$	[[_Emden, _Fowler]]	✓
16124	$4x^2y'' + 8xy' + y = 0$	[[_Emden, _Fowler]]	✓
16126	$x^2y'' - 5xy' + 9y = 0$	[[_Emden, _Fowler]]	✓
16127	$x^2y'' + 7xy' + 9y = 0$	[[_Emden, _Fowler]]	✓
16136	$x^2y'' + 5xy' + 4y = \frac{1}{x^5}$	[[_2nd_order, _with_linear_symmetries]]	✓
16137	$x^2y'' - 5xy' + 9y = x^3$	[[_2nd_order, _with_linear_symmetries]]	✓
16138	$x^2y'' + xy' + y = \frac{1}{x^2}$	[[_2nd_order, _with_linear_symmetries]]	✓
16139	$x^2y'' + xy' + 4y = \frac{1}{x^2}$	[[_2nd_order, _with_linear_symmetries]]	✓
16140	$x^2y'' + 2xy' - 6y = 2x$	[[_2nd_order, _with_linear_symmetries]]	✓
16141	$x^2y'' + xy' - 16y = \ln(x)$	[[_2nd_order, _with_linear_symmetries]]	✓

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Table 2.31 second order euler ode  
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#	ODE	CAS classification	Solved?
16142	$x^2y'' + xy' + 4y = 8$	[[_2nd_order, __with_linear_symmetries]]	✓
16143	$x^2y'' + xy' + 36y = x^2$	[[_2nd_order, __with_linear_symmetries]]	✓
16146	$3x^2y'' - 4xy' + 2y = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
16147	$2x^2y'' - 7xy' + 7y = 0$ i.c.	[[_Emden, _Fowler]]	✓
16148	$x^2y'' + xy' + 4y = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
16149	$x^2y'' + xy' + 2y = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
16154	$2x^2y'' + 3xy' - y = \frac{1}{x^2}$ i.c.	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
16155	$x^2y'' + 4xy' + 2y = \ln(x)$ i.c.	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
16157	$9x^2y'' + 27xy' + 10y = \frac{1}{x}$ i.c.	[[_2nd_order, __with_linear_symmetries]]	✓
16158	$x^2y'' - xy' + 2y = 0$	[[_Emden, _Fowler]]	✓
16159	$x^2y'' + 4xy' + 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
16160	$x^2y'' + xy' + y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
16172	$x^2y'' + 4xy' + 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
16173	$x^2y'' + xy' + y = x^2$	[[_2nd_order, __with_linear_symmetries]]	✓
16174	$x^2y'' + xy' + 4y = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓

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Table 2.31 second order euler ode  
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#	ODE	CAS classification	Solved?
16175	$x^2y'' - xy' + y = 0$ i.c.	[[_Emden, _Fowler]]	✓
16182	$6x^2y'' + 5xy' - y = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]^1]]	✓
16282	$t^2y'' - 5ty' + 5y = 0$	[[_Emden, _Fowler]]	✓
16283	$x^2y'' + 7xy' + 8y = 0$	[[_Emden, _Fowler]]	✓
16284	$x^2y'' - 4xy' + 6y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]^1]]	✓
16285	$x^2y'' + xy' + y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]^1]]	✓
16286	$2x^2y'' + 5xy' + y = 0$ i.c.	[[_2nd_order, _exact, _lin- ear, _homogeneous]]	✓
16287	$5x^2y'' - xy' + 2y = 0$	[[_Emden, _Fowler]]	✓
16288	$x^2y'' - 7xy' + 25y = 0$	[[_Emden, _Fowler]]	✓
16289	$x^2y'' - 7xy' + 15y = 8x$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
16793	$x^2y'' + xy' - y = 0$	[[_2nd_order, _exact, _lin- ear, _homogeneous]]	✓
16794	$x^2y'' + 3xy' + y = 0$	[[_2nd_order, _exact, _lin- ear, _homogeneous]]	✓
16795	$x^2y'' + 2xy' + 6y = 0$	[[_Emden, _Fowler]]	✓
16797	$(x + 2)^2 y'' + 3(x + 2) y' - 3y = 0$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
16798	$(2x + 1)^2 y'' - 2(2x + 1) y' + 4y = 0$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
16803	$x^2y'' + xy' + y = x(6 - \ln(x))$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
16805	$x^2y'' - xy' - 3y = -\frac{16 \ln(x)}{x}$	[[_2nd_order, _exact, _lin- ear, _nonhomogeneous]]	✓
16806	$x^2y'' - 2xy' - 2y = x^2 - 2x + 2$	[[_2nd_order, _with_lin- ear_symmetries]]	✓

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Table 2.31 second order euler ode  
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#	ODE	CAS classification	Solved?
16807	$x^2y'' + xy' - y = x^m$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
16808	$x^2y'' + 4xy' + 2y = 2 \ln(x)^2 + 12x$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
16810	$(-2 + x)^2 y'' - 3(-2 + x) y' + 4y = x$	[[_2nd_order, _with_linear_symmetries]]	✓
17227	$a x^2 y'' + b x y' + c y = d$	[[_2nd_order, _with_linear_symmetries]]	✓
17302	$a x^2 y'' + b x y' + c y = 0$	[[_Emden, _Fowler]]	✓
17303	$x^2 y'' + x y' + 4 y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]]]	✓
17304	$x^2 y'' + 4 x y' + 2 y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
17305	$x^2 y'' + 3 x y' + \frac{5 y}{4} = 0$	[[_Emden, _Fowler]]	✓
17306	$x^2 y'' - 4 x y' - 6 y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
17308	$x^2 y'' - 5 x y' + 9 y = 0$	[[_Emden, _Fowler]]	✓
17309	$x^2 y'' + 2 x y' + 4 y = 0$	[[_Emden, _Fowler]]	✓
17310	$2 x^2 y'' - 4 x y' + 6 y = 0$	[[_Emden, _Fowler]]	✓
17311	$2 x^2 y'' + x y' - 3 y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
17312	$4 x^2 y'' + 8 x y' + 17 y = 0$	[[_Emden, _Fowler]]	✓
17313	$x^2 y'' - 5 x y' + 9 y = 0$	[[_Emden, _Fowler]]	✓
17314	$x^2 y'' + 3 x y' + 5 y = 0$	[[_Emden, _Fowler]]	✓
17348	$x^2 y'' - 3 x y' + 4 y = \ln(x)$	[[_2nd_order, _with_linear_symmetries]]	✓
17349	$x^2 y'' + 7 x y' + 5 y = x$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
17350	$x^2 y'' - 2 x y' + 2 y = 3 x^2 + 2 \ln(x)$	[[_2nd_order, _with_linear_symmetries]]	✓
17351	$x^2 y'' + x y' + 4 y = \sin(\ln(x))$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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Table 2.31 second order euler ode  
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#	ODE	CAS classification	Solved?
17382	$x^2y'' - 3xy' + 4y = x^2 \ln(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17383	$t^2y'' - 2ty' + 2y = 4t^2$	[[_2nd_order, _with_linear_symmetries]]	✓
17384	$t^2y'' + 7ty' + 5y = t$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
17677	$x^2y'' - 2xy' + 2y = 2x^3$	[[_2nd_order, _with_linear_symmetries]]	✓
17702	$y'' + \frac{2y'}{x} - \frac{n(n+1)y}{x^2} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
17703	$x^2y'' - 4xy' + 6y = x$	[[_2nd_order, _with_linear_symmetries]]	✓
17704	$x^2y'' - xy' + 2y = x \ln(x)$	[[_2nd_order, _with_linear_symmetries]]	✓
17707	$(x+1)^2 y'' + (x+1)y' + y = 4 \cos(\ln(x+1))$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17890	$x^2y'' + xy' = 1$	[[_2nd_order, _missing_y]]	✓
17928	$x^3y'' + x^2y' + xy = 1$	[[_2nd_order, _with_linear_symmetries]]	✓
17936	$x^2y'' - 3xy' - 5y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
17939	<i>i.c.</i> $x^2y'' - 2xy' + 2y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
17988	$x^2y'' + 3xy' + 10y = 0$	[[_Emden, _Fowler]]	✓
17989	$2x^2y'' + 10xy' + 8y = 0$	[[_Emden, _Fowler]]	✓
17990	$x^2y'' + 2xy' - 12y = 0$	[[_Emden, _Fowler]]	✓
17992	$x^2y'' - 3xy' + 4y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
17993	$x^2y'' + 2xy' - 6y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
17994	$x^2y'' + 2xy' + 3y = 0$	[[_Emden, _Fowler]]	✓

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Table 2.31 second order euler ode  
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#	ODE	CAS classification	Solved?
17995	$x^2y'' + xy' - 2y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
17996	$x^2y'' + xy' - 16y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
18032	$x^2y'' - 2xy' + 2y = xe^{-x}$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
18189	$t^2x'' - 6tx' + 12x = 0$	[[_Emden, _Fowler]]	✓
18192	$t^2x'' - 2tx' + 2x = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
18271	$x^2y'' + 3xy' + y = \frac{1}{x}$	[[_2nd_order, _exact, _lin- ear, _nonhomogeneous]]	✓
18282	$x^2y'' - 5xy' + 5y = \frac{1}{x}$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
18291	$x^2y'' + xy' + y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
18361	$x^2y'' + 3xy' - 8y = x$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
18366	$x^2y'' - xy' + y = \ln(x)$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
18400	$y'' - \frac{2y'}{x} + \frac{2y}{x^2} = 0$	[[_2nd_order, _exact, _lin- ear, _homogeneous]]	✓
18599	$x^2y'' - xy' + y = 2 \ln(x)$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
18603	$x^2y'' - 2xy' - 4y = x^4$	[[_2nd_order, _exact, _lin- ear, _nonhomogeneous]]	✓
18604	$x^2y'' + 5xy' + 4y = x^4$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
18605	$x^2y'' + 2xy' - 20y = (x+1)^2$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
18606	$x^2y'' + 7xy' + 5y = x^5$	[[_2nd_order, _exact, _lin- ear, _nonhomogeneous]]	✓

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Table 2.31 second order euler ode  
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#	ODE	CAS classification	Solved?
18610	$x^2 y'' + 4xy' + 2y = e^x$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
18612	$(x + a)^2 y'' - 4(x + a) y' + 6y = x$	[[_2nd_order, _with_linear_symmetries]]	✓
18616	$x^2 y'' + xy' - y = x^m$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
18617	$x^2 y'' - 3xy' + 4y = x^m$	[[_2nd_order, _with_linear_symmetries]]	✓
18620	$x^2 y'' + 3xy' + y = \frac{1}{(1-x)^2}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
18621	$x^2 y'' - (2m - 1)xy' + (m^2 + n^2)y = n^2 x^m \ln(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18622	$x^2 y'' - 3xy' + y = \frac{\ln(x) \sin(\ln(x)) + 1}{x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

## 2.4.4 second order nonlinear exact ode

Table 2.32: second order nonlinear exact ode

#	ODE	CAS classification	Solved?
148	$yy'' + y'^2 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
153	$yy'' + y'^2 = yy'$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
157	$y'' = 2yy'$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Lagerstrom, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
233	$yy'' + y'^2 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
3260	$y'' = yy'$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Lagerstrom, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
3262	$y'' + yy' = 0$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Lagerstrom, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
3264	$yy'' + y'^2 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓

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Table 2.32 second order nonlinear exact ode  
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#	ODE	CAS classification	Solved?
3267	$yy'' + y'^2 = yy'$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
5995	$y'' = 2yy'$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Lagerstrom, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
6004	$yy'' + y'^2 - y' = 0$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
6011	<i>i.c.</i> $y'' = y'e^y$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _non- linear], [_2nd_order, _re- ducible, _mu_xy]]	✓
6012	<i>i.c.</i> $y'' = 2yy'$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Lagerstrom, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
6183	<i>i.c.</i> $y'' + yy' = 0$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Lagerstrom, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
6184	<i>i.c.</i> $y'' + yy' = 0$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Lagerstrom, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓

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Table 2.32 second order nonlinear exact ode  
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#	ODE	CAS classification	Solved?
6185	$y'' + yy' = 0$ i.c.	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Lagerstrom, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
6186	$y'' + yy' = 0$ i.c.	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Lagerstrom, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
6235	$yy'' + y'^2 + 4 = 0$ i.c.	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
6700	$yy'' + y'^2 = 2$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
6778	$yy'' + y'^2 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
7439	$y'' = yy'$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Lagerstrom, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
7500	$y''y' = x(x + 1)$	[[_2nd_order, _missing_y], [_2nd_order, _exact, _nonlinear], [_2nd_order, _reducible, _mu_y_y1], [_2nd_order, _reducible, _mu_poly_yn]]	✓

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Table 2.32 second order nonlinear exact ode  
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#	ODE	CAS classification	Solved?
7581	$yy'' + y'^2 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
7590	<i>i.c.</i> $y'' = y'e^y$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _non- linear], [_2nd_order, _re- ducible, _mu_xy]]	✓
8168	$yy'' + y'^2 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
8475	$y'' = \frac{1}{y} - \frac{xy'}{y^2}$	[[_2nd_order, _exact, _nonlinear], [_2nd_order, _with_linear_symmetries], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_y_y1], [_2nd_order, _reducible, _mu_xy]]	✓
11307	$y'' - 2a yy' = 0$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Lagerstrom, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
11372	$yy'' + y'^2 - a = 0$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
11374	$yy'' + y'^2 - y' = 0$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓

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Table 2.32 second order nonlinear exact ode  
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#	ODE	CAS classification	Solved?
12690	$y'' + yy' = 0$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Lagerstrom, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
13685	$(1 - y)y'' - y'^2 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
13686	$(\cos(y) - y \sin(y))y'' - y'^2(2 \sin(y) + y \cos(y)) = \sin(x)$	[[_2nd_order, _exact, _nonlinear], [_2nd_order, _reducible, _mu_y_y1], [_2nd_order, _reducible, _mu_xy]]	✓
14892	$y''y' = 1$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _non- linear], [_2nd_order, _re- ducible, _mu_poly_yn]]	✓
14893	$yy'' = -y'^2$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
14906	$\sin(y)y'' + \cos(y)y'^2 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
14908	$yy'' + y'^2 = 2yy'$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓

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Table 2.32 second order nonlinear exact ode  
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#	ODE	CAS classification	Solved?
14909	$y^2 y'' + y'' + 2yy'^2 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
14911	$y''y' = 1$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _non- linear], [_2nd_order, _re- ducible, _mu_poly_yn]]	✓
14929 i.c.	$y'' = -y'e^{-y}$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _non- linear], [_2nd_order, _re- ducible, _mu_xy]]	✓
14934 i.c.	$y'' = 2yy'$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Lagerstrom, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
14935 i.c.	$y'' = 2yy'$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Lagerstrom, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
14936 i.c.	$y'' = 2yy'$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Lagerstrom, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
14937 i.c.	$y'' = 2yy'$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Lagerstrom, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
16590	$yy'' + y'^2 = 1$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓

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Table 2.32 second order nonlinear exact ode  
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#	ODE	CAS classification	Solved?
16616	$y'' = 2yy'$ i.c.	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Lagerstrom, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
16619	$yy'' + y'^2 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
16854	$x'' + (x + 2)x' = 0$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
16860	$yy'' + y'^2 + 1 = 0$ i.c.	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
17242	$yy'' + y'^2 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
17863	$yy'' + y'^2 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
17872	$y'' = y'e^y$ i.c.	[[_2nd_order, _missing_x], [_2nd_order, _exact, _non- linear], [_2nd_order, _re- ducible, _mu_xy]]	✓

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Table 2.32 second order nonlinear exact ode  
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#	ODE	CAS classification	Solved?
17881	$yy'' + y'^2 - 2yy' = 0$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
18285	$y'' - 2yy' = 0$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Lagerstrom, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓

## 2.4.5 second order linear exact ode

Table 2.33: second order linear exact ode

#	ODE	CAS classification	Solved?
11	$x'' = 50$ i.c.	[[_2nd_order, _quadrature]]	✓
12	$x'' = -20$ i.c.	[[_2nd_order, _quadrature]]	✓
13	$x'' = 3t$ i.c.	[[_2nd_order, _quadrature]]	✓
14	$x'' = 2t + 1$ i.c.	[[_2nd_order, _quadrature]]	✓
15	$x'' = 4(3 + t)^2$ i.c.	[[_2nd_order, _quadrature]]	✓
16	$x'' = \frac{1}{\sqrt{t+4}}$ i.c.	[[_2nd_order, _quadrature]]	✓
17	$x'' = \frac{1}{(t+1)^3}$ i.c.	[[_2nd_order, _quadrature]]	✓
18	$x'' = 50 \sin(5t)$ i.c.	[[_2nd_order, _quadrature]]	✓
147	$xy'' = y'$	[[_2nd_order, _missing_y]]	✓
150	$xy'' + y' = 4x$	[[_2nd_order, _missing_y]]	✓
221	$y'' + y' = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
222	$y'' - 3y' = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
236	$y'' + 5y' = 0$	[[_2nd_order, _missing_x]]	✓
237	$2y'' + 3y' = 0$	[[_2nd_order, _missing_x]]	✓
244	$x^2y'' + xy' - y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
272	$2y'' - 3y' = 0$	[[_2nd_order, _missing_x]]	✓
376	$x^2y'' + xy' - y = 72x^5$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
813	$y'' + y' = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
814	$y'' - 3y' = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
825	$y'' + 5y' = 0$	[[_2nd_order, _missing_x]]	✓
826	$2y'' + 3y' = 0$	[[_2nd_order, _missing_x]]	✓

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Table 2.33 second order linear exact ode  
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#	ODE	CAS classification	Solved?
833	$x^2y'' + xy' - y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
846	$2y'' - 3y' = 0$	[[_2nd_order, _missing_x]]	✓
902	$x^2y'' + xy' - y = 72x^5$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
1253	$y'' + 5y' = 0$	[[_2nd_order, _missing_x]]	✓
1260	$y'' + 3y' = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
1294	$t^2y'' + 4ty' + 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
1296	$t^2y'' - 4ty' - 6y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
1330	$t^2y'' + 3ty' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
1345	$t^2y'' - 2y = 3t^2 - 1$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
1352	$t^2y'' + 7ty' + 5y = t$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
1742	$(x^2 - 1)y'' + 4xy' + 2y = 0$ i.c.	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
1746	$x^2y'' + xy' - y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
1754	$(x^2 - 4)y'' + 4xy' + 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
1811	$x^2y'' + xy' - y = 2x^2 + 2$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
1828	$x^2y'' - xy' - 3y = x^{3/2}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
1837	$(x - 1)^2y'' + 4xy' + 2y = 2x$ i.c.	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
1839	$(x + 1)(2x + 3)y'' + 2(x + 2)y' - 2y = (2x + 3)^2$ i.c.	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
2362	$2t^2y'' + 3ty' - y = 0$ i.c.	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
2400	$t^2y'' + 3ty' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
2433	$2t^2y'' + 3ty' - y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓

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Table 2.33 second order linear exact ode  
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#	ODE	CAS classification	Solved?
2435	$t^2y'' + 3ty' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
2543 i.c.	$2t^2y'' + 3ty' - y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
2581	$t^2y'' + 3ty' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
2591	$t^2y'' - 2y = t^2$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
2607	$y'' + 2y' = 1 + t^2 + e^{-2t}$	[[_2nd_order, _missing_y]]	✓
2629	$2t^2y'' + 3ty' - y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
2631	$t^2y'' + 3ty' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
3089	$y'' = 0$	[[_2nd_order, _quadrature]]	✓
3141 i.c.	$2y'' + y' = 8 \sin(2x) + e^{-x}$	[[_2nd_order, _missing_y]]	✓
3217	$y'' + 2y' = x^3 \sin(2x)$	[[_2nd_order, _missing_y]]	✓
3218	$y'' - y' = x e^{2x} \sin(x)$	[[_2nd_order, _missing_y]]	✓
3220	$y'' + 2y' = x^2 e^{-x} \sin(x)$	[[_2nd_order, _missing_y]]	✓
3228	$x^2y'' + 3xy' + y = 1 - x$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
3244	$y'' = \cos(t)$	[[_2nd_order, _quadrature]]	✓
3249	$xy'' = x^2 + 1$	[[_2nd_order, _quadrature]]	✓
3250	$(1 - x)y'' = y'$	[[_2nd_order, _missing_y]]	✓
3251	$(x^2 + 1)y'' + 2x(y' + 1) = 0$	[[_2nd_order, _missing_y]]	✓
3253	$xy'' + x = y'$	[[_2nd_order, _missing_y]]	✓
3272 i.c.	$y'' = \sec(x) \tan(x)$	[[_2nd_order, _quadrature]]	✓
3284 i.c.	$(1 - e^x)y'' = e^xy'$	[[_2nd_order, _missing_y]]	✓
3494	$(x + 1)^2y'' + 3(x + 1)y' + y = x^2$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
3565	$x^2y'' + 5xy' + 3y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓

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Table 2.33 second order linear exact ode  
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#	ODE	CAS classification	Solved?
3575	$x^2y'' + xy' - y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
3584	$y'' = x e^x$	[[_2nd_order, _quadrature]]	✓
3585	$y'' = x^n$	[[_2nd_order, _quadrature]]	✓
3587	$y'' = \cos(x)$ i.c.	[[_2nd_order, _quadrature]]	✓
3589	$y'' = x e^x$ i.c.	[[_2nd_order, _quadrature]]	✓
3699	$y'' + 4y' = 0$	[[_2nd_order, _missing_x]]	✓
3708	$2x^2y'' + 5xy' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
3773	$x^2y'' + 4xy' + 2y = 4 \ln(x)$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
3774	$x^2y'' + 4xy' + 2y = \cos(x)$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
4124	$2y'' + 3y' = 0$	[[_2nd_order, _missing_x]]	✓
4127	$y'' = 0$	[[_2nd_order, _quadrature]]	✓
4426	$xy'' = y' + x$	[[_2nd_order, _missing_y]]	✓
4484	$y'' - y' = e^x(x^2 + 10)$	[[_2nd_order, _missing_y]]	✓
4508	$y'' + y' = \frac{1}{1 + e^x}$	[[_2nd_order, _missing_y]]	✓
5916	$y'' + 2y' = 0$	[[_2nd_order, _missing_x]]	✓
5945	$y'' = 0$ i.c.	[[_2nd_order, _quadrature]]	✓
5958	$y'' - 3y' = 2 e^{2x} \sin(x)$	[[_2nd_order, _missing_y]]	✓
5959	$y'' + y' = x^2 + 2x$	[[_2nd_order, _missing_y]]	✓
5960	$y'' + y' = x + \sin(2x)$	[[_2nd_order, _missing_y]]	✓
5991	$y'' - \frac{2y'}{x} + \frac{2y}{x^2} = x \ln(x)$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
5993	$x^2y'' + xy' - y = x^2 e^{-x}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
5994	$2x^2y'' + 3xy' - y = \frac{1}{x}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓

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Table 2.33 second order linear exact ode  
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#	ODE	CAS classification	Solved?
5999	$xy'' - y' = x^2$	[[_2nd_order, _missing_y]]	✓
6009	$(x^2 + 1)y'' + 2x(y' + 1) = 0$	[[_2nd_order, _missing_y]]	✓
6015	$xy'' - y' = x^2$ i.c.	[[_2nd_order, _missing_y]]	✓
6137	$y'' + 9y' = 0$	[[_2nd_order, _missing_x]]	✓
6142	$y'' + 5y' = 0$	[[_2nd_order, _missing_x]]	✓
6151	$y'' - 4y' = 10$	[[_2nd_order, _missing_x]]	✓
6172	$2y'' + y' = 2x$	[[_2nd_order, _missing_y]]	✓
6182	$y'' - 2y' = 9xe^{-x} - 6x^2 + 4e^{2x}$	[[_2nd_order, _missing_y]]	✓
6197	$x^2y'' + xy' - y = x - \frac{1}{x}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
6219	$xy'' + y' = 4x$	[[_2nd_order, _missing_y]]	✓
6409	$x(1-x)y'' + 2(-2x+1)y' - 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
6514	$y'' = 9x^2 + 2x - 1$	[[_2nd_order, _quadrature]]	✓
6540	$y'' - 7y' = -3$	[[_2nd_order, _missing_x]]	✓
6541	$y'' + \frac{y'}{x} - \frac{y}{x^2} = \ln(x)$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
6713	$y'' - 4y' = 5$	[[_2nd_order, _missing_x]]	✓
6754	$(x+1)^2y'' + (x+1)y' - y = \ln(x+1)^2 + x - 1$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
6755	$(2x+1)^2y'' - 2(2x+1)y' - 12y = 6x$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
6774	$(x^2 + 1)y'' + 2xy' = \frac{2}{x^3}$	[[_2nd_order, _missing_y]]	✓
6775	$xy'' - y' = -\frac{2}{x} - \ln(x)$	[[_2nd_order, _missing_y]]	✓
7155	$y'' + \frac{y'}{x} - \frac{y}{x^2} = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
7160	$(-x^2 + 1)y'' - xy' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
7166	$y'' + xy' + y = 2xe^x - 1$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
7168	$x^2y'' + xy' - y = x^2 + 2x$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
7170	$x(x+1)y'' + (x+2)y' - y = x + \frac{1}{x}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
7257	$y'' = x + 2$	[[_2nd_order, _quadrature]]	✓
7265	$y'' = 3x + 1$	[[_2nd_order, _quadrature]]	✓
7291	$y'' = 0$	[[_2nd_order, _quadrature]]	✓
7350 i.c.	$y'' + \frac{y'}{x} - \frac{y}{x^2} = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
7351 i.c.	$y'' + \frac{y'}{x} - \frac{y}{x^2} = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
7352	$(3x-1)^2y'' + (9x-3)y' - 9y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
7435	$y'' + y' = 1$	[[_2nd_order, _missing_x]]	✓
7440	$xy'' - 2y' = x^3$	[[_2nd_order, _missing_y]]	✓
7587	$xy'' + y' = 4x$	[[_2nd_order, _missing_y]]	✓
7612	$xy'' - 3y' = 5x$	[[_2nd_order, _missing_y]]	✓
7653	$y'' - 2y' = 12x - 10$	[[_2nd_order, _missing_y]]	✓
7656	$y'' + y' = 10x^4 + 2$	[[_2nd_order, _missing_y]]	✓
7729 i.c.	$y'' = \tan(x)$	[[_2nd_order, _quadrature]]	✓
7730 i.c.	$y'' - 2y' = \ln(x)$	[[_2nd_order, _missing_y]]	✓
7737	$x^2y'' + 3xy' + y = \frac{2}{x}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
7899	$y'' - y' = 0$	[[_2nd_order, _missing_x]]	✓
7901	$y'' + 2y' = 0$	[[_2nd_order, _missing_x]]	✓
8038 i.c.	$ty'' - y' = 2t^2$	[[_2nd_order, _missing_y]]	✓
8172 i.c.	$xy'' = y' + x^5$	[[_2nd_order, _missing_y]]	✓

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Table 2.33 second order linear exact ode  
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#	ODE	CAS classification	Solved?
8173	$xy'' + y' + x = 0$ i.c.	[[_2nd_order, _missing_y]]	✓
8435	$ty'' + 4y' = t^2$	[[_2nd_order, _missing_y]]	✓
8436	$(t^2 + 9)y'' + 2ty' = 0$ i.c.	[[_2nd_order, _missing_y]]	✓
8438	$ty'' + y' = 0$	[[_2nd_order, _missing_y]]	✓
8442	$y'' = 0$	[[_2nd_order, _quadrature]]	✓
8443	$y'' = 1$	[[_2nd_order, _quadrature]]	✓
8444	$y'' = f(t)$	[[_2nd_order, _quadrature]]	✓
8445	$y'' = k$	[[_2nd_order, _quadrature]]	✓
8448	$y'' = 4 \sin(x) - 4$	[[_2nd_order, _quadrature]]	✓
8748	$y'' = 0$	[[_2nd_order, _quadrature]]	✓
8751	$ay'' = 0$	[[_2nd_order, _quadrature]]	✓
8754	$y'' = 1$	[[_2nd_order, _quadrature]]	✓
8756	$y'' = x$	[[_2nd_order, _quadrature]]	✓
8759	$y'' + y' = 0$	[[_2nd_order, _missing_x]]	✓
8762	$y'' + y' = 1$	[[_2nd_order, _missing_x]]	✓
8765	$y'' + y' = x$	[[_2nd_order, _missing_y]]	✓
8778	$y'' + y' = 1$	[[_2nd_order, _missing_x]]	✓
8779	$y'' + y' = x$	[[_2nd_order, _missing_y]]	✓
8780	$y'' + y' = x + 1$	[[_2nd_order, _missing_y]]	✓
8781	$y'' + y' = x^2 + x + 1$	[[_2nd_order, _missing_y]]	✓
8782	$y'' + y' = x^3 + x^2 + x + 1$	[[_2nd_order, _missing_y]]	✓
8783	$y'' + y' = \sin(x)$	[[_2nd_order, _missing_y]]	✓
8784	$y'' + y' = \cos(x)$	[[_2nd_order, _missing_y]]	✓

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Table 2.33 second order linear exact ode  
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#	ODE	CAS classification	Solved?
10687	$y'' = 0$	[[_2nd_order, _quadrature]]	✓
10724	$y'' + xy' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
10775	$xy'' + y' = 0$	[[_2nd_order, _missing_y]]	✓
10791	$xy'' - xy' - y - x(x+1)e^x = 0$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
10841	$x^2y'' + xy' - y - x^2a = 0$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
10847	$x^2y'' + (x+a)y' - y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
10850	$x^2y'' + 2xy' = 0$	[[_2nd_order, _missing_y]]	✓
10857	$x^2y'' - 2xy' - 4y - x \sin(x) - (x^2a + 12a + 4) \cos(x) = 0$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
10863	$x^2y'' + (3x-1)y' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
10865	$x^2y'' - 3xy' - 5y - x^2 \ln(x) = 0$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
10911	$(x^2+1)y'' + 4xy' + 2y - 2 \cos(x) + 2x = 0$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
10912	$(x^2+1)y'' + axy' + (a-2)y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
10918	$(x^2-1)y'' + 2xy' = 0$	[[_2nd_order, _missing_y]]	✓
10919	$(x^2-1)y'' + 2xy' - a = 0$	[[_2nd_order, _missing_y]]	✓
10927	$(x^2-1)y'' - 2(v-1)xy' - 2vy = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
10934	$x(x+1)y'' + (2+3x)y' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
10936	$x(x-1)y'' + ay' - 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
10944	$x(x+3)y'' + (3x-1)y' + y - (20x+30)(x^2+3x)^{7/3} = 0$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
10947	$(-2+x)^2y'' - (-2+x)y' - 3y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
10948	$2x^2y'' - (2x^2+l-5x)y' - (4x-1)y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓

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Table 2.33 second order linear exact ode  
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#	ODE	CAS classification	Solved?
10965	$(2x + 1)^2 y'' - 2(2x + 1) y' - 12y - 3x - 1 = 0$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
10967	$(3x - 1)^2 y'' + 3(3x - 1) y' - 9y - \ln(3x - 1)^2 = 0$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
10979	$(a^2 x^2 - 1) y'' + 2a^2 x y' = 0$	[[_2nd_order, _missing_y]]	✓
10981	$(x^2 a + b x) y'' + 2b y' - 2a y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
10992	$x(x^2 + 1) y'' + 2(x^2 - 1) y' - 2x y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
10999	$x(x^2 + 2) y'' - y' - 6x y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
11109	$y'' = -\frac{\cos(x) y'}{\sin(x)} + \frac{y}{\sin(x)^2}$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
12201	$y'' + (ax + b) y' + ay = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
12232	$y'' + (ax^n + bx^m) y' + (anx^{n-1} + bmx^{m-1}) y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
12245	$xy'' + ax y' + ay = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
12258	$xy'' + (x^2 a + bx + c) y' + (2ax + b) y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
12263	$xy'' + x(x^2 a + b) y' + (3x^2 a + b) y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
12270	$xy'' + (ax^n + b) y' + anx^{n-1} y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
12281	$(x + a) y'' + (bx + c) y' + by = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
12285	$(x + \gamma) y'' + (ax^n + bx^m + c) y' + (anx^{n-1} + bmx^{m-1}) y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
12339	$(x^2 + a) y'' + 2bx y' + 2(b - 1) y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓

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Table 2.33 second order linear exact ode  
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#	ODE	CAS classification	Solved?
12351	$(x^2a + bx + c)y'' + (dx + k)y' + (d - 2a)y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
12365	$x(x^2a + b)y'' + 2(x^2a + b)y' - 2axy = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
12426	$(ax^n + bx + c)y'' = an(n - 1)x^{n-2}y$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, ' _with_symmetry_[0,F(x)]']]	✓
12472	$y'' + (ae^{\lambda x} + be^{\mu x} + c)y' + (a\lambda e^{\lambda x} + b\mu e^{\mu x})y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
12622	$y'' - 2y' = e^{2x} + 1$	[[_2nd_order, _missing_y]]	✓
12626	$x^2y'' + 3xy' + y = \frac{1}{(1-x)^2}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
12667	$y'' = xe^x$	[[_2nd_order, _quadrature]]	✓
12676	$x^2y'' + 3xy' + y = x$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
12677	$(x - 1)^2y'' + 4(x - 1)y' + 2y = \cos(x)$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
12692	$(x^2 - x)y'' + (4x + 2)y' + 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
12699	$\sin(x)y'' - \cos(x)y' + 2\sin(x)y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
12714	$x'' = -3\sqrt{t}$ i.c.	[[_2nd_order, _quadrature]]	✓
12719	$x' + tx'' = 1$ i.c.	[[_2nd_order, _missing_y]]	✓
12772	$x'' + x' = 3t$	[[_2nd_order, _missing_y]]	✓
12789	$x'' - 2x' = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
12793	$x'' - 2x' = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
12817	$x'' - x' = 6 + e^{2t}$	[[_2nd_order, _missing_y]]	✓
12825	$x'' - 2x' = 4$ i.c.	[[_2nd_order, _missing_x]]	✓
12832	$t^2x'' + 3tx' + x = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓

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#	ODE	CAS classification	Solved?
12842	$t^2 x'' - 2x = t^3$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
12925	$(x^2 + 1)y'' + 4xy' + 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
13204	$(2x + 1)(x + 1)y'' + 2xy' - 2y = (2x + 1)^2$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
13222	$x^2 y'' + 4xy' + 2y = 4 \ln(x)$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
13228 i.c.	$x^2 y'' + 5xy' + 3y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
13229 i.c.	$x^2 y'' - 2y = 4x - 8$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
13234	$(x + 2)^2 y'' - (x + 2)y' - 3y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
13430 i.c.	$y'' - 4y' = 0$	[[_2nd_order, _missing_x]]	✓
13442	$x'' - 4x' = t^2$	[[_2nd_order, _missing_y]]	✓
13469	$t^2 x'' - 2x = t^3$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
13470	$x'' - 4x' = \tan(t)$	[[_2nd_order, _missing_y]]	✓
13475 i.c.	$t^2 x'' + tx' - x = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
13477 i.c.	$x^2 y'' - xy' - 3y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
13480 i.c.	$3x^2 z'' + 5xz' - z = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
13669	$y'' + 2xy' + 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
13670	$xy'' + \sin(x)y' + \cos(x)y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
13671	$y'' + 2x^2 y' + 4xy = 2x$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
13672	$(-x^2 + 1)y'' + (1 - x)y' + y = -2x + 1$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
13675	$y'' + x^2 y' + 2xy = 2x$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
13677	$xy'' + x^2 y' + 2xy = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓

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#	ODE	CAS classification	Solved?
13678	$y'' + \sin(x)y' + \cos(x)y = \cos(x)$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
13679	$y'' + \cot(x)y' - \csc(x)^2 y = \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13680	$x \ln(x)y'' + 2y' - \frac{y}{x} = 1$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
13763	$t^2y'' + 3ty' + y = t^7$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
13906	$xy'' - y' = e^x x^2$ i.c.	[[_2nd_order, _missing_y]]	✓
13937	$y'' - 3y' = 2 - 6x$	[[_2nd_order, _missing_y]]	✓
13986	$x^2y'' + xy' - y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
13988	$2x^2y'' + 3xy' - y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
13990	$x^2y'' - 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
14004	$x^2y'' + 6xy' + 4y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
14603	$y'' + 2y' = 3t + 2$ i.c.	[[_2nd_order, _missing_y]]	✓
14604	$y'' + 4y' = 3t + 2$ i.c.	[[_2nd_order, _missing_y]]	✓
14660	$y'' = \frac{x+1}{x-1}$	[[_2nd_order, _quadrature]]	✓
14674	$y'' = \sin(2x)$	[[_2nd_order, _quadrature]]	✓
14675	$y'' - 3 = x$	[[_2nd_order, _quadrature]]	✓
14683	$xy'' + 2 = \sqrt{x}$ i.c.	[[_2nd_order, _quadrature]]	✓
14885	$xy'' + 4y' = 18x^2$	[[_2nd_order, _missing_y]]	✓
14886	$xy'' = 2y'$	[[_2nd_order, _missing_y]]	✓
14887	$y'' = y'$	[[_2nd_order, _missing_x]]	✓
14888	$y'' + 2y' = 8e^{2x}$	[[_2nd_order, _missing_y]]	✓
14890	$(x^2 + 1)y'' + 2xy' = 0$	[[_2nd_order, _missing_y]]	✓

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Table 2.33 second order linear exact ode  
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#	ODE	CAS classification	Solved?
14897	$y'' = 2y' - 6$	[[_2nd_order, _missing_x]]	✓
14899	$y'' + 4y' = 9e^{-3x}$	[[_2nd_order, _missing_y]]	✓
14907	$y'' = y'$	[[_2nd_order, _missing_x]]	✓
14913	$xy'' - y' = 6x^5$	[[_2nd_order, _missing_y]]	✓
14917	$y'' + 4y' = 9e^{-3x}$	[[_2nd_order, _missing_y]]	✓
14919	$xy'' + 4y' = 18x^2$ i.c.	[[_2nd_order, _missing_y]]	✓
14920	$xy'' = 2y'$ i.c.	[[_2nd_order, _missing_y]]	✓
14921	$y'' = y'$ i.c.	[[_2nd_order, _missing_x]]	✓
14922	$y'' + 2y' = 8e^{2x}$ i.c.	[[_2nd_order, _missing_y]]	✓
14925	$xy'' + 2y' = 6$ i.c.	[[_2nd_order, _missing_y]]	✓
14988	$y'' + 5y' = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
14994	$y'' + 3y' = 0$	[[_2nd_order, _missing_x]]	✓
15056	$x^2y'' - 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
15067	$2x^2y'' + 5xy' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
15111	$y'' + 3y' = e^{\frac{x}{2}}$	[[_2nd_order, _missing_y]]	✓
15115	$y'' + 3y' = 26 \cos\left(\frac{x}{3}\right) - 12 \sin\left(\frac{x}{3}\right)$	[[_2nd_order, _missing_y]]	✓
15126	$y'' = 6x e^x \sin(x)$	[[_2nd_order, _quadrature]]	✓
15131	$y'' + 4y' = 20$	[[_2nd_order, _missing_x]]	✓
15132	$y'' + 4y' = x^2$	[[_2nd_order, _missing_y]]	✓
15183	$2x^2y'' + 5xy' + y = 85 \cos(2 \ln(x))$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
15184	$x^2y'' - 2y = 15 \cos(3 \ln(x)) - 10 \sin(3 \ln(x))$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
15186	$2x^2y'' + 5xy' + y = \frac{10}{x}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓

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Table 2.33 second order linear exact ode  
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#	ODE	CAS classification	Solved?
15195	$x^2y'' + xy' - y = \sqrt{x}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
15199	$x^2y'' - 2y = \frac{1}{-2+x}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
15201	$xy'' + (2x+2)y' + 2y = 8e^{2x}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
15203	$x^2y'' - 2xy' - 4y = \frac{10}{x}$ i.c.	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
15217	$2xy'' + y' = \sqrt{x}$	[[_2nd_order, _missing_y]]	✓
15237	$2y'' - 7y' + 3 = 0$	[[_2nd_order, _missing_x]]	✓
15239	$xy'' = 3y'$	[[_2nd_order, _missing_y]]	✓
15240	$y'' - 5y' = 0$	[[_2nd_order, _missing_x]]	✓
15254	$x^2y'' + xy' - y = \frac{1}{x^2+1}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
15259	$x^2y'' + 3xy' + y = \frac{1}{(x+1)^2}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
15260	$x^2y'' + 3xy' + y = \frac{1}{x}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
15470	$y'' + 9y' = 0$	[[_2nd_order, _missing_x]]	✓
15499	$y'' + 9y' = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
15677	$y'' - \frac{y'}{t} + \frac{y}{t^2} = \frac{1}{t}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
15865	$t^2y'' + ty' - y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
15882	$y'' = 0$	[[_2nd_order, _quadrature]]	✓
15884	$y'' + y' = 0$	[[_2nd_order, _missing_x]]	✓
15897	$y'' - y' = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
15898	$3y'' - y' = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
15932	$y'' + 2y' = 3 - 4t$	[[_2nd_order, _missing_y]]	✓
15937	$y'' = 3t^4 - 2t$	[[_2nd_order, _quadrature]]	✓

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Table 2.33 second order linear exact ode  
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#	ODE	CAS classification	Solved?
15947	$y'' - 2y' = 52 \sin(3t)$	[[_2nd_order, _missing_y]]	✓
15955	$y'' + 4y' = 8e^{4t} - 4e^{-4t}$	[[_2nd_order, _missing_y]]	✓
15956	$y'' - 3y' = t^2 - e^{3t}$	[[_2nd_order, _missing_y]]	✓
15957	$y'' + 4y' = -24t - 6 - 4te^{-4t} + e^{-4t}$	[[_2nd_order, _missing_y]]	✓
15958	$y'' - 3y' = t^2 - e^{3t}$	[[_2nd_order, _missing_y]]	✓
15959	$y'' = t^2 + e^t + \sin(t)$	[[_2nd_order, _quadrature]]	✓
15960	$y'' + 3y' = 18$ i.c.	[[_2nd_order, _missing_x]]	✓
15968	$y'' - 3y' = -e^{3t} - 2t$ i.c.	[[_2nd_order, _missing_y]]	✓
15969	$y'' - y' = -3t - 4t^2e^{2t}$ i.c.	[[_2nd_order, _missing_y]]	✓
15970	$y'' - 2y' = 2t^2$ i.c.	[[_2nd_order, _missing_y]]	✓
15971	$y'' + 4y' = -24t - 6 - 4te^{-4t} + e^{-4t}$ i.c.	[[_2nd_order, _missing_y]]	✓
15972	$y'' - 3y' = e^{-3t} - e^{3t}$ i.c.	[[_2nd_order, _missing_y]]	✓
15985	$y'' + 16y' = t$	[[_2nd_order, _missing_y]]	✓
16030	$t^2y'' + 3ty' + y = \ln(t)$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
16032	$t^2y'' - 4ty' - 6y = 2 \ln(t)$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
16154	$2x^2y'' + 3xy' - y = \frac{1}{x^2}$ i.c.	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
16155	$x^2y'' + 4xy' + 2y = \ln(x)$ i.c.	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
16159	$x^2y'' + 4xy' + 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
16172	$x^2y'' + 4xy' + 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
16252	$y'' + 5y' = 5t^2$	[[_2nd_order, _missing_y]]	✓
16253	$y'' - 4y' = -3 \sin(t)$	[[_2nd_order, _missing_y]]	✓
16256	$y'' - 2y' = \frac{1}{1 + e^{2t}}$	[[_2nd_order, _missing_y]]	✓

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Table 2.33 second order linear exact ode  
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#	ODE	CAS classification	Solved?
16286	$2x^2y'' + 5xy' + y = 0$ i.c.	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
16585	$(x - 1)y'' = 1$	[[_2nd_order, _quadrature]]	✓
16594	$y'' = xe^x$ i.c.	[[_2nd_order, _quadrature]]	✓
16595	$y'' = 2x \ln(x)$	[[_2nd_order, _quadrature]]	✓
16596	$xy'' = y'$	[[_2nd_order, _missing_y]]	✓
16597	$xy'' + y' = 0$	[[_2nd_order, _missing_y]]	✓
16599	$xy'' = y' + x^2$	[[_2nd_order, _missing_y]]	✓
16611	$y'' + y' + 2 = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
16650	$y'' + 3y' = 3$	[[_2nd_order, _missing_x]]	✓
16651	$y'' - 7y' = (x - 1)^2$	[[_2nd_order, _missing_y]]	✓
16652	$y'' + 3y' = e^x$	[[_2nd_order, _missing_y]]	✓
16653	$y'' + 7y' = e^{-7x}$	[[_2nd_order, _missing_y]]	✓
16656	$4y'' - 3y' = xe^{\frac{3x}{4}}$	[[_2nd_order, _missing_y]]	✓
16657	$y'' - 4y' = xe^{4x}$	[[_2nd_order, _missing_y]]	✓
16687	$y'' + 2y' = -2$	[[_2nd_order, _missing_x]]	✓
16695	$y'' + 8y' = 8x$	[[_2nd_order, _missing_y]]	✓
16699	$7y'' - y' = 14x$	[[_2nd_order, _missing_y]]	✓
16700	$y'' + 3y' = 3xe^{-3x}$	[[_2nd_order, _missing_y]]	✓
16709	$y'' - y' = e^x \sin(x)$	[[_2nd_order, _missing_y]]	✓
16710	$y'' + 2y' = 4e^x(\cos(x) + \sin(x))$	[[_2nd_order, _missing_y]]	✓
16712	$4y'' + 8y' = x \sin(x)$	[[_2nd_order, _missing_y]]	✓
16727	$y'' + 4y' = x + e^{-4x}$	[[_2nd_order, _missing_y]]	✓
16733	$y'' - 4y' = 2 \cos(4x)^2$	[[_2nd_order, _missing_y]]	✓
16735	$y'' - 3y' = 18x - 10 \cos(x)$	[[_2nd_order, _missing_y]]	✓
16742	$y'' + y' = \cos(x)^2 + e^x + x^2$	[[_2nd_order, _missing_y]]	✓
16745	$y'' + y' = x^2 - e^{-x} + e^x$	[[_2nd_order, _missing_y]]	✓

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Table 2.33 second order linear exact ode  
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#	ODE	CAS classification	Solved?
16752	$y'' - 3y' = 1 + e^x + \cos(x) + \sin(x)$	[[_2nd_order, _missing_y]]	✓
16758	$y'' + 2y' + 1 = 3 \sin(2x) + \cos(x)$	[[_2nd_order, _missing_y]]	✓
16770	$y'' + y' = e^{-x}$ i.c.	[[_2nd_order, _missing_y]]	✓
16777	$y'' - y' = -5e^{-x}(\cos(x) + \sin(x))$ i.c.	[[_2nd_order, _missing_y]]	✓
16793	$x^2y'' + xy' - y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
16794	$x^2y'' + 3xy' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
16796	$xy'' + y' = 0$	[[_2nd_order, _missing_y]]	✓
16804	$x^2y'' - 2y = \sin(\ln(x))$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
16805	$x^2y'' - xy' - 3y = -\frac{16 \ln(x)}{x}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
16807	$x^2y'' + xy' - y = x^m$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
16808	$x^2y'' + 4xy' + 2y = 2 \ln(x)^2 + 12x$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
16825	$y'' + y' = \frac{1}{1 + e^x}$	[[_2nd_order, _missing_y]]	✓
16831	$y'' + y' = e^{2x} \cos(e^x)$	[[_2nd_order, _missing_y]]	✓
16840	$(x^2 + 1)y'' + 2xy' = \frac{1}{x^2 + 1}$ i.c.	[[_2nd_order, _missing_y]]	✓
16864	$y'' + \alpha y' = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
16871	$xy'' + y' = 0$	[[_2nd_order, _missing_y]]	✓
17241	$t^2y'' - 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
17271	$y'' + 5y' = 0$	[[_2nd_order, _missing_x]]	✓
17293	$y'' + 3y' = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
17304	$x^2y'' + 4xy' + 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
17306	$x^2y'' - 4xy' - 6y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓

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Table 2.33 second order linear exact ode  
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#	ODE	CAS classification	Solved?
17307	$x^2y'' - 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
17311 i.c.	$2x^2y'' + xy' - 3y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
17321	$y'' + 2y' = 3 + 4 \sin(2t)$	[[_2nd_order, _missing_y]]	✓
17339	$y'' + 3y' = 2t^4 + t^2e^{-3t} + \sin(3t)$	[[_2nd_order, _missing_y]]	✓
17349	$x^2y'' + 7xy' + 5y = x$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
17381	$t^2y'' - 2y = 3t^2 - 1$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
17384	$t^2y'' + 7ty' + 5y = t$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
17569	$y'' = \sin(x)$	[[_2nd_order, _quadrature]]	✓
17705	$x^2y'' - 2y = x^2 + \frac{1}{x}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
17869	$xy'' + y' = 4x$	[[_2nd_order, _missing_y]]	✓
17925	$xy'' - y' = 3x^2$	[[_2nd_order, _missing_y]]	✓
17926	$xy'' + y' = 0$	[[_2nd_order, _missing_y]]	✓
17929	$y'' - 2y' = 6$	[[_2nd_order, _missing_x]]	✓
17931	$y'' = e^x$	[[_2nd_order, _quadrature]]	✓
17932	$y'' - 2y' = 4$	[[_2nd_order, _missing_x]]	✓
17935	$y'' + 2y' = 6e^x$	[[_2nd_order, _missing_y]]	✓
17936	$x^2y'' - 3xy' - 5y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
17942 i.c.	$x^2y'' - 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
17945 i.c.	$y'' + y' = 0$	[[_2nd_order, _missing_x]]	✓
17972	$y'' + y' = 0$	[[_2nd_order, _missing_x]]	✓
18006	$y'' - 2y' = 12x - 10$	[[_2nd_order, _missing_y]]	✓
18009	$y'' + y' = 10x^4 + 2$	[[_2nd_order, _missing_y]]	✓
18090	$y'' + xy' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓

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Table 2.33 second order linear exact ode  
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#	ODE	CAS classification	Solved?
18196	$x'' + 3x' = 0$	[[_2nd_order, _missing_x]]	✓
18271	$x^2y'' + 3xy' + y = \frac{1}{x}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
18354	$ey'' = \frac{P(\frac{L}{2} - x)}{2}$	[[_2nd_order, _quadrature]]	✓
18355	$ey'' = \frac{w(\frac{L^2}{4} - x^2)}{2}$	[[_2nd_order, _quadrature]]	✓
18356	$ey'' = -\frac{(wL + P)x}{2} - \frac{wx^2}{2}$	[[_2nd_order, _quadrature]]	✓
18357	$ey'' = -P(L - x)$	[[_2nd_order, _quadrature]]	✓
18358	$ey'' = -PL + (wL + P)x - \frac{w(L^2 + x^2)}{2}$	[[_2nd_order, _quadrature]]	✓
18365	$xy'' + 2y' = 2x$	[[_2nd_order, _missing_y]]	✓
18367	$(x^2 - 1)y'' + 4xy' + 2y = 2x$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
18368	$(x^2 + 1)y'' + 4xy' + 2y = x$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
18369	$y'' - \cot(x)y' + \csc(x)^2y = \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18370	$(x^2 - x)y'' + (3x - 2)y' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
18371	$(3x^2 + x)y'' + 2(1 + 6x)y' + 6y = \sin(x)$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
18374	$y'' = \cos(x)$	[[_2nd_order, _quadrature]]	✓
18381	$xy'' + 3y' = 3x$	[[_2nd_order, _missing_y]]	✓
18382	$x = y'' + y'$	[[_2nd_order, _missing_y]]	✓
18400	$y'' - \frac{2y'}{x} + \frac{2y}{x^2} = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
18603	$x^2y'' - 2xy' - 4y = x^4$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
18606	$x^2y'' + 7xy' + 5y = x^5$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
18610	$x^2y'' + 4xy' + 2y = e^x$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓

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Table 2.33 second order linear exact ode

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#	ODE	CAS classification	Solved?
18616	$x^2y'' + xy' - y = x^m$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
18620	$x^2y'' + 3xy' + y = \frac{1}{(1-x)^2}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
18625	$xy'' + 2xy' + 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
18626	$y'' + 2e^xy' + 2ye^x = x^2$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓

## 2.4.6 second order ode missing x

Table 2.34: second order ode missing x

#	ODE	CAS classification	Solved?
148	$yy'' + y'^2 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
153	$yy'' + y'^2 = yy'$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
155	$y'' = 2yy'^3$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_y_y1]]	✓
156	$y^3y'' = 1$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓
157	$y'' = 2yy'$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Lagerstrom, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
158	$yy'' = 3y'^2$	[[_2nd_order, _missing_x], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
233	$yy'' + y'^2 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
2820	$z'' + z^3 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓
2821	$z'' + z + z^5 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓

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Table 2.34 second order ode missing x  
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#	ODE	CAS classification	Solved?
2822	$z'' + e^{z^2} = 1$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓
2823	$z'' + \frac{z}{1+z^2} = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓
2824	$z'' + z - 2z^3 = 0$	[[_2nd_order, _missing_x], _Duffing, [_2nd_order, _re- ducible, _mu_x_y1]]	✓
3247	$y^3 y'' + 4 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓
3248	$x'' = \frac{k^2}{x^2}$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓
3260	$y'' = yy'$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Lagerstrom, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
3262	$y'' + yy' = 0$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Lagerstrom, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
3264	$yy'' + y'^2 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
3265	$yy'' + 1 = y'^2$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓
3267	$yy'' + y'^2 = yy'$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓

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Table 2.34 second order ode missing x

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#	ODE	CAS classification	Solved?
3268	$2yy'' - y'^2 = 0$	[[_2nd_order, _missing_x], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
3271	$(1 + y)y'' = 3y'^2$	[[_2nd_order, _missing_x], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
3273	$2y'' = e^y$ i.c.	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓
3274	$y'' = y^3$ i.c.	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓
3276	$yy'' - y^2y' = y'^2$ i.c.	[[_2nd_order, _missing_x], [_2nd_order, _with_potential_symmetries], [_2nd_order, _reducible, _mu_xy]]	✓
3278	$yy'' = y^3 + y'^2$ i.c.	[[_2nd_order, _missing_x]]	✓
3279	$(1 + y'^2)^2 = y^2y''$ i.c.	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓
3281	$2yy'' = y^3 + 2y'^2$ i.c.	[[_2nd_order, _missing_x]]	✓
3283	$yy'' = 2y'^2 + y^2$ i.c.	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_xy]]	✓
4407	$yy'' - yy' = y'^2$	[[_2nd_order, _missing_x], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
4432	$yy'' - y^2y' - y'^2 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _with_potential_symmetries], [_2nd_order, _reducible, _mu_xy]]	✓
4436	$(1 + y^2)y'' + y'^3 + y' = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓

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Table 2.34 second order ode missing x  
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#	ODE	CAS classification	Solved?
5995	$y'' = 2yy'$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Lagerstrom, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
5996	$y^3y'' = k$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓
5997	$yy'' = y'^2 - 1$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓
6000	$(1 + y)y'' = 3y'^2$	[[_2nd_order, _missing_x], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
6001	$r'' = -\frac{k}{r^2}$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓
6002	$y'' = \frac{3ky^2}{2}$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓
6003	$y'' = 2ky^3$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓
6004	$yy'' + y'^2 - y' = 0$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
6005	$r'' = \frac{h^2}{r^3} - \frac{k}{r^2}$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓
6006	$yy'' + y'^3 - y'^2 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_y_y1]]	✓

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Table 2.34 second order ode missing x  
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#	ODE	CAS classification	Solved?
6007	$yy'' - 3y'^2 = 0$	[[_2nd_order, _missing_x], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
6010	$(1 + y)y'' = 3y'^2$ i.c.	[[_2nd_order, _missing_x], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
6011	$y'' = y'e^y$ i.c.	[[_2nd_order, _missing_x], [_2nd_order, _exact, _non- linear], [_2nd_order, _re- ducible, _mu_xy]]	✓
6012	$y'' = 2yy'$ i.c.	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Lagerstrom, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
6013	$2y'' = e^y$ i.c.	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓
6183	$y'' + yy' = 0$ i.c.	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Lagerstrom, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
6184	$y'' + yy' = 0$ i.c.	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Lagerstrom, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
6185	$y'' + yy' = 0$ i.c.	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Lagerstrom, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓

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Table 2.34 second order ode missing x  
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#	ODE	CAS classification	Solved?
6186	$y'' + yy' = 0$ i.c.	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Lagerstrom, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
6188	$2yy'' = y'^2$	[[_2nd_order, _missing_x], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
6235	$yy'' + y'^2 + 4 = 0$ i.c.	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
6700	$yy'' + y'^2 = 2$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
6701	$yy'' + y'^3 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_y_y1]]	✓
6777	$yy'' + y'^3 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_y_y1]]	✓
6778	$yy'' + y'^2 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
6779	$yy'' = y'^2(1 - y' \cos(y) + yy' \sin(y))$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_y_y1]]	✓
6782	$yy'' - y'^2 = y^2 \ln(y)$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_xy]]	✓

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Table 2.34 second order ode missing x  
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#	ODE	CAS classification	Solved?
6787	$2(1+y)y'' + 2y'^2 + y^2 + 2y = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_xy]]	✓
7209	$xx'' - x'^2 = 0$	[[_2nd_order, _missing_x], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
7241	$yy'' - y^2y' - y'^2 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _with_potential_symmetries], [_2nd_order, _reducible, _mu_xy]]	✓
7437	$yy'' + 4y'^2 = 0$	[[_2nd_order, _missing_x], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
7439	$y'' = yy'$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Lagerstrom, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
7443	<i>i.c.</i> $y'' + \sin(y) = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓
7444	<i>i.c.</i> $y'' + \sin(y) = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓
7581	$yy'' + y'^2 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
7585	$2yy'' = 1 + y'^2$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓
7586	$yy'' - y'^2 = 0$	[[_2nd_order, _missing_x], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓

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Table 2.34 second order ode missing x  
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#	ODE	CAS classification	Solved?
7589	<i>i.c.</i> $yy'' = y^2y' + y'^2$	[[_2nd_order, _missing_x], [_2nd_order, _with_potential_symmetries], [_2nd_order, _reducible, _mu_xy]]	✓
7590	<i>i.c.</i> $y'' = y'e^y$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], [_2nd_order, _reducible, _mu_xy]]	✓
7609	$yy'' - y'^2 = 0$	[[_2nd_order, _missing_x], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
7611	$yy'' + y' = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
7747	$y'' + \sin(y) = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓
8168	$yy'' + y'^2 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
8169	$y^2y'' + y'^3 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_y_y1]]	✓
8170	$(1 + y)y'' = y'^2$	[[_2nd_order, _missing_x], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
8174	$y'' = 2yy'^3$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_y_y1]]	✓
8175	$yy'' + y'^3 - y'^2 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_y_y1]]	✓

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Table 2.34 second order ode missing x  
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#	ODE	CAS classification	Solved?
8177	$yy'' + y'^3 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_y_y1]]	✓
8181	$y'' = -e^{-2y}$ i.c.	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓
8182	$y'' = -e^{-2y}$ i.c.	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓
8192	$yy'' = y'^2(1 - y' \sin(y) - yy' \cos(y))$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_y_y1]]	✓
8193	$(1 + y^2)y'' + y'^3 + y' = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓
8194	$(yy'' + 1 + y'^2)^2 = (1 + y'^2)^3$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓
8203	$3yy'y'' = y'^3 - 1$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓
8204	$4yy'^2y'' = y'^4 + 3$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓
8449	$yy'' = 0$	[[_2nd_order, _quadra- ture]]	✓
8450	$yy'' = 1$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓
8453	$y^2y'' = 0$	[[_2nd_order, _quadra- ture]]	✓
8455	$3yy'' + y = 5$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓
8456	$ayy'' + by = c$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓
8457	$ay^2y'' + by^2 = c$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓

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Table 2.34 second order ode missing x  
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#	ODE	CAS classification	Solved?
8458	$ayy'' + by = 0$	[[_2nd_order, _quadrature]]	✓
8560	$y'' + \sin(y)y'^2 = 0$	[[_2nd_order, _missing_x], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
8638	$y'' = Ay^{2/3}$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓
8659	$y'' + e^y = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓
8770	$y'' + y'^2 + y = 0$	[[_2nd_order, _missing_x]]	✓
8792	$yy''^2 + y' = 0$	[[_2nd_order, _missing_x]]	✓
8793	$yy''^2 + y'^3 = 0$	[[_2nd_order, _missing_x]]	✓
8794	$y^2y''^2 + y' = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓
8795	$yy''^4 + y'^2 = 0$	[[_2nd_order, _missing_x]]	✓
8797	$yy'' + y'^3 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_y_y1]]	✓
8804	$y''y' + y^2 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓
8805	$y''y' + y^n = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓
11266	$y'' - y^2 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓
11267	$y'' - 6y^2 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓
11269	$y'' - 6y^2 + 4y = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓

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Table 2.34 second order ode missing x  
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#	ODE	CAS classification	Solved?
11272	$y'' - ay^3 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓
11275	$y'' + d + by^2 + cy + ay^3 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓
11277	$y'' + 6a^{10}y^{11} - y = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓
11279	$y'' - e^y = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓
11282	$y'' + a \sin(y) = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓
11295	$y'' + yy' - y^3 = 0$	[[_2nd_order, _missing_x]]	✓
11307	$y'' - 2ayy' = 0$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Lagerstrom, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
11308	$y'' + ayy' + by^3 = 0$	[[_2nd_order, _missing_x]]	✓
11310	$y'' + ay'^2 + by = 0$	[[_2nd_order, _missing_x]]	✓
11313	$y'' + ay'^2 + b \sin(y) = 0$	[[_2nd_order, _missing_x]]	✓
11315	$y'' + ayy'^2 + by = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓
11321	$y'' + ay(1 + y'^2)^2 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓
11327	$y'' = a\sqrt{y'^2 + by^2}$	[[_2nd_order, _missing_x]]	✓
11330	$y'' - ay(1 + y'^2)^{3/2} = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓
11332	$y'' + y^3y' - yy'\sqrt{y^4 + 4y'} = 0$	[[_2nd_order, _missing_x]]	✓
11369	$yy'' - a = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓

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Table 2.34 second order ode missing x

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#	ODE	CAS classification	Solved?
11372	$yy'' + y'^2 - a = 0$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
11374	$yy'' + y'^2 - y' = 0$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
11375	$yy'' - y'^2 + 1 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓
11376	$yy'' - y'^2 - 1 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓
11378	$yy'' - y'^2 - y^2 \ln(y) = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_xy]]	✓
11382	$yy'' - y'^2 + ayy' + by^2 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_xy]]	✓
11389	$yy'' - 3y'^2 + 3yy' - y^2 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_xy]]	✓
11390	$yy'' - ay'^2 = 0$	[[_2nd_order, _missing_x], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
11391	$yy'' + a(1 + y'^2) = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓
11392	$yy'' + ay'^2 + by^3 = 0$	[[_2nd_order, _missing_x]]	✓
11395	$yy'' + ay'^2 + by^2y' + cy^4 = 0$	[[_2nd_order, _missing_x]]	✓
11402	$2yy'' + y'^2 + 1 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓

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Table 2.34 second order ode missing x  
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#	ODE	CAS classification	Solved?
11403	$2yy'' - y'^2 + a = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓
11405	$2yy'' - y'^2 - 8y^3 = 0$	[[_2nd_order, _missing_x]]	✓
11406	$2yy'' - y'^2 - 8y^3 - 4y^2 = 0$	[[_2nd_order, _missing_x]]	✓
11408	$2yy'' - y'^2 + (ay + b)y^2 = 0$	[[_2nd_order, _missing_x]]	✓
11411	$2yy'' - y'^2 - 3y^4 = 0$	[[_2nd_order, _missing_x]]	✓
11415	$2yy'' - 3y'^2 = 0$	[[_2nd_order, _missing_x], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
11416	$2yy'' - 3y'^2 - 4y^2 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_xy]]	✓
11418	$2yy'' - 6y'^2 + (1 + ay^3)y^2 = 0$	[[_2nd_order, _missing_x]]	✓
11419	$2yy'' - y'^2(1 + y'^2) = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓
11420	$2(y - a)y'' + y'^2 + 1 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓
11422	$3yy'' - 5y'^2 = 0$	[[_2nd_order, _missing_x], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
11423	$4yy'' - 3y'^2 + 4y = 0$	[[_2nd_order, _missing_x]]	✓
11424	$4yy'' - 3y'^2 - 12y^3 = 0$	[[_2nd_order, _missing_x]]	✓
11425	$4yy'' - 3y'^2 + ay^3 + by^2 + cy = 0$	[[_2nd_order, _missing_x]]	✓
11427	$4yy'' - 5y'^2 + y^2a = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_xy]]	✓
11428	$12yy'' - 15y'^2 + 8y^3 = 0$	[[_2nd_order, _missing_x]]	✓

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Table 2.34 second order ode missing x  
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#	ODE	CAS classification	Solved?
11429	$nyy'' - (n - 1)y'^2 = 0$	[[_2nd_order, _missing_x], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
11430	$ayy'' + by'^2 + c_4y^4 + c_3y^3 + c_2y^2 + c_1y + c_0 = 0$	[[_2nd_order, _missing_x]]	✓
11433	$(ay + b)y'' + cy'^2 = 0$	[[_2nd_order, _missing_x], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
11453	$y^2y'' - a = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓
11456	$(1 + y^2)y'' + (1 - 2y)y'^2 = 0$	[[_2nd_order, _missing_x], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
11457	$(1 + y^2)y'' - 3yy'^2 = 0$	[[_2nd_order, _missing_x], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
11468	$ay(y - 1)y'' - (a - 1)(2y - 1)y'^2 + fy(y - 1)y' = 0$	[[_2nd_order, _missing_x], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
11469	$aby(y - 1)y'' - ((2ab - a - b)y + (-a + 1)b)y'^2 + fy(y - 1)y' = 0$	[[_2nd_order, _missing_x], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
11474	$y^3y'' - a = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓
11475	$y(1 + y^2)y'' + (1 - 3y^2)y'^2 = 0$	[[_2nd_order, _missing_x], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓

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Table 2.34 second order ode missing x  
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#	ODE	CAS classification	Solved?
11478	$2(y-a)(y-b)(y-c)y'' - ((y-a)^2(y-b)(y-c) + (y-b)(y-c))y'^2 + (y-a)^2(y-b)^2(y-c)^2 \left( A_0 + \frac{B_0}{(y-a)^2} + \frac{C_1}{(y-b)^2} + \frac{D_0}{(y-c)^2} \right) = 0$	[[_2nd_order, _missing_x]]	✓
11479	$(4y^3 - ay - b)y'' - \left(6y^2 - \frac{a}{2}\right)y'^2 = 0$	[[_2nd_order, _missing_x], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
11480	$(4y^3 - ay - b)(y'' + fy') - \left(6y^2 - \frac{a}{2}\right)y'^2 = 0$	[[_2nd_order, _missing_x], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
11483	$\frac{(y^2 - 1)(a^2y^2 - 1)y''}{+ b\sqrt{(1-y^2)(1-a^2y^2)}} + (1 + a^2 - 2a^2y^2)y'y'^2 = 0$	[[_2nd_order, _missing_x], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
11485	$\sqrt{y}y'' - a = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓
11487	$y(1 - \ln(y))y'' + (1 + \ln(y))y'^2 = 0$	[[_2nd_order, _missing_x], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
11488	$(b + a \sin(y^2))y'' + ay'^2 \cos(y) \sin(y) + Ay(c + a \sin(y^2)) = 0$	[[_2nd_order, _missing_x]]	✓
11497	$(y'^2 + y^2)y'' + y^3 = 0$	[[_2nd_order, _missing_x]]	✓
11508	$(a^2y^2 - b^2)y''^2 - 2a^2yy'^2y'' + (a^2y'^2 - 1)y'^2 = 0$	[[_2nd_order, _missing_x]]	✓
12669	$yy'' - y^2y' - y'^2 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _with_potential_symmetries], [_2nd_order, _reducible, _mu_xy]]	✓

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Table 2.34 second order ode missing x  
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#	ODE	CAS classification	Solved?
12670	$yy'' - y'^2 + 1 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓
12671	$2y'' = e^y$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓
12672	$yy'' + 2y' - y'^2 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
12690	$y'' + yy' = 0$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Lagerstrom, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
12693	$y(1 - \ln(y))y'' + (1 + \ln(y))y'^2 = 0$	[[_2nd_order, _missing_x], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
13582	$y'' + \frac{2y'^2}{1-y} = 0$	[[_2nd_order, _missing_x], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
13585	$x^3x'' + 1 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓
13593 i.c.	$y'' = 3\sqrt{y}$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓
13597	$yy'y'' = y'^3 + y''^2$	[[_2nd_order, _missing_x]]	✓
13618 i.c.	$y'' = 2y^3$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓
13619	$yy'' - y'^2 = y'$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓

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Table 2.34 second order ode missing x  
Continued from previous page

#	ODE	CAS classification	Solved?
13654	$yy'' = 1$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓
13685	$(1 - y)y'' - y'^2 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
13905	$y'' = \frac{a}{y^3}$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓
13907 i.c.	$yy'' + y'^3 - y'^2 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_y_y1]]	✓
13951	$yy'' = 1 + y'^2$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓
13980	$x'' + x - x^3 = 0$	[[_2nd_order, _missing_x], _Duffing, [_2nd_order, _re- ducible, _mu_x_y1]]	✓
13981	$x'' + x + x^3 = 0$	[[_2nd_order, _missing_x], _Duffing, [_2nd_order, _re- ducible, _mu_x_y1]]	✓
13984	$x'' = (2 \cos(x) - 1) \sin(x)$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓
14165	$2yy'' - y'^2 = 0$	[[_2nd_order, _missing_x], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
14893	$yy'' = -y'^2$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
14896	$yy'' - y'^2 = y'$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓

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Table 2.34 second order ode missing x  
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#	ODE	CAS classification	Solved?
14898	$(-3 + y)y'' = 2y'^2$	[[_2nd_order, _missing_x], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
14904	<i>i.c.</i> $yy'' = y'^2$	[[_2nd_order, _missing_x], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
14905	<i>i.c.</i> $3yy'' = 2y'^2$	[[_2nd_order, _missing_x], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
14906	$\sin(y)y'' + \cos(y)y'^2 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
14908	$yy'' + y'^2 = 2yy'$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
14909	$y^2y'' + y'' + 2yy'^2 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
14914	$yy'' - y'^2 = y'$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
14915	$yy'' = 2y'^2$	[[_2nd_order, _missing_x], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓

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Table 2.34 second order ode missing x  
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#	ODE	CAS classification	Solved?
14916	$(-3 + y)y'' = y'^2$	[[_2nd_order, _missing_x], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
14927 i.c.	$3yy'' = 2y'^2$	[[_2nd_order, _missing_x], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
14928 i.c.	$yy'' + 2y'^2 = 3yy'$	[[_2nd_order, _missing_x], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
14929 i.c.	$y'' = -y'e^{-y}$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _non- linear], [_2nd_order, _re- ducible, _mu_xy]]	✓
14934 i.c.	$y'' = 2yy'$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Lagerstrom, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
14935 i.c.	$y'' = 2yy'$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Lagerstrom, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
14936 i.c.	$y'' = 2yy'$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Lagerstrom, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
14937 i.c.	$y'' = 2yy'$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Lagerstrom, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓

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Table 2.34 second order ode missing x  
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#	ODE	CAS classification	Solved?
14944	$(1 + y)y'' = y'^3$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_y_y1]]	✓
16081	$2yy'' + y^2 = y'^2$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_xy]]	✓
16590	$yy'' + y'^2 = 1$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
16615	$yy'' = y'^2$	[[_2nd_order, _missing_x], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
16616	$y'' = 2yy'$ i.c.	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Lagerstrom, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
16617	$3y''y' = 2y$ i.c.	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓
16618	$2y'' = 3y^2$ i.c.	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓
16619	$yy'' + y'^2 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
16620	$yy'' = y' + y'^2$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
16621	$yy'' = 1 + y'^2$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓

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Table 2.34 second order ode missing x

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#	ODE	CAS classification	Solved?
16622	$2yy'' = 1 + y'^2$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓
16623 i.c.	$y^3y'' = -1$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓
16624	$yy'' - y'^2 = y^2y'$	[[_2nd_order, _missing_x], [_2nd_order, _with_potential_symmetries], [_2nd_order, _reducible, _mu_xy]]	✓
16625 i.c.	$y'' = e^{2y}$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓
16626	$2yy'' - 3y'^2 = 4y^2$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_xy]]	✓
16849	$x'' + x'^2 + x = 0$	[[_2nd_order, _missing_x]]	✓
16851	$x'' - xe^{x'} = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓
16853	$x'' + xx'^2 = 0$	[[_2nd_order, _missing_x], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
16854	$x'' + (x + 2)x' = 0$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
16860 i.c.	$yy'' + 1 + y'^2 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
17242	$yy'' + y'^2 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓

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Table 2.34 second order ode missing x  
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#	ODE	CAS classification	Solved?
17647	$y'' = \frac{1}{\sqrt{y}}$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓
17650	$2(2a - y)y'' = 1 + y'^2$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓
17652	$yy'' + y'^2 = y^2 \ln(y)$	[[_2nd_order, _missing_x]]	✓
17653	$yy'' - y'^2 = 0$	[[_2nd_order, _missing_x], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
17661	$yy'' - y'^2 - y'^4 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓
17664	$y(1 - \ln(y))y'' + (1 + \ln(y))y'^2 = 0$	[[_2nd_order, _missing_x], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
17863	$yy'' + y'^2 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
17867	$2yy'' = 1 + y'^2$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓
17868	$yy'' - y'^2 = 0$	[[_2nd_order, _missing_x], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
17871	<i>i.c.</i> $yy'' = y^2y' + y'^2$	[[_2nd_order, _missing_x], [_2nd_order, _with_potential_symmetries], [_2nd_order, _reducible, _mu_xy]]	✓
17872	<i>i.c.</i> $y'' = y'e^y$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], [_2nd_order, _reducible, _mu_xy]]	✓

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Table 2.34 second order ode missing x  
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#	ODE	CAS classification	Solved?
17875	$yy'' = y'^2$	[[_2nd_order, _missing_x], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
17881	$yy'' + y'^2 - 2yy' = 0$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
17915	$y^2y'' + y'^3 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_y_y1]]	✓
17923	$y'' = 2yy'^3$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_y_y1]]	✓
18244	$\phi'' = \frac{4\pi nc}{\sqrt{v_0^2 + \frac{2e(\phi-V_0)}{m}}}$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓
18285	$y'' - 2yy' = 0$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Lagerstrom, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
18286	$y'' - y'^2 - yy'^3 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_y_y1]]	✓
18377	$y'' = \frac{1}{y^2}$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓
18378	$yy'' - y'^2 = 0$	[[_2nd_order, _missing_x], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
18379	$yy'' - y'^2 = 1$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓

## 2.4.7 second order ode missing y

Table 2.35: second order ode missing y

#	ODE	CAS classification	Solved?
11	<i>i.c.</i> $x'' = 50$	[[_2nd_order, _quadrature]]	✓
12	<i>i.c.</i> $x'' = -20$	[[_2nd_order, _quadrature]]	✓
13	<i>i.c.</i> $x'' = 3t$	[[_2nd_order, _quadrature]]	✓
14	<i>i.c.</i> $x'' = 2t + 1$	[[_2nd_order, _quadrature]]	✓
15	<i>i.c.</i> $x'' = 4(3 + t)^2$	[[_2nd_order, _quadrature]]	✓
16	<i>i.c.</i> $x'' = \frac{1}{\sqrt{t+4}}$	[[_2nd_order, _quadrature]]	✓
17	<i>i.c.</i> $x'' = \frac{1}{(t+1)^3}$	[[_2nd_order, _quadrature]]	✓
18	<i>i.c.</i> $x'' = 50 \sin(5t)$	[[_2nd_order, _quadrature]]	✓
147	$xy'' = y'$	[[_2nd_order, _missing_y]]	✓
150	$xy'' + y' = 4x$	[[_2nd_order, _missing_y]]	✓
151	$y'' = y'^2$	[[_2nd_order, _missing_x], _Liouville, [_2nd_order, _reducible, _mu_xy]]	✓
152	$x^2y'' + 3xy' = 2$	[[_2nd_order, _missing_y]]	✓
154	$y'' = (x + y')^2$	[[_2nd_order, _missing_y], [_2nd_order, _reducible, _mu_xy]]	✓
170	$ry'' = (1 + y'^2)^{3/2}$	[[_2nd_order, _missing_x]]	✓
221	<i>i.c.</i> $y'' + y' = 0$	[[_2nd_order, _missing_x]]	✓
222	<i>i.c.</i> $y'' - 3y' = 0$	[[_2nd_order, _missing_x]]	✓
236	$y'' + 5y' = 0$	[[_2nd_order, _missing_x]]	✓
237	$2y'' + 3y' = 0$	[[_2nd_order, _missing_x]]	✓
247	$x^2y'' + xy' = 0$	[[_2nd_order, _missing_y]]	✓
272	$2y'' - 3y' = 0$	[[_2nd_order, _missing_x]]	✓

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Table 2.35 second order ode missing y

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#	ODE	CAS classification	Solved?
813	$y'' + y' = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
814	$y'' - 3y' = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
825	$y'' + 5y' = 0$	[[_2nd_order, _missing_x]]	✓
826	$2y'' + 3y' = 0$	[[_2nd_order, _missing_x]]	✓
836	$x^2y'' + xy' = 0$	[[_2nd_order, _missing_y]]	✓
846	$2y'' - 3y' = 0$	[[_2nd_order, _missing_x]]	✓
1253	$y'' + 5y' = 0$	[[_2nd_order, _missing_x]]	✓
1260	$y'' + 3y' = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
2607	$y'' + 2y' = 1 + t^2 + e^{-2t}$	[[_2nd_order, _missing_y]]	✓
3089	$y'' = 0$	[[_2nd_order, _quadrature]]	✓
3141	$2y'' + y' = 8 \sin(2x) + e^{-x}$ i.c.	[[_2nd_order, _missing_y]]	✓
3217	$y'' + 2y' = x^3 \sin(2x)$	[[_2nd_order, _missing_y]]	✓
3218	$y'' - y' = x e^{2x} \sin(x)$	[[_2nd_order, _missing_y]]	✓
3220	$y'' + 2y' = x^2 e^{-x} \sin(x)$	[[_2nd_order, _missing_y]]	✓
3244	$y'' = \cos(t)$	[[_2nd_order, _quadrature]]	✓
3249	$xy'' = x^2 + 1$	[[_2nd_order, _quadrature]]	✓
3250	$(1 - x)y'' = y'$	[[_2nd_order, _missing_y]]	✓
3251	$(x^2 + 1)y'' + 2x(y' + 1) = 0$	[[_2nd_order, _missing_y]]	✓
3252	$y'' = y'^3 + y'$	[[_2nd_order, _missing_x]]	✓
3253	$xy'' + x = y'$	[[_2nd_order, _missing_y]]	✓
3254	$x'' + tx' = t^3$	[[_2nd_order, _missing_y]]	✓
3255	$x^2y'' = xy' + 1$	[[_2nd_order, _missing_y]]	✓
3256	$y'' = 1 + y'^2$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_xy]]	✓
3257	$(-x^2 + 1)y'' + xy' = 1$	[[_2nd_order, _missing_y]]	✓

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Table 2.35 second order ode missing y  
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#	ODE	CAS classification	Solved?
3258	$y'' = \sqrt{1 + y'^2}$	[[_2nd_order, _missing_x]]	✓
3259	$y'' = y' + y'^2$	[[_2nd_order, _missing_x], _Liouville, [_2nd_order, _reducible, _mu_xy]]	✓
3261	$(x^2 + 1)y'' + 1 + y'^2 = 0$	[[_2nd_order, _missing_y], [_2nd_order, _reducible, _mu_y_y1]]	✓
3263	$y'' + 2y'^2 = 0$	[[_2nd_order, _missing_x], _Liouville, [_2nd_order, _reducible, _mu_xy]]	✓
3269	$y'' + 2y'^2 = 2$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_xy]]	✓
3270	$y'' + y' = y'^3$	[[_2nd_order, _missing_x]]	✓
3272	$y'' = \sec(x) \tan(x)$	[[_2nd_order, _quadrature]]	✓
3275	$y'' = y'^2 \cos(x)$	[[_2nd_order, _missing_y], [_2nd_order, _reducible, _mu_y_y1]]	✓
3277	$(x^2 + 1)y'' + 1 + y'^2 = 0$	[[_2nd_order, _missing_y], [_2nd_order, _reducible, _mu_y_y1]]	✓
3280	$y'' = y'^2 \sin(x)$	[[_2nd_order, _missing_y], [_2nd_order, _reducible, _mu_y_y1]]	✓
3284	$(1 - e^x)y'' = e^x y'$	[[_2nd_order, _missing_y]]	✓
3483	$y'' + y'^2 + y' = 0$	[[_2nd_order, _missing_x], _Liouville, [_2nd_order, _reducible, _mu_xy]]	✓
3584	$y'' = x e^x$	[[_2nd_order, _quadrature]]	✓
3585	$y'' = x^n$	[[_2nd_order, _quadrature]]	✓
3587	$y'' = \cos(x)$	[[_2nd_order, _quadrature]]	✓
3589	$y'' = x e^x$	[[_2nd_order, _quadrature]]	✓

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Table 2.35 second order ode missing y  
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#	ODE	CAS classification	Solved?
3631	$y'' + \frac{y'}{x} = 9x$	[[_2nd_order, _missing_y]]	✓
3699	$y'' + 4y' = 0$	[[_2nd_order, _missing_x]]	✓
4124	$2y'' + 3y' = 0$	[[_2nd_order, _missing_x]]	✓
4127	$y'' = 0$	[[_2nd_order, _quadrature]]	✓
4426	$xy'' = x + y'$	[[_2nd_order, _missing_y]]	✓
4484	$y'' - y' = e^x(x^2 + 10)$	[[_2nd_order, _missing_y]]	✓
4508	$y'' + y' = \frac{1}{1 + e^x}$	[[_2nd_order, _missing_y]]	✓
5916	$y'' + 2y' = 0$	[[_2nd_order, _missing_x]]	✓
5945	$y'' = 0$ i.c.	[[_2nd_order, _quadrature]]	✓
5958	$y'' - 3y' = 2e^{2x} \sin(x)$	[[_2nd_order, _missing_y]]	✓
5959	$y'' + y' = x^2 + 2x$	[[_2nd_order, _missing_y]]	✓
5960	$y'' + y' = x + \sin(2x)$	[[_2nd_order, _missing_y]]	✓
5998	$x^2y'' + xy' = 1$	[[_2nd_order, _missing_y]]	✓
5999	$xy'' - y' = x^2$	[[_2nd_order, _missing_y]]	✓
6008	$(x^2 + 1)y'' + 1 + y'^2 = 0$	[[_2nd_order, _missing_y], [_2nd_order, _reducible, _mu_y_y1]]	✓
6009	$(x^2 + 1)y'' + 2x(y' + 1) = 0$	[[_2nd_order, _missing_y]]	✓
6014	$x^2y'' + xy' = 1$ i.c.	[[_2nd_order, _missing_y]]	✓
6015	$xy'' - y' = x^2$ i.c.	[[_2nd_order, _missing_y]]	✓
6030	$(1 + y'^2)^3 = a^2y''^2$	[[_2nd_order, _missing_x]]	✓
6137	$y'' + 9y' = 0$	[[_2nd_order, _missing_x]]	✓
6142	$y'' + 5y' = 0$	[[_2nd_order, _missing_x]]	✓
6151	$y'' - 4y' = 10$	[[_2nd_order, _missing_x]]	✓
6172	$2y'' + y' = 2x$	[[_2nd_order, _missing_y]]	✓
6182	$y'' - 2y' = 9xe^{-x} - 6x^2 + 4e^{2x}$	[[_2nd_order, _missing_y]]	✓
6187	$y'' + 2xy' = 0$	[[_2nd_order, _missing_y]]	✓

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Table 2.35 second order ode missing y

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#	ODE	CAS classification	Solved?
6189	$xy'' = y'^3 + y'$	[[_2nd_order, _missing_y], [_2nd_order, _reducible, _mu_y_y1]]	✓
6190	$y''^2 = k^2(1 + y'^2)$	[[_2nd_order, _missing_x]]	✓
6191	$k = \frac{y''}{(y' + 1)^{3/2}}$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _non- linear]]	✓
6219	$xy'' + y' = 4x$	[[_2nd_order, _missing_y]]	✓
6514	$y'' = 9x^2 + 2x - 1$	[[_2nd_order, _quadra- ture]]	✓
6540	$y'' - 7y' = -3$	[[_2nd_order, _missing_x]]	✓
6542	$x^2y'' - xy' = x^3e^x$	[[_2nd_order, _missing_y]]	✓
6699	$y'' + y'^2 + 1 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_xy]]	✓
6713	$y'' - 4y' = 5$	[[_2nd_order, _missing_x]]	✓
6773	$y'' + y'^2 + 1 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_xy]]	✓
6774	$(x^2 + 1)y'' + 2xy' = \frac{2}{x^3}$	[[_2nd_order, _missing_y]]	✓
6775	$xy'' - y' = -\frac{2}{x} - \ln(x)$	[[_2nd_order, _missing_y]]	✓
7227	$u'' - \cot(\theta)u' = 0$	[[_2nd_order, _missing_y]]	✓
7257	$y'' = x + 2$	[[_2nd_order, _quadra- ture]]	✓
7265	$y'' = 3x + 1$	[[_2nd_order, _quadra- ture]]	✓
7291	$y'' = 0$	[[_2nd_order, _quadra- ture]]	✓
7435	$y'' + y' = 1$	[[_2nd_order, _missing_x]]	✓
7436	$y'' + e^xy' = e^x$	[[_2nd_order, _missing_y]]	✓
7440	$xy'' - 2y' = x^3$	[[_2nd_order, _missing_y]]	✓
7441	<i>i.c.</i> $y'' = 1 + y'^2$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_xy]]	✓

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Table 2.35 second order ode missing y  
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#	ODE	CAS classification	Solved?
7442	$y'' = -\frac{1}{2y'^2}$ i.c.	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_poly_yn]]	✓
7499	$\frac{y''}{y'} = x^2$	[[_2nd_order, _missing_y]]	✓
7500	$y''y' = x(x+1)$	[[_2nd_order, _missing_y], [_2nd_order, _exact, _nonlinear], [_2nd_order, _reducible, _mu_y_y1], [_2nd_order, _reducible, _mu_poly_yn]]	✓
7584	$x^2y'' = 2xy' + y'^2$	[[_2nd_order, _missing_y]]	✓
7587	$xy'' + y' = 4x$	[[_2nd_order, _missing_y]]	✓
7588	$(x^2 + 2y')y'' + 2xy' = 0$ i.c.	[[_2nd_order, _missing_y], [_2nd_order, _exact, _non- linear], [_2nd_order, _re- ducible, _mu_poly_yn]]	✓
7591	$y'' = 1 + y'^2$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_xy]]	✓
7592	$y'' + y'^2 = 1$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_xy]]	✓
7610	$xy'' = y' - 2y'^3$	[[_2nd_order, _missing_y], [_2nd_order, _reducible, _mu_y_y1]]	✓
7612	$xy'' - 3y' = 5x$	[[_2nd_order, _missing_y]]	✓
7653	$y'' - 2y' = 12x - 10$	[[_2nd_order, _missing_y]]	✓
7656	$y'' + y' = 10x^4 + 2$	[[_2nd_order, _missing_y]]	✓
7729	$y'' = \tan(x)$ i.c.	[[_2nd_order, _quadra- ture]]	✓
7730	$y'' - 2y' = \ln(x)$ i.c.	[[_2nd_order, _missing_y]]	✓
7899	$y'' - y' = 0$	[[_2nd_order, _missing_x]]	✓
7901	$y'' + 2y' = 0$	[[_2nd_order, _missing_x]]	✓
8038	$ty'' - y' = 2t^2$ i.c.	[[_2nd_order, _missing_y]]	✓

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Table 2.35 second order ode missing y  
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#	ODE	CAS classification	Solved?
8165	$y'' = xy'^3$	[[_2nd_order, _missing_y], [_2nd_order, _reducible, _mu_y_y1]]	✓
8166	$x^2y'' + y'^2 - 2xy' = 0$ i.c.	[[_2nd_order, _missing_y]]	✓
8167	$x^2y'' + y'^2 - 2xy' = 0$ i.c.	[[_2nd_order, _missing_y]]	✓
8171	$2ay'' + y'^3 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_y_y1]]	✓
8172	$xy'' = y' + x^5$ i.c.	[[_2nd_order, _missing_y]]	✓
8173	$xy'' + y' + x = 0$ i.c.	[[_2nd_order, _missing_y]]	✓
8178	$y'' \cos(x) = y'$	[[_2nd_order, _missing_y]]	✓
8179	$y'' = xy'^2$ i.c.	[[_2nd_order, _missing_y], [_2nd_order, _reducible, _mu_y_y1]]	✓
8180	$y'' = xy'^2$ i.c.	[[_2nd_order, _missing_y], [_2nd_order, _reducible, _mu_y_y1]]	✓
8185	$x^3y'' - x^2y' = -x^2 + 3$	[[_2nd_order, _missing_y]]	✓
8186	$y'' = y'^2$	[[_2nd_order, _missing_x], _Liouville, [_2nd_order, _reducible, _mu_xy]]	✓
8187	$y'' = e^x y'^2$	[[_2nd_order, _missing_y]]	✓
8188	$2y'' = y'^3 \sin(2x)$	[[_2nd_order, _missing_y], [_2nd_order, _reducible, _mu_y_y1]]	✓
8189	$x^2y'' + y'^2 = 0$	[[_2nd_order, _missing_y], [_2nd_order, _reducible, _mu_y_y1]]	✓
8190	$y'' = 1 + y'^2$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_xy]]	✓
8191	$y'' = (1 + y'^2)^{3/2}$	[[_2nd_order, _missing_x]]	✓
8195	$x^2y'' = y'(2x - y')$ i.c.	[[_2nd_order, _missing_y]]	✓

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Table 2.35 second order ode missing y  
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#	ODE	CAS classification	Solved?
8196	$x^2 y'' = y'(3x - 2y')$	[[_2nd_order, _missing_y]]	✓
8197	$xy'' = y'(2 - 3xy')$	[[_2nd_order, _missing_y], _Liouville, [_2nd_order, _reducible, _mu_xy]]	✓
8198	$x^4 y'' = y'(y' + x^3)$ i.c.	[[_2nd_order, _missing_y]]	✓
8199	$y'' = 2x + (x^2 - y')^2$	[[_2nd_order, _missing_y], [_2nd_order, _reducible, _mu_xy]]	✓
8201	$y''^2 - xy'' + y' = 0$	[[_2nd_order, _missing_y]]	✓
8202	$y''^3 = 12y'(xy'' - 2y')$	[[_2nd_order, _missing_y]]	✓
8435	$ty'' + 4y' = t^2$	[[_2nd_order, _missing_y]]	✓
8436	$(t^2 + 9)y'' + 2ty' = 0$ i.c.	[[_2nd_order, _missing_y]]	✓
8438	$ty'' + y' = 0$	[[_2nd_order, _missing_y]]	✓
8439	$t^2 y'' - 2y' = 0$	[[_2nd_order, _missing_y]]	✓
8442	$y'' = 0$	[[_2nd_order, _quadra- ture]]	✓
8443	$y'' = 1$	[[_2nd_order, _quadra- ture]]	✓
8444	$y'' = f(t)$	[[_2nd_order, _quadra- ture]]	✓
8445	$y'' = k$	[[_2nd_order, _quadra- ture]]	✓
8448	$y'' = 4 \sin(x) - 4$	[[_2nd_order, _quadra- ture]]	✓
8555	$(x^2 + 1)y'' + 1 + y'^2 = 0$	[[_2nd_order, _missing_y], [_2nd_order, _reducible, _mu_y_y1]]	✓
8557	$(x^2 + 1)y'' + 1 + xy'^2 = 1$	[[_2nd_order, _missing_y], [_2nd_order, _reducible, _mu_y_y1]]	✓
8559	$(x^2 + 1)y'' + y'^2 = 0$	[[_2nd_order, _missing_y], [_2nd_order, _reducible, _mu_y_y1]]	✓
8561	$(x^2 + 1)y'' + y'^3 = 0$	[[_2nd_order, _missing_y], [_2nd_order, _reducible, _mu_y_y1]]	✓

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Table 2.35 second order ode missing y  
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#	ODE	CAS classification	Solved?
8748	$y'' = 0$	[[_2nd_order, _quadrature]]	✓
8749	$y''^2 = 0$	[[_2nd_order, _quadrature]]	✓
8750	$y''^n = 0$	[[_2nd_order, _quadrature]]	✓
8751	$ay'' = 0$	[[_2nd_order, _quadrature]]	✓
8752	$ay''^2 = 0$	[[_2nd_order, _quadrature]]	✓
8753	$ay''^n = 0$	[[_2nd_order, _quadrature]]	✓
8754	$y'' = 1$	[[_2nd_order, _quadrature]]	✓
8755	$y''^2 = 1$	[[_2nd_order, _quadrature]]	✓
8756	$y'' = x$	[[_2nd_order, _quadrature]]	✓
8757	$y''^2 = x$	[[_2nd_order, _quadrature]]	✓
8758	$y''^3 = 0$	[[_2nd_order, _quadrature]]	✓
8759	$y'' + y' = 0$	[[_2nd_order, _missing_x]]	✓
8760	$y''^2 + y' = 0$	[[_2nd_order, _missing_x]]	✓
8761	$y'' + y'^2 = 0$	[[_2nd_order, _missing_x], _Liouville, [_2nd_order, _reducible, _mu_xy]]	✓
8762	$y'' + y' = 1$	[[_2nd_order, _missing_x]]	✓
8763	$y''^2 + y' = 1$	[[_2nd_order, _missing_x]]	✓
8764	$y'' + y'^2 = 1$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_xy]]	✓
8765	$y'' + y' = x$	[[_2nd_order, _missing_y]]	✓
8766	$y''^2 + y' = x$	[[_2nd_order, _missing_y]]	✓
8767	$y'' + y'^2 = x$	[[_2nd_order, _missing_y], [_2nd_order, _reducible, _mu_xy]]	✓

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Table 2.35 second order ode missing y  
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#	ODE	CAS classification	Solved?
8778	$y'' + y' = 1$	[[_2nd_order, _missing_x]]	✓
8779	$y'' + y' = x$	[[_2nd_order, _missing_y]]	✓
8780	$y'' + y' = x + 1$	[[_2nd_order, _missing_y]]	✓
8781	$y'' + y' = x^2 + x + 1$	[[_2nd_order, _missing_y]]	✓
8782	$y'' + y' = x^3 + x^2 + x + 1$	[[_2nd_order, _missing_y]]	✓
8783	$y'' + y' = \sin(x)$	[[_2nd_order, _missing_y]]	✓
8784	$y'' + y' = \cos(x)$	[[_2nd_order, _missing_y]]	✓
8809	$y'' + \sin(x)y' + y'^2 = 0$	[[_2nd_order, _missing_y], _Liouville, [_2nd_order, _reducible, _mu_xy]]	✓
10687	$y'' = 0$	[[_2nd_order, _quadra- _ture]]	✓
10775	$xy'' + y' = 0$	[[_2nd_order, _missing_y]]	✓
10850	$x^2y'' + 2xy' = 0$	[[_2nd_order, _missing_y]]	✓
10915	$(x^2 - 1)y'' + xy' + 2 = 0$	[[_2nd_order, _missing_y]]	✓
10918	$(x^2 - 1)y'' + 2xy' = 0$	[[_2nd_order, _missing_y]]	✓
10919	$(x^2 - 1)y'' + 2xy' - a = 0$	[[_2nd_order, _missing_y]]	✓
10938	$x(x - 1)y'' + ((a + 1)x + b)y' = 0$	[[_2nd_order, _missing_y]]	✓
10941	$x(x - 1)y'' + ((a1 + b1 + 1)x - d1)y' + a1 b1 d1 = 0$	[[_2nd_order, _missing_y]]	✓
10979	$(a^2x^2 - 1)y'' + 2a^2xy' = 0$	[[_2nd_order, _missing_y]]	✓
11002	$x^2(x + 1)y'' + 2x(2 + 3x)y' = 0$	[[_2nd_order, _missing_y]]	✓
11325	$y'' = a\sqrt{1 + y'^2}$	[[_2nd_order, _missing_x]]	✓
11326	$y'' = a\sqrt{1 + y'^2} + b$	[[_2nd_order, _missing_x]]	✓
11328	$y'' = a(1 + y'^2)^{3/2}$	[[_2nd_order, _missing_x]]	✓
11329	$y'' - 2ax(1 + y'^2)^{3/2} = 0$	[[_2nd_order, _missing_y], [_2nd_order, _reducible, _mu_y_y1]]	✓
11336	$8y'' + 9y'^4 = 0$	[[_2nd_order, _missing_x]]	✓
11346	$2xy'' + y'^3 + y' = 0$	[[_2nd_order, _missing_y], [_2nd_order, _reducible, _mu_y_y1]]	✓

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Table 2.35 second order ode missing y  
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#	ODE	CAS classification	Solved?
11354	$(x^2 + 1)y'' + 1 + y'^2 = 0$	[[_2nd_order, _missing_y], [_2nd_order, _reducible, _mu_y_y1]]	✓
12220	$y'' + ax^ny' = 0$	[[_2nd_order, _missing_y]]	✓
12253	$xy'' + (ax + b)y' + cx(-cx^2 + ax + b + 1) = 0$	[[_2nd_order, _missing_y]]	✓
12622	$y'' - 2y' = e^{2x} + 1$	[[_2nd_order, _missing_y]]	✓
12664	$(x^2 + 1)y'' + 1 + y'^2 = 0$	[[_2nd_order, _missing_y], [_2nd_order, _reducible, _mu_y_y1]]	✓
12666	$y'' + xy' = x$	[[_2nd_order, _missing_y]]	✓
12667	$y'' = xe^x$	[[_2nd_order, _quadra- ture]]	✓
12668	$(y' - xy'')^2 = 1 + y'^2$	[[_2nd_order, _missing_y]]	✓
12683	$y'' + 2 \cot(x)y' + 2 \tan(x)y'^2 = 0$	[[_2nd_order, _missing_y]]	✓
12688	$y'' = 1 + y'^2$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_xy]]	✓
12689	$(-x^2 + 1)y'' - xy' = 2$	[[_2nd_order, _missing_y]]	✓
12694	$y'' + \frac{y'}{x} = 0$	[[_2nd_order, _missing_y]]	✓
12696	$y'' + y'^2 + 1 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_xy]]	✓
12697	$(-x^2 + 1)y'' - \frac{y'}{x} + x^2 = 0$	[[_2nd_order, _missing_y]]	✓
12714	$x'' = -3\sqrt{t}$	[[_2nd_order, _quadra- ture]]	✓
12719	$x' + tx'' = 1$	[[_2nd_order, _missing_y]]	✓
12748	$\frac{x' + tx''}{t} = -2$	[[_2nd_order, _missing_y]]	✓
12772	$x'' + x' = 3t$	[[_2nd_order, _missing_y]]	✓
12789	$x'' - 2x' = 0$	[[_2nd_order, _missing_x]]	✓
12793	$x'' - 2x' = 0$	[[_2nd_order, _missing_x]]	✓
12817	$x'' - x' = 6 + e^{2t}$	[[_2nd_order, _missing_y]]	✓

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Table 2.35 second order ode missing y  
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#	ODE	CAS classification	Solved?
12825	$x'' - 2x' = 4$	[[_2nd_order, _missing_x]]	✓
	<i>i.c.</i>		
12836	$t^2x'' + tx' = 0$	[[_2nd_order, _missing_y]]	✓
	<i>i.c.</i>		
12838	$x'' + t^2x' = 0$	[[_2nd_order, _missing_y]]	✓
	<i>i.c.</i>		
12845	$x'' + \frac{x'}{t} = a$	[[_2nd_order, _missing_y]]	✓
13430	$y'' - 4y' = 0$	[[_2nd_order, _missing_x]]	✓
	<i>i.c.</i>		
13442	$x'' - 4x' = t^2$	[[_2nd_order, _missing_y]]	✓
13470	$x'' - 4x' = \tan(t)$	[[_2nd_order, _missing_y]]	✓
13584	$(x^2 + 1)y'' + 1 + y'^2 = 0$	[[_2nd_order, _missing_y], [_2nd_order, _reducible, _mu_y_y1]]	✓
13592	$y'' + y'^2 = 1$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_xy]]	✓
	<i>i.c.</i>		
13595	$u'' + \frac{2u'}{r} = 0$	[[_2nd_order, _missing_y]]	✓
13604	$mx'' = f(x')$	[[_2nd_order, _missing_x]]	✓
13610	$y''' + y'' + 1 = x$	[[_2nd_order, _quadrature]]	✓
13616	$xy'' = y' \ln\left(\frac{y'}{x}\right)$	[[_2nd_order, _missing_y]]	✓
13837	$y'' + \frac{2y'}{x} = 0$	[[_2nd_order, _missing_y]]	✓
13902	$y'' = \frac{1}{2y'}$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_poly_yn]]	✓
13906	$xy'' - y' = e^x x^2$	[[_2nd_order, _missing_y]]	✓
	<i>i.c.</i>		
13908	$y'' + \tan(x)y' = \sin(2x)$	[[_2nd_order, _missing_y]]	✓
	<i>i.c.</i>		
13909	$y''^2 + y'^2 = a^2$	[[_2nd_order, _missing_x]]	✓
	<i>i.c.</i>		
13910	$y'' = \frac{1}{2y'}$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_poly_yn]]	✓

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Table 2.35 second order ode missing y  
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#	ODE	CAS classification	Solved?
13937	$y'' - 3y' = 2 - 6x$	[[_2nd_order, _missing_y]]	✓
14003	$x^2y'' - xy' = 0$	[[_2nd_order, _missing_y]]	✓
14158	$x(x-3)y'' + 3y' = x^2$ i.c.	[[_2nd_order, _missing_y]]	✓
14159	$x(x-3)y'' + 3y' = x^2$ i.c.	[[_2nd_order, _missing_y]]	✓
14603	$y'' + 2y' = 3t + 2$ i.c.	[[_2nd_order, _missing_y]]	✓
14604	$y'' + 4y' = 3t + 2$ i.c.	[[_2nd_order, _missing_y]]	✓
14660	$y'' = \frac{x+1}{x-1}$	[[_2nd_order, _quadrature]]	✓
14661	$x^2y'' = 1$	[[_2nd_order, _quadrature]]	✓
14664	$x^2y'' + 3xy' = 0$	[[_2nd_order, _missing_y]]	✓
14674	$y'' = \sin(2x)$	[[_2nd_order, _quadrature]]	✓
14675	$y'' - 3 = x$	[[_2nd_order, _quadrature]]	✓
14683	$xy'' + 2 = \sqrt{x}$ i.c.	[[_2nd_order, _quadrature]]	✓
14885	$xy'' + 4y' = 18x^2$	[[_2nd_order, _missing_y]]	✓
14886	$xy'' = 2y'$	[[_2nd_order, _missing_y]]	✓
14887	$y'' = y'$	[[_2nd_order, _missing_x]]	✓
14888	$y'' + 2y' = 8e^{2x}$	[[_2nd_order, _missing_y]]	✓
14889	$xy'' = y' - 2x^2y'$	[[_2nd_order, _missing_y]]	✓
14890	$(x^2 + 1)y'' + 2xy' = 0$	[[_2nd_order, _missing_y]]	✓
14891	$y'' = 4x\sqrt{y'}$	[[_2nd_order, _missing_y], [_2nd_order, _reducible, _mu_y_y1]]	✓
14892	$y''y' = 1$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _non- linear], [_2nd_order, _re- ducible, _mu_poly_yn]]	✓
14894	$xy'' = y'^2 - y'$	[[_2nd_order, _missing_y], [_2nd_order, _reducible, _mu_y_y1]]	✓

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Table 2.35 second order ode missing y  
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#	ODE	CAS classification	Solved?
14895	$xy'' - y'^2 = 6x^5$	[[_2nd_order, _missing_y]]	✓
14897	$y'' = 2y' - 6$	[[_2nd_order, _missing_x]]	✓
14899	$y'' + 4y' = 9e^{-3x}$	[[_2nd_order, _missing_y]]	✓
14907	$y'' = y'$	[[_2nd_order, _missing_x]]	✓
14910	$y'' = 4x\sqrt{y'}$	[[_2nd_order, _missing_y], [_2nd_order, _reducible, _mu_y_y1]]	✓
14911	$y''y' = 1$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _non- linear], [_2nd_order, _re- ducible, _mu_poly_yn]]	✓
14912	$xy'' = y'^2 - y'$	[[_2nd_order, _missing_y], [_2nd_order, _reducible, _mu_y_y1]]	✓
14913	$xy'' - y' = 6x^5$	[[_2nd_order, _missing_y]]	✓
14917	$y'' + 4y' = 9e^{-3x}$	[[_2nd_order, _missing_y]]	✓
14918	$y'' = y'(y' - 2)$	[[_2nd_order, _missing_x], _Liouville, [_2nd_order, _reducible, _mu_xy]]	✓
14919	$xy'' + 4y' = 18x^2$ i.c.	[[_2nd_order, _missing_y]]	✓
14920	$xy'' = 2y'$ i.c.	[[_2nd_order, _missing_y]]	✓
14921	$y'' = y'$ i.c.	[[_2nd_order, _missing_x]]	✓
14922	$y'' + 2y' = 8e^{2x}$ i.c.	[[_2nd_order, _missing_y]]	✓
14925	$xy'' + 2y' = 6$ i.c.	[[_2nd_order, _missing_y]]	✓
14926	$2xy'y'' = y'^2 - 1$ i.c.	[[_2nd_order, _missing_y], [_2nd_order, _reducible, _mu_y_y1], [_2nd_order, _reducible, _mu_poly_yn]]	✓
14930	$y'' = -2xy'^2$ i.c.	[[_2nd_order, _missing_y], [_2nd_order, _reducible, _mu_y_y1]]	✓
14931	$y'' = -2xy'^2$ i.c.	[[_2nd_order, _missing_y], [_2nd_order, _reducible, _mu_y_y1]]	✓

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Table 2.35 second order ode missing y  
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#	ODE	CAS classification	Solved?
14932	$y'' = -2xy'^2$ i.c.	[[_2nd_order, _missing_y], [_2nd_order, _reducible, _mu_y_y1]]	✓
14933	$y'' = -2xy'^2$ i.c.	[[_2nd_order, _missing_y], [_2nd_order, _reducible, _mu_y_y1]]	✓
14988	$y'' + 5y' = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
14994	$y'' + 3y' = 0$	[[_2nd_order, _missing_x]]	✓
15057	$x^2y'' - 2xy' = 0$	[[_2nd_order, _missing_y]]	✓
15069	$x^2y'' + xy' = 0$	[[_2nd_order, _missing_y]]	✓
15111	$y'' + 3y' = e^{\frac{x}{2}}$	[[_2nd_order, _missing_y]]	✓
15115	$y'' + 3y' = 26 \cos\left(\frac{x}{3}\right) - 12 \sin\left(\frac{x}{3}\right)$	[[_2nd_order, _missing_y]]	✓
15126	$y'' = 6x e^x \sin(x)$	[[_2nd_order, _quadrature]]	✓
15131	$y'' + 4y' = 20$	[[_2nd_order, _missing_x]]	✓
15132	$y'' + 4y' = x^2$	[[_2nd_order, _missing_y]]	✓
15217	$2xy'' + y' = \sqrt{x}$	[[_2nd_order, _missing_y]]	✓
15226	$y'' = y'^2$	[[_2nd_order, _missing_x], _Liouville, [_2nd_order, _reducible, _mu_xy]]	✓
15237	$2y'' - 7y' + 3 = 0$	[[_2nd_order, _missing_x]]	✓
15239	$xy'' = 3y'$	[[_2nd_order, _missing_y]]	✓
15240	$y'' - 5y' = 0$	[[_2nd_order, _missing_x]]	✓
15252	$xy'' - y' = -3xy'^3$	[[_2nd_order, _missing_y]]	✓
15470	$y'' + 9y' = 0$	[[_2nd_order, _missing_x]]	✓
15499	$y'' + 9y' = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
15882	$y'' = 0$	[[_2nd_order, _quadrature]]	✓
15884	$y'' + y' = 0$	[[_2nd_order, _missing_x]]	✓
15897	$y'' - y' = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
15898	$3y'' - y' = 0$ i.c.	[[_2nd_order, _missing_x]]	✓

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Table 2.35 second order ode missing y  
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#	ODE	CAS classification	Solved?
15932	$y'' + 2y' = 3 - 4t$	[[_2nd_order, _missing_y]]	✓
15937	$y'' = 3t^4 - 2t$	[[_2nd_order, _quadrature]]	✓
15947	$y'' - 2y' = 52 \sin(3t)$	[[_2nd_order, _missing_y]]	✓
15955	$y'' + 4y' = 8e^{4t} - 4e^{-4t}$	[[_2nd_order, _missing_y]]	✓
15956	$y'' - 3y' = t^2 - e^{3t}$	[[_2nd_order, _missing_y]]	✓
15957	$y'' + 4y' = -24t - 6 - 4te^{-4t} + e^{-4t}$	[[_2nd_order, _missing_y]]	✓
15958	$y'' - 3y' = t^2 - e^{3t}$	[[_2nd_order, _missing_y]]	✓
15959	$y'' = t^2 + e^t + \sin(t)$	[[_2nd_order, _quadrature]]	✓
15960	$y'' + 3y' = 18$ i.c.	[[_2nd_order, _missing_x]]	✓
15968	$y'' - 3y' = -e^{3t} - 2t$ i.c.	[[_2nd_order, _missing_y]]	✓
15969	$y'' - y' = -3t - 4t^2e^{2t}$ i.c.	[[_2nd_order, _missing_y]]	✓
15970	$y'' - 2y' = 2t^2$ i.c.	[[_2nd_order, _missing_y]]	✓
15971	$y'' + 4y' = -24t - 6 - 4te^{-4t} + e^{-4t}$ i.c.	[[_2nd_order, _missing_y]]	✓
15972	$y'' - 3y' = e^{-3t} - e^{3t}$ i.c.	[[_2nd_order, _missing_y]]	✓
15985	$y'' + 16y' = t$	[[_2nd_order, _missing_y]]	✓
16252	$y'' + 5y' = 5t^2$	[[_2nd_order, _missing_y]]	✓
16253	$y'' - 4y' = -3 \sin(t)$	[[_2nd_order, _missing_y]]	✓
16256	$y'' - 2y' = \frac{1}{1 + e^{2t}}$	[[_2nd_order, _missing_y]]	✓
16584	$y'' = y'^2$	[[_2nd_order, _missing_x], _Liouville, [_2nd_order, _reducible, _mu_xy]]	✓
16585	$(x - 1)y'' = 1$	[[_2nd_order, _quadrature]]	✓
16589	$y'' = (1 + y'^2)^{3/2}$	[[_2nd_order, _missing_x]]	✓
16593	$y''(x + 2)^5 = 1$ i.c.	[[_2nd_order, _quadrature]]	✓

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Table 2.35 second order ode missing y  
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#	ODE	CAS classification	Solved?
16594	$y'' = x e^x$ i.c.	[[_2nd_order, _quadrature]]	✓
16595	$y'' = 2x \ln(x)$	[[_2nd_order, _quadrature]]	✓
16596	$xy'' = y'$	[[_2nd_order, _missing_y]]	✓
16597	$xy'' + y' = 0$	[[_2nd_order, _missing_y]]	✓
16598	$xy'' = (2x^2 + 1)y'$	[[_2nd_order, _missing_y]]	✓
16599	$xy'' = y' + x^2$	[[_2nd_order, _missing_y]]	✓
16600	$x \ln(x) y'' = y'$	[[_2nd_order, _missing_y]]	✓
16602	$2y'' = \frac{y'}{x} + \frac{x^2}{y'}$ i.c.	[[_2nd_order, _missing_y], [_2nd_order, _reducible, _mu_poly_yn]]	✓
16605	$y'' = \sqrt{1 + y'^2}$	[[_2nd_order, _missing_x]]	✓
16606	$y'' = y'^2$	[[_2nd_order, _missing_x], _Liouville, [_2nd_order, _reducible, _mu_xy]]	✓
16607	$y'' = \sqrt{1 - y'^2}$	[[_2nd_order, _missing_x]]	✓
16608	$y'' = 1 + y'^2$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_xy]]	✓
16609	$y'' = \sqrt{y' + 1}$	[[_2nd_order, _missing_x]]	✓
16610	$y'' = y' \ln(y')$ i.c.	[[_2nd_order, _missing_x]]	✓
16611	$y'' + y' + 2 = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
16612	$y'' = y'(y' + 1)$	[[_2nd_order, _missing_x], _Liouville, [_2nd_order, _reducible, _mu_xy]]	✓
16613	$3y'' = (1 + y'^2)^{3/2}$	[[_2nd_order, _missing_x]]	✓
16650	$y'' + 3y' = 3$	[[_2nd_order, _missing_x]]	✓
16651	$y'' - 7y' = (x - 1)^2$	[[_2nd_order, _missing_y]]	✓
16652	$y'' + 3y' = e^x$	[[_2nd_order, _missing_y]]	✓
16653	$y'' + 7y' = e^{-7x}$	[[_2nd_order, _missing_y]]	✓

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Table 2.35 second order ode missing y  
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#	ODE	CAS classification	Solved?
16656	$4y'' - 3y' = x e^{\frac{3x}{4}}$	[[_2nd_order, _missing_y]]	✓
16657	$y'' - 4y' = x e^{4x}$	[[_2nd_order, _missing_y]]	✓
16687	$y'' + 2y' = -2$	[[_2nd_order, _missing_x]]	✓
16695	$y'' + 8y' = 8x$	[[_2nd_order, _missing_y]]	✓
16699	$7y'' - y' = 14x$	[[_2nd_order, _missing_y]]	✓
16700	$y'' + 3y' = 3x e^{-3x}$	[[_2nd_order, _missing_y]]	✓
16709	$y'' - y' = e^x \sin(x)$	[[_2nd_order, _missing_y]]	✓
16710	$y'' + 2y' = 4e^x (\cos(x) + \sin(x))$	[[_2nd_order, _missing_y]]	✓
16712	$4y'' + 8y' = x \sin(x)$	[[_2nd_order, _missing_y]]	✓
16727	$y'' + 4y' = x + e^{-4x}$	[[_2nd_order, _missing_y]]	✓
16733	$y'' - 4y' = 2 \cos(4x)^2$	[[_2nd_order, _missing_y]]	✓
16735	$y'' - 3y' = 18x - 10 \cos(x)$	[[_2nd_order, _missing_y]]	✓
16742	$y'' + y' = \cos(x)^2 + e^x + x^2$	[[_2nd_order, _missing_y]]	✓
16745	$y'' + y' = x^2 - e^{-x} + e^x$	[[_2nd_order, _missing_y]]	✓
16752	$y'' - 3y' = 1 + e^x + \cos(x) + \sin(x)$	[[_2nd_order, _missing_y]]	✓
16758	$y'' + 2y' + 1 = 3 \sin(2x) + \cos(x)$	[[_2nd_order, _missing_y]]	✓
16770	$y'' + y' = e^{-x}$ i.c.	[[_2nd_order, _missing_y]]	✓
16777	$y'' - y' = -5e^{-x}(\cos(x) + \sin(x))$ i.c.	[[_2nd_order, _missing_y]]	✓
16796	$xy'' + y' = 0$	[[_2nd_order, _missing_y]]	✓
16825	$y'' + y' = \frac{1}{1 + e^x}$	[[_2nd_order, _missing_y]]	✓
16831	$y'' + y' = e^{2x} \cos(e^x)$	[[_2nd_order, _missing_y]]	✓
16833	$xy'' - (2x^2 + 1)y' = 4x^3 e^{x^2}$	[[_2nd_order, _missing_y]]	✓
16834	$y'' - 2 \tan(x) y' = 1$	[[_2nd_order, _missing_y]]	✓
16835	$x \ln(x) y'' - y' = \ln(x)^2$	[[_2nd_order, _missing_y]]	✓
16836	$xy'' + (2x - 1)y' = -4x^2$	[[_2nd_order, _missing_y]]	✓
16837	$y'' + \tan(x) y' = \cos(x) \cot(x)$	[[_2nd_order, _missing_y]]	✓

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Table 2.35 second order ode missing y  
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#	ODE	CAS classification	Solved?
16840	$(x^2 + 1)y'' + 2xy' = \frac{1}{x^2 + 1}$ i.c.	[[_2nd_order, _missing_y]]	✓
16864	$y'' + \alpha y' = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
16871	$xy'' + y' = 0$	[[_2nd_order, _missing_y]]	✓
17271	$y'' + 5y' = 0$	[[_2nd_order, _missing_x]]	✓
17293	$y'' + 3y' = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
17321	$y'' + 2y' = 3 + 4 \sin(2t)$	[[_2nd_order, _missing_y]]	✓
17339	$y'' + 3y' = 2t^4 + t^2 e^{-3t} + \sin(3t)$	[[_2nd_order, _missing_y]]	✓
17569	$y'' = \sin(x)$	[[_2nd_order, _quadrature]]	✓
17662	$a^2 y'' = 2x\sqrt{1 + y'^2}$	[[_2nd_order, _missing_y], [_2nd_order, _reducible, _mu_y_y1]]	✓
17667	$y''^2 + 2xy'' - y' = 0$	[[_2nd_order, _missing_y]]	✓
17668	$y''^2 - 2xy'' - y' = 0$	[[_2nd_order, _missing_y]]	✓
17864	$xy'' = y'^3 + y'$	[[_2nd_order, _missing_y], [_2nd_order, _reducible, _mu_y_y1]]	✓
17866	$x^2 y'' = 2xy' + y'^2$	[[_2nd_order, _missing_y]]	✓
17869	$xy'' + y' = 4x$	[[_2nd_order, _missing_y]]	✓
17873	$y'' = 1 + y'^2$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_xy]]	✓
17874	$y'' + y'^2 = 1$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_xy]]	✓
17885	$y'' + 2xy'^2 = 0$	[[_2nd_order, _missing_y], [_2nd_order, _reducible, _mu_y_y1]]	✓
17890	$x^2 y'' + xy' = 1$	[[_2nd_order, _missing_y]]	✓
17897	$(x^2 + 1)y'' + xy' = 0$	[[_2nd_order, _missing_y]]	✓
17909	$x^2 y'' = y'(3x - 2y')$	[[_2nd_order, _missing_y]]	✓

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Table 2.35 second order ode missing y  
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#	ODE	CAS classification	Solved?
17920	$x^2y'' + y'^2 = 0$	[[_2nd_order, _missing_y], [_2nd_order, _reducible, _mu_y_y1]]	✓
17925	$xy'' - y' = 3x^2$	[[_2nd_order, _missing_y]]	✓
17926	$xy'' + y' = 0$	[[_2nd_order, _missing_y]]	✓
17929	$y'' - 2y' = 6$	[[_2nd_order, _missing_x]]	✓
17931	$y'' = e^x$	[[_2nd_order, _quadra- ture]]	✓
17932	$y'' - 2y' = 4$	[[_2nd_order, _missing_x]]	✓
17935	$y'' + 2y' = 6e^x$	[[_2nd_order, _missing_y]]	✓
17945	$y'' + y' = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
17946	$y'' + y'^2 = 0$	[[_2nd_order, _missing_x], _Liouville, [_2nd_order, _reducible, _mu_xy]]	✓
17972	$y'' + y' = 0$	[[_2nd_order, _missing_x]]	✓
18006	$y'' - 2y' = 12x - 10$	[[_2nd_order, _missing_y]]	✓
18009	$y'' + y' = 10x^4 + 2$	[[_2nd_order, _missing_y]]	✓
18196	$x'' + 3x' = 0$	[[_2nd_order, _missing_x]]	✓
18243	$y'' = \frac{m\sqrt{1+y'^2}}{k}$	[[_2nd_order, _missing_x]]	✓
18272	$y'' = c(1+y'^2)$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_xy]]	✓
18273	$y'' = c(1+y'^2)^{3/2}$	[[_2nd_order, _missing_x]]	✓
18276	$1 + y'^2 + \frac{my''}{\sqrt{1+y'^2}} = 0$	[[_2nd_order, _missing_x]]	✓
18284	$v'' + \frac{2v'}{r} = 0$	[[_2nd_order, _missing_y]]	✓
18287	$(1+y'^2)^{3/2} = ry''$	[[_2nd_order, _missing_x]]	✓
18292	$(-x^2 + 1)y'' - xy' = 0$	[[_2nd_order, _missing_y]]	✓
18354	$ey'' = \frac{P(\frac{L}{2} - x)}{2}$	[[_2nd_order, _quadra- ture]]	✓

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Table 2.35 second order ode missing y  
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#	ODE	CAS classification	Solved?
18355	$ey'' = \frac{w\left(\frac{L^2}{4} - x^2\right)}{2}$	[[_2nd_order, _quadrature]]	✓
18356	$ey'' = -\frac{(wL + P)x}{2} - \frac{wx^2}{2}$	[[_2nd_order, _quadrature]]	✓
18357	$ey'' = -P(L - x)$	[[_2nd_order, _quadrature]]	✓
18358	$ey'' = -PL + (wL + P)x - \frac{w(L^2 + x^2)}{2}$	[[_2nd_order, _quadrature]]	✓
18365	$xy'' + 2y' = 2x$	[[_2nd_order, _missing_y]]	✓
18374	$y'' = \cos(x)$	[[_2nd_order, _quadrature]]	✓
18375	$x^2y'' = \ln(x)$	[[_2nd_order, _quadrature]]	✓
18380	$(x^2 + 1)y'' - 1 - y'^2 = 0$	[[_2nd_order, _missing_y], [_2nd_order, _reducible, _mu_y_y1]]	✓
18381	$xy'' + 3y' = 3x$	[[_2nd_order, _missing_y]]	✓
18382	$x = y'' + y'$	[[_2nd_order, _missing_y]]	✓
18385	$V'' + \frac{2V'}{r} = 0$	[[_2nd_order, _missing_y]]	✓
18386	$V'' + \frac{V'}{r} = 0$	[[_2nd_order, _missing_y]]	✓
18401	$v'' + \frac{2v'}{r} = 0$	[[_2nd_order, _missing_y]]	✓

## 2.4.8 second order integrable as is

Table 2.36: second order integrable as is

#	ODE	CAS classification	Solved?
11	<i>i.c.</i> $x'' = 50$	[[_2nd_order, _quadrature]]	✓
12	<i>i.c.</i> $x'' = -20$	[[_2nd_order, _quadrature]]	✓
13	<i>i.c.</i> $x'' = 3t$	[[_2nd_order, _quadrature]]	✓
14	<i>i.c.</i> $x'' = 2t + 1$	[[_2nd_order, _quadrature]]	✓
15	<i>i.c.</i> $x'' = 4(3 + t)^2$	[[_2nd_order, _quadrature]]	✓
16	<i>i.c.</i> $x'' = \frac{1}{\sqrt{t+4}}$	[[_2nd_order, _quadrature]]	✓
17	<i>i.c.</i> $x'' = \frac{1}{(t+1)^3}$	[[_2nd_order, _quadrature]]	✓
18	<i>i.c.</i> $x'' = 50 \sin(5t)$	[[_2nd_order, _quadrature]]	✓
147	$xy'' = y'$	[[_2nd_order, _missing_y]]	✓
148	$yy'' + y'^2 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
150	$xy'' + y' = 4x$	[[_2nd_order, _missing_y]]	✓
153	$yy'' + y'^2 = yy'$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
157	$y'' = 2yy'$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Lagerstrom, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
221	<i>i.c.</i> $y'' + y' = 0$	[[_2nd_order, _missing_x]]	✓

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Table 2.36 second order integrable as is  
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#	ODE	CAS classification	Solved?
222	$y'' - 3y' = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
233	$yy'' + y'^2 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
236	$y'' + 5y' = 0$	[[_2nd_order, _missing_x]]	✓
237	$2y'' + 3y' = 0$	[[_2nd_order, _missing_x]]	✓
244	$x^2y'' + xy' - y = 0$	[[_2nd_order, _exact, _lin- ear, _homogeneous]]	✓
272	$2y'' - 3y' = 0$	[[_2nd_order, _missing_x]]	✓
376	$x^2y'' + xy' - y = 72x^5$	[[_2nd_order, _exact, _lin- ear, _nonhomogeneous]]	✓
813	$y'' + y' = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
814	$y'' - 3y' = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
825	$y'' + 5y' = 0$	[[_2nd_order, _missing_x]]	✓
826	$2y'' + 3y' = 0$	[[_2nd_order, _missing_x]]	✓
833	$x^2y'' + xy' - y = 0$	[[_2nd_order, _exact, _lin- ear, _homogeneous]]	✓
846	$2y'' - 3y' = 0$	[[_2nd_order, _missing_x]]	✓
902	$x^2y'' + xy' - y = 72x^5$	[[_2nd_order, _exact, _lin- ear, _nonhomogeneous]]	✓
1253	$y'' + 5y' = 0$	[[_2nd_order, _missing_x]]	✓
1260	$y'' + 3y' = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
1294	$t^2y'' + 4ty' + 2y = 0$	[[_2nd_order, _exact, _lin- ear, _homogeneous]]	✓
1296	$t^2y'' - 4ty' - 6y = 0$	[[_2nd_order, _exact, _lin- ear, _homogeneous]]	✓
1330	$t^2y'' + 3ty' + y = 0$	[[_2nd_order, _exact, _lin- ear, _homogeneous]]	✓
1345	$t^2y'' - 2y = 3t^2 - 1$	[[_2nd_order, _exact, _lin- ear, _nonhomogeneous]]	✓

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Table 2.36 second order integrable as is  
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#	ODE	CAS classification	Solved?
1352	$t^2y'' + 7ty' + 5y = t$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
1742	$(x^2 - 1)y'' + 4xy' + 2y = 0$ i.c.	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
1746	$x^2y'' + xy' - y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
1754	$(x^2 - 4)y'' + 4xy' + 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
1811	$x^2y'' + xy' - y = 2x^2 + 2$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
1828	$x^2y'' - xy' - 3y = x^{3/2}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
1837	$(x - 1)^2y'' + 4xy' + 2y = 2x$ i.c.	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
1839	$(x + 1)(2x + 3)y'' + 2(x + 2)y' - 2y = (2x + 3)^2$ i.c.	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
2362	$2t^2y'' + 3ty' - y = 0$ i.c.	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
2400	$t^2y'' + 3ty' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
2433	$2t^2y'' + 3ty' - y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
2435	$t^2y'' + 3ty' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
2543	$2t^2y'' + 3ty' - y = 0$ i.c.	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
2581	$t^2y'' + 3ty' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
2591	$t^2y'' - 2y = t^2$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
2607	$y'' + 2y' = 1 + t^2 + e^{-2t}$	[[_2nd_order, _missing_y]]	✓
2629	$2t^2y'' + 3ty' - y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
2631	$t^2y'' + 3ty' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
3089	$y'' = 0$	[[_2nd_order, _quadrature]]	✓
3141	$2y'' + y' = 8 \sin(2x) + e^{-x}$ i.c.	[[_2nd_order, _missing_y]]	✓

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Table 2.36 second order integrable as is  
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#	ODE	CAS classification	Solved?
3217	$y'' + 2y' = x^3 \sin(2x)$	[[_2nd_order, _missing_y]]	✓
3218	$y'' - y' = x e^{2x} \sin(x)$	[[_2nd_order, _missing_y]]	✓
3220	$y'' + 2y' = x^2 e^{-x} \sin(x)$	[[_2nd_order, _missing_y]]	✓
3228	$x^2 y'' + 3xy' + y = 1 - x$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
3244	$y'' = \cos(t)$	[[_2nd_order, _quadrature]]	✓
3249	$xy'' = x^2 + 1$	[[_2nd_order, _quadrature]]	✓
3250	$(1 - x)y'' = y'$	[[_2nd_order, _missing_y]]	✓
3251	$(x^2 + 1)y'' + 2x(y' + 1) = 0$	[[_2nd_order, _missing_y]]	✓
3253	$xy'' + x = y'$	[[_2nd_order, _missing_y]]	✓
3260	$y'' = yy'$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Lagerstrom, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
3262	$y'' + yy' = 0$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Lagerstrom, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
3264	$yy'' + y'^2 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
3267	$yy'' + y'^2 = yy'$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
3272	$y'' = \sec(x) \tan(x)$	[[_2nd_order, _quadrature]]	✓
3284	$(1 - e^x)y'' = e^x y'$	[[_2nd_order, _missing_y]]	✓

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Table 2.36 second order integrable as is  
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#	ODE	CAS classification	Solved?
3494	$(x+1)^2 y'' + 3(x+1)y' + y = x^2$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
3565	$x^2 y'' + 5xy' + 3y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
3575	$x^2 y'' + xy' - y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
3584	$y'' = x e^x$	[[_2nd_order, _quadrature]]	✓
3585	$y'' = x^n$	[[_2nd_order, _quadrature]]	✓
3587	$y'' = \cos(x)$ i.c.	[[_2nd_order, _quadrature]]	✓
3589	$y'' = x e^x$ i.c.	[[_2nd_order, _quadrature]]	✓
3699	$y'' + 4y' = 0$	[[_2nd_order, _missing_x]]	✓
3708	$2x^2 y'' + 5xy' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
3773	$x^2 y'' + 4xy' + 2y = 4 \ln(x)$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
3774	$x^2 y'' + 4xy' + 2y = \cos(x)$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
4124	$2y'' + 3y' = 0$	[[_2nd_order, _missing_x]]	✓
4127	$y'' = 0$	[[_2nd_order, _quadrature]]	✓
4426	$xy'' = y' + x$	[[_2nd_order, _missing_y]]	✓
4484	$y'' - y' = e^x(x^2 + 10)$	[[_2nd_order, _missing_y]]	✓
4508	$y'' + y' = \frac{1}{1+e^x}$	[[_2nd_order, _missing_y]]	✓
5916	$y'' + 2y' = 0$	[[_2nd_order, _missing_x]]	✓
5945	$y'' = 0$ i.c.	[[_2nd_order, _quadrature]]	✓
5958	$y'' - 3y' = 2e^{2x} \sin(x)$	[[_2nd_order, _missing_y]]	✓
5959	$y'' + y' = x^2 + 2x$	[[_2nd_order, _missing_y]]	✓
5960	$y'' + y' = x + \sin(2x)$	[[_2nd_order, _missing_y]]	✓
5991	$y'' - \frac{2y'}{x} + \frac{2y}{x^2} = x \ln(x)$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓

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Table 2.36 second order integrable as is  
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#	ODE	CAS classification	Solved?
5993	$x^2 y'' + xy' - y = x^2 e^{-x}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
5994	$2x^2 y'' + 3xy' - y = \frac{1}{x}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
5995	$y'' = 2yy'$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Lagerstrom, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
5999	$xy'' - y' = x^2$	[[_2nd_order, _missing_y]]	✓
6004	$yy'' + y'^2 - y' = 0$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
6009	$(x^2 + 1) y'' + 2x(y' + 1) = 0$	[[_2nd_order, _missing_y]]	✓
6012	<i>i.c.</i> $y'' = 2yy'$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Lagerstrom, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
6015	<i>i.c.</i> $xy'' - y' = x^2$	[[_2nd_order, _missing_y]]	✓
6017	$xyy'' + xy'^2 - yy' = 0$	[[_2nd_order, _exact, _nonlinear], _Liouville, [_2nd_order, _with_linear_symmetries], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
6137	$y'' + 9y' = 0$	[[_2nd_order, _missing_x]]	✓
6142	$y'' + 5y' = 0$	[[_2nd_order, _missing_x]]	✓
6151	$y'' - 4y' = 10$	[[_2nd_order, _missing_x]]	✓
6172	$2y'' + y' = 2x$	[[_2nd_order, _missing_y]]	✓
6182	$y'' - 2y' = 9x e^{-x} - 6x^2 + 4 e^{2x}$	[[_2nd_order, _missing_y]]	✓

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Table 2.36 second order integrable as is  
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#	ODE	CAS classification	Solved?
6183	$y'' + yy' = 0$ i.c.	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Lagerstrom, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
6186	$y'' + yy' = 0$ i.c.	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Lagerstrom, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
6197	$x^2y'' + xy' - y = x - \frac{1}{x}$	[[_2nd_order, _exact, _lin- ear, _nonhomogeneous]]	✓
6219	$xy'' + y' = 4x$	[[_2nd_order, _missing_y]]	✓
6231	$x(yy'' + y'^2) = yy'$	[[_2nd_order, _ex- act, _nonlinear], _Li- ouville, [_2nd_order, _with_linear_symmetries], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
6235	$yy'' + y'^2 + 4 = 0$ i.c.	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
6409	$x(1-x)y'' + 2(-2x+1)y' - 2y = 0$	[[_2nd_order, _exact, _lin- ear, _homogeneous]]	✓
6514	$y'' = 9x^2 + 2x - 1$	[[_2nd_order, _quadra- ture]]	✓
6540	$y'' - 7y' = -3$	[[_2nd_order, _missing_x]]	✓
6541	$y'' + \frac{y'}{x} - \frac{y}{x^2} = \ln(x)$	[[_2nd_order, _exact, _lin- ear, _nonhomogeneous]]	✓
6700	$yy'' + y'^2 = 2$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
6713	$y'' - 4y' = 5$	[[_2nd_order, _missing_x]]	✓

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Table 2.36 second order integrable as is  
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#	ODE	CAS classification	Solved?
6754	$(x+1)^2 y'' + (x+1)y' - y = \ln(x+1)^2 + x - 1$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
6755	$(2x+1)^2 y'' - 2(2x+1)y' - 12y = 6x$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
6774	$(x^2+1)y'' + 2xy' = \frac{2}{x^3}$	[[_2nd_order, _missing_y]]	✓
6775	$xy'' - y' = -\frac{2}{x} - \ln(x)$	[[_2nd_order, _missing_y]]	✓
6778	$yy'' + y'^2 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
6783	$(x+2y)y'' + 2y'^2 + 2y' = 2$	[[_2nd_order, _exact, _nonlinear], [_2nd_order, _with_linear_symmetries], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_y_y1], [_2nd_order, _reducible, _mu_xy]]	✓
7155	$y'' + \frac{y'}{x} - \frac{y}{x^2} = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
7160	$(-x^2+1)y'' - xy' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
7166	$y'' + xy' + y = 2xe^x - 1$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
7168	$x^2y'' + xy' - y = x^2 + 2x$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
7170	$x(x+1)y'' + (x+2)y' - y = x + \frac{1}{x}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
7257	$y'' = x + 2$	[[_2nd_order, _quadrature]]	✓
7265	$y'' = 3x + 1$	[[_2nd_order, _quadrature]]	✓
7291	$y'' = 0$	[[_2nd_order, _quadrature]]	✓
7350	$y'' + \frac{y'}{x} - \frac{y}{x^2} = 0$ i.c.	[[_2nd_order, _exact, _linear, _homogeneous]]	✓

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Table 2.36 second order integrable as is  
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#	ODE	CAS classification	Solved?
7351	$y'' + \frac{y'}{x} - \frac{y}{x^2} = 0$ i.c.	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
7352	$(3x - 1)^2 y'' + (9x - 3)y' - 9y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
7435	$y'' + y' = 1$	[[_2nd_order, _missing_x]]	✓
7439	$y'' = yy'$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Lagerstrom, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
7440	$xy'' - 2y' = x^3$	[[_2nd_order, _missing_y]]	✓
7499	$\frac{y''}{y'} = x^2$	[[_2nd_order, _missing_y]]	✓
7500	$y''y' = x(x + 1)$	[[_2nd_order, _missing_y], [_2nd_order, _exact, _nonlinear], [_2nd_order, _reducible, _mu_y_y1], [_2nd_order, _reducible, _mu_poly_yn]]	✓
7581	$yy'' + y'^2 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
7587	$xy'' + y' = 4x$	[[_2nd_order, _missing_y]]	✓
7590	$y'' = y'e^y$ i.c.	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], [_2nd_order, _reducible, _mu_xy]]	✓
7612	$xy'' - 3y' = 5x$	[[_2nd_order, _missing_y]]	✓
7653	$y'' - 2y' = 12x - 10$	[[_2nd_order, _missing_y]]	✓
7656	$y'' + y' = 10x^4 + 2$	[[_2nd_order, _missing_y]]	✓
7729	$y'' = \tan(x)$ i.c.	[[_2nd_order, _quadrature]]	✓
7730	$y'' - 2y' = \ln(x)$ i.c.	[[_2nd_order, _missing_y]]	✓

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Table 2.36 second order integrable as is  
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#	ODE	CAS classification	Solved?
7737	$x^2y'' + 3xy' + y = \frac{2}{x}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
7899	$y'' - y' = 0$	[[_2nd_order, _missing_x]]	✓
7901	$y'' + 2y' = 0$	[[_2nd_order, _missing_x]]	✓
8038	$ty'' - y' = 2t^2$	[[_2nd_order, _missing_y]]	✓
8168	$yy'' + y'^2 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
8172	$xy'' = y' + x^5$	[[_2nd_order, _missing_y]]	✓
8173	$xy'' + y' + x = 0$	[[_2nd_order, _missing_y]]	✓
8435	$ty'' + 4y' = t^2$	[[_2nd_order, _missing_y]]	✓
8436	$(t^2 + 9)y'' + 2ty' = 0$	[[_2nd_order, _missing_y]]	✓
8438	$ty'' + y' = 0$	[[_2nd_order, _missing_y]]	✓
8442	$y'' = 0$	[[_2nd_order, _quadrature]]	✓
8443	$y'' = 1$	[[_2nd_order, _quadrature]]	✓
8445	$y'' = k$	[[_2nd_order, _quadrature]]	✓
8448	$y'' = 4 \sin(x) - 4$	[[_2nd_order, _quadrature]]	✓
8475	$y'' = \frac{1}{y} - \frac{xy'}{y^2}$	[[_2nd_order, _exact, _nonlinear], [_2nd_order, _with_linear_symmetries], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_y_y1], [_2nd_order, _reducible, _mu_xy]]	✓
8748	$y'' = 0$	[[_2nd_order, _quadrature]]	✓

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Table 2.36 second order integrable as is  
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#	ODE	CAS classification	Solved?
8751	$ay'' = 0$	[[_2nd_order, _quadrature]]	✓
8754	$y'' = 1$	[[_2nd_order, _quadrature]]	✓
8756	$y'' = x$	[[_2nd_order, _quadrature]]	✓
8759	$y'' + y' = 0$	[[_2nd_order, _missing_x]]	✓
8762	$y'' + y' = 1$	[[_2nd_order, _missing_x]]	✓
8765	$y'' + y' = x$	[[_2nd_order, _missing_y]]	✓
8778	$y'' + y' = 1$	[[_2nd_order, _missing_x]]	✓
8779	$y'' + y' = x$	[[_2nd_order, _missing_y]]	✓
8780	$y'' + y' = x + 1$	[[_2nd_order, _missing_y]]	✓
8781	$y'' + y' = x^2 + x + 1$	[[_2nd_order, _missing_y]]	✓
8782	$y'' + y' = x^3 + x^2 + x + 1$	[[_2nd_order, _missing_y]]	✓
8783	$y'' + y' = \sin(x)$	[[_2nd_order, _missing_y]]	✓
8784	$y'' + y' = \cos(x)$	[[_2nd_order, _missing_y]]	✓
10687	$y'' = 0$	[[_2nd_order, _quadrature]]	✓
10724	$y'' + xy' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
10775	$xy'' + y' = 0$	[[_2nd_order, _missing_y]]	✓
10791	$xy'' - xy' - y - x(x + 1)e^x = 0$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
10841	$x^2y'' + xy' - y - x^2a = 0$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
10847	$x^2y'' + (x + a)y' - y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
10850	$x^2y'' + 2xy' = 0$	[[_2nd_order, _missing_y]]	✓
10857	$x^2y'' - 2xy' - 4y - x \sin(x) - (x^2a + 12a + 4) \cos(x) = 0$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
10863	$x^2y'' + (3x - 1)y' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
10865	$x^2y'' - 3xy' - 5y - x^2 \ln(x) = 0$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓

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Table 2.36 second order integrable as is  
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#	ODE	CAS classification	Solved?
10911	$(x^2 + 1)y'' + 4xy' + 2y - 2\cos(x) + 2x = 0$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
10912	$(x^2 + 1)y'' + axy' + (a - 2)y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
10918	$(x^2 - 1)y'' + 2xy' = 0$	[[_2nd_order, _missing_y]]	✓
10919	$(x^2 - 1)y'' + 2xy' - a = 0$	[[_2nd_order, _missing_y]]	✓
10927	$(x^2 - 1)y'' - 2(v - 1)xy' - 2vy = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
10934	$x(x + 1)y'' + (2 + 3x)y' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
10936	$x(x - 1)y'' + ay' - 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
10944	$x(x + 3)y'' + (3x - 1)y' + y - (20x + 30)(x^2 + 3x)^{7/3} = 0$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
10947	$(-2 + x)^2 y'' - (-2 + x)y' - 3y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
10948	$2x^2 y'' - (2x^2 + l - 5x)y' - (4x - 1)y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
10965	$(2x + 1)^2 y'' - 2(2x + 1)y' - 12y - 3x - 1 = 0$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
10967	$(3x - 1)^2 y'' + 3(3x - 1)y' - 9y - \ln(3x - 1)^2 = 0$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
10979	$(a^2 x^2 - 1)y'' + 2a^2 xy' = 0$	[[_2nd_order, _missing_y]]	✓
10981	$(x^2 a + bx)y'' + 2by' - 2ay = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
10992	$x(x^2 + 1)y'' + 2(x^2 - 1)y' - 2xy = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
10999	$x(x^2 + 2)y'' - y' - 6xy = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
11109	$y'' = -\frac{\cos(x)y'}{\sin(x)} + \frac{y}{\sin(x)^2}$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓

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Table 2.36 second order integrable as is  
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#	ODE	CAS classification	Solved?
11307	$y'' - 2ayy' = 0$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Lagerstrom, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
11343	$xy'' + (y - 1)y' = 0$	[[_2nd_order, _exact, _nonlinear], [_2nd_order, _with_linear_symmetries], [_2nd_order, _reducible, _mu_xy]]	✓
11372	$yy'' + y'^2 - a = 0$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
11374	$yy'' + y'^2 - y' = 0$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
11398	$y''(x + y) + y'^2 - y' = 0$	[[_2nd_order, _exact, _nonlinear], [_2nd_order, _with_linear_symmetries], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_y_y1], [_2nd_order, _reducible, _mu_xy]]	✓
11434	$xyy'' + xy'^2 - yy' = 0$	[[_2nd_order, _ex- act, _nonlinear], _Li- ouville, [_2nd_order, _with_linear_symmetries], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓

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Table 2.36 second order integrable as is  
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#	ODE	CAS classification	Solved?
11443	$x(x+y)y'' + xy'^2 + (x-y)y' - y = 0$	[[_2nd_order, _exact, _nonlinear], [_2nd_order, _with_linear_symmetries], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_y_y1], [_2nd_order, _reducible, _mu_xy]]	✓
12201	$y'' + (ax+b)y' + ay = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
12232	$y'' + (ax^n + bx^m)y' + (anx^{n-1} + bmx^{m-1})y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, ' _with_symmetry_[0,F(x)]']]	✓
12245	$xy'' + axy' + ay = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
12258	$xy'' + (x^2a + bx + c)y' + (2ax + b)y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
12263	$xy'' + x(x^2a + b)y' + (3x^2a + b)y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
12270	$xy'' + (ax^n + b)y' + anx^{n-1}y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, ' _with_symmetry_[0,F(x)]']]	✓
12281	$(x+a)y'' + (bx+c)y' + by = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
12285	$(x+\gamma)y'' + (ax^n + bx^m + c)y' + (anx^{n-1} + bmx^{m-1})y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, ' _with_symmetry_[0,F(x)]']]	✓
12339	$(x^2+a)y'' + 2bxy' + 2(b-1)y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
12351	$(x^2a + bx + c)y'' + (dx + k)y' + (d - 2a)y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
12365	$x(x^2a + b)y'' + 2(x^2a + b)y' - 2axy = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
12426	$(ax^n + bx + c)y'' = an(n-1)x^{n-2}y$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, ' _with_symmetry_[0,F(x)]']]	✓

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Table 2.36 second order integrable as is  
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#	ODE	CAS classification	Solved?
12472	$y'' + (ae^{\lambda x} + be^{\mu x} + c)y' + (a\lambda e^{\lambda x} + b\mu e^{\mu x})y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
12622	$y'' - 2y' = e^{2x} + 1$	[[_2nd_order, _missing_y]]	✓
12626	$x^2y'' + 3xy' + y = \frac{1}{(1-x)^2}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
12667	$y'' = xe^x$	[[_2nd_order, _quadrature]]	✓
12676	$x^2y'' + 3xy' + y = x$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
12677	$(x-1)^2y'' + 4(x-1)y' + 2y = \cos(x)$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
12690	$y'' + yy' = 0$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Lagerstrom, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
12692	$(x^2 - x)y'' + (4x + 2)y' + 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
12695	$x(x + 2y)y'' + 2xy'^2 + 4(x + y)y' + 2y + x^2 = 0$	[[_2nd_order, _exact, _nonlinear], [_2nd_order, _reducible, _mu_xy]]	✓
12699	$\sin(x)y'' - \cos(x)y' + 2\sin(x)y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
12714	$x'' = -3\sqrt{t}$ i.c.	[[_2nd_order, _quadrature]]	✓
12719	$x' + tx'' = 1$ i.c.	[[_2nd_order, _missing_y]]	✓
12772	$x'' + x' = 3t$	[[_2nd_order, _missing_y]]	✓
12789	$x'' - 2x' = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
12793	$x'' - 2x' = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
12817	$x'' - x' = 6 + e^{2t}$	[[_2nd_order, _missing_y]]	✓
12825	$x'' - 2x' = 4$ i.c.	[[_2nd_order, _missing_x]]	✓
12832	$t^2x'' + 3tx' + x = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓

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Table 2.36 second order integrable as is  
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#	ODE	CAS classification	Solved?
12842	$t^2 x'' - 2x = t^3$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
12925	$(x^2 + 1)y'' + 4xy' + 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
13204	$(2x + 1)(x + 1)y'' + 2xy' - 2y = (2x + 1)^2$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
13222	$x^2 y'' + 4xy' + 2y = 4 \ln(x)$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
13228 i.c.	$x^2 y'' + 5xy' + 3y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
13229 i.c.	$x^2 y'' - 2y = 4x - 8$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
13234	$(x + 2)^2 y'' - (x + 2)y' - 3y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
13430 i.c.	$y'' - 4y' = 0$	[[_2nd_order, _missing_x]]	✓
13442	$x'' - 4x' = t^2$	[[_2nd_order, _missing_y]]	✓
13469	$t^2 x'' - 2x = t^3$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
13470	$x'' - 4x' = \tan(t)$	[[_2nd_order, _missing_y]]	✓
13475 i.c.	$t^2 x'' + tx' - x = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
13477 i.c.	$x^2 y'' - xy' - 3y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
13480 i.c.	$3x^2 z'' + 5xz' - z = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
13669	$y'' + 2xy' + 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
13670	$xy'' + \sin(x)y' + \cos(x)y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
13671	$y'' + 2x^2 y' + 4xy = 2x$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
13672	$(-x^2 + 1)y'' + (1 - x)y' + y = -2x + 1$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
13675	$y'' + x^2 y' + 2xy = 2x$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
13677	$xy'' + x^2 y' + 2xy = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓

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Table 2.36 second order integrable as is  
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#	ODE	CAS classification	Solved?
13678	$y'' + \sin(x)y' + \cos(x)y = \cos(x)$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
13679	$y'' + \cot(x)y' - \csc(x)^2 y = \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13680	$x \ln(x)y'' + 2y' - \frac{y}{x} = 1$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
13682	$\frac{xy''}{1+y} + \frac{yy' - xy'^2 + y'}{(1+y)^2} = x \sin(x)$	[[_2nd_order, _exact, _nonlinear], [_2nd_order, _with_linear_symmetries], [_2nd_order, _reducible, _mu_xy]]	✓
13683	$(x \cos(y) + \sin(x))y'' - xy'^2 \sin(y) + 2(\cos(y) + \cos(x))y' = \sin(x)y$	[[_2nd_order, _exact, _nonlinear], [_2nd_order, _reducible, _mu_xy]]	✓
13684	$yy'' \sin(x) + (\sin(x)y' + \cos(x)y)y' = \cos(x)$	[[_2nd_order, _exact, _nonlinear], [_2nd_order, _reducible, _mu_y_y1], [_2nd_order, _reducible, _mu_xy]]	✓
13685	$(1-y)y'' - y'^2 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
13686	$(\cos(y) - y \sin(y))y'' - y'^2(2 \sin(y) + y \cos(y)) = \sin(x)$	[[_2nd_order, _exact, _nonlinear], [_2nd_order, _reducible, _mu_y_y1], [_2nd_order, _reducible, _mu_xy]]	✓
13763	$t^2y'' + 3ty' + y = t^7$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
13906	$xy'' - y' = e^x x^2$ i.c.	[[_2nd_order, _missing_y]]	✓
13937	$y'' - 3y' = 2 - 6x$	[[_2nd_order, _missing_y]]	✓
13986	$x^2y'' + xy' - y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
13988	$2x^2y'' + 3xy' - y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓

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Table 2.36 second order integrable as is  
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#	ODE	CAS classification	Solved?
13990	$x^2y'' - 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
14004	$x^2y'' + 6xy' + 4y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
14603	$y'' + 2y' = 3t + 2$ i.c.	[[_2nd_order, _missing_y]]	✓
14604	$y'' + 4y' = 3t + 2$ i.c.	[[_2nd_order, _missing_y]]	✓
14660	$y'' = \frac{x+1}{x-1}$	[[_2nd_order, _quadrature]]	✓
14674	$y'' = \sin(2x)$	[[_2nd_order, _quadrature]]	✓
14675	$y'' - 3 = x$	[[_2nd_order, _quadrature]]	✓
14683	$xy'' + 2 = \sqrt{x}$ i.c.	[[_2nd_order, _quadrature]]	✓
14885	$xy'' + 4y' = 18x^2$	[[_2nd_order, _missing_y]]	✓
14886	$xy'' = 2y'$	[[_2nd_order, _missing_y]]	✓
14887	$y'' = y'$	[[_2nd_order, _missing_x]]	✓
14888	$y'' + 2y' = 8e^{2x}$	[[_2nd_order, _missing_y]]	✓
14890	$(x^2 + 1)y'' + 2xy' = 0$	[[_2nd_order, _missing_y]]	✓
14892	$y''y' = 1$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], [_2nd_order, _reducible, _mu_poly_yn]]	✓
14893	$yy'' = -y'^2$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
14897	$y'' = 2y' - 6$	[[_2nd_order, _missing_x]]	✓
14899	$y'' + 4y' = 9e^{-3x}$	[[_2nd_order, _missing_y]]	✓

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Table 2.36 second order integrable as is  
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#	ODE	CAS classification	Solved?
14906	$\sin(y)y'' + \cos(y)y'^2 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
14907	$y'' = y'$	[[_2nd_order, _missing_x]]	✓
14908	$yy'' + y'^2 = 2yy'$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
14909	$y^2y'' + y'' + 2yy'^2 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
14911	$y''y' = 1$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _non- linear], [_2nd_order, _re- ducible, _mu_poly_yn]]	✓
14913	$xy'' - y' = 6x^5$	[[_2nd_order, _missing_y]]	✓
14917	$y'' + 4y' = 9e^{-3x}$	[[_2nd_order, _missing_y]]	✓
14919	$xy'' + 4y' = 18x^2$ i.c.	[[_2nd_order, _missing_y]]	✓
14920	$xy'' = 2y'$ i.c.	[[_2nd_order, _missing_y]]	✓
14921	$y'' = y'$ i.c.	[[_2nd_order, _missing_x]]	✓
14922	$y'' + 2y' = 8e^{2x}$ i.c.	[[_2nd_order, _missing_y]]	✓
14925	$xy'' + 2y' = 6$ i.c.	[[_2nd_order, _missing_y]]	✓
14929	$y'' = -y'e^{-y}$ i.c.	[[_2nd_order, _missing_x], [_2nd_order, _exact, _non- linear], [_2nd_order, _re- ducible, _mu_xy]]	✓

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Table 2.36 second order integrable as is  
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#	ODE	CAS classification	Solved?
14934	$y'' = 2yy'$ i.c.	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Lagerstrom, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
14936	$y'' = 2yy'$ i.c.	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Lagerstrom, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
14937	$y'' = 2yy'$ i.c.	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Lagerstrom, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
14988	$y'' + 5y' = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
14994	$y'' + 3y' = 0$	[[_2nd_order, _missing_x]]	✓
15056	$x^2y'' - 2y = 0$	[[_2nd_order, _exact, _lin- ear, _homogeneous]]	✓
15067	$2x^2y'' + 5xy' + y = 0$	[[_2nd_order, _exact, _lin- ear, _homogeneous]]	✓
15111	$y'' + 3y' = e^{\frac{x}{2}}$	[[_2nd_order, _missing_y]]	✓
15115	$y'' + 3y' = 26 \cos\left(\frac{x}{3}\right) - 12 \sin\left(\frac{x}{3}\right)$	[[_2nd_order, _missing_y]]	✓
15126	$y'' = 6x e^x \sin(x)$	[[_2nd_order, _quadra- ture]]	✓
15131	$y'' + 4y' = 20$	[[_2nd_order, _missing_x]]	✓
15132	$y'' + 4y' = x^2$	[[_2nd_order, _missing_y]]	✓
15183	$2x^2y'' + 5xy' + y = 85 \cos(2 \ln(x))$	[[_2nd_order, _exact, _lin- ear, _nonhomogeneous]]	✓
15184	$x^2y'' - 2y = 15 \cos(3 \ln(x)) - 10 \sin(3 \ln(x))$	[[_2nd_order, _exact, _lin- ear, _nonhomogeneous]]	✓
15186	$2x^2y'' + 5xy' + y = \frac{10}{x}$	[[_2nd_order, _exact, _lin- ear, _nonhomogeneous]]	✓
15195	$x^2y'' + xy' - y = \sqrt{x}$	[[_2nd_order, _exact, _lin- ear, _nonhomogeneous]]	✓

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Table 2.36 second order integrable as is  
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#	ODE	CAS classification	Solved?
15199	$x^2y'' - 2y = \frac{1}{-2+x}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
15201	$xy'' + (2x+2)y' + 2y = 8e^{2x}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
15203 i.c.	$x^2y'' - 2xy' - 4y = \frac{10}{x}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
15217	$2xy'' + y' = \sqrt{x}$	[[_2nd_order, _missing_y]]	✓
15237	$2y'' - 7y' + 3 = 0$	[[_2nd_order, _missing_x]]	✓
15239	$xy'' = 3y'$	[[_2nd_order, _missing_y]]	✓
15240	$y'' - 5y' = 0$	[[_2nd_order, _missing_x]]	✓
15254	$x^2y'' + xy' - y = \frac{1}{x^2+1}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
15259	$x^2y'' + 3xy' + y = \frac{1}{(x+1)^2}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
15260	$x^2y'' + 3xy' + y = \frac{1}{x}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
15470	$y'' + 9y' = 0$	[[_2nd_order, _missing_x]]	✓
15499 i.c.	$y'' + 9y' = 0$	[[_2nd_order, _missing_x]]	✓
15677	$y'' - \frac{y'}{t} + \frac{y}{t^2} = \frac{1}{t}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
15865	$t^2y'' + ty' - y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
15882	$y'' = 0$	[[_2nd_order, _quadrature]]	✓
15884	$y'' + y' = 0$	[[_2nd_order, _missing_x]]	✓
15897 i.c.	$y'' - y' = 0$	[[_2nd_order, _missing_x]]	✓
15898 i.c.	$3y'' - y' = 0$	[[_2nd_order, _missing_x]]	✓
15932	$y'' + 2y' = 3 - 4t$	[[_2nd_order, _missing_y]]	✓
15937	$y'' = 3t^4 - 2t$	[[_2nd_order, _quadrature]]	✓
15947	$y'' - 2y' = 52 \sin(3t)$	[[_2nd_order, _missing_y]]	✓
15955	$y'' + 4y' = 8e^{4t} - 4e^{-4t}$	[[_2nd_order, _missing_y]]	✓

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Table 2.36 second order integrable as is  
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#	ODE	CAS classification	Solved?
15956	$y'' - 3y' = t^2 - e^{3t}$	[[_2nd_order, _missing_y]]	✓
15957	$y'' + 4y' = -24t - 6 - 4te^{-4t} + e^{-4t}$	[[_2nd_order, _missing_y]]	✓
15958	$y'' - 3y' = t^2 - e^{3t}$	[[_2nd_order, _missing_y]]	✓
15959	$y'' = t^2 + e^t + \sin(t)$	[[_2nd_order, _quadrature]]	✓
15960	$y'' + 3y' = 18$	[[_2nd_order, _missing_x]]	✓
	i.c.		
15968	$y'' - 3y' = -e^{3t} - 2t$	[[_2nd_order, _missing_y]]	✓
	i.c.		
15969	$y'' - y' = -3t - 4t^2e^{2t}$	[[_2nd_order, _missing_y]]	✓
	i.c.		
15970	$y'' - 2y' = 2t^2$	[[_2nd_order, _missing_y]]	✓
	i.c.		
15971	$y'' + 4y' = -24t - 6 - 4te^{-4t} + e^{-4t}$	[[_2nd_order, _missing_y]]	✓
	i.c.		
15972	$y'' - 3y' = e^{-3t} - e^{3t}$	[[_2nd_order, _missing_y]]	✓
	i.c.		
15985	$y'' + 16y' = t$	[[_2nd_order, _missing_y]]	✓
16030	$t^2y'' + 3ty' + y = \ln(t)$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
16032	$t^2y'' - 4ty' - 6y = 2\ln(t)$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
16154	$2x^2y'' + 3xy' - y = \frac{1}{x^2}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
	i.c.		
16155	$x^2y'' + 4xy' + 2y = \ln(x)$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
	i.c.		
16159	$x^2y'' + 4xy' + 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
16172	$x^2y'' + 4xy' + 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
16252	$y'' + 5y' = 5t^2$	[[_2nd_order, _missing_y]]	✓
16253	$y'' - 4y' = -3\sin(t)$	[[_2nd_order, _missing_y]]	✓
16256	$y'' - 2y' = \frac{1}{1 + e^{2t}}$	[[_2nd_order, _missing_y]]	✓
16286	$2x^2y'' + 5xy' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
	i.c.		

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Table 2.36 second order integrable as is  
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#	ODE	CAS classification	Solved?
16298	$t(y''y + y'^2) + y'y = 1$ i.c.	[[_2nd_order, _exact, _nonlinear], [_2nd_order, _with_linear_symmetries], [_2nd_order, _reducible, _mu_y_y1], [_2nd_order, _reducible, _mu_xy]]	✓
16585	$(x - 1)y'' = 1$	[[_2nd_order, _quadrature]]	✓
16590	$yy'' + y'^2 = 1$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
16594	$y'' = xe^x$ i.c.	[[_2nd_order, _quadrature]]	✓
16595	$y'' = 2x \ln(x)$	[[_2nd_order, _quadrature]]	✓
16596	$xy'' = y'$	[[_2nd_order, _missing_y]]	✓
16597	$xy'' + y' = 0$	[[_2nd_order, _missing_y]]	✓
16599	$xy'' = y' + x^2$	[[_2nd_order, _missing_y]]	✓
16611	$y'' + y' + 2 = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
16619	$yy'' + y'^2 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
16650	$y'' + 3y' = 3$	[[_2nd_order, _missing_x]]	✓
16651	$y'' - 7y' = (x - 1)^2$	[[_2nd_order, _missing_y]]	✓
16652	$y'' + 3y' = e^x$	[[_2nd_order, _missing_y]]	✓
16653	$y'' + 7y' = e^{-7x}$	[[_2nd_order, _missing_y]]	✓
16656	$4y'' - 3y' = xe^{\frac{3x}{4}}$	[[_2nd_order, _missing_y]]	✓
16657	$y'' - 4y' = xe^{4x}$	[[_2nd_order, _missing_y]]	✓
16687	$y'' + 2y' = -2$	[[_2nd_order, _missing_x]]	✓
16695	$y'' + 8y' = 8x$	[[_2nd_order, _missing_y]]	✓

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Table 2.36 second order integrable as is  
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#	ODE	CAS classification	Solved?
16699	$7y'' - y' = 14x$	[[_2nd_order, _missing_y]]	✓
16700	$y'' + 3y' = 3xe^{-3x}$	[[_2nd_order, _missing_y]]	✓
16709	$y'' - y' = e^x \sin(x)$	[[_2nd_order, _missing_y]]	✓
16710	$y'' + 2y' = 4e^x(\cos(x) + \sin(x))$	[[_2nd_order, _missing_y]]	✓
16712	$4y'' + 8y' = x \sin(x)$	[[_2nd_order, _missing_y]]	✓
16727	$y'' + 4y' = x + e^{-4x}$	[[_2nd_order, _missing_y]]	✓
16733	$y'' - 4y' = 2 \cos(4x)^2$	[[_2nd_order, _missing_y]]	✓
16735	$y'' - 3y' = 18x - 10 \cos(x)$	[[_2nd_order, _missing_y]]	✓
16742	$y'' + y' = \cos(x)^2 + e^x + x^2$	[[_2nd_order, _missing_y]]	✓
16745	$y'' + y' = x^2 - e^{-x} + e^x$	[[_2nd_order, _missing_y]]	✓
16752	$y'' - 3y' = 1 + e^x + \cos(x) + \sin(x)$	[[_2nd_order, _missing_y]]	✓
16758	$y'' + 2y' + 1 = 3 \sin(2x) + \cos(x)$	[[_2nd_order, _missing_y]]	✓
16770	$y'' + y' = e^{-x}$ i.c.	[[_2nd_order, _missing_y]]	✓
16777	$y'' - y' = -5e^{-x}(\cos(x) + \sin(x))$ i.c.	[[_2nd_order, _missing_y]]	✓
16793	$x^2y'' + xy' - y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
16794	$x^2y'' + 3xy' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
16796	$xy'' + y' = 0$	[[_2nd_order, _missing_y]]	✓
16804	$x^2y'' - 2y = \sin(\ln(x))$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
16805	$x^2y'' - xy' - 3y = -\frac{16 \ln(x)}{x}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
16807	$x^2y'' + xy' - y = x^m$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
16808	$x^2y'' + 4xy' + 2y = 2 \ln(x)^2 + 12x$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
16825	$y'' + y' = \frac{1}{1 + e^x}$	[[_2nd_order, _missing_y]]	✓
16831	$y'' + y' = e^{2x} \cos(e^x)$	[[_2nd_order, _missing_y]]	✓
16840	$(x^2 + 1)y'' + 2xy' = \frac{1}{x^2 + 1}$ i.c.	[[_2nd_order, _missing_y]]	✓

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Table 2.36 second order integrable as is  
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#	ODE	CAS classification	Solved?
16854	$x'' + (x + 2)x' = 0$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
16860	<i>i.c.</i> $yy'' + 1 + y'^2 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
16864	<i>i.c.</i> $y'' + \alpha y' = 0$	[[_2nd_order, _missing_x]]	✓
16871	$xy'' + y' = 0$	[[_2nd_order, _missing_y]]	✓
17241	$t^2 y'' - 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
17242	$y''y + y'^2 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
17271	$y'' + 5y' = 0$	[[_2nd_order, _missing_x]]	✓
17293	<i>i.c.</i> $y'' + 3y' = 0$	[[_2nd_order, _missing_x]]	✓
17304	$x^2 y'' + 4xy' + 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
17306	$x^2 y'' - 4xy' - 6y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
17307	$x^2 y'' - 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
17311	<i>i.c.</i> $2x^2 y'' + xy' - 3y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
17321	$y'' + 2y' = 3 + 4 \sin(2t)$	[[_2nd_order, _missing_y]]	✓
17339	$y'' + 3y' = 2t^4 + t^2 e^{-3t} + \sin(3t)$	[[_2nd_order, _missing_y]]	✓
17349	$x^2 y'' + 7xy' + 5y = x$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
17381	$t^2 y'' - 2y = 3t^2 - 1$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓

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Table 2.36 second order integrable as is  
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#	ODE	CAS classification	Solved?
17384	$t^2y'' + 7ty' + 5y = t$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
17569	$y'' = \sin(x)$	[[_2nd_order, _quadrature]]	✓
17654	$xyy'' + xy'^2 - yy' = 0$	[[_2nd_order, _exact, _nonlinear], _Liouville, [_2nd_order, _with_linear_symmetries], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
17660	$x(xy + 1)y'' + x^2y'^2 + (4xy + 2)y' + y^2 + 1 = 0$	[[_2nd_order, _exact, _nonlinear], [_2nd_order, _reducible, _mu_xy]]	✓
17705	$x^2y'' - 2y = x^2 + \frac{1}{x}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
17863	$yy'' + y'^2 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
17869	$xy'' + y' = 4x$	[[_2nd_order, _missing_y]]	✓
17872	$y'' = y'e^y$ i.c.	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], [_2nd_order, _reducible, _mu_xy]]	✓
17881	$yy'' + y'^2 - 2yy' = 0$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
17925	$xy'' - y' = 3x^2$	[[_2nd_order, _missing_y]]	✓
17926	$xy'' + y' = 0$	[[_2nd_order, _missing_y]]	✓
17929	$y'' - 2y' = 6$	[[_2nd_order, _missing_x]]	✓
17931	$y'' = e^x$	[[_2nd_order, _quadrature]]	✓
17932	$y'' - 2y' = 4$	[[_2nd_order, _missing_x]]	✓
17935	$y'' + 2y' = 6e^x$	[[_2nd_order, _missing_y]]	✓

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Table 2.36 second order integrable as is  
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#	ODE	CAS classification	Solved?
17936	$x^2y'' - 3xy' - 5y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
17942 i.c.	$x^2y'' - 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
17945 i.c.	$y'' + y' = 0$	[[_2nd_order, _missing_x]]	✓
17972	$y'' + y' = 0$	[[_2nd_order, _missing_x]]	✓
18006	$y'' - 2y' = 12x - 10$	[[_2nd_order, _missing_y]]	✓
18009	$y'' + y' = 10x^4 + 2$	[[_2nd_order, _missing_y]]	✓
18090	$y'' + xy' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
18196	$x'' + 3x' = 0$	[[_2nd_order, _missing_x]]	✓
18271	$x^2y'' + 3xy' + y = \frac{1}{x}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
18285	$y'' - 2yy' = 0$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Lagerstrom, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
18354	$ey'' = \frac{P(\frac{L}{2} - x)}{2}$	[[_2nd_order, _quadrature]]	✓
18355	$ey'' = \frac{w(\frac{L^2}{4} - x^2)}{2}$	[[_2nd_order, _quadrature]]	✓
18356	$ey'' = -\frac{(wL + P)x}{2} - \frac{wx^2}{2}$	[[_2nd_order, _quadrature]]	✓
18357	$ey'' = -P(L - x)$	[[_2nd_order, _quadrature]]	✓
18358	$ey'' = -PL + (wL + P)x - \frac{w(L^2 + x^2)}{2}$	[[_2nd_order, _quadrature]]	✓
18365	$xy'' + 2y' = 2x$	[[_2nd_order, _missing_y]]	✓
18367	$(x^2 - 1)y'' + 4xy' + 2y = 2x$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
18368	$(x^2 + 1)y'' + 4xy' + 2y = x$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
18369	$y'' - \cot(x)y' + \csc(x)^2y = \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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Table 2.36 second order integrable as is  
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#	ODE	CAS classification	Solved?
18370	$(x^2 - x)y'' + (3x - 2)y' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
18371	$(3x^2 + x)y'' + 2(1 + 6x)y' + 6y = \sin(x)$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
18374	$y'' = \cos(x)$	[[_2nd_order, _quadrature]]	✓
18381	$xy'' + 3y' = 3x$	[[_2nd_order, _missing_y]]	✓
18382	$x = y'' + y'$	[[_2nd_order, _missing_y]]	✓
18400	$y'' - \frac{2y'}{x} + \frac{2y}{x^2} = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
18603	$x^2y'' - 2xy' - 4y = x^4$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
18606	$x^2y'' + 7xy' + 5y = x^5$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
18610	$x^2y'' + 4xy' + 2y = e^x$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
18616	$x^2y'' + xy' - y = x^m$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
18620	$x^2y'' + 3xy' + y = \frac{1}{(1-x)^2}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
18625	$xy'' + 2xy' + 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
18626	$y'' + 2e^xy' + 2ye^x = x^2$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
18629	$x^2yy'' + (-y + xy')^2 - 3y^2 = 0$	[[_2nd_order, _exact, _nonlinear], [_2nd_order, _with_linear_symmetries], [_2nd_order, _reducible, _mu_xy]]	✓

## 2.4.9 second order integrable as is ABC

Table 2.37: second order integrable as is ABC

#	ODE	CAS classification	Solved?
11	$x'' = 50$ i.c.	[[_2nd_order, _quadrature]]	✓
12	$x'' = -20$ i.c.	[[_2nd_order, _quadrature]]	✓
13	$x'' = 3t$ i.c.	[[_2nd_order, _quadrature]]	✓
14	$x'' = 2t + 1$ i.c.	[[_2nd_order, _quadrature]]	✓
15	$x'' = 4(3 + t)^2$ i.c.	[[_2nd_order, _quadrature]]	✓
16	$x'' = \frac{1}{\sqrt{t+4}}$ i.c.	[[_2nd_order, _quadrature]]	✓
17	$x'' = \frac{1}{(t+1)^3}$ i.c.	[[_2nd_order, _quadrature]]	✓
18	$x'' = 50 \sin(5t)$ i.c.	[[_2nd_order, _quadrature]]	✓
147	$xy'' = y'$	[[_2nd_order, _missing_y]]	✓
148	$yy'' + y'^2 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
150	$xy'' + y' = 4x$	[[_2nd_order, _missing_y]]	✓
153	$yy'' + y'^2 = yy'$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
157	$y'' = 2yy'$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Lagerstrom, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
221	$y'' + y' = 0$ i.c.	[[_2nd_order, _missing_x]]	✓

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Table 2.37 second order integrable as is ABC

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#	ODE	CAS classification	Solved?
222	$y'' - 3y' = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
233	$yy'' + y'^2 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
236	$y'' + 5y' = 0$	[[_2nd_order, _missing_x]]	✓
237	$2y'' + 3y' = 0$	[[_2nd_order, _missing_x]]	✓
244	$x^2y'' + xy' - y = 0$	[[_2nd_order, _exact, _lin- ear, _homogeneous]]	✓
272	$2y'' - 3y' = 0$	[[_2nd_order, _missing_x]]	✓
376	$x^2y'' + xy' - y = 72x^5$	[[_2nd_order, _exact, _lin- ear, _nonhomogeneous]]	✓
813	$y'' + y' = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
814	$y'' - 3y' = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
825	$y'' + 5y' = 0$	[[_2nd_order, _missing_x]]	✓
826	$2y'' + 3y' = 0$	[[_2nd_order, _missing_x]]	✓
833	$x^2y'' + xy' - y = 0$	[[_2nd_order, _exact, _lin- ear, _homogeneous]]	✓
846	$2y'' - 3y' = 0$	[[_2nd_order, _missing_x]]	✓
902	$x^2y'' + xy' - y = 72x^5$	[[_2nd_order, _exact, _lin- ear, _nonhomogeneous]]	✓
1253	$y'' + 5y' = 0$	[[_2nd_order, _missing_x]]	✓
1260	$y'' + 3y' = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
1294	$t^2y'' + 4ty' + 2y = 0$	[[_2nd_order, _exact, _lin- ear, _homogeneous]]	✓
1296	$t^2y'' - 4ty' - 6y = 0$	[[_2nd_order, _exact, _lin- ear, _homogeneous]]	✓
1330	$t^2y'' + 3ty' + y = 0$	[[_2nd_order, _exact, _lin- ear, _homogeneous]]	✓
1345	$t^2y'' - 2y = 3t^2 - 1$	[[_2nd_order, _exact, _lin- ear, _nonhomogeneous]]	✓

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Table 2.37 second order integrable as is ABC

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#	ODE	CAS classification	Solved?
1352	$t^2y'' + 7ty' + 5y = t$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
1742	$(x^2 - 1)y'' + 4xy' + 2y = 0$ i.c.	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
1746	$x^2y'' + xy' - y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
1754	$(x^2 - 4)y'' + 4xy' + 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
1811	$x^2y'' + xy' - y = 2x^2 + 2$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
1828	$x^2y'' - xy' - 3y = x^{3/2}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
1837	$(x - 1)^2y'' + 4xy' + 2y = 2x$ i.c.	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
1839	$(x + 1)(2x + 3)y'' + 2(x + 2)y' - 2y = (2x + 3)^2$ i.c.	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
2362	$2t^2y'' + 3ty' - y = 0$ i.c.	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
2400	$t^2y'' + 3ty' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
2433	$2t^2y'' + 3ty' - y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
2435	$t^2y'' + 3ty' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
2543	$2t^2y'' + 3ty' - y = 0$ i.c.	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
2581	$t^2y'' + 3ty' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
2591	$t^2y'' - 2y = t^2$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
2607	$y'' + 2y' = 1 + t^2 + e^{-2t}$	[[_2nd_order, _missing_y]]	✓
2629	$2t^2y'' + 3ty' - y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
2631	$t^2y'' + 3ty' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
3089	$y'' = 0$	[[_2nd_order, _quadrature]]	✓
3141	$2y'' + y' = 8\sin(2x) + e^{-x}$ i.c.	[[_2nd_order, _missing_y]]	✓

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Table 2.37 second order integrable as is ABC

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#	ODE	CAS classification	Solved?
3217	$y'' + 2y' = x^3 \sin(2x)$	[[_2nd_order, _missing_y]]	✓
3218	$y'' - y' = x e^{2x} \sin(x)$	[[_2nd_order, _missing_y]]	✓
3220	$y'' + 2y' = x^2 e^{-x} \sin(x)$	[[_2nd_order, _missing_y]]	✓
3228	$x^2 y'' + 3xy' + y = 1 - x$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
3244	$y'' = \cos(t)$	[[_2nd_order, _quadrature]]	✓
3249	$xy'' = x^2 + 1$	[[_2nd_order, _quadrature]]	✓
3250	$(1 - x)y'' = y'$	[[_2nd_order, _missing_y]]	✓
3251	$(x^2 + 1)y'' + 2x(y' + 1) = 0$	[[_2nd_order, _missing_y]]	✓
3253	$xy'' + x = y'$	[[_2nd_order, _missing_y]]	✓
3260	$y'' = yy'$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Lagerstrom, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
3262	$y'' + yy' = 0$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Lagerstrom, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
3264	$yy'' + y'^2 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
3267	$yy'' + y'^2 = yy'$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
3272	$y'' = \sec(x) \tan(x)$	[[_2nd_order, _quadrature]]	✓
3284	$(1 - e^x)y'' = e^x y'$	[[_2nd_order, _missing_y]]	✓

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Table 2.37 second order integrable as is ABC

Continued from previous page

#	ODE	CAS classification	Solved?
3494	$(x+1)^2 y'' + 3(x+1)y' + y = x^2$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
3565	$x^2 y'' + 5xy' + 3y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
3575	$x^2 y'' + xy' - y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
3584	$y'' = x e^x$	[[_2nd_order, _quadrature]]	✓
3585	$y'' = x^n$	[[_2nd_order, _quadrature]]	✓
3587	$y'' = \cos(x)$ i.c.	[[_2nd_order, _quadrature]]	✓
3589	$y'' = x e^x$ i.c.	[[_2nd_order, _quadrature]]	✓
3699	$y'' + 4y' = 0$	[[_2nd_order, _missing_x]]	✓
3708	$2x^2 y'' + 5xy' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
3773	$x^2 y'' + 4xy' + 2y = 4 \ln(x)$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
3774	$x^2 y'' + 4xy' + 2y = \cos(x)$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
4124	$2y'' + 3y' = 0$	[[_2nd_order, _missing_x]]	✓
4127	$y'' = 0$	[[_2nd_order, _quadrature]]	✓
4426	$xy'' = y' + x$	[[_2nd_order, _missing_y]]	✓
4484	$y'' - y' = e^x(x^2 + 10)$	[[_2nd_order, _missing_y]]	✓
4508	$y'' + y' = \frac{1}{1+e^x}$	[[_2nd_order, _missing_y]]	✓
5916	$y'' + 2y' = 0$	[[_2nd_order, _missing_x]]	✓
5945	$y'' = 0$ i.c.	[[_2nd_order, _quadrature]]	✓
5958	$y'' - 3y' = 2e^{2x} \sin(x)$	[[_2nd_order, _missing_y]]	✓
5959	$y'' + y' = x^2 + 2x$	[[_2nd_order, _missing_y]]	✓
5960	$y'' + y' = x + \sin(2x)$	[[_2nd_order, _missing_y]]	✓
5991	$y'' - \frac{2y'}{x} + \frac{2y}{x^2} = x \ln(x)$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓

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Table 2.37 second order integrable as is ABC

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#	ODE	CAS classification	Solved?
5993	$x^2 y'' + xy' - y = x^2 e^{-x}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
5994	$2x^2 y'' + 3xy' - y = \frac{1}{x}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
5995	$y'' = 2yy'$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Lagerstrom, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
5999	$xy'' - y' = x^2$	[[_2nd_order, _missing_y]]	✓
6004	$yy'' + y'^2 - y' = 0$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
6009	$(x^2 + 1)y'' + 2x(y' + 1) = 0$	[[_2nd_order, _missing_y]]	✓
6012	<i>i.c.</i> $y'' = 2yy'$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Lagerstrom, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
6015	<i>i.c.</i> $xy'' - y' = x^2$	[[_2nd_order, _missing_y]]	✓
6017	$xyy'' + xy'^2 - yy' = 0$	[[_2nd_order, _exact, _nonlinear], _Liouville, [_2nd_order, _with_linear_symmetries], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
6137	$y'' + 9y' = 0$	[[_2nd_order, _missing_x]]	✓
6142	$y'' + 5y' = 0$	[[_2nd_order, _missing_x]]	✓
6151	$y'' - 4y' = 10$	[[_2nd_order, _missing_x]]	✓
6172	$2y'' + y' = 2x$	[[_2nd_order, _missing_y]]	✓
6182	$y'' - 2y' = 9x e^{-x} - 6x^2 + 4e^{2x}$	[[_2nd_order, _missing_y]]	✓

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#	ODE	CAS classification	Solved?
6183	$y'' + yy' = 0$ i.c.	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Lagerstrom, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
6186	$y'' + yy' = 0$ i.c.	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Lagerstrom, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
6197	$x^2y'' + xy' - y = x - \frac{1}{x}$	[[_2nd_order, _exact, _lin- ear, _nonhomogeneous]]	✓
6219	$xy'' + y' = 4x$	[[_2nd_order, _missing_y]]	✓
6231	$x(yy'' + y'^2) = yy'$	[[_2nd_order, _ex- act, _nonlinear], _Li- ouville, [_2nd_order, _with_linear_symmetries], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
6235	$yy'' + y'^2 + 4 = 0$ i.c.	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
6409	$x(1-x)y'' + 2(-2x+1)y' - 2y = 0$	[[_2nd_order, _exact, _lin- ear, _homogeneous]]	✓
6514	$y'' = 9x^2 + 2x - 1$	[[_2nd_order, _quadra- ture]]	✓
6540	$y'' - 7y' = -3$	[[_2nd_order, _missing_x]]	✓
6541	$y'' + \frac{y'}{x} - \frac{y}{x^2} = \ln(x)$	[[_2nd_order, _exact, _lin- ear, _nonhomogeneous]]	✓
6700	$yy'' + y'^2 = 2$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
6713	$y'' - 4y' = 5$	[[_2nd_order, _missing_x]]	✓

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#	ODE	CAS classification	Solved?
6754	$(x+1)^2 y'' + (x+1)y' - y = \ln(x+1)^2 + x - 1$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
6755	$(2x+1)^2 y'' - 2(2x+1)y' - 12y = 6x$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
6774	$(x^2+1)y'' + 2xy' = \frac{2}{x^3}$	[[_2nd_order, _missing_y]]	✓
6775	$xy'' - y' = -\frac{2}{x} - \ln(x)$	[[_2nd_order, _missing_y]]	✓
6778	$yy'' + y'^2 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
6783	$(x+2y)y'' + 2y'^2 + 2y' = 2$	[[_2nd_order, _exact, _nonlinear], [_2nd_order, _with_linear_symmetries], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_y_y1], [_2nd_order, _reducible, _mu_xy]]	✓
7155	$y'' + \frac{y'}{x} - \frac{y}{x^2} = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
7160	$(-x^2+1)y'' - xy' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
7166	$y'' + xy' + y = 2xe^x - 1$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
7168	$x^2y'' + xy' - y = x^2 + 2x$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
7170	$x(x+1)y'' + (x+2)y' - y = x + \frac{1}{x}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
7257	$y'' = x + 2$	[[_2nd_order, _quadrature]]	✓
7265	$y'' = 3x + 1$	[[_2nd_order, _quadrature]]	✓
7291	$y'' = 0$	[[_2nd_order, _quadrature]]	✓
7350	$y'' + \frac{y'}{x} - \frac{y}{x^2} = 0$ i.c.	[[_2nd_order, _exact, _linear, _homogeneous]]	✓

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#	ODE	CAS classification	Solved?
7351	$y'' + \frac{y'}{x} - \frac{y}{x^2} = 0$ i.c.	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
7352	$(3x - 1)^2 y'' + (9x - 3)y' - 9y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
7435	$y'' + y' = 1$	[[_2nd_order, _missing_x]]	✓
7439	$y'' = yy'$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Lagerstrom, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
7440	$xy'' - 2y' = x^3$	[[_2nd_order, _missing_y]]	✓
7499	$\frac{y''}{y'} = x^2$	[[_2nd_order, _missing_y]]	✓
7500	$y''y' = x(x + 1)$	[[_2nd_order, _missing_y], [_2nd_order, _exact, _nonlinear], [_2nd_order, _reducible, _mu_y_y1], [_2nd_order, _reducible, _mu_poly_yn]]	✓
7581	$yy'' + y'^2 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
7587	$xy'' + y' = 4x$	[[_2nd_order, _missing_y]]	✓
7590	$y'' = y'e^y$ i.c.	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], [_2nd_order, _reducible, _mu_xy]]	✓
7612	$xy'' - 3y' = 5x$	[[_2nd_order, _missing_y]]	✓
7653	$y'' - 2y' = 12x - 10$	[[_2nd_order, _missing_y]]	✓
7656	$y'' + y' = 10x^4 + 2$	[[_2nd_order, _missing_y]]	✓
7729	$y'' = \tan(x)$ i.c.	[[_2nd_order, _quadrature]]	✓
7730	$y'' - 2y' = \ln(x)$ i.c.	[[_2nd_order, _missing_y]]	✓

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#	ODE	CAS classification	Solved?
7737	$x^2y'' + 3xy' + y = \frac{2}{x}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
7899	$y'' - y' = 0$	[[_2nd_order, _missing_x]]	✓
7901	$y'' + 2y' = 0$	[[_2nd_order, _missing_x]]	✓
8038	$ty'' - y' = 2t^2$	[[_2nd_order, _missing_y]]	✓
8168	$yy'' + y'^2 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
8172	$xy'' = y' + x^5$	[[_2nd_order, _missing_y]]	✓
8173	$xy'' + y' + x = 0$	[[_2nd_order, _missing_y]]	✓
8435	$ty'' + 4y' = t^2$	[[_2nd_order, _missing_y]]	✓
8436	$(t^2 + 9)y'' + 2ty' = 0$	[[_2nd_order, _missing_y]]	✓
8438	$ty'' + y' = 0$	[[_2nd_order, _missing_y]]	✓
8442	$y'' = 0$	[[_2nd_order, _quadrature]]	✓
8443	$y'' = 1$	[[_2nd_order, _quadrature]]	✓
8445	$y'' = k$	[[_2nd_order, _quadrature]]	✓
8448	$y'' = 4 \sin(x) - 4$	[[_2nd_order, _quadrature]]	✓
8475	$y'' = \frac{1}{y} - \frac{xy'}{y^2}$	[[_2nd_order, _exact, _nonlinear], [_2nd_order, _with_linear_symmetries], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_y_y1], [_2nd_order, _reducible, _mu_xy]]	✓
8748	$y'' = 0$	[[_2nd_order, _quadrature]]	✓

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#	ODE	CAS classification	Solved?
8751	$ay'' = 0$	[[_2nd_order, _quadrature]]	✓
8754	$y'' = 1$	[[_2nd_order, _quadrature]]	✓
8756	$y'' = x$	[[_2nd_order, _quadrature]]	✓
8759	$y'' + y' = 0$	[[_2nd_order, _missing_x]]	✓
8762	$y'' + y' = 1$	[[_2nd_order, _missing_x]]	✓
8765	$y'' + y' = x$	[[_2nd_order, _missing_y]]	✓
8778	$y'' + y' = 1$	[[_2nd_order, _missing_x]]	✓
8779	$y'' + y' = x$	[[_2nd_order, _missing_y]]	✓
8780	$y'' + y' = x + 1$	[[_2nd_order, _missing_y]]	✓
8781	$y'' + y' = x^2 + x + 1$	[[_2nd_order, _missing_y]]	✓
8782	$y'' + y' = x^3 + x^2 + x + 1$	[[_2nd_order, _missing_y]]	✓
8783	$y'' + y' = \sin(x)$	[[_2nd_order, _missing_y]]	✓
8784	$y'' + y' = \cos(x)$	[[_2nd_order, _missing_y]]	✓
10687	$y'' = 0$	[[_2nd_order, _quadrature]]	✓
10724	$y'' + xy' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
10775	$xy'' + y' = 0$	[[_2nd_order, _missing_y]]	✓
10791	$xy'' - xy' - y - x(x + 1)e^x = 0$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
10841	$x^2y'' + xy' - y - x^2a = 0$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
10847	$x^2y'' + (x + a)y' - y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
10850	$x^2y'' + 2xy' = 0$	[[_2nd_order, _missing_y]]	✓
10857	$x^2y'' - 2xy' - 4y - x \sin(x) - (x^2a + 12a + 4) \cos(x) = 0$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
10863	$x^2y'' + (3x - 1)y' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
10865	$x^2y'' - 3xy' - 5y - x^2 \ln(x) = 0$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
10911	$(x^2 + 1)y'' + 4xy' + 2y - 2\cos(x) + 2x = 0$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
10912	$(x^2 + 1)y'' + axy' + (a - 2)y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
10918	$(x^2 - 1)y'' + 2xy' = 0$	[[_2nd_order, _missing_y]]	✓
10919	$(x^2 - 1)y'' + 2xy' - a = 0$	[[_2nd_order, _missing_y]]	✓
10927	$(x^2 - 1)y'' - 2(v - 1)xy' - 2vy = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
10934	$x(x + 1)y'' + (2 + 3x)y' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
10936	$x(x - 1)y'' + ay' - 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
10944	$x(x + 3)y'' + (3x - 1)y' + y - (20x + 30)(x^2 + 3x)^{7/3} = 0$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
10947	$(-2 + x)^2 y'' - (-2 + x)y' - 3y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
10948	$2x^2 y'' - (2x^2 + l - 5x)y' - (4x - 1)y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
10965	$(2x + 1)^2 y'' - 2(2x + 1)y' - 12y - 3x - 1 = 0$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
10967	$(3x - 1)^2 y'' + 3(3x - 1)y' - 9y - \ln(3x - 1)^2 = 0$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
10979	$(a^2 x^2 - 1)y'' + 2a^2 xy' = 0$	[[_2nd_order, _missing_y]]	✓
10981	$(x^2 a + bx)y'' + 2by' - 2ay = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
10992	$x(x^2 + 1)y'' + 2(x^2 - 1)y' - 2xy = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
10999	$x(x^2 + 2)y'' - y' - 6xy = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
11109	$y'' = -\frac{\cos(x)y'}{\sin(x)} + \frac{y}{\sin(x)^2}$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓

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#	ODE	CAS classification	Solved?
11307	$y'' - 2ayy' = 0$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Lagerstrom, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
11343	$xy'' + (y - 1)y' = 0$	[[_2nd_order, _exact, _nonlinear], [_2nd_order, _with_linear_symmetries], [_2nd_order, _reducible, _mu_xy]]	✓
11372	$yy'' + y'^2 - a = 0$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
11374	$yy'' + y'^2 - y' = 0$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
11398	$y''(x + y) + y'^2 - y' = 0$	[[_2nd_order, _exact, _nonlinear], [_2nd_order, _with_linear_symmetries], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_y_y1], [_2nd_order, _reducible, _mu_xy]]	✓
11434	$xyy'' + xy'^2 - yy' = 0$	[[_2nd_order, _ex- act, _nonlinear], _Li- ouville, [_2nd_order, _with_linear_symmetries], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓

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#	ODE	CAS classification	Solved?
11443	$x(x+y)y'' + xy'^2 + (x-y)y' - y = 0$	[[_2nd_order, _exact, _nonlinear], [_2nd_order, _with_linear_symmetries], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_y_y1], [_2nd_order, _reducible, _mu_xy]]	✓
12201	$y'' + (ax + b)y' + ay = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
12232	$y'' + (ax^n + bx^m)y' + (anx^{n-1} + bmx^{m-1})y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, ' _with_symmetry_[0,F(x)]']]	✓
12245	$xy'' + axy' + ay = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
12258	$xy'' + (x^2a + bx + c)y' + (2ax + b)y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
12263	$xy'' + x(x^2a + b)y' + (3x^2a + b)y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
12270	$xy'' + (ax^n + b)y' + anx^{n-1}y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, ' _with_symmetry_[0,F(x)]']]	✓
12281	$(x + a)y'' + (bx + c)y' + by = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
12285	$(x + \gamma)y'' + (ax^n + bx^m + c)y' + (anx^{n-1} + bmx^{m-1})y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, ' _with_symmetry_[0,F(x)]']]	✓
12339	$(x^2 + a)y'' + 2bxy' + 2(b - 1)y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
12351	$(x^2a + bx + c)y'' + (dx + k)y' + (d - 2a)y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
12365	$x(x^2a + b)y'' + 2(x^2a + b)y' - 2axy = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
12426	$(ax^n + bx + c)y'' = an(n - 1)x^{n-2}y$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, ' _with_symmetry_[0,F(x)]']]	✓

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#	ODE	CAS classification	Solved?
12472	$y'' + (ae^{\lambda x} + be^{\mu x} + c)y' + (a\lambda e^{\lambda x} + b\mu e^{\mu x})y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
12622	$y'' - 2y' = e^{2x} + 1$	[[_2nd_order, _missing_y]]	✓
12626	$x^2y'' + 3xy' + y = \frac{1}{(1-x)^2}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
12667	$y'' = xe^x$	[[_2nd_order, _quadrature]]	✓
12676	$x^2y'' + 3xy' + y = x$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
12677	$(x-1)^2y'' + 4(x-1)y' + 2y = \cos(x)$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
12690	$y'' + yy' = 0$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Lagerstrom, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
12692	$(x^2 - x)y'' + (4x + 2)y' + 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
12695	$x(x + 2y)y'' + 2xy'^2 + 4(x + y)y' + 2y + x^2 = 0$	[[_2nd_order, _exact, _nonlinear], [_2nd_order, _reducible, _mu_xy]]	✓
12699	$\sin(x)y'' - \cos(x)y' + 2\sin(x)y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
12714	$x'' = -3\sqrt{t}$ i.c.	[[_2nd_order, _quadrature]]	✓
12719	$x' + tx'' = 1$ i.c.	[[_2nd_order, _missing_y]]	✓
12772	$x'' + x' = 3t$	[[_2nd_order, _missing_y]]	✓
12789	$x'' - 2x' = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
12793	$x'' - 2x' = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
12817	$x'' - x' = 6 + e^{2t}$	[[_2nd_order, _missing_y]]	✓
12825	$x'' - 2x' = 4$ i.c.	[[_2nd_order, _missing_x]]	✓
12832	$t^2x'' + 3tx' + x = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓

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#	ODE	CAS classification	Solved?
12842	$t^2 x'' - 2x = t^3$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
12925	$(x^2 + 1)y'' + 4xy' + 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
13204	$(2x + 1)(x + 1)y'' + 2xy' - 2y = (2x + 1)^2$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
13222	$x^2 y'' + 4xy' + 2y = 4 \ln(x)$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
13228 i.c.	$x^2 y'' + 5xy' + 3y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
13229 i.c.	$x^2 y'' - 2y = 4x - 8$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
13234	$(x + 2)^2 y'' - (x + 2)y' - 3y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
13430 i.c.	$y'' - 4y' = 0$	[[_2nd_order, _missing_x]]	✓
13442	$x'' - 4x' = t^2$	[[_2nd_order, _missing_y]]	✓
13469	$t^2 x'' - 2x = t^3$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
13470	$x'' - 4x' = \tan(t)$	[[_2nd_order, _missing_y]]	✓
13475 i.c.	$t^2 x'' + tx' - x = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
13477 i.c.	$x^2 y'' - xy' - 3y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
13480 i.c.	$3x^2 z'' + 5xz' - z = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
13669	$y'' + 2xy' + 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
13670	$xy'' + \sin(x)y' + \cos(x)y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
13671	$y'' + 2x^2 y' + 4xy = 2x$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
13672	$(-x^2 + 1)y'' + (1 - x)y' + y = -2x + 1$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
13675	$y'' + x^2 y' + 2xy = 2x$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
13677	$xy'' + x^2 y' + 2xy = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓

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#	ODE	CAS classification	Solved?
13678	$y'' + \sin(x)y' + \cos(x)y = \cos(x)$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
13679	$y'' + \cot(x)y' - \csc(x)^2 y = \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13682	$\frac{xy''}{1+y} + \frac{yy' - xy'^2 + y'}{(1+y)^2} = x \sin(x)$	[[_2nd_order, _exact, _nonlinear], [_2nd_order, _with_linear_symmetries], [_2nd_order, _reducible, _mu_xy]]	✓
13683	$(x \cos(y) + \sin(x))y'' - xy'^2 \sin(y) + 2(\cos(y) + \cos(x))y' = \sin(x)y$	[[_2nd_order, _exact, _nonlinear], [_2nd_order, _reducible, _mu_xy]]	✓
13684	$yy'' \sin(x) + (\sin(x)y' + \cos(x)y)y' = \cos(x)$	[[_2nd_order, _exact, _nonlinear], [_2nd_order, _reducible, _mu_y_y1], [_2nd_order, _reducible, _mu_xy]]	✓
13685	$(1-y)y'' - y'^2 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
13686	$(\cos(y) - y \sin(y))y'' - y'^2(2 \sin(y) + y \cos(y)) = \sin(x)$	[[_2nd_order, _exact, _nonlinear], [_2nd_order, _reducible, _mu_y_y1], [_2nd_order, _reducible, _mu_xy]]	✓
13763	$t^2 y'' + 3ty' + y = t^7$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
13906	$xy'' - y' = e^x x^2$ i.c.	[[_2nd_order, _missing_y]]	✓
13937	$y'' - 3y' = 2 - 6x$	[[_2nd_order, _missing_y]]	✓
13986	$x^2 y'' + xy' - y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
13988	$2x^2 y'' + 3xy' - y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
13990	$x^2 y'' - 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓

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#	ODE	CAS classification	Solved?
14004	$x^2 y'' + 6xy' + 4y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
14603	$y'' + 2y' = 3t + 2$ i.c.	[[_2nd_order, _missing_y]]	✓
14604	$y'' + 4y' = 3t + 2$ i.c.	[[_2nd_order, _missing_y]]	✓
14660	$y'' = \frac{x+1}{x-1}$	[[_2nd_order, _quadrature]]	✓
14674	$y'' = \sin(2x)$	[[_2nd_order, _quadrature]]	✓
14675	$y'' - 3 = x$	[[_2nd_order, _quadrature]]	✓
14683	$xy'' + 2 = \sqrt{x}$ i.c.	[[_2nd_order, _quadrature]]	✓
14885	$xy'' + 4y' = 18x^2$	[[_2nd_order, _missing_y]]	✓
14886	$xy'' = 2y'$	[[_2nd_order, _missing_y]]	✓
14887	$y'' = y'$	[[_2nd_order, _missing_x]]	✓
14888	$y'' + 2y' = 8e^{2x}$	[[_2nd_order, _missing_y]]	✓
14890	$(x^2 + 1)y'' + 2xy' = 0$	[[_2nd_order, _missing_y]]	✓
14892	$y''y' = 1$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], [_2nd_order, _reducible, _mu_poly_yn]]	✓
14893	$yy'' = -y'^2$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
14897	$y'' = 2y' - 6$	[[_2nd_order, _missing_x]]	✓
14899	$y'' + 4y' = 9e^{-3x}$	[[_2nd_order, _missing_y]]	✓
14906	$\sin(y)y'' + \cos(y)y'^2 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
14907	$y'' = y'$	[[_2nd_order, _missing_x]]	✓

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#	ODE	CAS classification	Solved?
14908	$yy'' + y'^2 = 2yy'$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
14909	$y^2y'' + y'' + 2yy'^2 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
14911	$y''y' = 1$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], [_2nd_order, _reducible, _mu_poly_yn]]	✓
14913	$xy'' - y' = 6x^5$	[[_2nd_order, _missing_y]]	✓
14917	$y'' + 4y' = 9e^{-3x}$	[[_2nd_order, _missing_y]]	✓
14919	$xy'' + 4y' = 18x^2$	[[_2nd_order, _missing_y]]	✓
14920	$xy'' = 2y'$	[[_2nd_order, _missing_y]]	✓
14921	$y'' = y'$	[[_2nd_order, _missing_x]]	✓
14922	$y'' + 2y' = 8e^{2x}$	[[_2nd_order, _missing_y]]	✓
14925	$xy'' + 2y' = 6$	[[_2nd_order, _missing_y]]	✓
14929	$y'' = -y'e^{-y}$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], [_2nd_order, _reducible, _mu_xy]]	✓
14934	$y'' = 2yy'$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Lagerstrom, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓

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#	ODE	CAS classification	Solved?
14936	$y'' = 2yy'$ i.c.	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Lagerstrom, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
14937	$y'' = 2yy'$ i.c.	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Lagerstrom, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
14988	$y'' + 5y' = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
14994	$y'' + 3y' = 0$	[[_2nd_order, _missing_x]]	✓
15056	$x^2y'' - 2y = 0$	[[_2nd_order, _exact, _lin- ear, _homogeneous]]	✓
15067	$2x^2y'' + 5xy' + y = 0$	[[_2nd_order, _exact, _lin- ear, _homogeneous]]	✓
15111	$y'' + 3y' = e^{\frac{x}{2}}$	[[_2nd_order, _missing_y]]	✓
15115	$y'' + 3y' = 26 \cos\left(\frac{x}{3}\right) - 12 \sin\left(\frac{x}{3}\right)$	[[_2nd_order, _missing_y]]	✓
15126	$y'' = 6x e^x \sin(x)$	[[_2nd_order, _quadra- ture]]	✓
15131	$y'' + 4y' = 20$	[[_2nd_order, _missing_x]]	✓
15132	$y'' + 4y' = x^2$	[[_2nd_order, _missing_y]]	✓
15183	$2x^2y'' + 5xy' + y = 85 \cos(2 \ln(x))$	[[_2nd_order, _exact, _lin- ear, _nonhomogeneous]]	✓
15184	$x^2y'' - 2y = 15 \cos(3 \ln(x)) - 10 \sin(3 \ln(x))$	[[_2nd_order, _exact, _lin- ear, _nonhomogeneous]]	✓
15186	$2x^2y'' + 5xy' + y = \frac{10}{x}$	[[_2nd_order, _exact, _lin- ear, _nonhomogeneous]]	✓
15195	$x^2y'' + xy' - y = \sqrt{x}$	[[_2nd_order, _exact, _lin- ear, _nonhomogeneous]]	✓
15199	$x^2y'' - 2y = \frac{1}{-2+x}$	[[_2nd_order, _exact, _lin- ear, _nonhomogeneous]]	✓
15201	$xy'' + (2x + 2)y' + 2y = 8e^{2x}$	[[_2nd_order, _exact, _lin- ear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
15203	$x^2 y'' - 2xy' - 4y = \frac{10}{x}$ i.c.	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
15217	$2xy'' + y' = \sqrt{x}$	[[_2nd_order, _missing_y]]	✓
15237	$2y'' - 7y' + 3 = 0$	[[_2nd_order, _missing_x]]	✓
15239	$xy'' = 3y'$	[[_2nd_order, _missing_y]]	✓
15240	$y'' - 5y' = 0$	[[_2nd_order, _missing_x]]	✓
15254	$x^2 y'' + xy' - y = \frac{1}{x^2 + 1}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
15259	$x^2 y'' + 3xy' + y = \frac{1}{(x+1)^2}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
15260	$x^2 y'' + 3xy' + y = \frac{1}{x}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
15470	$y'' + 9y' = 0$	[[_2nd_order, _missing_x]]	✓
15499	$y'' + 9y' = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
15677	$y'' - \frac{y'}{t} + \frac{y}{t^2} = \frac{1}{t}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
15865	$t^2 y'' + ty' - y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
15882	$y'' = 0$	[[_2nd_order, _quadrature]]	✓
15884	$y'' + y' = 0$	[[_2nd_order, _missing_x]]	✓
15897	$y'' - y' = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
15898	$3y'' - y' = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
15932	$y'' + 2y' = 3 - 4t$	[[_2nd_order, _missing_y]]	✓
15937	$y'' = 3t^4 - 2t$	[[_2nd_order, _quadrature]]	✓
15947	$y'' - 2y' = 52 \sin(3t)$	[[_2nd_order, _missing_y]]	✓
15955	$y'' + 4y' = 8e^{4t} - 4e^{-4t}$	[[_2nd_order, _missing_y]]	✓
15956	$y'' - 3y' = t^2 - e^{3t}$	[[_2nd_order, _missing_y]]	✓
15957	$y'' + 4y' = -24t - 6 - 4te^{-4t} + e^{-4t}$	[[_2nd_order, _missing_y]]	✓
15958	$y'' - 3y' = t^2 - e^{3t}$	[[_2nd_order, _missing_y]]	✓

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#	ODE	CAS classification	Solved?
15959	$y'' = t^2 + e^t + \sin(t)$	[[_2nd_order, _quadrature]]	✓
15960	$y'' + 3y' = 18$	[[_2nd_order, _missing_x]]	✓
15968	$y'' - 3y' = -e^{3t} - 2t$	[[_2nd_order, _missing_y]]	✓
15969	$y'' - y' = -3t - 4t^2 e^{2t}$	[[_2nd_order, _missing_y]]	✓
15970	$y'' - 2y' = 2t^2$	[[_2nd_order, _missing_y]]	✓
15971	$y'' + 4y' = -24t - 6 - 4t e^{-4t} + e^{-4t}$	[[_2nd_order, _missing_y]]	✓
15972	$y'' - 3y' = e^{-3t} - e^{3t}$	[[_2nd_order, _missing_y]]	✓
15985	$y'' + 16y' = t$	[[_2nd_order, _missing_y]]	✓
16030	$t^2 y'' + 3ty' + y = \ln(t)$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
16032	$t^2 y'' - 4ty' - 6y = 2 \ln(t)$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
16154	$2x^2 y'' + 3xy' - y = \frac{1}{x^2}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
16155	$x^2 y'' + 4xy' + 2y = \ln(x)$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
16159	$x^2 y'' + 4xy' + 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
16172	$x^2 y'' + 4xy' + 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
16252	$y'' + 5y' = 5t^2$	[[_2nd_order, _missing_y]]	✓
16253	$y'' - 4y' = -3 \sin(t)$	[[_2nd_order, _missing_y]]	✓
16256	$y'' - 2y' = \frac{1}{1 + e^{2t}}$	[[_2nd_order, _missing_y]]	✓
16286	$2x^2 y'' + 5xy' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓

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#	ODE	CAS classification	Solved?
16298	$t(y''y + y'^2) + y'y = 1$ i.c.	[[_2nd_order, _exact, _nonlinear], [_2nd_order, _with_linear_symmetries], [_2nd_order, _reducible, _mu_y_y1], [_2nd_order, _reducible, _mu_xy]]	✓
16585	$(x - 1)y'' = 1$	[[_2nd_order, _quadrature]]	✓
16590	$yy'' + y'^2 = 1$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
16594	$y'' = xe^x$ i.c.	[[_2nd_order, _quadrature]]	✓
16595	$y'' = 2x \ln(x)$	[[_2nd_order, _quadrature]]	✓
16596	$xy'' = y'$	[[_2nd_order, _missing_y]]	✓
16597	$xy'' + y' = 0$	[[_2nd_order, _missing_y]]	✓
16599	$xy'' = y' + x^2$	[[_2nd_order, _missing_y]]	✓
16611	$y'' + y' + 2 = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
16619	$yy'' + y'^2 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
16650	$y'' + 3y' = 3$	[[_2nd_order, _missing_x]]	✓
16651	$y'' - 7y' = (x - 1)^2$	[[_2nd_order, _missing_y]]	✓
16652	$y'' + 3y' = e^x$	[[_2nd_order, _missing_y]]	✓
16653	$y'' + 7y' = e^{-7x}$	[[_2nd_order, _missing_y]]	✓
16656	$4y'' - 3y' = xe^{\frac{3x}{4}}$	[[_2nd_order, _missing_y]]	✓
16657	$y'' - 4y' = xe^{4x}$	[[_2nd_order, _missing_y]]	✓
16687	$y'' + 2y' = -2$	[[_2nd_order, _missing_x]]	✓
16695	$y'' + 8y' = 8x$	[[_2nd_order, _missing_y]]	✓

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#	ODE	CAS classification	Solved?
16699	$7y'' - y' = 14x$	[[_2nd_order, _missing_y]]	✓
16700	$y'' + 3y' = 3xe^{-3x}$	[[_2nd_order, _missing_y]]	✓
16709	$y'' - y' = e^x \sin(x)$	[[_2nd_order, _missing_y]]	✓
16710	$y'' + 2y' = 4e^x(\cos(x) + \sin(x))$	[[_2nd_order, _missing_y]]	✓
16712	$4y'' + 8y' = x \sin(x)$	[[_2nd_order, _missing_y]]	✓
16727	$y'' + 4y' = x + e^{-4x}$	[[_2nd_order, _missing_y]]	✓
16733	$y'' - 4y' = 2 \cos(4x)^2$	[[_2nd_order, _missing_y]]	✓
16735	$y'' - 3y' = 18x - 10 \cos(x)$	[[_2nd_order, _missing_y]]	✓
16742	$y'' + y' = \cos(x)^2 + e^x + x^2$	[[_2nd_order, _missing_y]]	✓
16745	$y'' + y' = x^2 - e^{-x} + e^x$	[[_2nd_order, _missing_y]]	✓
16752	$y'' - 3y' = 1 + e^x + \cos(x) + \sin(x)$	[[_2nd_order, _missing_y]]	✓
16758	$y'' + 2y' + 1 = 3 \sin(2x) + \cos(x)$	[[_2nd_order, _missing_y]]	✓
16770	$y'' + y' = e^{-x}$ i.c.	[[_2nd_order, _missing_y]]	✓
16777	$y'' - y' = -5e^{-x}(\cos(x) + \sin(x))$ i.c.	[[_2nd_order, _missing_y]]	✓
16793	$x^2y'' + xy' - y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
16794	$x^2y'' + 3xy' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
16796	$xy'' + y' = 0$	[[_2nd_order, _missing_y]]	✓
16804	$x^2y'' - 2y = \sin(\ln(x))$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
16805	$x^2y'' - xy' - 3y = -\frac{16 \ln(x)}{x}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
16807	$x^2y'' + xy' - y = x^m$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
16808	$x^2y'' + 4xy' + 2y = 2 \ln(x)^2 + 12x$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
16825	$y'' + y' = \frac{1}{1 + e^x}$	[[_2nd_order, _missing_y]]	✓
16831	$y'' + y' = e^{2x} \cos(e^x)$	[[_2nd_order, _missing_y]]	✓
16840	$(x^2 + 1)y'' + 2xy' = \frac{1}{x^2 + 1}$ i.c.	[[_2nd_order, _missing_y]]	✓

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#	ODE	CAS classification	Solved?
16854	$x'' + (x + 2)x' = 0$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
16860	<i>i.c.</i> $yy'' + 1 + y'^2 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
16864	<i>i.c.</i> $y'' + \alpha y' = 0$	[[_2nd_order, _missing_x]]	✓
16871	$xy'' + y' = 0$	[[_2nd_order, _missing_y]]	✓
17241	$t^2 y'' - 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
17242	$y''y + y'^2 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
17271	$y'' + 5y' = 0$	[[_2nd_order, _missing_x]]	✓
17293	<i>i.c.</i> $y'' + 3y' = 0$	[[_2nd_order, _missing_x]]	✓
17304	$x^2 y'' + 4xy' + 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
17306	$x^2 y'' - 4xy' - 6y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
17307	$x^2 y'' - 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
17311	<i>i.c.</i> $2x^2 y'' + xy' - 3y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
17321	$y'' + 2y' = 3 + 4 \sin(2t)$	[[_2nd_order, _missing_y]]	✓
17339	$y'' + 3y' = 2t^4 + t^2 e^{-3t} + \sin(3t)$	[[_2nd_order, _missing_y]]	✓
17349	$x^2 y'' + 7xy' + 5y = x$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
17381	$t^2 y'' - 2y = 3t^2 - 1$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
17384	$t^2y'' + 7ty' + 5y = t$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
17569	$y'' = \sin(x)$	[[_2nd_order, _quadrature]]	✓
17654	$xyy'' + xy'^2 - yy' = 0$	[[_2nd_order, _exact, _nonlinear], _Liouville, [_2nd_order, _with_linear_symmetries], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
17660	$x(xy + 1)y'' + x^2y'^2 + (4xy + 2)y' + y^2 + 1 = 0$	[[_2nd_order, _exact, _nonlinear], [_2nd_order, _reducible, _mu_xy]]	✓
17705	$x^2y'' - 2y = x^2 + \frac{1}{x}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
17863	$yy'' + y'^2 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
17869	$xy'' + y' = 4x$	[[_2nd_order, _missing_y]]	✓
17872	$y'' = y'e^y$ i.c.	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], [_2nd_order, _reducible, _mu_xy]]	✓
17881	$yy'' + y'^2 - 2yy' = 0$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
17925	$xy'' - y' = 3x^2$	[[_2nd_order, _missing_y]]	✓
17926	$xy'' + y' = 0$	[[_2nd_order, _missing_y]]	✓
17929	$y'' - 2y' = 6$	[[_2nd_order, _missing_x]]	✓
17931	$y'' = e^x$	[[_2nd_order, _quadrature]]	✓
17932	$y'' - 2y' = 4$	[[_2nd_order, _missing_x]]	✓
17935	$y'' + 2y' = 6e^x$	[[_2nd_order, _missing_y]]	✓

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Table 2.37 second order integrable as is ABC

Continued from previous page

#	ODE	CAS classification	Solved?
17936	$x^2y'' - 3xy' - 5y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
17942	$x^2y'' - 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
17945	$y'' + y' = 0$	[[_2nd_order, _missing_x]]	✓
17972	$y'' + y' = 0$	[[_2nd_order, _missing_x]]	✓
18006	$y'' - 2y' = 12x - 10$	[[_2nd_order, _missing_y]]	✓
18009	$y'' + y' = 10x^4 + 2$	[[_2nd_order, _missing_y]]	✓
18090	$y'' + xy' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
18196	$x'' + 3x' = 0$	[[_2nd_order, _missing_x]]	✓
18271	$x^2y'' + 3xy' + y = \frac{1}{x}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
18285	$y'' - 2yy' = 0$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Lagerstrom, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
18354	$ey'' = \frac{P(\frac{L}{2} - x)}{2}$	[[_2nd_order, _quadrature]]	✓
18355	$ey'' = \frac{w(\frac{L^2}{4} - x^2)}{2}$	[[_2nd_order, _quadrature]]	✓
18356	$ey'' = -\frac{(wL + P)x}{2} - \frac{wx^2}{2}$	[[_2nd_order, _quadrature]]	✓
18357	$ey'' = -P(L - x)$	[[_2nd_order, _quadrature]]	✓
18358	$ey'' = -PL + (wL + P)x - \frac{w(L^2 + x^2)}{2}$	[[_2nd_order, _quadrature]]	✓
18365	$xy'' + 2y' = 2x$	[[_2nd_order, _missing_y]]	✓
18367	$(x^2 - 1)y'' + 4xy' + 2y = 2x$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
18368	$(x^2 + 1)y'' + 4xy' + 2y = x$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
18369	$y'' - \cot(x)y' + \csc(x)^2y = \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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Table 2.37 second order integrable as is ABC

*Continued from previous page*

#	ODE	CAS classification	Solved?
18370	$(x^2 - x)y'' + (3x - 2)y' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
18371	$(3x^2 + x)y'' + 2(1 + 6x)y' + 6y = \sin(x)$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
18374	$y'' = \cos(x)$	[[_2nd_order, _quadrature]]	✓
18381	$xy'' + 3y' = 3x$	[[_2nd_order, _missing_y]]	✓
18382	$x = y'' + y'$	[[_2nd_order, _missing_y]]	✓
18400	$y'' - \frac{2y'}{x} + \frac{2y}{x^2} = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
18603	$x^2y'' - 2xy' - 4y = x^4$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
18606	$x^2y'' + 7xy' + 5y = x^5$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
18610	$x^2y'' + 4xy' + 2y = e^x$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
18616	$x^2y'' + xy' - y = x^m$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
18620	$x^2y'' + 3xy' + y = \frac{1}{(1-x)^2}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
18625	$xy'' + 2xy' + 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
18626	$y'' + 2e^xy' + 2ye^x = x^2$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
18629	$x^2yy'' + (-y + xy')^2 - 3y^2 = 0$	[[_2nd_order, _exact, _nonlinear], [_2nd_order, _with_linear_symmetries], [_2nd_order, _reducible, _mu_xy]]	✓

## 2.4.10 second order ode can be made integrable

Table 2.38: second order ode can be made integrable

#	ODE	CAS classification	Solved?
11	$x'' = 50$ i.c.	[[_2nd_order, _quadrature]]	✓
12	$x'' = -20$ i.c.	[[_2nd_order, _quadrature]]	✓
149	$y'' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
215	$y'' - y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
216	$y'' - 9y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
217	$y'' + 4y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
218	$y'' + 25y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
258	$y'' - 4y = 12$ i.c.	[[_2nd_order, _missing_x]]	✓
271	$y'' - 4y = 0$	[[_2nd_order, _missing_x]]	✓
311	$y'' = (-2 + 2i\sqrt{3})y$	[[_2nd_order, _missing_x]]	✓
807	$y'' - y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
808	$y'' - 9y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
809	$y'' + 4y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
810	$y'' + 25y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
839	$y'' - 4y = 12$ i.c.	[[_2nd_order, _missing_x]]	✓
842	$y'' + 2y = 4$	[[_2nd_order, _missing_x]]	✓
845	$y'' - 4y = 0$	[[_2nd_order, _missing_x]]	✓
859	$y'' = (-2 + 2i\sqrt{3})y$	[[_2nd_order, _missing_x]]	✓
1254	$4y'' - 9y = 0$	[[_2nd_order, _missing_x]]	✓
1264	$4y'' - y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
1265	$y'' - y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓

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Table 2.38 second order ode can be made integrable

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#	ODE	CAS classification	Solved?
1268	$4y'' - y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
1278	$4y'' + 9y = 0$	[[_2nd_order, _missing_x]]	✓
1283	$y'' + 4y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
1286	$y'' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
1355	$u'' + 2u = 0$	[[_2nd_order, _missing_x]]	✓
2364	$y'' - y = 0$	[[_2nd_order, _missing_x]]	✓
2545	$y'' - y = 0$	[[_2nd_order, _missing_x]]	✓
2564	$y'' + w^2y = 0$	[[_2nd_order, _missing_x]]	✓
2820	$z'' + z^3 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓
2821	$z'' + z + z^5 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓
2822	$z'' + e^{z^2} = 1$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓
2823	$z'' + \frac{z}{1+z^2} = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓
2824	$z'' + z - 2z^3 = 0$	[[_2nd_order, _missing_x], _Duffing, [_2nd_order, _re- ducible, _mu_x_y1]]	✓
2835	$y'' + \lambda y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
2838	$y'' + \lambda y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
2840	$y'' + \lambda y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
3059	$y'' - 4y = 0$	[[_2nd_order, _missing_x]]	✓
3089	$y'' = 0$	[[_2nd_order, _quadra- ture]]	✓
3245	$y'' = k^2y$	[[_2nd_order, _missing_x]]	✓
3246	$x'' + k^2x = 0$	[[_2nd_order, _missing_x]]	✓

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Table 2.38 second order ode can be made integrable

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#	ODE	CAS classification	Solved?
3266	$y'' = y$	[[_2nd_order, _missing_x]]	✓
3273	$2y'' = e^y$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓
3282	$x'' - k^2x = 0$	[[_2nd_order, _missing_x]]	✓
3558	$y'' - 25y = 0$	[[_2nd_order, _missing_x]]	✓
3559	$y'' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
3564	$y'' - 9y = 0$	[[_2nd_order, _missing_x]]	✓
3698	$y'' - 36y = 0$	[[_2nd_order, _missing_x]]	✓
4125	$y'' + 25y = 0$	[[_2nd_order, _missing_x]]	✓
4127	$y'' = 0$	[[_2nd_order, _quadrature]]	✓
5918	$y'' - y = 0$	[[_2nd_order, _missing_x]]	✓
5945	$y'' = 0$	[[_2nd_order, _quadrature]]	✓
6002	$y'' = \frac{3ky^2}{2}$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓
6003	$y'' = 2ky^3$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓
6013	$2y'' = e^y$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓
6140	$y'' + 16y = 0$	[[_2nd_order, _missing_x]]	✓
6243	$y'' = -4y$	[[_2nd_order, _missing_x]]	✓
6245	$y'' = y$	[[_2nd_order, _missing_x]]	✓
6389	$x'' - \omega^2x = 0$	[[_2nd_order, _missing_x]]	✓
6576	$y'' - y = 0$	[[_2nd_order, _missing_x]]	✓
6707	$y'' + 25y = 0$	[[_2nd_order, _missing_x]]	✓
7261	$y'' - y = 0$	[[_2nd_order, _missing_x]]	✓
7262	$y'' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
7263	$y'' + k^2y = 0$	[[_2nd_order, _missing_x]]	✓

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Table 2.38 second order ode can be made integrable

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#	ODE	CAS classification	Solved?
7288	$y'' - 4y = 0$	[[_2nd_order, _missing_x]]	✓
7289	$3y'' + 2y = 0$	[[_2nd_order, _missing_x]]	✓
7290	$y'' + 16y = 0$	[[_2nd_order, _missing_x]]	✓
7291	$y'' = 0$	[[_2nd_order, _quadrature]]	✓
7298	$y'' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
7299	$y'' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
7300	$y'' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
7304	$y'' + 10y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
7326	$y'' + y = 0$	[[_2nd_order, _missing_x]]	✓
7327	$y'' - y = 0$	[[_2nd_order, _missing_x]]	✓
7438	$y'' + k^2y = 0$	[[_2nd_order, _missing_x]]	✓
7442	$y'' = -\frac{1}{2y'^2}$ i.c.	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_poly_yn]]	✓
7443	$y'' + \sin(y) = 0$ i.c.	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓
7444	$y'' + \sin(y) = 0$ i.c.	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓
7453	$y'' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
7454	$y'' - 4y = 0$	[[_2nd_order, _missing_x]]	✓
7583	$y'' - k^2y = 0$	[[_2nd_order, _missing_x]]	✓
7615	$y'' + 8y = 0$	[[_2nd_order, _missing_x]]	✓
7621	$y'' + y = 0$	[[_2nd_order, _missing_x]]	✓
7625	$y'' = 4y$	[[_2nd_order, _missing_x]]	✓
7723	$y'' + 9y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
7746	$y'' = -3y$ i.c.	[[_2nd_order, _missing_x]]	✓

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Table 2.38 second order ode can be made integrable

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#	ODE	CAS classification	Solved?
7747	$y'' + \sin(y) = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓
7895	$y'' + y = 0$	[[_2nd_order, _missing_x]]	✓
7897	$y'' - y = 0$	[[_2nd_order, _missing_x]]	✓
7983	$y'' + y = 0$	[[_2nd_order, _missing_x]]	✓
8176	$y'' + \beta^2 y = 0$	[[_2nd_order, _missing_x]]	✓
8182	$y'' = -e^{-2y}$ i.c.	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓
8183	$2y'' = \sin(2y)$ i.c.	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓
8184	$2y'' = \sin(2y)$ i.c.	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓
8442	$y'' = 0$	[[_2nd_order, _quadrature]]	✓
8443	$y'' = 1$	[[_2nd_order, _quadrature]]	✓
8445	$y'' = k$	[[_2nd_order, _quadrature]]	✓
8638	$y'' = Ay^{2/3}$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓
8659	$y'' + e^y = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓
8748	$y'' = 0$	[[_2nd_order, _quadrature]]	✓
8751	$ay'' = 0$	[[_2nd_order, _quadrature]]	✓
8754	$y'' = 1$	[[_2nd_order, _quadrature]]	✓
8785	$y'' + y = 1$	[[_2nd_order, _missing_x]]	✓
8804	$y''y' + y^2 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓

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Table 2.38 second order ode can be made integrable

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#	ODE	CAS classification	Solved?
8805	$y''y' + y^n = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓
10687	$y'' = 0$	[[_2nd_order, _quadra- ture]]	✓
10688	$y'' + y = 0$	[[_2nd_order, _missing_x]]	✓
10692	$y'' - y = 0$	[[_2nd_order, _missing_x]]	✓
10695	$y'' + ly = 0$	[[_2nd_order, _missing_x]]	✓
11266	$y'' - y^2 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓
11267	$y'' - 6y^2 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓
11269	$y'' - 6y^2 + 4y = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓
11272	$y'' - ay^3 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓
11275	$y'' + d + by^2 + cy + ay^3 = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓
11277	$y'' + 6a^{10}y^{11} - y = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓
11279	$y'' - e^y = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓
11282	$y'' + a \sin(y) = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓
12177	$y'' + ay = 0$	[[_2nd_order, _missing_x]]	✓
12671	$2y'' = e^y$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓
12799	$x'' - 12x = 0$	[[_2nd_order, _missing_x]]	✓
12943	$y'' + y = 0$	[[_2nd_order, _missing_x]]	✓
	<i>i.c.</i>		
	<i>i.c.</i>		

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Table 2.38 second order ode can be made integrable

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#	ODE	CAS classification	Solved?
13093	$y'' + 9y = 0$	[[_2nd_order, _missing_x]]	✓
13094	$4y'' + y = 0$	[[_2nd_order, _missing_x]]	✓
13354	$y'' + \lambda y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
13355	$y'' + \lambda y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
13356	$y'' + \lambda y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
13431	$\theta'' + 4\theta = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
13438	$y'' - 4y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
13440	$y'' + \omega^2 y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
13825	$y'' + \alpha^2 y = 0$	[[_2nd_order, _missing_x]]	✓
13826	$y'' - \alpha^2 y = 0$	[[_2nd_order, _missing_x]]	✓
13902	$y'' = \frac{1}{2y'}$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_poly_yn]]	✓
13904	$y'' = a^2 y$	[[_2nd_order, _missing_x]]	✓
13910	$y'' = \frac{1}{2y'}$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_poly_yn]]	✓
13913	$y'' = 9y$	[[_2nd_order, _missing_x]]	✓
13914	$y'' + y = 0$	[[_2nd_order, _missing_x]]	✓
13915	$y'' - y = 0$	[[_2nd_order, _missing_x]]	✓
13980	$x'' + x - x^3 = 0$	[[_2nd_order, _missing_x], _Duffing, [_2nd_order, _re- ducible, _mu_x_y1]]	✓
13981	$x'' + x + x^3 = 0$	[[_2nd_order, _missing_x], _Duffing, [_2nd_order, _re- ducible, _mu_x_y1]]	✓
13984	$x'' = (2 \cos(x) - 1) \sin(x)$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓
14013	$y'' - y = 0$	[[_2nd_order, _missing_x]]	✓

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Table 2.38 second order ode can be made integrable

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#	ODE	CAS classification	Solved?
14162	$y'' - y = 0$	[[_2nd_order, _missing_x]]	✓
14163	$y'' + y = 0$	[[_2nd_order, _missing_x]]	✓
14166	$y'' - y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
14169	$y'' - 4y = 31$ i.c.	[[_2nd_order, _missing_x]]	✓
14182	$y'' + \alpha y = 0$	[[_2nd_order, _missing_x]]	✓
14572	$y'' + 2y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
14892	$y''y' = 1$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _non- linear], [_2nd_order, _re- ducible, _mu_poly_yn]]	✓
14911	$y''y' = 1$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _non- linear], [_2nd_order, _re- ducible, _mu_poly_yn]]	✓
14972	$y'' + 4y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
14973	$y'' - 4y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
14985	$y'' - 4y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
14993	$y'' - 25y = 0$	[[_2nd_order, _missing_x]]	✓
14995	$4y'' - y = 0$	[[_2nd_order, _missing_x]]	✓
15000	$y'' - 9y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
15001	$y'' - 9y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
15002	$y'' - 9y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
15015	$y'' + 25y = 0$	[[_2nd_order, _missing_x]]	✓
15020	$4y'' + y = 0$	[[_2nd_order, _missing_x]]	✓
15022	$y'' + 16y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
15023	$y'' + 16y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓

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Table 2.38 second order ode can be made integrable

*Continued from previous page*

#	ODE	CAS classification	Solved?
15091	$y'' - 9y = 36$ i.c.	[[_2nd_order, _missing_x]]	✓
15211	$y'' + 36y = 0$	[[_2nd_order, _missing_x]]	✓
15214	$y'' - 36y = 0$	[[_2nd_order, _missing_x]]	✓
15220	$y'' + 3y = 0$	[[_2nd_order, _missing_x]]	✓
15853	$y'' - y = 0$	[[_2nd_order, _missing_x]]	✓
15856	$y'' + 9y = 0$	[[_2nd_order, _missing_x]]	✓
15858	$y'' + 9y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
15863	$y'' + 16y = 0$	[[_2nd_order, _missing_x]]	✓
15882	$y'' = 0$	[[_2nd_order, _quadrature]]	✓
15889	$4y'' + 9y = 0$	[[_2nd_order, _missing_x]]	✓
15890	$y'' + 16y = 0$	[[_2nd_order, _missing_x]]	✓
15891	$y'' + 8y = 0$	[[_2nd_order, _missing_x]]	✓
15892	$y'' + 7y = 0$	[[_2nd_order, _missing_x]]	✓
15903	$y'' + 36y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
15904	$y'' + 100y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
15922	$y'' - 16y = 0$	[[_2nd_order, _missing_x]]	✓
15961	$y'' - y = 4$ i.c.	[[_2nd_order, _missing_x]]	✓
15984	$y'' + 4y = 1$	[[_2nd_order, _missing_x]]	✓
16267	$y'' + 16y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
16300	$9x'' + 4x = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
16301	$x'' + 64x = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
16302	$x'' + 100x = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
16303	$x'' + x = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
16304	$x'' + 4x = 0$ i.c.	[[_2nd_order, _missing_x]]	✓

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Table 2.38 second order ode can be made integrable

*Continued from previous page*

#	ODE	CAS classification	Solved?
16305	$x'' + 16x = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
16306	$x'' + 256x = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
16307	$x'' + 9x = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
16308	$10x'' + \frac{x}{10} = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
16587	$y'' + y = 0$	[[_2nd_order, _missing_x]]	✓
16625	$y'' = e^{2y}$ i.c.	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓
16628	$y'' - y = 0$	[[_2nd_order, _missing_x]]	✓
16665	$y'' + k^2y = k$	[[_2nd_order, _missing_x]]	✓
16688	$y'' + 9y = 9$	[[_2nd_order, _missing_x]]	✓
16785	$y'' - y = 1$	[[_2nd_order, _missing_x]]	✓
16857	$y'' + \lambda y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
16858	$y'' - y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
16862	$y'' - y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
16868	$y'' + \lambda^2y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
17243	$y'' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
17272	$4y'' - 9y = 0$	[[_2nd_order, _missing_x]]	✓
17281	$4y'' + 9y = 0$	[[_2nd_order, _missing_x]]	✓
17286	$y'' + 16y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
17294	$y'' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
17301	$4y'' - y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
17315	$y'' + 2y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
17317	$my'' + ky = 0$ i.c.	[[_2nd_order, _missing_x]]	✓

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Table 2.38 second order ode can be made integrable

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#	ODE	CAS classification	Solved?
17681	$y'' + y = 0$	[[_2nd_order, _missing_x]]	✓
17736	$y'' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
17737	$y'' - 4y = 0$	[[_2nd_order, _missing_x]]	✓
17865	$y'' - ky = 0$	[[_2nd_order, _missing_x]]	✓
17938	$y'' - y = 0$	[[_2nd_order, _missing_x]]	✓
17966	$y'' + 8y = 0$	[[_2nd_order, _missing_x]]	✓
17976	$y'' = 4y$	[[_2nd_order, _missing_x]]	✓
18198	$x'' + x = 0$	[[_2nd_order, _missing_x]]	✓
	<i>i.c.</i>		
18241	$\theta'' = -p^2\theta$	[[_2nd_order, _missing_x]]	✓
18244	$\phi'' = \frac{4\pi nc}{\sqrt{v_0^2 + \frac{2e(\phi - V_0)}{m}}}$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓
18256	$\theta'' - p^2\theta = 0$	[[_2nd_order, _missing_x]]	✓
18257	$y'' + y = 0$	[[_2nd_order, _missing_x]]	✓
18259	$r'' - a^2r = 0$	[[_2nd_order, _missing_x]]	✓
18275	$y'' = -m^2y$	[[_2nd_order, _missing_x]]	✓
18359	$ey'' = P(-y + a)$	[[_2nd_order, _missing_x]]	✓
18376	$y'' = -a^2y$	[[_2nd_order, _missing_x]]	✓
18402	$y'' - k^2y = 0$	[[_2nd_order, _missing_x]]	✓
18544	$y'' - m^2y = 0$	[[_2nd_order, _missing_x]]	✓

## 2.4.11 second order ode solved by an integrating factor

Table 2.39: second order ode solved by an integrating factor

#	ODE	CAS classification	Solved?
223	$y'' + 2y' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
224	$y'' - 10y' + 25y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
227	$x^2y'' - 2xy' + 2y = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
240	$4y'' + 4y' + y = 0$	[[_2nd_order, _missing_x]]	✓
241	$9y'' - 12y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
262	$x^2y'' - 2xy' + 2y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
275	$y'' + 6y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓
277	$4y'' - 12y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓
325	$4y'' + 4y' + y = 3x e^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
368	$y'' - 4y' + 4y = 2e^{2x}$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
377	$x^2y'' - 4xy' + 6y = x^3$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
379	$4x^2y'' - 4xy' + 3y = 8x^{4/3}$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
388	$x'' + 4x' + 4x = 10 \cos(3t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
815	$y'' + 2y' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
816	$y'' - 10y' + 25y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
819	$x^2y'' - 2xy' + 2y = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
829	$4y'' + 4y' + y = 0$	[[_2nd_order, _missing_x]]	✓
830	$9y'' - 12y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
849	$y'' + 6y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓

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Table 2.39 second order ode solved by an integrating factor

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#	ODE	CAS classification	Solved?
851	$4y'' - 12y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓
864	$x'' + 8x' + 16x = 0$	[[_2nd_order, _missing_x]]	✓
	<i>i.c.</i>		
872	$4y'' + 4y' + y = 3x e^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
894	$y'' - 4y' + 4y = 2e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓
903	$x^2y'' - 4xy' + 6y = x^3$	[[_2nd_order, _with_linear_symmetries]]	✓
905	$4x^2y'' - 4xy' + 3y = 8x^{4/3}$	[[_2nd_order, _with_linear_symmetries]]	✓
913	$x'' + 4x' + 4x = 10 \cos(3t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1294	$t^2y'' + 4ty' + 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
1297	$t^2y'' - 4ty' + 6y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, 'with_symmetry_[0,F(x)]]]	✓
1303	$y'' - 2y' + y = 0$	[[_2nd_order, _missing_x]]	✓
1304	$9y'' + 6y' + y = 0$	[[_2nd_order, _missing_x]]	✓
1306	$4y'' + 12y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓
1308	$y'' - 6y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓
1310	$16y'' + 24y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓
1311	$25y'' - 20y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
1313	$9y'' - 12y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
	<i>i.c.</i>		
1314	$y'' - 6y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓
	<i>i.c.</i>		
1316	$y'' + 4y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
	<i>i.c.</i>		
1317	$4y'' + 12y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓
	<i>i.c.</i>		
1318	$y'' - y' + \frac{y}{4} = 0$	[[_2nd_order, _missing_x]]	✓
	<i>i.c.</i>		
1335	$y'' + 2y' + y = 3e^{-t}$	[[_2nd_order, _with_linear_symmetries]]	✓

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Table 2.39 second order ode solved by an integrating factor

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#	ODE	CAS classification	Solved?
1336	$4y'' - 4y' + y = 16e^{\frac{t}{2}}$	[[_2nd_order, _with_linear_symmetries]]	✓
1339	$y'' + 4y' + 4y = \frac{e^{-2t}}{t^2}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1342	$y'' - 2y' + y = \frac{e^t}{t^2 + 1}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1351	$t^2y'' - 2ty' + 2y = 4t^2$	[[_2nd_order, _with_linear_symmetries]]	✓
1740	$y'' - 2y' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
1741	$y'' - 2y' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
1742	$(x^2 - 1)y'' + 4xy' + 2y = 0$ i.c.	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
1744	$y'' - 6y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓
1745	$y'' - 2ay' + a^2y = 0$	[[_2nd_order, _missing_x]]	✓
1754	$(x^2 - 4)y'' + 4xy' + 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
1809	$y'' - 2y' + y = 14x^{3/2}e^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1813	$4x^2y'' + (-8x^2 + 4x)y' + (4x^2 - 4x - 1)y = 4\sqrt{x}e^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1814	$y'' + 4xy' + (4x^2 + 2)y = 4e^{-x(x+2)}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1815	$x^2y'' - 4xy' + 6y = x^{5/2}$	[[_2nd_order, _with_linear_symmetries]]	✓
1835	$(x - 1)^2y'' - 2(x - 1)y' + 2y = (x - 1)^2$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
2367	$3y'' + 6y' + 3y = 0$	[[_2nd_order, _missing_x]]	✓
2387	$y'' - 6y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓
2388	$4y'' - 12y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓
2389	$9y'' + 6y' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
2390	$4y'' - 4y' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
2391	$y'' + 2y' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓

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Table 2.39 second order ode solved by an integrating factor

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#	ODE	CAS classification	Solved?
2392	$9y'' - 12y' + 4y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
2394	$y'' - 4ty' + (4t^2 - 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
2403	$y'' - 4y' + 4y = te^{2t}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2407	$y'' + 4y' + 4y = t^{5/2}e^{-2t}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2434	$(t - 1)^2 y'' - 2(t - 1)y' + 2y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]]	✓
2567	$y'' - 6y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓
2568	$4y'' - 12y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓
2569	$9y'' + 6y' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
2570	$4y'' - 4y' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
2572	$9y'' - 12y' + 4y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
2584	$y'' - 4y' + 4y = te^{2t}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2588	$y'' + 4y' + 4y = t^{5/2}e^{-2t}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2595	$y'' + 4y' + 4y = te^{xt}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2598	$y'' + 2y' + y = e^{-t}$	[[_2nd_order, _with_linear_symmetries]]	✓
2601	$y'' - 6y' + 9y = (3t^7 - 5t^4)e^{3t}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2610	$y'' - 6y' + 9y = t^{3/2}e^{3t}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2630	$(t - 1)^2 y'' - 2(t - 1)y' + 2y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]]	✓
3088	$y'' - 2y' + y = 0$	[[_2nd_order, _missing_x]]	✓
3128	$y'' + 4y' + 4y = x^3e^{2x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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Table 2.39 second order ode solved by an integrating factor

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#	ODE	CAS classification	Solved?
3131	$y'' + 2ny' + n^2y = 5 \cos(6x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3146	$y'' + 4y' + 4y = e^x$	[[_2nd_order, _with_linear_symmetries]]	✓
3148	$y'' - 2y' + y = e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓
3160	$y'' - 2y' + y = \frac{e^x}{(1-x)^2}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3168	$4y'' - 4y' + y = e^{\frac{x}{2}} \ln(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3170	$y'' - 6y' + 9y = e^{3x}$	[[_2nd_order, _with_linear_symmetries]]	✓
3175	$y'' + 4y' + 4y = \frac{e^x}{2} + \frac{e^{-x}}{2}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3178	$y'' + 4y' + 4y = \frac{e^{3x}}{2} - \frac{e^{-3x}}{2}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3185	$y'' + 2n^2y' + n^4y = \sin(kx)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3230	$x^2y'' - 2xy' + 2y = 4x + \sin(\ln(x))$	[[_2nd_order, _with_linear_symmetries]]	✓
3487	<i>i.c.</i> $f'' + 6f' + 9f = e^{-t}$	[[_2nd_order, _with_linear_symmetries]]	✓
3490	$y'' + 2y' + y = 4e^{-x}$	[[_2nd_order, _with_linear_symmetries]]	✓
3497	$y'' - 2y' + y = 2xe^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3569	$x^2y'' - 4xy' + 6y = x^4 \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3571	$y'' - 2ay' + a^2y = 0$	[[_2nd_order, _missing_x]]	✓
3574	$y'' + 6y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓
3717	$y'' + 4y' + 4y = 5xe^{-2x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3735	$y'' + 2y' + y = 50 \sin(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3737	$y'' + 4y' + 4y = 169 \sin(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3745	$y'' - 6y' + 9y = 4e^{3x} \ln(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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Table 2.39 second order ode solved by an integrating factor

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#	ODE	CAS classification	Solved?
3746	$y'' + 4y' + 4y = \frac{e^{-2x}}{x^2}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3748	$y'' + 6y' + 9y = \frac{2e^{-3x}}{x^2 + 1}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3752	$y'' - 10y' + 25y = \frac{2e^{5x}}{x^2 + 4}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3757	$y'' - 2my' + m^2y = \frac{e^{mx}}{x^2 + 1}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3758	$y'' - 2y' + y = \frac{4e^x \ln(x)}{x^3}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3759	$y'' + 2y' + y = \frac{e^{-x}}{\sqrt{-x^2 + 4}}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3761	$y'' + 4y' + 4y = \frac{4e^{-2x}}{x^2 + 1} + 2x^2 - 1$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3762	$y'' + 4y' + 4y = 15e^{-2x} \ln(x) + 25 \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3771	$y'' - 4y' + 4y = 5xe^{2x}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3773	$x^2y'' + 4xy' + 2y = 4 \ln(x)$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
3774	$x^2y'' + 4xy' + 2y = \cos(x)$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
3777	$x^2y'' - 4xy' + 6y = x^4 \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3778	$x^2y'' + 6xy' + 6y = 4e^{2x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3797	$y'' + 6y' + 9y = 4e^{-3x}$	[[_2nd_order, _with_linear_symmetries]]	✓
3798	$y'' + 6y' + 9y = 4e^{-2x}$	[[_2nd_order, _with_linear_symmetries]]	✓
3803	$y'' + 2y' + y = 2xe^{-x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4120	$y'' + 6y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓
4121	$y'' + 6y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓
4132	$y'' - 6y' + 9y = e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓

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Table 2.39 second order ode solved by an integrating factor

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#	ODE	CAS classification	Solved?
4140	$x^2 y'' - 2xy' + 2y = x^2 + 2$	[[_2nd_order, _with_linear_symmetries]]	✓
4141 i.c.	$y'' + 2ny' + n^2y = A \cos(xp)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4156	$y'' - 4y' + 4y = x^3 e^{2x} + x e^{2x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4158	$y'' - 6y' + 9y = e^x \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4163 i.c.	$25y'' - 30y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓
4164 i.c.	$9y'' - 6y' + y = (4x^2 + 24x + 18) e^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4479	$y'' - 4y' + 4y = (x + 1) e^x + 2 e^{2x} + 3 e^{3x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4488	$y'' - 4y' + 4y = 4x e^{2x} \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4499	$y'' - 2y' + y = \frac{e^x}{x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4505	$y'' + 2y' + y = 15 e^{-x} \sqrt{x + 1}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4507	$y'' - 2y' + y = \frac{e^{2x}}{(1 + e^x)^2}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
5928	$y'' + 4y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
5931	$y'' - 2ay' + a^2y = 0$	[[_2nd_order, _missing_x]]	✓
5946 i.c.	$y'' + 4y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
5963	$y'' + 2y' + y = x^2 e^{-x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
5981	$y'' + 2y' + y = x^2 e^{-x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
5983	$y'' + 2y' + y = e^{-x} \ln(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
5986	$y'' + 2y' + y = \frac{e^{-x}}{x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
5988	$y'' - 2y' + y = e^x \ln(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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Table 2.39 second order ode solved by an integrating factor

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#	ODE	CAS classification	Solved?
5991	$y'' - \frac{2y'}{x} + \frac{2y}{x^2} = x \ln(x)$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
6026	$x^2 y'' - 2xy' + 2y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
6136	$y'' - 4y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
6152	$y'' - 4y' + 4y = 16$	[[_2nd_order, _missing_x]]	✓
6156	$y'' + 6y' + 9y = 12e^{-x}$	[[_2nd_order, _with_linear_symmetries]]	✓
6159	$y'' + 2y' + y = 2e^{-x}$	[[_2nd_order, _with_linear_symmetries]]	✓
6160	$y'' - 6y' + 9y = 6e^{3x}$	[[_2nd_order, _with_linear_symmetries]]	✓
6163	$y'' - 2y' + y = 2 \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6174	$y'' - 6y' + 9y = 12xe^{3x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6181	$y'' + 2y' + y = 4e^x + (1-x)(-1 + e^{2x})$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6211	$r'' - 6r' + 9r = 0$	[[_2nd_order, _missing_x]]	✓
6222	$y'' - 4y' + 4y = 6e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓
6247	$y'' - 2y' + y = 0$	[[_2nd_order, _missing_x]]	✓
6255	$y'' - 4xy' + (4x^2 - 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
6396	$y'' - 2y' + y = 2 \cos(x)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6482	$y'' + 2y' + y = e^{-2x}$	[[_2nd_order, _with_linear_symmetries]]	✓
6484	$y'' - 2y' + y = 4 \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6489	$y'' - 6y' + 9y = 54x + 18$	[[_2nd_order, _with_linear_symmetries]]	✓
6491	$y'' + 2y' + y = 4 \sinh(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6494	$y'' + 4y' + 4y = 2 \cos(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
6519	$y'' - 2y' + y = x^2 - 1$	[[_2nd_order, _with_linear_symmetries]]	✓
6520	$y'' - 2y' + y = 4e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓
6521	$y'' - 2y' + y = 4\cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6522	$y'' - 2y' + y = 3e^x$	[[_2nd_order, _with_linear_symmetries]]	✓
6523	$y'' - 2y' + y = xe^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6530	$y'' - 2y' + y = \frac{e^x}{x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6533	$t^2N'' - 2tN' + 2N = t\ln(t)$	[[_2nd_order, _with_linear_symmetries]]	✓
6536	$y'' - 2y' + y = \frac{e^x}{x^5}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6574	$y'' - 2y' + y = 0$	[[_2nd_order, _missing_x]]	✓
6704	$y'' + 6y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓
6717	$y'' - 6y' + 9y = e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓
6738	$y'' - 4y' + 4y = e^x + xe^{2x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6747	$y'' - 4y' + 4y = \frac{e^{2x}}{x^2}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6751	$x^2y'' - 2xy' + 2y = \ln(x)^2 - \ln(x^2)$	[[_2nd_order, _with_linear_symmetries]]	✓
7194	$s'' + 2s' + s = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
7212	$y'' + 6y' + 9y = 50e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓
7213	$y'' - 4y' + 4y = 50e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓
7333	$y'' - 2iy' - y = 0$	[[_2nd_order, _missing_x]]	✓
7340	$y'' - 2iy' - y = e^{ix} - 2e^{-ix}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7614	$y'' + 2y' + y = 0$	[[_2nd_order, _missing_x]]	✓
7617	$y'' - 4y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓

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#	ODE	CAS classification	Solved?
7620	$4y'' - 12y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓
7623	$4y'' + 20y' + 25y = 0$	[[_2nd_order, _missing_x]]	✓
7633	$y'' - 6y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓
	<i>i.c.</i>		
7648	$y'' + 10y' + 25y = 14e^{-5x}$	[[_2nd_order, _with_linear_symmetries]]	✓
7654	$y'' - 2y' + y = 6e^x$	[[_2nd_order, _with_linear_symmetries]]	✓
7662	$y'' + 2y' + y = e^{-x} \ln(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7674	$y'' - 2y' + y = 2x$	[[_2nd_order, _with_linear_symmetries]]	✓
7680	$x^2y'' - 2xy' + 2y = xe^{-x}$	[[_2nd_order, _with_linear_symmetries]]	✓
7717	$y'' + 6y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓
7736	$y'' + 4y' + 4y = x \ln(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7743	$x^2y'' - 2xy' + 2y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
	<i>i.c.</i>		
8206	$y'' - 6y' + 9y = e^x$	[[_2nd_order, _with_linear_symmetries]]	✓
8428	$y'' + 2y' + y = 0$	[[_2nd_order, _missing_x]]	✓
8639	$y'' + 2xy' + (x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8640	$y'' + 2 \cot(x)y' - y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8642	$4x^2y'' + (-8x^2 + 4x)y' + (4x^2 - 4x - 1)y = 4\sqrt{x}e^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8845	$x^2y'' - 4xy' + 6y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
10732	$y'' + 4xy' + (4x^2 + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10735	$y'' - 4xy' + (4x^2 - 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
10856	$x^2 y'' - 2xy' + 2y - x^5 \ln(x) = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10866	$x^2 y'' - 4xy' + 6y - x^4 + x^2 = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
10911	$(x^2 + 1) y'' + 4xy' + 2y - 2 \cos(x) + 2x = 0$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
10962	$4x^2 y'' - 4x(2x - 1) y' + (4x^2 - 4x - 1) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
11020	$y'' = \frac{2(ax + 2b) y'}{x(ax + b)} - \frac{(2ax + 6b) y}{(ax + b)x^2}$	[[_2nd_order, _with_linear_symmetries]]	✓
11046	$y'' = -\frac{2xy'}{x^2 + 1} - \frac{y}{(x^2 + 1)^2}$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, ' _with_symmetry_[0,F(x)]']]]	✓
11084	$y'' = -\frac{(2x^2 + 1) y'}{x^3} - \frac{(-2x^2 + 1) y}{4x^6}$	[[_2nd_order, _with_linear_symmetries]]	✓
12222	$y'' + 2a x^n y' + a(a x^{2n} + n x^{n-1}) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12453	$y'' + 2a e^{\lambda x} y' + a e^{\lambda x} (a e^{\lambda x} + \lambda) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12608	$y'' - 2y' + y = \frac{e^x}{(1-x)^2}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12616	$y'' - 2y' + y = 2x e^{2x} - \sin(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12618	$y'' + 2y' + y = 3e^{2x} - \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12630	$y'' + 2y' + y = 2x^3 - x e^{3x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12677	$(x-1)^2 y'' + 4(x-1) y' + 2y = \cos(x)$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
12788	$x'' - 4x' + 4x = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
12790	$\frac{x''}{2} + x' + \frac{x}{2} = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
12792	$x'' - 4x' + 4x = 0$ i.c.	[[_2nd_order, _missing_x]]	✓

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#	ODE	CAS classification	Solved?
12794	$\frac{x''}{2} + x' + \frac{x}{2} = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
12833	$tx'' + 4x' + \frac{2x}{t} = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
12844	$x'' - 2x' + x = \frac{e^t}{2t}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12925	$(x^2 + 1)y'' + 4xy' + 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
12935	$y'' - 4y' + 4y = -8 \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13069	$y'' - 2y' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
13070	$x^2y'' - 2xy' + 2y = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
13089	$y'' - 8y' + 16y = 0$	[[_2nd_order, _missing_x]]	✓
13090	$4y'' + 4y' + y = 0$	[[_2nd_order, _missing_x]]	✓
13111	$y'' + 6y' + 9y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
13112	$4y'' - 12y' + 9y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
13113	$y'' + 4y' + 4y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
13114	$9y'' - 6y' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
13155	$y'' + 8y' + 16y = 8e^{-2x}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
13156	$y'' + 6y' + 9y = 27e^{-6x}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
13161	$y'' - 2y' + y = 2xe^{2x} + 6e^x$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13170	$y'' - 6y' + 9y = x^4e^x + x^3e^{2x} + x^2e^{3x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13189	$y'' + 6y' + 9y = \frac{e^{-3x}}{x^3}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
13190	$y'' - 2y' + y = x e^x \ln(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13196	$y'' - 2y' + y = e^x \arcsin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13198	$y'' - 2y' + y = x \ln(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13200	$(x+1)^2 y'' - 2(x+1)y' + 2y = 1$	[[_2nd_order, _with_linear_symmetries]]	✓
13209	$4x^2 y'' - 4xy' + 3y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
13220	$x^2 y'' - 4xy' + 6y = 4x - 6$	[[_2nd_order, _with_linear_symmetries]]	✓
13222	$x^2 y'' + 4xy' + 2y = 4 \ln(x)$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
13227 i.c.	$x^2 y'' - 4xy' + 6y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
13427 i.c.	$y'' - 4y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
13434 i.c.	$y'' + 2y' + y = 0$	[[_2nd_order, _missing_x]]	✓
13439 i.c.	$y'' + 4y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
13445	$x'' + 2x' + x = e^{-t}$	[[_2nd_order, _with_linear_symmetries]]	✓
13451	$x'' + 4x' + 4x = e^{2t}$	[[_2nd_order, _with_linear_symmetries]]	✓
13472 i.c.	$x^2 y'' - 4xy' + 6y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
13580	$x^2 y'' - 4xy' + 6y = 2$	[[_2nd_order, _with_linear_symmetries]]	✓
13583	$x'' - 4x' + 4x = e^t + e^{2t} + 1$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13599	$y'' + 2y' + y = \sinh(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
13611	$x'' + 10x' + 25x = 2^t + t e^{-5t}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13673	$y'' + 4xy' + (4x^2 + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
13680	$x \ln(x) y'' + 2y' - \frac{y}{x} = 1$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
13768	$y'' + 2y' + y = 1$	[[_2nd_order, _missing_x]]	✓
13808	$y'' - 2y' + y = x^{3/2} e^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13835	$y'' - 2ky' + k^2y = e^x$	[[_2nd_order, _with_linear_symmetries]]	✓
13917	$y'' - 4y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
13920	$4y'' - 12y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓
13934	$y'' - 2ay' + a^2y = e^x$	[[_2nd_order, _with_linear_symmetries]]	✓
14000	$y'' + 2y' + y = 0$	[[_2nd_order, _missing_x]]	✓
14021 i.c.	$x^2 y'' - 4xy' + 6y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]]']]	✓
14022 i.c.	$x^2 y'' - 4xy' + 6y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]]']]	✓
14023 i.c.	$x^2 y'' - 4xy' + 6y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]]']]	✓
14024 i.c.	$x^2 y'' - 4xy' + 6y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]]']]	✓
14025 i.c.	$x^2 y'' - 4xy' + 6y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]]']]	✓
14571 i.c.	$y'' + 2y' + y = 0$	[[_2nd_order, _missing_x]]	✓
14591	$y'' + 2y' + y = e^{-t}$	[[_2nd_order, _with_linear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
14622	$y'' + 2y' + y = \cos(3t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
14626 i.c.	$y'' + 2y' + y = 2 \cos(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
14975 i.c.	$y'' - 4y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
14976 i.c.	$x^2y'' - 4xy' + 6y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]]]	✓
14977 i.c.	$4x^2y'' + 4xy' - y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]]]	✓
14980 i.c.	$(x+1)^2y'' - 2(x+1)y' + 2y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]]]	✓
14981	$x^2y'' - 4xy' + 6y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]]]	✓
15003	$y'' - 10y' + 25y = 0$	[[_2nd_order, _missing_x]]	✓
15004	$y'' + 2y' + y = 0$	[[_2nd_order, _missing_x]]	✓
15005	$4y'' - 4y' + y = 0$	[[_2nd_order, _missing_x]]	✓
15006	$25y'' - 10y' + y = 0$	[[_2nd_order, _missing_x]]	✓
15007	$16y'' - 24y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓
15008	$9y'' + 12y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
15009 i.c.	$y'' - 8y' + 16y = 0$	[[_2nd_order, _missing_x]]	✓
15010 i.c.	$y'' - 8y' + 16y = 0$	[[_2nd_order, _missing_x]]	✓
15011 i.c.	$y'' - 8y' + 16y = 0$	[[_2nd_order, _missing_x]]	✓
15012 i.c.	$4y'' + 4y' + y = 0$	[[_2nd_order, _missing_x]]	✓
15013 i.c.	$4y'' + 4y' + y = 0$	[[_2nd_order, _missing_x]]	✓

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#	ODE	CAS classification	Solved?
15014	$4y'' + 4y' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
15074	$4x^2y'' + 4xy' - y = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
15094	$y'' + 6y' + 9y = 169 \sin(2x)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15095	$x^2y'' - 4xy' + 6y = 10x + 12$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
15101	$x^2y'' - 4xy' + 6y = 1$	[[_2nd_order, _with_linear_symmetries]]	✓
15102	$x^2y'' - 4xy' + 6y = x$	[[_2nd_order, _with_linear_symmetries]]	✓
15103	$x^2y'' - 4xy' + 6y = 22x + 24$	[[_2nd_order, _with_linear_symmetries]]	✓
15109	$y'' - 6y' + 9y = 27 e^{6x}$	[[_2nd_order, _with_linear_symmetries]]	✓
15114	$y'' - 6y' + 9y = 25 \sin(6x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15120	$y'' - 6y' + 9y = 18x^2 + 3x + 4$	[[_2nd_order, _with_linear_symmetries]]	✓
15124	$y'' - 6y' + 9y = e^{2x} \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15127	$y'' - 2y' + y = (-6x - 8) \cos(2x) + (8x - 11) \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15128	$y'' - 2y' + y = (12x - 4) e^{-5x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15134	$y'' - 6y' + 9y = 10 e^{3x}$	[[_2nd_order, _with_linear_symmetries]]	✓
15137	$y'' - 10y' + 25y = 6 e^{5x}$	[[_2nd_order, _with_linear_symmetries]]	✓
15138	$y'' - 10y' + 25y = 6 e^{-5x}$	[[_2nd_order, _with_linear_symmetries]]	✓
15161	$y'' - 10y' + 25y = 3x^2 e^{5x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15162	$y'' - 10y' + 25y = 3x^4$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15177	$y'' - 6y' + 9y = 27 e^{6x} + 25 \sin(6x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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Table 2.39 second order ode solved by an integrating factor

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#	ODE	CAS classification	Solved?
15189	$x^2 y'' - 2xy' + 2y = 3\sqrt{x}$	[[_2nd_order, _with_linear_symmetries]]	✓
15193	$y'' - 4y' + 4y = (24x^2 + 2) e^{2x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15194	$y'' + 4y' + 4y = \frac{e^{-2x}}{x^2 + 1}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15212	$y'' - 12y' + 36y = 0$	[[_2nd_order, _missing_x]]	✓
15219	$y'' + 6y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓
15231	$16y'' - 8y' + y = 0$	[[_2nd_order, _missing_x]]	✓
15238	$y'' + 20y' + 100y = 0$	[[_2nd_order, _missing_x]]	✓
15242	$y'' - 12y' + 36y = 25 \sin(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15244	$y'' - 12y' + 36y = 81 e^{3x}$	[[_2nd_order, _with_linear_symmetries]]	✓
15246	$y'' - 12y' + 36y = 3x e^{6x} - 2e^{6x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15249	$y'' + 6y' + 9y = 10 e^{-3x}$	[[_2nd_order, _with_linear_symmetries]]	✓
15251	$y'' + 6y' + 9y = 2 \cos(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15255	$4y'' - 12y' + 9y = x e^{\frac{3x}{2}}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15476	$x^2 y'' - 12xy' + 42y = 0$	[[_Emden, _Fowler]]	✓
15502	$t^2 y'' - 12ty' + 42y = 0$	[[_Emden, _Fowler]]	✓
15854	$y'' + 2y' + y = 0$	[[_2nd_order, _missing_x]]	✓
15895	$4y'' + 4y' + y = 0$	[[_2nd_order, _missing_x]]	✓
15896	$y'' - 6y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓
15905	$y'' - 2y' + y = 0$	[[_2nd_order, _missing_x]]	✓
15906	$y'' + 4y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
15914	$9y'' + 6y' + y = 0$	[[_2nd_order, _missing_x]]	✓
15931	$y'' - 2y' + y = t^2$	[[_2nd_order, _with_linear_symmetries]]	✓

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Table 2.39 second order ode solved by an integrating factor

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#	ODE	CAS classification	Solved?
15951	$y'' + 4y' + 4y = -32t^2 \cos(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15965	$y'' + 8y' + 16y = 4$ i.c.	[[_2nd_order, _missing_x]]	✓
16003	$y'' - 2y' + y = \frac{e^t}{t}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16004	$y'' - 4y' + 4y = \frac{e^{2t}}{t^2}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16005	$y'' + 8y' + 16y = \frac{e^{-4t}}{t^4}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16006	$y'' + 6y' + 9y = \frac{e^{-3t}}{t}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16007	$y'' + 6y' + 9y = e^{-3t} \ln(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16009	$y'' + 4y' + 4y = e^{-2t} \sqrt{-t^2 + 1}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16010	$y'' - 2y' + y = e^t \sqrt{-t^2 + 1}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16011	$y'' - 10y' + 25y = e^{5t} \ln(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16012	$y'' - 4y' + 4y = e^{2t} \arctan(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16013	$y'' + 8y' + 16y = \frac{e^{-4t}}{t^2 + 1}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16033	$4y'' + 4y' + y = e^{-\frac{t}{2}}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
16155	$x^2 y'' + 4xy' + 2y = \ln(x)$ i.c.	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
16159	$x^2 y'' + 4xy' + 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
16172	$x^2 y'' + 4xy' + 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
16241	$y'' + 2y' + y = 0$	[[_2nd_order, _missing_x]]	✓
16275	$y'' - 8y' + 16y = \frac{e^{4t}}{t^3}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16276	$y'' - 8y' + 16y = \frac{e^{4t}}{t^3}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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Table 2.39 second order ode solved by an integrating factor

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#	ODE	CAS classification	Solved?
16277	$y'' - 2y' + y = e^t \ln(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16278	$y'' - 2y' + y = e^t \ln(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16281	$y'' + 4y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
16284	$x^2y'' - 4xy' + 6y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, _with_symmetry_[0,F(x)]]]	✓
16337	$x'' + 6x' + 9x = 0$	[[_2nd_order, _missing_x]]	✓
16631	$y'' + 2y' + y = 0$	[[_2nd_order, _missing_x]]	✓
16654	$y'' - 8y' + 16y = (1 - x)e^{4x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16655	$y'' - 10y' + 25y = e^{5x}$	[[_2nd_order, _with_linear_symmetries]]	✓
16686	$y'' + 2y' + y = -2$	[[_2nd_order, _missing_x]]	✓
16694	$y'' - 4y' + 4y = x^2$	[[_2nd_order, _with_linear_symmetries]]	✓
16696	$y'' - 2ky' + k^2y = e^x$	[[_2nd_order, _with_linear_symmetries]]	✓
16697	$y'' + 4y' + 4y = 8e^{-2x}$	[[_2nd_order, _with_linear_symmetries]]	✓
16706	$y'' - 2my' + m^2y = \sin(nx)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16718	$y'' - 2y' + y = x^3$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16721	$y'' + 2y' + y = x^2e^{-x} \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16736	$y'' - 2y' + y = 2 + e^x \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16754	$y'' - 4y' + 4y = 4x + \sin(x) + \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16755	$y'' + 2y' + y = 1 + 2 \cos(x) + \cos(2x) - \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16757	$y'' + 6y' + 9y = 18e^{-3x} + 8 \sin(x) + 6 \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16766	$y'' - 6y' + 9y = 9x^2 - 12x + 2$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓

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Table 2.39 second order ode solved by an integrating factor

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#	ODE	CAS classification	Solved?
16768	$y'' - 4y' + 4y = 2e^{2x}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
16771	$y'' + 6y' + 9y = 10 \sin(x)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16776	$y'' - 6y' + 9y = 16e^{-x} + 9x - 6$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
16808	$x^2y'' + 4xy' + 2y = 2 \ln(x)^2 + 12x$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
16828	$y'' - 2y' + y = \frac{e^x}{x^2 + 1}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16848	$x'' + 2x' + x = 0$	[[_2nd_order, _missing_x]]	✓
16901	$y'' - 4y' + 4y = \pi^2 - x^2$	[[_2nd_order, _with_linear_symmetries]]	✓
16903	$y'' - 4y' + 4y = \arcsin(\sin(x))$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17244	$y'' - 2y' + y = 0$	[[_2nd_order, _missing_x]]	✓
17261	$y'' - 4y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
17262	$9y'' + 6y' + y = 0$	[[_2nd_order, _missing_x]]	✓
17265	$4y'' - 4y' + y = 0$	[[_2nd_order, _missing_x]]	✓
17268	$9y'' + 12y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
17273	$25y'' - 20y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
17279	$y'' + 4y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
17280	$9y'' - 24y' + 16y = 0$	[[_2nd_order, _missing_x]]	✓
17287	$9y'' - 12y' + 4y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
17291	$y'' + 6y' + 9y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
17295	$y'' + 4y' + 4y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
17304	$x^2y'' + 4xy' + 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
17323	$y'' + 2y' + y = 2e^{-t}$	[[_2nd_order, _with_linear_symmetries]]	✓
17326	$y'' + 2y' + y = 3e^{-t}$	[[_2nd_order, _with_linear_symmetries]]	✓

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Table 2.39 second order ode solved by an integrating factor

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#	ODE	CAS classification	Solved?
17327	$4y'' - 4y' + y = 16e^{\frac{t}{2}}$	[[_2nd_order, _with_linear_symmetries]]	✓
17335	$y'' - 2y' + y = te^t + 4$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17343	$y'' - 4y' + 4y = 2t^2 + 4te^{2t} + t \sin(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17350	$x^2y'' - 2xy' + 2y = 3x^2 + 2 \ln(x)$	[[_2nd_order, _with_linear_symmetries]]	✓
17365	$y'' + 2y' + y = 3e^{-t}$	[[_2nd_order, _with_linear_symmetries]]	✓
17366	$4y'' - 4y' + y = 16e^{\frac{t}{2}}$	[[_2nd_order, _with_linear_symmetries]]	✓
17369	$y'' + 4y' + 4y = \frac{e^{2t}}{t^2}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17372	$y'' - 2y' + y = \frac{e^t}{t^2 + 1}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17383	$t^2y'' - 2ty' + 2y = 4t^2$	[[_2nd_order, _with_linear_symmetries]]	✓
17677	$x^2y'' - 2xy' + 2y = 2x^3$	[[_2nd_order, _with_linear_symmetries]]	✓
17692	$y'' - 4y' + 4y = x^2$	[[_2nd_order, _with_linear_symmetries]]	✓
17703	$x^2y'' - 4xy' + 6y = x$	[[_2nd_order, _with_linear_symmetries]]	✓
17939	$x^2y'' - 2xy' + 2y = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _linear, _with_symmetry_[0,F(x)]]]	✓
17941	$y'' - 4y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
17947	$y'' + 2xy' + (x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
17965	$y'' + 2y' + y = 0$	[[_2nd_order, _missing_x]]	✓
17968	$y'' - 4y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
17971	$4y'' - 12y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓
17974	$4y'' + 20y' + 25y = 0$	[[_2nd_order, _missing_x]]	✓
17979	$16y'' - 8y' + y = 0$	[[_2nd_order, _missing_x]]	✓

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Table 2.39 second order ode solved by an integrating factor

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#	ODE	CAS classification	Solved?
17984	$y'' - 6y' + 9y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
18001	$y'' + 10y' + 25y = 14e^{-5x}$	[[_2nd_order, _with_linear_symmetries]]	✓
18007	$y'' - 2y' + y = 6e^x$	[[_2nd_order, _with_linear_symmetries]]	✓
18013	$y'' - 2y' + y = 2x$	[[_2nd_order, _with_linear_symmetries]]	✓
18016	$y'' + 2y' + y = e^{-x} \ln(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18032	$x^2y'' - 2xy' + 2y = xe^{-x}$	[[_2nd_order, _with_linear_symmetries]]	✓
18058	$y'' + 4y' + 4y = 10x^3e^{-2x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18059	$y'' - 2y' + y = e^x$	[[_2nd_order, _with_linear_symmetries]]	✓
18073	$y'' + 2y' + y = 2x^2e^{-2x} + 3e^{2x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18082	$y'' - 4y' + 4y = e^{2x} \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18189	$t^2x'' - 6tx' + 12x = 0$	[[_Emden, _Fowler]]	✓
18192	$t^2x'' - 2tx' + 2x = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, 'with_symmetry_[0,F(x)]]]	✓
18194	$x'' - 4x' + 4x = 0$	[[_2nd_order, _missing_x]]	✓
18199	$x'' + 2x' + x = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
18294	$v'' + \frac{2xv'}{x^2+1} + \frac{v}{(x^2+1)^2} = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, 'with_symmetry_[0,F(x)]]]	✓
18346	$y'' - 2y' + y = e^x$	[[_2nd_order, _with_linear_symmetries]]	✓
18347	$y'' - 2y' + y = x$	[[_2nd_order, _with_linear_symmetries]]	✓
18367	$(x^2 - 1)y'' + 4xy' + 2y = 2x$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓

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Table 2.39 second order ode solved by an integrating factor

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#	ODE	CAS classification	Solved?
18368	$(x^2 + 1)y'' + 4xy' + 2y = x$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
18371	$(3x^2 + x)y'' + 2(1 + 6x)y' + 6y = \sin(x)$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
18400	$y'' - \frac{2y'}{x} + \frac{2y}{x^2} = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
18554	$y'' + 2y' + y = 2e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓
18558	$y'' - 2y' + y = 3e^{\frac{5x}{2}}$	[[_2nd_order, _with_linear_symmetries]]	✓
18582	$y'' - 2y' + y = x^2e^{3x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18610	$x^2y'' + 4xy' + 2y = e^x$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
18612	$(x + a)^2 y'' - 4(x + a)y' + 6y = x$	[[_2nd_order, _with_linear_symmetries]]	✓

## 2.4.12 second order airy

Table 2.40: second order airy

#	ODE	CAS classification	Solved?
3805	$y'' + xy = \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8494	$y'' - y' - xy - x = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8495	$y'' - y' - xy - x^2 = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8496	$y'' - y' - xy - x^2 - 1 = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8497	$y'' - y' - xy - x^2 - 1 = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8498	$y'' - 2y' - xy - x^2 - 2 = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8499	$y'' - 4y' - xy - x^2 - 4 = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8500	$y'' - y' - xy - x^3 + 1 = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8501	$y'' - 2y' - xy - x^3 - x^2 = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8502	$y'' - y' - xy - x^3 + 2 = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8503	$y'' - 2y' - xy - x^3 + 2 = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8504	$y'' - 4y' - xy - x^3 + 2 = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8505	$y'' - 6y' - xy - x^3 + 2 = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8506	$y'' - 8y' - xy - x^3 + 2 = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8507	$y'' - y' - xy - x^4 + 3 = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8508	$y'' - y' - xy - x^3 = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8509	$y'' - xy - x^3 + 2 = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8510	$y'' - xy - x^6 + 64 = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8511	$y'' - xy - x = 0$	[[_2nd_order, _with_linear_symmetries]]	✓

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Table 2.40 second order airy  
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#	ODE	CAS classification	Solved?
8512	$y'' - xy - x^2 = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8513	$y'' - xy - x^3 = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8514	$y'' - xy - x^6 - x^3 + 42 = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
10696	$y'' + (ax + b)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10768	$4y'' + 9xy = 0$	[[_Emden, _Fowler]]	✓
12178	$y'' - (ax + b)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12188	$y'' + ay' + (bx + c)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
13353	$x'' + (t + 1)x = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
17221	$y'' + ty = 0$	[[_Emden, _Fowler]]	✓
17226	$y'' - ty = \frac{1}{\pi}$	unknown	✓

## 2.4.13 second order change of variable on x method 2

Table 2.41: second order change of variable on x method 2

#	ODE	CAS classification	Solved?
227	<i>i.c.</i> $x^2y'' - 2xy' + 2y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
228	<i>i.c.</i> $x^2y'' + 2xy' - 6y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
229	<i>i.c.</i> $x^2y'' - xy' + y = 0$	[[_Emden, _Fowler]]	✓
230	<i>i.c.</i> $x^2y'' + xy' + y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
244	$x^2y'' + xy' - y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
245	$x^2y'' + 2xy' - 12y = 0$	[[_Emden, _Fowler]]	✓
246	$4x^2y'' + 8xy' - 3y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
248	$x^2y'' - 3xy' + 4y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
262	$x^2y'' - 2xy' + 2y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
315	$x^2y'' + xy' + 9y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
316	$x^2y'' + 7xy' + 25y = 0$	[[_Emden, _Fowler]]	✓
376	$x^2y'' + xy' - y = 72x^5$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
377	$x^2y'' - 4xy' + 6y = x^3$	[[_2nd_order, _with_linear_symmetries]]	✓
378	$x^2y'' - 3xy' + 4y = x^4$	[[_2nd_order, _with_linear_symmetries]]	✓

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Table 2.41 second order change of variable on x method 2

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#	ODE	CAS classification	Solved?
379	$4x^2y'' - 4xy' + 3y = 8x^{4/3}$	[[_2nd_order, _with_linear_symmetries]]	✓
380	$x^2y'' + xy' + y = \ln(x)$	[[_2nd_order, _with_linear_symmetries]]	✓
516	$xy'' - y' + 36x^3y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
819	<i>i.c.</i> $x^2y'' - 2xy' + 2y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
820	<i>i.c.</i> $x^2y'' + 2xy' - 6y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
821	<i>i.c.</i> $x^2y'' - xy' + y = 0$	[[_Emden, _Fowler]]	✓
822	<i>i.c.</i> $x^2y'' + xy' + y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
833	$x^2y'' + xy' - y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
834	$x^2y'' + 2xy' - 12y = 0$	[[_Emden, _Fowler]]	✓
835	$4x^2y'' + 8xy' - 3y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
837	$x^2y'' - 3xy' + 4y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
860	$x^2y'' + xy' + 9y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
861	$x^2y'' + 7xy' + 25y = 0$	[[_Emden, _Fowler]]	✓
902	$x^2y'' + xy' - y = 72x^5$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓

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Table 2.41 second order change of variable on x method 2

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#	ODE	CAS classification	Solved?
903	$x^2y'' - 4xy' + 6y = x^3$	[[_2nd_order, _with_linear_symmetries]]	✓
904	$x^2y'' - 3xy' + 4y = x^4$	[[_2nd_order, _with_linear_symmetries]]	✓
905	$4x^2y'' - 4xy' + 3y = 8x^{4/3}$	[[_2nd_order, _with_linear_symmetries]]	✓
906	$x^2y'' + xy' + y = \ln(x)$	[[_2nd_order, _with_linear_symmetries]]	✓
1293	$t^2y'' + ty' + y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
1294	$t^2y'' + 4ty' + 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
1295	$t^2y'' + 3ty' + \frac{5y}{4} = 0$	[[_Emden, _Fowler]]	✓
1296	$t^2y'' - 4ty' - 6y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
1297	$t^2y'' - 4ty' + 6y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
1298	$t^2y'' - ty' + 5y = 0$	[[_Emden, _Fowler]]	✓
1299	$t^2y'' + 3ty' - 3y = 0$	[[_Emden, _Fowler]]	✓
1300	$t^2y'' + 7ty' + 10y = 0$	[[_Emden, _Fowler]]	✓
1301	$y'' + ty' + e^{-t^2}y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
1302	$ty'' + (t^2 - 1)y' + t^3y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
1327	$t^2y'' - 3ty' + 4y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
1328	$t^2y'' + 2ty' + \frac{y}{4} = 0$	[[_Emden, _Fowler]]	✓
1329	$2t^2y'' - 5ty' + 5y = 0$	[[_Emden, _Fowler]]	✓
1330	$t^2y'' + 3ty' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓

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Table 2.41 second order change of variable on x method 2

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#	ODE	CAS classification	Solved?
1331	$4t^2y'' - 8ty' + 9y = 0$	[[_Emden, _Fowler]]	✓
1332	$t^2y'' + 5ty' + 13y = 0$	[[_Emden, _Fowler]]	✓
1349	$x^2y'' - 3xy' + 4y = x^2 \ln(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1351	$t^2y'' - 2ty' + 2y = 4t^2$	[[_2nd_order, _with_linear_symmetries]]	✓
1352	$t^2y'' + 7ty' + 5y = t$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
1746	$x^2y'' + xy' - y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
1747	$x^2y'' - xy' + y = 0$	[[_Emden, _Fowler]]	✓
1748	$x^2y'' - (2a - 1)xy' + a^2y = 0$	[[_Emden, _Fowler]]	✓
1811	$x^2y'' + xy' - y = 2x^2 + 2$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
1815	$x^2y'' - 4xy' + 6y = x^{5/2}$	[[_2nd_order, _with_linear_symmetries]]	✓
1816	$x^2y'' - 3xy' + 3y = 2x^4 \sin(x)$	[[_2nd_order, _with_linear_symmetries]]	✓
1820	$x^2y'' - (2a - 1)xy' + a^2y = x^{a+1}$	[[_2nd_order, _with_linear_symmetries]]	✓
1822	$xy'' - y' - 4x^3y = 8x^5$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1828	$x^2y'' - xy' - 3y = x^{3/2}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
1835	$(x - 1)^2 y'' - 2(x - 1)y' + 2y = (x - 1)^2$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
1838	$x^2y'' + 2xy' - 2y = -2x^2$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
2362	$2t^2y'' + 3ty' - y = 0$ i.c.	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
2373	$t^2y'' + \alpha ty' + \beta y = 0$	[[_Emden, _Fowler]]	✓
2374	$t^2y'' + 5ty' - 5y = 0$	[[_Emden, _Fowler]]	✓
2375	$t^2y'' - ty' - 2y = 0$ i.c.	[[_Emden, _Fowler]]	✓

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Table 2.41 second order change of variable on x method 2

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#	ODE	CAS classification	Solved?
2385	$t^2 y'' + ty' + y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
2386	$t^2 y'' + 2ty' + 2y = 0$	[[_Emden, _Fowler]]	✓
2400	$t^2 y'' + 3ty' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
2401	$t^2 y'' - ty' + y = 0$	[[_Emden, _Fowler]]	✓
2431	$t^2 y'' - 5ty' + 9y = 0$	[[_Emden, _Fowler]]	✓
2432	$t^2 y'' + 5ty' - 5y = 0$	[[_Emden, _Fowler]]	✓
2433	$2t^2 y'' + 3ty' - y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
2434	$(t - 1)^2 y'' - 2(t - 1)y' + 2y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
2435	$t^2 y'' + 3ty' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
2436	$t^2 y'' - ty' + y = 0$	[[_Emden, _Fowler]]	✓
2437	$(t - 2)^2 y'' + 5(t - 2)y' + 4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
2438	$t^2 y'' + ty' + y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
2439	$t^2 y'' - ty' + 2y = 0$	[[_Emden, _Fowler]]	✓
2440	$t^2 y'' - 3ty' + 4y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
2543	$2t^2 y'' + 3ty' - y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
2554	$t^2 y'' + \alpha ty' + \beta y = 0$	[[_Emden, _Fowler]]	✓
2555	$t^2 y'' + 5ty' - 2y = 0$	[[_Emden, _Fowler]]	✓

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#	ODE	CAS classification	Solved?
2565	$t^2 y'' + ty' + y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
2566	$t^2 y'' + 2ty' + 2y = 0$	[[_Emden, _Fowler]]	✓
2581	$t^2 y'' + 3ty' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
2582	$t^2 y'' - ty' + y = 0$	[[_Emden, _Fowler]]	✓
2628	$t^2 y'' + 5ty' - 5y = 0$	[[_Emden, _Fowler]]	✓
2629	$2t^2 y'' + 3ty' - y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
2630	$(t - 1)^2 y'' - 2(t - 1)y' + 2y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
2631	$t^2 y'' + 3ty' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
2632	$t^2 y'' - ty' + y = 0$	[[_Emden, _Fowler]]	✓
2633	$(t - 2)^2 y'' + 5(t - 2)y' + 4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
2634	$t^2 y'' + ty' + y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
2635	$t^2 y'' + 3ty' + 2y = 0$	[[_Emden, _Fowler]]	✓
2636	$t^2 y'' - ty' - 2y = 0$	[[_Emden, _Fowler]]	✓
2637	$t^2 y'' - 3ty' + 4y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
3221	$x^2 y'' - 4xy' + y = 0$	[[_Emden, _Fowler]]	✓
3222	$x^2 y'' + xy' + 16y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
3223	$4x^2 y'' - 16xy' + 25y = 0$	[[_Emden, _Fowler]]	✓
3224	$x^2 y'' + 5xy' + 10y = 0$	[[_Emden, _Fowler]]	✓

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#	ODE	CAS classification	Solved?
3225	$2x^2y'' - 3xy' - 18y = \ln(x)$	[[_2nd_order, _with_linear_symmetries]]	✓
3226	$2x^2y'' - 3xy' + 2y = \ln(x^2)$	[[_2nd_order, _with_linear_symmetries]]	✓
3227	$x^2y'' - 3xy' + 4y = x^3$	[[_2nd_order, _with_linear_symmetries]]	✓
3228	$x^2y'' + 3xy' + y = 1 - x$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
3230	$x^2y'' - 2xy' + 2y = 4x + \sin(\ln(x))$	[[_2nd_order, _with_linear_symmetries]]	✓
3231	$x^2y'' - xy' + 2y = x^2 \ln(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3232	$x^2y'' + 4xy' + 3y = (x - 1) \ln(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3493	$x^2y'' - xy' + y = x$	[[_2nd_order, _with_linear_symmetries]]	✓
3494	$(x + 1)^2 y'' + 3(x + 1) y' + y = x^2$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
3565	$x^2y'' + 5xy' + 3y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
3566	$x^2y'' - 3xy' + 4y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
3567	$x^2y'' - 3xy' + 13y = 0$	[[_Emden, _Fowler]]	✓
3568	$2x^2y'' - xy' + y = 9x^2$	[[_2nd_order, _with_linear_symmetries]]	✓
3569	$x^2y'' - 4xy' + 6y = x^4 \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3575	$x^2y'' + xy' - y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
3576	$x^2y'' + 5xy' + 4y = 0$	[[_Emden, _Fowler]]	✓
3591	$x^2y'' - xy' - 8y = 0$	[[_Emden, _Fowler]]	✓
3592	$x^2y'' - 3xy' + 4y = x^2 \ln(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3707	$x^2y'' + 3xy' - 8y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓

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#	ODE	CAS classification	Solved?
3708	$2x^2y'' + 5xy' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
3773	$x^2y'' + 4xy' + 2y = 4 \ln(x)$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
3774	$x^2y'' + 4xy' + 2y = \cos(x)$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
3775	$x^2y'' + xy' + 9y = 9 \ln(x)$	[[_2nd_order, _with_linear_symmetries]]	✓
3776	$x^2y'' - xy' + 5y = 8x \ln(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3777	$x^2y'' - 4xy' + 6y = x^4 \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3778	$x^2y'' + 6xy' + 6y = 4e^{2x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3779	$x^2y'' - 3xy' + 4y = \frac{x^2}{\ln(x)}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3780	$x^2y'' - (2m - 1)xy' + m^2y = x^m \ln(x)^k$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3781	$x^2y'' - xy' + 5y = 0$ i.c.	[[_Emden, _Fowler]]	✓
3782	$t^2y'' + ty' + 25y = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
4139	$(x^2 + 1)y'' + xy' - 4y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
4140	$x^2y'' - 2xy' + 2y = x^2 + 2$	[[_2nd_order, _with_linear_symmetries]]	✓
4509	$x^2y'' - xy' + y = \ln(x)$	[[_2nd_order, _with_linear_symmetries]]	✓
4510	$x^2y'' + 3xy' + 5y = \frac{5 \ln(x)}{x^2}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4512	$(-2 + x)^2 y'' - 3(-2 + x)y' + 4y = x$	[[_2nd_order, _with_linear_symmetries]]	✓
5990	$x^2y'' - xy' + y = x$	[[_2nd_order, _with_linear_symmetries]]	✓

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Table 2.41 second order change of variable on x method 2

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#	ODE	CAS classification	Solved?
5991	$y'' - \frac{2y'}{x} + \frac{2y}{x^2} = x \ln(x)$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
5992	$x^2y'' + xy' - 4y = x^3$	[[_2nd_order, _with_linear_symmetries]]	✓
5993	$x^2y'' + xy' - y = x^2e^{-x}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
5994	$2x^2y'' + 3xy' - y = \frac{1}{x}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
6026	$x^2y'' - 2xy' + 2y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]]]	✓
6192	$x^2y'' + 3xy' - 3y = 0$	[[_Emden, _Fowler]]	✓
6193	$x^2y'' + xy' - 4y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]]]	✓
6194	$x^2y'' + 7xy' + 9y = 0$	[[_Emden, _Fowler]]	✓
6195	$x^2y'' - xy' + 6y = 0$	[[_Emden, _Fowler]]	✓
6196	$x^2y'' + xy' - 16y = 8x^4$	[[_2nd_order, _with_linear_symmetries]]	✓
6197	$x^2y'' + xy' - y = x - \frac{1}{x}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
6198	$x^2y'' - 5xy' + 9y = 2x^3$	[[_2nd_order, _with_linear_symmetries]]	✓
6199	$x^2y'' - 3xy' + 4y = 6x^2 \ln(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6201	$x^2y'' + xy' + y = 2x$	[[_2nd_order, _with_linear_symmetries]]	✓
6215	$x^2y'' - xy' + y = x$	[[_2nd_order, _with_linear_symmetries]]	✓
6249	$x^2y'' - 3xy' + 3y = 0$	[[_Emden, _Fowler]]	✓
6410	$x^2y'' + xy' - 9y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]]]	✓

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Table 2.41 second order change of variable on x method 2

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#	ODE	CAS classification	Solved?
6411	$xy'' + \frac{y'}{2} + 2y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
6412	$x^2y'' - xy' + y = 0$	[[_Emden, _Fowler]]	✓
6533	$t^2N'' - 2tN' + 2N = t \ln(t)$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
6541	$y'' + \frac{y'}{x} - \frac{y}{x^2} = \ln(x)$	[[_2nd_order, _exact, _lin- ear, _nonhomogeneous]]	✓
6696	$x^2y'' - 3xy' + 4y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
6698	$xy'' - y' + 4x^3y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
6750	$x^2y'' - 3xy' + 4y = x + x^2 \ln(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6751	$x^2y'' - 2xy' + 2y = \ln(x)^2 - \ln(x^2)$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
6754	$(x+1)^2y'' + (x+1)y' - y = \ln(x+1)^2 + x - 1$	[[_2nd_order, _exact, _lin- ear, _nonhomogeneous]]	✓
6764	$xy'' - y' + 4x^3y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
6765	$x^4y'' + 2x^3y' + y = \frac{x+1}{x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6766	$x^8y'' + 4x^7y' + y = \frac{1}{x^3}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6768	$xy'' - 3y' + \frac{3y}{x} = x + 2$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
7155	$y'' + \frac{y'}{x} - \frac{y}{x^2} = 0$	[[_2nd_order, _exact, _lin- ear, _homogeneous]]	✓
7156	$(x^2+1)y'' + xy' + y = 0$	[[_2nd_order, _with_lin- ear_symmetries], [_2nd_or- der, _linear, '_with_sym- metry_[0,F(x)]']]	✓

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Table 2.41 second order change of variable on x method 2

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#	ODE	CAS classification	Solved?
7160	$(-x^2 + 1)y'' - xy' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
7163	$x^2y'' + 2xy' + 4y = 0$	[[_Emden, _Fowler]]	✓
7165	$(x^2 + 1)y'' + xy' + y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
7168	$x^2y'' + xy' - y = x^2 + 2x$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
7175	$(-x^2 + 1)y'' - xy' + \frac{y}{4} = -\frac{x^2}{2} + \frac{1}{2}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7200	$px^2u'' + qxu' + ru = f(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7203	$y'' - \frac{xy'}{-x^2 + 1} + \frac{y}{-x^2 + 1} = 0$	[_Gegenbauer, [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
7350	$y'' + \frac{y'}{x} - \frac{y}{x^2} = 0$ i.c.	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
7351	$y'' + \frac{y'}{x} - \frac{y}{x^2} = 0$ i.c.	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
7352	$(3x - 1)^2 y'' + (9x - 3)y' - 9y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
7373	$(-x^2 + 1)y'' - xy' + \alpha^2 y = 0$	[_Gegenbauer, [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
7375	$x^2y'' + 2xy' - 6y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
7376	$2x^2y'' + xy' - y = 0$	[[_Emden, _Fowler]]	✓
7377	$x^2y'' + xy' - 4y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
7378	$x^2y'' - 5xy' + 9y = x^2$	[[_2nd_order, _with_linear_symmetries]]	✓
7380	$x^2y'' + xy' + 4y = 1$	[[_2nd_order, _with_linear_symmetries]]	✓

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Table 2.41 second order change of variable on x method 2

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#	ODE	CAS classification	Solved?
7381	$x^2y'' - 3xy' + 5y = 0$	[[_Emden, _Fowler]]	✓
7382	$x^2y'' + (-2 - i)xy' + 3iy = 0$	[[_Emden, _Fowler]]	✓
7383	$x^2y'' + xy' - 4\pi y = x$	[[_2nd_order, _with_linear_symmetries]]	✓
7637	$x^2y'' + 3xy' + 10y = 0$	[[_Emden, _Fowler]]	✓
7638	$2x^2y'' + 10xy' + 8y = 0$	[[_Emden, _Fowler]]	✓
7639	$x^2y'' + 2xy' - 12y = 0$	[[_Emden, _Fowler]]	✓
7641	$x^2y'' - 3xy' + 4y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)][']]	✓
7642	$x^2y'' + 2xy' - 6y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)][']]	✓
7643	$x^2y'' + 2xy' + 3y = 0$	[[_Emden, _Fowler]]	✓
7644	$x^2y'' + xy' - 2y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)][']]	✓
7645	$x^2y'' + xy' - 16y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)][']]	✓
7680	$x^2y'' - 2xy' + 2y = xe^{-x}$	[[_2nd_order, _with_linear_symmetries]]	✓
7737	$x^2y'' + 3xy' + y = \frac{2}{x}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
8282	$2x^2y'' + xy' - y = 0$	[[_Emden, _Fowler]]	✓
8283	$2x^2y'' - 3xy' + 2y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)][']]	✓
8285	$2x^2y'' + 5xy' - 2y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)][']]	✓
8286	$x^2y'' + 2xy' - 12y = 0$	[[_Emden, _Fowler]]	✓

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Table 2.41 second order change of variable on x method 2

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#	ODE	CAS classification	Solved?
8287	$x^2y'' + xy' - 9y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
8288	$x^2y'' - 3xy' + 4y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
8289	$x^2y'' - 5xy' + 9y = 0$	[[_Emden, _Fowler]]	✓
8290	$x^2y'' + 5xy' + 5y = 0$	[[_Emden, _Fowler]]	✓
8437	$t^2y'' - 3ty' + 5y = 0$	[[_Emden, _Fowler]]	✓
8441	$ty'' - y' + 4t^3y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
8529	$y'' - \frac{y'}{x} - x^2y - x^3 - \frac{1}{x} = 0$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
8549	$x^4y'' + x^3y' - 4x^2y = 1$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
8550	$x^4y'' + x^3y' - 4x^2y = x$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
8551	$x^2y'' + xy' - 4y = x$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
8637	$y'' \sin(2x)^2 + y' \sin(4x) - 4y = 0$	[[_2nd_order, _with_lin- ear_symmetries], [_2nd_or- der, _linear, '_with_sym- metry_[0,F(x)]']]	✓
8815	$y'' + \frac{2y'}{x} + \frac{a^2y}{x^4} = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
8816	$(-x^2 + 1)y'' - xy' - c^2y = 0$	[_Gegenbauer, [_2nd_or- der, _linear, '_with_sym- metry_[0,F(x)]']]	✓
8817	$x^6y'' + 3x^5y' + a^2y = \frac{1}{x^2}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8818	$x^2y'' - 3xy' + 3y = 2x^3 - x^2$	[[_2nd_order, _with_lin- ear_symmetries]]	✓

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Table 2.41 second order change of variable on x method 2

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#	ODE	CAS classification	Solved?
8819	$y'' + \cot(x)y' + 4y \csc(x)^2 = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
8821	$y'' + \tan(x)y' + \cos(x)^2 y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8822	$xy'' - y' + 4x^3 y = 8x^3 \sin(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8823	$xy'' - y' + 4x^3 y = x^5$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8824	$\cos(x)y'' + \sin(x)y' - 2y \cos(x)^3 = 2 \cos(x)^5$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8825	$y'' + \left(1 - \frac{1}{x}\right)y' + 4x^2 y e^{-2x} = 4(x^3 + x^2) e^{-3x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8845	$x^2 y'' - 4xy' + 6y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
10718	$y'' + y' + a e^{-2x} y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
10719	$y'' - y' + e^{2x} y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
10748	$y'' - (2e^x + 1)y' + e^{2x} y - e^{3x} = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
10751	$y'' + \tan(x)y' + \cos(x)^2 y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10752	$y'' + \tan(x)y' - \cos(x)^2 y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10754	$y'' - \cot(x)y' + y \sin(x)^2 = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10763	$y'' - \frac{af'(x)y'}{f(x)} + bf(x)^{2a} y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
10772	$a^2 y'' + a(a^2 - 2be^{-ax})y' + b^2 e^{-2ax} y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓

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Table 2.41 second order change of variable on x method 2

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#	ODE	CAS classification	Solved?
10780	$xy'' - y' - yax^3 = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
10805	$xy'' - (2x^2a + 1)y' + bx^3y = 0$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
10807	$xy'' + (4x^2 - 1)y' - 4x^3y - 4x^5 = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
10812	$2xy'' + y' + ay = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
10817	$4xy'' + 2y' - y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
10841	$x^2y'' + xy' - y - x^2a = 0$	[[_2nd_order, _exact, _lin- ear, _nonhomogeneous]]	✓
10842	$x^2y'' + xy' + ay = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
10848	$x^2y'' - xy' + y - 3x^3 = 0$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
10856	$x^2y'' - 2xy' + 2y - x^5 \ln(x) = 0$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
10857	$x^2y'' - 2xy' - 4y - x \sin(x)$ $- (x^2a + 12a + 4) \cos(x) = 0$	[[_2nd_order, _exact, _lin- ear, _nonhomogeneous]]	✓
10864	$x^2y'' - 3xy' + 4y - 5x = 0$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
10865	$x^2y'' - 3xy' - 5y - x^2 \ln(x) = 0$	[[_2nd_order, _exact, _lin- ear, _nonhomogeneous]]	✓
10866	$x^2y'' - 4xy' + 6y - x^4 + x^2 = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
10868	$x^2y'' - 5xy' + 8y - \sin(x)x^3 = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
10869	$x^2y'' + axy' + by = 0$	[[_Emden, _Fowler]]	✓

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Table 2.41 second order change of variable on x method 2

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#	ODE	CAS classification	Solved?
10904	$(x^2 + 1)y'' + xy' + 2y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
10905	$(x^2 + 1)y'' + xy' - 9y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
10906	$(x^2 + 1)y'' + xy' + ay = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
10916	$(x^2 - 1)y'' + xy' + ay = 0$	[_Gegenbauer, [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
10960	$4x^2y'' + 5xy' - y - \ln(x) = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10967	$(3x - 1)^2y'' + 3(3x - 1)y' - 9y - \ln(3x - 1)^2 = 0$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
10971	$(27x^2 + 4)y'' + 27xy' - 3y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
10973	$50x(x - 1)y'' + 25(2x - 1)y' - 2y = 0$	[_Jacobi, [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
10978	$(x^2a + 1)y'' + axy' + by = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
10988	$x^3y'' - x^2y' + xy - \ln(x)^3 = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10990	$x^3y'' + 3x^2y' + xy - 1 = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10995	$x(x^2 - 1)y'' + y' + ya x^3 = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
11017	$y'' = -\frac{(3x + a + 2b)y'}{2(x + a)(x + b)} - \frac{(-b + a)y}{4(x + a)^2(x + b)}$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓

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Table 2.41 second order change of variable on x method 2

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#	ODE	CAS classification	Solved?
11030	$y'' = -\frac{2y'}{x} - \frac{a^2y}{x^4}$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
11032	$y'' = -\frac{2(x+a)y'}{x^2} - \frac{by}{x^4}$	[[_2nd_order, _with_linear_symmetries]]	✓
11046	$y'' = -\frac{2xy'}{x^2+1} - \frac{y}{(x^2+1)^2}$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
11050	$y'' = -\frac{2xy'}{x^2-1} + \frac{a^2y}{(x^2-1)^2}$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
11056	$y'' = -\frac{(2x^2+a)y'}{x(x^2+a)} - \frac{by}{x^2(x^2+a)}$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
11063	$y'' = -\frac{((\alpha+\beta+1)(x-a)^2(x-b) + (1-\alpha-\beta)(x-b)^2(x-a))y'}{(x-a)^2(x-b)^2} - \frac{\alpha\beta(-b+a)^2y}{(x-a)^2(x-b)^2}$	[[_2nd_order, _with_linear_symmetries]]	✓
11081	$y'' = -\frac{(3x^2+a)y'}{x^3} - \frac{by}{x^6}$	[[_2nd_order, _with_linear_symmetries]]	✓
11089	$y'' = -ax^{2a-1}x^{-2a}y' - b^2x^{-2a}y$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
11092	$y'' = \frac{y'}{x \ln(x)} + \ln(x)^2 y$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
11097	$y'' = -\frac{(\sin(x)^2 - \cos(x))y'}{\sin(x)} - y \sin(x)^2$	[[_2nd_order, _with_linear_symmetries]]	✓
11109	$y'' = -\frac{\cos(x)y'}{\sin(x)} + \frac{y}{\sin(x)^2}$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓

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Table 2.41 second order change of variable on x method 2

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#	ODE	CAS classification	Solved?
11117	$y'' = \frac{(3 \sin(x)^2 + 1) y'}{\cos(x) \sin(x)} + \frac{\sin(x)^2 y}{\cos(x)^2}$	[[_2nd_order, _with_linear_symmetries]]	✓
12237	$xy'' + \frac{y'}{2} + ay = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
12241	$xy'' + ny' + bx^{1-2n}y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
12299	$x^2y'' + axy' + by = 0$	[[_Emden, _Fowler]]	✓
12327	$(x^2 - 1) y'' + xy' + ay = 0$	[_Gegenbauer, [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
12328	$(-x^2 + 1) y'' - xy' + n^2y = 0$	[_Gegenbauer, [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
12338	$(x^2a + b) y'' + axy' + cy = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
12350	$(2ax + x^2 + b) y'' + (x + a) y' - m^2y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
12353	$(x^2a + 2bx + c) y'' + (ax + b) y' + dy = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
12378	$2x(x^2a + bx + c) y'' + (x^2a - c) y' + \lambda x^2y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
12382	$2(ax^3 + bx^2 + cx + d) y'' + (3x^2a + 2bx + c) y' + \lambda y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
12390	$x^4y'' + 2x^2(x + a) y' + by = 0$	[[_2nd_order, _with_linear_symmetries]]	✓

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Table 2.41 second order change of variable on x method 2

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#	ODE	CAS classification	Solved?
12401	$(x^2a + b)^2 y'' + 2ax(x^2a + b) y' + cy = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
12405	$(x^2a + b)^2 y'' + (2ax + c)(x^2a + b) y' + ky = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12410	$(x - a)^2 (x - b)^2 y'' + (x - a)(x - b)(2x + \lambda) y' + \mu y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12414	$(x^2a + bx + c)^2 y'' + (2ax + k)(x^2a + bx + c) y' + my = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12416	$x^6 y'' + (3x^2 + a)x^3 y' + by = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12449	$y'' - ay' + be^{2ax} y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
12457	$y'' - (a + 2be^{ax}) y' + b^2 e^{2ax} y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12459	$y'' + (ae^{\lambda x} - \lambda) y' + be^{2\lambda x} y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12626	$x^2 y'' + 3xy' + y = \frac{1}{(1-x)^2}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
12649	$y'' + (2e^x - 1) y' + e^{2x} y = e^{4x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12650	$(-x^2 + 1) y'' - xy' + 4y = 0$	[_Gegenbauer, [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
12651	$y'' + \tan(x) y' + \cos(x)^2 y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12652	$x^6 y'' + 3x^5 y' + y = \frac{1}{x^2}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12653	$xy'' - (2x^2 + 1) y' - 8x^3 y = 4x^3 e^{-x^2}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12676	$x^2 y'' + 3xy' + y = x$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
12677	$(x - 1)^2 y'' + 4(x - 1) y' + 2y = \cos(x)$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓

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Table 2.41 second order change of variable on x method 2

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#	ODE	CAS classification	Solved?
12832	$t^2x'' + 3tx' + x = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
12833	$tx'' + 4x' + \frac{2x}{t} = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
12834	$t^2x'' - 7tx' + 16x = 0$	[[_Emden, _Fowler]]	✓
12835 i.c.	$t^2x'' + 3tx' - 8x = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
12837 i.c.	$t^2x'' - tx' + 2x = 0$	[[_Emden, _Fowler]]	✓
12846	$t^2x'' - 3tx' + 3x = 4t^7$	[[_2nd_order, _with_linear_symmetries]]	✓
13070 i.c.	$x^2y'' - 2xy' + 2y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
13071 i.c.	$x^2y'' + xy' - 4y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
13199	$x^2y'' - 6xy' + 10y = 3x^4 + 6x^3$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13200	$(x+1)^2y'' - 2(x+1)y' + 2y = 1$	[[_2nd_order, _with_linear_symmetries]]	✓
13207	$x^2y'' - 3xy' + 3y = 0$	[[_Emden, _Fowler]]	✓
13208	$x^2y'' + xy' - 4y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
13209	$4x^2y'' - 4xy' + 3y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
13210	$x^2y'' - 3xy' + 4y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓

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Table 2.41 second order change of variable on x method 2

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#	ODE	CAS classification	Solved?
13211	$x^2y'' + xy' + 4y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
13212	$x^2y'' - 3xy' + 13y = 0$	[[_Emden, _Fowler]]	✓
13213	$3x^2y'' - 4xy' + 2y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
13214	$x^2y'' + xy' + 9y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
13215	$9x^2y'' + 3xy' + y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
13216	$x^2y'' - 5xy' + 10y = 0$	[[_Emden, _Fowler]]	✓
13220	$x^2y'' - 4xy' + 6y = 4x - 6$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
13221	$x^2y'' - 5xy' + 8y = 2x^3$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
13222	$x^2y'' + 4xy' + 2y = 4 \ln(x)$	[[_2nd_order, _exact, _lin- ear, _nonhomogeneous]]	✓
13223	$x^2y'' + xy' + 4y = 2x \ln(x)$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
13224	$x^2y'' + xy' + 4y = 4 \sin(\ln(x))$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13226	$x^2y'' - 2xy' - 10y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
13227	$x^2y'' - 4xy' + 6y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
13228	$x^2y'' + 5xy' + 3y = 0$	[[_2nd_order, _exact, _lin- ear, _homogeneous]]	✓
13230	$x^2y'' - 4xy' + 4y = -6x^3 + 4x^2$	[[_2nd_order, _with_lin- ear_symmetries]]	✓

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Table 2.41 second order change of variable on x method 2

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#	ODE	CAS classification	Solved?
13231	$x^2 y'' + 2xy' - 6y = 10x^2$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
13232	$x^2 y'' - 5xy' + 8y = 2x^3$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
13235	$(2x - 3)^2 y'' - 6(2x - 3)y' + 12y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
13338	$tx'' - 2x' + 9t^5 x = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
13342	$t^2 x'' + 3tx' + 3x = 0$	[[_Emden, _Fowler]]	✓
13349	$t^2 x'' + tx' + x = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
13358	$y' + xy'' + \frac{\lambda y}{x} = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
13359	$y' + xy'' + \frac{\lambda y}{x} = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
13360	$2xy' + (x^2 + 1)y'' + \frac{\lambda y}{x^2 + 1} = 0$ i.c.	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
13361	$-\frac{6y'x}{(3x^2 + 1)^2} + \frac{y''}{3x^2 + 1} + \lambda(3x^2 + 1)y = 0$ i.c.	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
13472	$x^2 y'' - 4xy' + 6y = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
13474	$t^2 x'' - 5tx' + 10x = 0$ i.c.	[[_Emden, _Fowler]]	✓
13475	$t^2 x'' + tx' - x = 0$ i.c.	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
13476	$x^2 z'' + 3xz' + 4z = 0$ i.c.	[[_Emden, _Fowler]]	✓

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Table 2.41 second order change of variable on x method 2

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#	ODE	CAS classification	Solved?
13477	$x^2y'' - xy' - 3y = 0$ i.c.	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
13478	$4t^2x'' + 8tx' + 5x = 0$ i.c.	[[_Emden, _Fowler]]	✓
13479	$x^2y'' - 5xy' + 5y = 0$ i.c.	[[_Emden, _Fowler]]	✓
13480	$3x^2z'' + 5xz' - z = 0$ i.c.	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
13481	$t^2x'' + 3tx' + 13x = 0$ i.c.	[[_Emden, _Fowler]]	✓
13580	$x^2y'' - 4xy' + 6y = 2$	[[_2nd_order, _with_linear_symmetries]]	✓
13607	$(x+1)^2y'' + (x+1)y' + y = 2\cos(\ln(x+1))$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13679	$y'' + \cot(x)y' - y\csc(x)^2 = \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13763	$t^2y'' + 3ty' + y = t^7$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
13836	$(-x^2 + 1)y'' - xy' - a^2y = 0$	[_Gegenbauer, [_2nd_order, _linear, '_with_symmetry_[0,F(x)']]]	✓
13986	$x^2y'' + xy' - y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
13988	$2x^2y'' + 3xy' - y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
13996	$2x^2y'' + xy' - y = 0$	[[_Emden, _Fowler]]	✓
14004	$x^2y'' + 6xy' + 4y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
14005	$x^2y'' - 5xy' + 9y = 0$	[[_Emden, _Fowler]]	✓
14021	$x^2y'' - 4xy' + 6y = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)']]]	✓
14022	$x^2y'' - 4xy' + 6y = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)']]]	✓

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Table 2.41 second order change of variable on x method 2

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#	ODE	CAS classification	Solved?
14023 i.c.	$x^2y'' - 4xy' + 6y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
14024 i.c.	$x^2y'' - 4xy' + 6y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
14025 i.c.	$x^2y'' - 4xy' + 6y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
14164	$x^2y'' + 2xy' - 2y = 0$	[[_Emden, _Fowler]]	✓
14168 i.c.	$x^2y'' - xy' + y = 0$	[[_Emden, _Fowler]]	✓
14171 i.c.	$x^2y'' + xy' - 4y = -3x - \frac{3}{x}$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
14976 i.c.	$x^2y'' - 4xy' + 6y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
14977 i.c.	$4x^2y'' + 4xy' - y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
14978 i.c.	$x^2y'' - xy' + y = 0$	[[_Emden, _Fowler]]	✓
14979 i.c.	$xy'' - y' + 4x^3y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
14980 i.c.	$(x + 1)^2 y'' - 2(x + 1) y' + 2y = 0$	[[_2nd_order, _with_lin- ear_symmetries], [_2nd_or- der, _linear, '_with_sym- metry_[0,F(x)]']]	✓
14981	$x^2y'' - 4xy' + 6y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓

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Table 2.41 second order change of variable on x method 2

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#	ODE	CAS classification	Solved?
14982	$xy'' - y' + 4x^3y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
15055	$x^2y'' - 5xy' + 8y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
15058	$2x^2y'' - xy' + y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
15059	$x^2y'' - 5xy' + 9y = 0$	[[_Emden, _Fowler]]	✓
15060	$x^2y'' + 5xy' + 4y = 0$	[[_Emden, _Fowler]]	✓
15062	$x^2y'' - 19xy' + 100y = 0$	[[_Emden, _Fowler]]	✓
15063	$x^2y'' - 5xy' + 29y = 0$	[[_Emden, _Fowler]]	✓
15064	$x^2y'' - xy' + 10y = 0$	[[_Emden, _Fowler]]	✓
15065	$x^2y'' + 5xy' + 29y = 0$	[[_Emden, _Fowler]]	✓
15066	$x^2y'' + xy' + y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
15067	$2x^2y'' + 5xy' + y = 0$	[[_2nd_order, _exact, _lin- ear, _homogeneous]]	✓
15070	$x^2y'' + xy' - 25y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
15071	$4x^2y'' + 8xy' + 5y = 0$	[[_Emden, _Fowler]]	✓
15072	$3x^2y'' - 7xy' + 3y = 0$	[[_Emden, _Fowler]]	✓
15073	$x^2y'' - 2xy' - 10y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
15074	$4x^2y'' + 4xy' - y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓

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Table 2.41 second order change of variable on x method 2

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#	ODE	CAS classification	Solved?
15075	$x^2y'' - 11xy' + 36y = 0$ i.c.	[[_Emden, _Fowler]]	✓
15076	$x^2y'' - xy' + y = 0$ i.c.	[[_Emden, _Fowler]]	✓
15077	$x^2y'' - xy' + 2y = 0$ i.c.	[[_Emden, _Fowler]]	✓
15078	$x^2y'' - 3xy' + 13y = 0$ i.c.	[[_Emden, _Fowler]]	✓
15095	$x^2y'' - 4xy' + 6y = 10x + 12$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
15101	$x^2y'' - 4xy' + 6y = 1$	[[_2nd_order, _with_linear_symmetries]]	✓
15102	$x^2y'' - 4xy' + 6y = x$	[[_2nd_order, _with_linear_symmetries]]	✓
15103	$x^2y'' - 4xy' + 6y = 22x + 24$	[[_2nd_order, _with_linear_symmetries]]	✓
15104	$x^2y'' - 7xy' + 15y = x^2$	[[_2nd_order, _with_linear_symmetries]]	✓
15105	$x^2y'' - 7xy' + 15y = x$	[[_2nd_order, _with_linear_symmetries]]	✓
15106	$x^2y'' - 7xy' + 15y = 1$	[[_2nd_order, _with_linear_symmetries]]	✓
15107	$x^2y'' - 7xy' + 15y = 4x^2 + 2x + 3$	[[_2nd_order, _with_linear_symmetries]]	✓
15181	$x^2y'' - 5xy' + 8y = \frac{5}{x^3}$	[[_2nd_order, _with_linear_symmetries]]	✓
15182	$2x^2y'' - xy' + y = \frac{50}{x^3}$	[[_2nd_order, _with_linear_symmetries]]	✓
15183	$2x^2y'' + 5xy' + y = 85 \cos(2 \ln(x))$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
15185	$3x^2y'' - 7xy' + 3y = 4x^3$	[[_2nd_order, _with_linear_symmetries]]	✓
15186	$2x^2y'' + 5xy' + y = \frac{10}{x}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
15187	$x^2y'' - 5xy' + 9y = 6x^3$	[[_2nd_order, _with_linear_symmetries]]	✓
15188	$x^2y'' + 5xy' + 4y = 64x^2 \ln(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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Table 2.41 second order change of variable on x method 2

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#	ODE	CAS classification	Solved?
15189	$x^2y'' - 2xy' + 2y = 3\sqrt{x}$	[[_2nd_order, _with_linear_symmetries]]	✓
15195	$x^2y'' + xy' - y = \sqrt{x}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
15196	$x^2y'' + xy' - 9y = 12x^3$	[[_2nd_order, _with_linear_symmetries]]	✓
15197	$x^2y'' - 3xy' + 4y = x^2$	[[_2nd_order, _with_linear_symmetries]]	✓
15198	$x^2y'' + 5xy' + 4y = \ln(x)$	[[_2nd_order, _with_linear_symmetries]]	✓
15200	$xy'' - y' - 4x^3y = x^3e^{x^2}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15203	$x^2y'' - 2xy' - 4y = \frac{10}{x}$ i.c.	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
15213	$x^2y'' + xy' - 9y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]]']]	✓
15216	$x^2y'' - 7xy' + 16y = 0$	[[_Emden, _Fowler]]	✓
15221	$x^2y'' + 7xy' + 9y = 0$	[[_Emden, _Fowler]]	✓
15227	$x^2y'' + xy' + 9y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]]']]	✓
15229	$x^2y'' + 2xy' - 30y = 0$	[[_Emden, _Fowler]]	✓
15232	$4x^2y'' + 8xy' + y = 0$	[[_Emden, _Fowler]]	✓
15234	$2x^2y'' - 3xy' + 2y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]]']]	✓
15235	$9x^2y'' + 3xy' + y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]]']]	✓
15245	$x^2y'' + xy' - 9y = 3\sqrt{x}$	[[_2nd_order, _with_linear_symmetries]]	✓
15248	$x^2y'' + 2xy' - 6y = 18 \ln(x)$	[[_2nd_order, _with_linear_symmetries]]	✓

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Table 2.41 second order change of variable on x method 2

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#	ODE	CAS classification	Solved?
15250	$2x^2y'' - xy' - 2y = 10x^2$	[[_2nd_order, _with_linear_symmetries]]	✓
15253	$x^2y'' + 3xy' + 2y = 6$	[[_2nd_order, _with_linear_symmetries]]	✓
15254	$x^2y'' + xy' - y = \frac{1}{x^2 + 1}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
15259	$x^2y'' + 3xy' + y = \frac{1}{(x + 1)^2}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
15260	$x^2y'' + 3xy' + y = \frac{1}{x}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
15461	$t^2y'' + ty' + 2y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]]]	✓
15476	$x^2y'' - 12xy' + 42y = 0$	[[_Emden, _Fowler]]	✓
15477	$t^2y'' + 3ty' + 5y = 0$	[[_Emden, _Fowler]]	✓
15502	$t^2y'' - 12ty' + 42y = 0$	[[_Emden, _Fowler]]	✓
15503	$x^2y'' + 3xy' + 5y = 0$	[[_Emden, _Fowler]]	✓
15522	$x^2y'' - xy' - 16y = 0$	[[_Emden, _Fowler]]	✓
15523	$x^2y'' + 3xy' + 2y = 0$	[[_Emden, _Fowler]]	✓
15534	$x^2y'' + 5xy' + 4y = 0$	[[_Emden, _Fowler]]	✓
15677	$y'' - \frac{y'}{t} + \frac{y}{t^2} = \frac{1}{t}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
15855	$2t^2y'' - 3ty' - 3y = 0$	[[_Emden, _Fowler]]	✓
15859	$3t^2y'' - 5ty' - 3y = 0$	[[_Emden, _Fowler]]	✓
15860	$t^2y'' + 7ty' - 7y = 0$	[[_Emden, _Fowler]]	✓
15865	$t^2y'' + ty' - y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
15877	$t^2y'' + aty' + by = 0$	[[_Emden, _Fowler]]	✓
15916	$3t^2y'' - 2ty' + 2y = 0$	[[_Emden, _Fowler]]	✓
15917	$t^2y'' - ty' + y = 0$	[[_Emden, _Fowler]]	✓

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Table 2.41 second order change of variable on x method 2

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#	ODE	CAS classification	Solved?
16030	$t^2y'' + 3ty' + y = \ln(t)$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
16031	$t^2y'' + ty' + 4y = t$	[[_2nd_order, _with_linear_symmetries]]	✓
16032	$t^2y'' - 4ty' - 6y = 2\ln(t)$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
16116	$4x^2y'' - 8xy' + 5y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]]]	✓
16117	$3x^2y'' - 4xy' + 2y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]]]	✓
16118	$2x^2y'' - 8xy' + 8y = 0$	[[_Emden, _Fowler]]	✓
16119	$2x^2y'' - 7xy' + 7y = 0$	[[_Emden, _Fowler]]	✓
16121	$9x^2y'' - 9xy' + 10y = 0$	[[_Emden, _Fowler]]	✓
16122	$2x^2y'' - 2xy' + 20y = 0$	[[_Emden, _Fowler]]	✓
16123	$x^2y'' - 5xy' + 10y = 0$	[[_Emden, _Fowler]]	✓
16124	$4x^2y'' + 8xy' + y = 0$	[[_Emden, _Fowler]]	✓
16126	$x^2y'' - 5xy' + 9y = 0$	[[_Emden, _Fowler]]	✓
16127	$x^2y'' + 7xy' + 9y = 0$	[[_Emden, _Fowler]]	✓
16136	$x^2y'' + 5xy' + 4y = \frac{1}{x^5}$	[[_2nd_order, _with_linear_symmetries]]	✓
16137	$x^2y'' - 5xy' + 9y = x^3$	[[_2nd_order, _with_linear_symmetries]]	✓
16138	$x^2y'' + xy' + y = \frac{1}{x^2}$	[[_2nd_order, _with_linear_symmetries]]	✓
16139	$x^2y'' + xy' + 4y = \frac{1}{x^2}$	[[_2nd_order, _with_linear_symmetries]]	✓
16140	$x^2y'' + 2xy' - 6y = 2x$	[[_2nd_order, _with_linear_symmetries]]	✓
16141	$x^2y'' + xy' - 16y = \ln(x)$	[[_2nd_order, _with_linear_symmetries]]	✓
16142	$x^2y'' + xy' + 4y = 8$	[[_2nd_order, _with_linear_symmetries]]	✓

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Table 2.41 second order change of variable on x method 2

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#	ODE	CAS classification	Solved?
16143	$x^2y'' + xy' + 36y = x^2$	[[_2nd_order, _with_linear_symmetries]]	✓
16146 i.c.	$3x^2y'' - 4xy' + 2y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
16147 i.c.	$2x^2y'' - 7xy' + 7y = 0$	[[_Emden, _Fowler]]	✓
16148 i.c.	$x^2y'' + xy' + 4y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
16149 i.c.	$x^2y'' + xy' + 2y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
16154 i.c.	$2x^2y'' + 3xy' - y = \frac{1}{x^2}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
16155 i.c.	$x^2y'' + 4xy' + 2y = \ln(x)$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
16157 i.c.	$9x^2y'' + 27xy' + 10y = \frac{1}{x}$	[[_2nd_order, _with_linear_symmetries]]	✓
16158	$x^2y'' - xy' + 2y = 0$	[[_Emden, _Fowler]]	✓
16159	$x^2y'' + 4xy' + 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
16160	$x^2y'' + xy' + y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
16165	$(x^2 + 1)^2 y'' + 2x(x^2 + 1) y' + 4y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
16166	$(x^2 + 1)^2 y'' + 2x(x^2 + 1) y' + 4y = \arctan(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16167 i.c.	$(x^2 + 1)^2 y'' + 2x(x^2 + 1) y' + 4y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓

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Table 2.41 second order change of variable on x method 2

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#	ODE	CAS classification	Solved?
16168	$(x^2 + 1)^2 y'' + 2x(x^2 + 1)y' + 4y = \arctan(x)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16169	$(x^4 - 1)y'' + (x^3 - x)y' + (x^2 - 1)y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
16170	$(x^4 - 1)y'' + (x^3 - x)y' + (4x^2 - 4)y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
16171	$(x^4 - 1)y'' + (x^3 - x)y' + (x^2 - 1)y = 0$ i.c.	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
16172	$x^2 y'' + 4xy' + 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
16173	$x^2 y'' + xy' + y = x^2$	[[_2nd_order, _with_linear_symmetries]]	✓
16174	$x^2 y'' + xy' + 4y = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
16175	$x^2 y'' - xy' + y = 0$ i.c.	[[_Emden, _Fowler]]	✓
16182	$6x^2 y'' + 5xy' - y = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
16282	$t^2 y'' - 5ty' + 5y = 0$	[[_Emden, _Fowler]]	✓
16283	$x^2 y'' + 7xy' + 8y = 0$	[[_Emden, _Fowler]]	✓
16284	$x^2 y'' - 4xy' + 6y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
16285	$x^2 y'' + xy' + y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
16286	$2x^2 y'' + 5xy' + y = 0$ i.c.	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
16287	$5x^2 y'' - xy' + 2y = 0$	[[_Emden, _Fowler]]	✓

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Table 2.41 second order change of variable on x method 2

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#	ODE	CAS classification	Solved?
16288	$x^2y'' - 7xy' + 25y = 0$	[[_Emden, _Fowler]]	✓
16289	$x^2y'' - 7xy' + 15y = 8x$	[[_2nd_order, _with_linear_symmetries]]	✓
16793	$x^2y'' + xy' - y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
16794	$x^2y'' + 3xy' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
16795	$x^2y'' + 2xy' + 6y = 0$	[[_Emden, _Fowler]]	✓
16797	$(x+2)^2y'' + 3(x+2)y' - 3y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
16803	$x^2y'' + xy' + y = x(6 - \ln(x))$	[[_2nd_order, _with_linear_symmetries]]	✓
16805	$x^2y'' - xy' - 3y = -\frac{16 \ln(x)}{x}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
16806	$x^2y'' - 2xy' - 2y = x^2 - 2x + 2$	[[_2nd_order, _with_linear_symmetries]]	✓
16807	$x^2y'' + xy' - y = x^m$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
16808	$x^2y'' + 4xy' + 2y = 2 \ln(x)^2 + 12x$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
16809	$(x+1)^3y'' + 3(x+1)^2y' + (x+1)y = 6 \ln(x+1)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16810	$(-2+x)^2y'' - 3(-2+x)y' + 4y = x$	[[_2nd_order, _with_linear_symmetries]]	✓
16839	$4xy'' + 2y' + y = \frac{6+x}{x^2}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16897	$xy'' + \frac{y'}{2} + \frac{y}{4} = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, 'with_symmetry_[0,F(x)]']]	✓
17227	$a x^2y'' + bxy' + cy = d$	[[_2nd_order, _with_linear_symmetries]]	✓
17239	$(-x^2+1)y'' - 2xy' + \frac{\alpha(1+\alpha)\mu^2y}{-x^2+1} = 0$ i.c.	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, 'with_symmetry_[0,F(x)]']]	✓
17302	$a x^2y'' + bxy' + cy = 0$	[[_Emden, _Fowler]]	✓

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Table 2.41 second order change of variable on x method 2

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#	ODE	CAS classification	Solved?
17303	$x^2y'' + xy' + 4y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, _with_symme- try_[0,F(x)]]]	✓
17304	$x^2y'' + 4xy' + 2y = 0$	[[_2nd_order, _exact, _lin- ear, _homogeneous]]	✓
17305	$x^2y'' + 3xy' + \frac{5y}{4} = 0$	[[_Emden, _Fowler]]	✓
17306	$x^2y'' - 4xy' - 6y = 0$	[[_2nd_order, _exact, _lin- ear, _homogeneous]]	✓
17308	$x^2y'' - 5xy' + 9y = 0$	[[_Emden, _Fowler]]	✓
17309	$x^2y'' + 2xy' + 4y = 0$	[[_Emden, _Fowler]]	✓
17310	$2x^2y'' - 4xy' + 6y = 0$	[[_Emden, _Fowler]]	✓
17311	$2x^2y'' + xy' - 3y = 0$	[[_2nd_order, _exact, _lin- ear, _homogeneous]]	✓
17312	$4x^2y'' + 8xy' + 17y = 0$	[[_Emden, _Fowler]]	✓
17313	$x^2y'' - 5xy' + 9y = 0$	[[_Emden, _Fowler]]	✓
17314	$x^2y'' + 3xy' + 5y = 0$	[[_Emden, _Fowler]]	✓
17348	$x^2y'' - 3xy' + 4y = \ln(x)$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
17349	$x^2y'' + 7xy' + 5y = x$	[[_2nd_order, _exact, _lin- ear, _nonhomogeneous]]	✓
17350	$x^2y'' - 2xy' + 2y = 3x^2 + 2\ln(x)$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
17351	$x^2y'' + xy' + 4y = \sin(\ln(x))$	[[_2nd_order, _linear, _ nonhomogeneous]]	✓
17382	$x^2y'' - 3xy' + 4y = x^2 \ln(x)$	[[_2nd_order, _linear, _ nonhomogeneous]]	✓
17383	$t^2y'' - 2ty' + 2y = 4t^2$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
17384	$t^2y'' + 7ty' + 5y = t$	[[_2nd_order, _exact, _lin- ear, _nonhomogeneous]]	✓
17677	$x^2y'' - 2xy' + 2y = 2x^3$	[[_2nd_order, _with_lin- ear_symmetries]]	✓

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Table 2.41 second order change of variable on x method 2

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#	ODE	CAS classification	Solved?
17685	$\sin(x)^2 y'' + \sin(x) \cos(x) y' = y$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
17702	$y'' + \frac{2y'}{x} - \frac{n(n+1)y}{x^2} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
17703	$x^2 y'' - 4xy' + 6y = x$	[[_2nd_order, _with_linear_symmetries]]	✓
17704	$x^2 y'' - xy' + 2y = x \ln(x)$	[[_2nd_order, _with_linear_symmetries]]	✓
17707	$(x+1)^2 y'' + (x+1)y' + y = 4 \cos(\ln(x+1))$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17711	$xy'' - y' - x^3 y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
17928	$x^3 y'' + x^2 y' + xy = 1$	[[_2nd_order, _with_linear_symmetries]]	✓
17936	$x^2 y'' - 3xy' - 5y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
17939	$x^2 y'' - 2xy' + 2y = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
17988	$x^2 y'' + 3xy' + 10y = 0$	[[_Emden, _Fowler]]	✓
17989	$2x^2 y'' + 10xy' + 8y = 0$	[[_Emden, _Fowler]]	✓
17990	$x^2 y'' + 2xy' - 12y = 0$	[[_Emden, _Fowler]]	✓
17992	$x^2 y'' - 3xy' + 4y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
17993	$x^2 y'' + 2xy' - 6y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
17994	$x^2 y'' + 2xy' + 3y = 0$	[[_Emden, _Fowler]]	✓
17995	$x^2 y'' + xy' - 2y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓

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Table 2.41 second order change of variable on x method 2

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#	ODE	CAS classification	Solved?
17996	$x^2y'' + xy' - 16y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]]	✓
17997	$xy'' + (x^2 - 1)y' + x^3y = 0$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
18032	$x^2y'' - 2xy' + 2y = xe^{-x}$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
18189	$t^2x'' - 6tx' + 12x = 0$	[[_Emden, _Fowler]]	✓
18192	$t^2x'' - 2tx' + 2x = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]]	✓
18271	$x^2y'' + 3xy' + y = \frac{1}{x}$	[[_2nd_order, _exact, _lin- ear, _nonhomogeneous]]	✓
18282	$x^2y'' - 5xy' + 5y = \frac{1}{x}$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
18291	$x^2y'' + xy' + y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]]	✓
18294	$v'' + \frac{2xv'}{x^2+1} + \frac{v}{(x^2+1)^2} = 0$	[[_2nd_order, _with_lin- ear_symmetries], [_2nd_or- der, _linear, '_with_sym- metry_[0,F(x)]']]]	✓
18361	$x^2y'' + 3xy' - 8y = x$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
18366	$x^2y'' - xy' + y = \ln(x)$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
18400	$y'' - \frac{2y'}{x} + \frac{2y}{x^2} = 0$	[[_2nd_order, _exact, _lin- ear, _homogeneous]]	✓
18599	$x^2y'' - xy' + y = 2\ln(x)$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
18603	$x^2y'' - 2xy' - 4y = x^4$	[[_2nd_order, _exact, _lin- ear, _nonhomogeneous]]	✓
18604	$x^2y'' + 5xy' + 4y = x^4$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
18605	$x^2y'' + 2xy' - 20y = (x+1)^2$	[[_2nd_order, _with_lin- ear_symmetries]]	✓

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Table 2.41 second order change of variable on x method 2

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#	ODE	CAS classification	Solved?
18606	$x^2y'' + 7xy' + 5y = x^5$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
18610	$x^2y'' + 4xy' + 2y = e^x$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
18612	$(x + a)^2 y'' - 4(x + a) y' + 6y = x$	[[_2nd_order, _with_linear_symmetries]]	✓
18616	$x^2y'' + xy' - y = x^m$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
18617	$x^2y'' - 3xy' + 4y = x^m$	[[_2nd_order, _with_linear_symmetries]]	✓
18620	$x^2y'' + 3xy' + y = \frac{1}{(1-x)^2}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
18621	$x^2y'' - (2m - 1)xy' + (m^2 + n^2)y = n^2x^m \ln(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18622	$x^2y'' - 3xy' + y = \frac{\ln(x) \sin(\ln(x)) + 1}{x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

## 2.4.14 second order change of variable on x method 1

Table 2.42: second order change of variable on x method 1

#	ODE	CAS classification	Solved?
227	<i>i.c.</i> $x^2y'' - 2xy' + 2y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
230	<i>i.c.</i> $x^2y'' + xy' + y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
244	$x^2y'' + xy' - y = 0$	[[_2nd_order, _exact, _lin- ear, _homogeneous]]	✓
248	$x^2y'' - 3xy' + 4y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
262	$x^2y'' - 2xy' + 2y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
315	$x^2y'' + xy' + 9y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
316	$x^2y'' + 7xy' + 25y = 0$	[[_Emden, _Fowler]]	✓
376	$x^2y'' + xy' - y = 72x^5$	[[_2nd_order, _exact, _lin- ear, _nonhomogeneous]]	✓
377	$x^2y'' - 4xy' + 6y = x^3$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
378	$x^2y'' - 3xy' + 4y = x^4$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
379	$4x^2y'' - 4xy' + 3y = 8x^{4/3}$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
380	$x^2y'' + xy' + y = \ln(x)$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
516	$xy'' - y' + 36x^3y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
819	<i>i.c.</i> $x^2y'' - 2xy' + 2y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓

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Table 2.42 second order change of variable on x method 1

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#	ODE	CAS classification	Solved?
822	<i>i.c.</i> $x^2y'' + xy' + y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]]	✓
833	$x^2y'' + xy' - y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
837	$x^2y'' - 3xy' + 4y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]]	✓
860	$x^2y'' + xy' + 9y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]]	✓
861	$x^2y'' + 7xy' + 25y = 0$	[[_Emden, _Fowler]]	✓
902	$x^2y'' + xy' - y = 72x^5$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
903	$x^2y'' - 4xy' + 6y = x^3$	[[_2nd_order, _with_linear_symmetries]]	✓
904	$x^2y'' - 3xy' + 4y = x^4$	[[_2nd_order, _with_linear_symmetries]]	✓
905	$4x^2y'' - 4xy' + 3y = 8x^{4/3}$	[[_2nd_order, _with_linear_symmetries]]	✓
906	$x^2y'' + xy' + y = \ln(x)$	[[_2nd_order, _with_linear_symmetries]]	✓
1293	$t^2y'' + ty' + y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]]	✓
1294	$t^2y'' + 4ty' + 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
1295	$t^2y'' + 3ty' + \frac{5y}{4} = 0$	[[_Emden, _Fowler]]	✓
1297	$t^2y'' - 4ty' + 6y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]]	✓
1298	$t^2y'' - ty' + 5y = 0$	[[_Emden, _Fowler]]	✓
1300	$t^2y'' + 7ty' + 10y = 0$	[[_Emden, _Fowler]]	✓

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Table 2.42 second order change of variable on x method 1

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#	ODE	CAS classification	Solved?
1301	$y'' + ty' + e^{-t^2}y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
1302	$ty'' + (t^2 - 1)y' + t^3y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
1327	$t^2y'' - 3ty' + 4y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
1328	$t^2y'' + 2ty' + \frac{y}{4} = 0$	[[_Emden, _Fowler]]	✓
1329	$2t^2y'' - 5ty' + 5y = 0$	[[_Emden, _Fowler]]	✓
1330	$t^2y'' + 3ty' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
1331	$4t^2y'' - 8ty' + 9y = 0$	[[_Emden, _Fowler]]	✓
1332	$t^2y'' + 5ty' + 13y = 0$	[[_Emden, _Fowler]]	✓
1351	$t^2y'' - 2ty' + 2y = 4t^2$	[[_2nd_order, _with_linear_symmetries]]	✓
1352	$t^2y'' + 7ty' + 5y = t$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
1746	$x^2y'' + xy' - y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
1747	$x^2y'' - xy' + y = 0$	[[_Emden, _Fowler]]	✓
1811	$x^2y'' + xy' - y = 2x^2 + 2$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
1815	$x^2y'' - 4xy' + 6y = x^{5/2}$	[[_2nd_order, _with_linear_symmetries]]	✓
1816	$x^2y'' - 3xy' + 3y = 2x^4 \sin(x)$	[[_2nd_order, _with_linear_symmetries]]	✓
1822	$xy'' - y' - 4x^3y = 8x^5$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2385	$t^2y'' + ty' + y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
2386	$t^2y'' + 2ty' + 2y = 0$	[[_Emden, _Fowler]]	✓
2400	$t^2y'' + 3ty' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓

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Table 2.42 second order change of variable on x method 1

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#	ODE	CAS classification	Solved?
2401	$t^2y'' - ty' + y = 0$	[[_Emden, _Fowler]]	✓
2431	$t^2y'' - 5ty' + 9y = 0$	[[_Emden, _Fowler]]	✓
2435	$t^2y'' + 3ty' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
2436	$t^2y'' - ty' + y = 0$	[[_Emden, _Fowler]]	✓
2438	$t^2y'' + ty' + y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
2439	$t^2y'' - ty' + 2y = 0$ i.c.	[[_Emden, _Fowler]]	✓
2565	$t^2y'' + ty' + y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
2566	$t^2y'' + 2ty' + 2y = 0$	[[_Emden, _Fowler]]	✓
2581	$t^2y'' + 3ty' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
2582	$t^2y'' - ty' + y = 0$	[[_Emden, _Fowler]]	✓
2631	$t^2y'' + 3ty' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
2632	$t^2y'' - ty' + y = 0$	[[_Emden, _Fowler]]	✓
2634	$t^2y'' + ty' + y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
2635	$t^2y'' + 3ty' + 2y = 0$	[[_Emden, _Fowler]]	✓
3221	$x^2y'' - 4xy' + y = 0$	[[_Emden, _Fowler]]	✓
3222	$x^2y'' + xy' + 16y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
3223	$4x^2y'' - 16xy' + 25y = 0$	[[_Emden, _Fowler]]	✓
3224	$x^2y'' + 5xy' + 10y = 0$	[[_Emden, _Fowler]]	✓
3226	$2x^2y'' - 3xy' + 2y = \ln(x^2)$	[[_2nd_order, _with_linear_symmetries]]	✓

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Table 2.42 second order change of variable on x method 1

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#	ODE	CAS classification	Solved?
3227	$x^2y'' - 3xy' + 4y = x^3$	[[_2nd_order, __with_linear_symmetries]]	✓
3228	$x^2y'' + 3xy' + y = 1 - x$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
3230	$x^2y'' - 2xy' + 2y = 4x + \sin(\ln(x))$	[[_2nd_order, __with_linear_symmetries]]	✓
3231	$x^2y'' - xy' + 2y = x^2 \ln(x)$	[[_2nd_order, __linear, _nonhomogeneous]]	✓
3232	$x^2y'' + 4xy' + 3y = (x - 1) \ln(x)$	[[_2nd_order, __linear, _nonhomogeneous]]	✓
3494	$(x + 1)^2 y'' + 3(x + 1) y' + y = x^2$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
3565	$x^2y'' + 5xy' + 3y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
3566	$x^2y'' - 3xy' + 4y = 0$	[[_Emden, __Fowler], [_2nd_order, __linear, __with_symmetry_[0,F(x)]]]	✓
3567	$x^2y'' - 3xy' + 13y = 0$	[[_Emden, _Fowler]]	✓
3568	$2x^2y'' - xy' + y = 9x^2$	[[_2nd_order, __with_linear_symmetries]]	✓
3569	$x^2y'' - 4xy' + 6y = x^4 \sin(x)$	[[_2nd_order, __linear, _nonhomogeneous]]	✓
3575	$x^2y'' + xy' - y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
3576	$x^2y'' + 5xy' + 4y = 0$	[[_Emden, _Fowler]]	✓
3708	$2x^2y'' + 5xy' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
3773	$x^2y'' + 4xy' + 2y = 4 \ln(x)$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
3774	$x^2y'' + 4xy' + 2y = \cos(x)$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
3775	$x^2y'' + xy' + 9y = 9 \ln(x)$	[[_2nd_order, __with_linear_symmetries]]	✓
3776	$x^2y'' - xy' + 5y = 8x \ln(x)^2$	[[_2nd_order, __linear, _nonhomogeneous]]	✓
3777	$x^2y'' - 4xy' + 6y = x^4 \sin(x)$	[[_2nd_order, __linear, _nonhomogeneous]]	✓

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Table 2.42 second order change of variable on x method 1

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#	ODE	CAS classification	Solved?
3778	$x^2 y'' + 6xy' + 6y = 4e^{2x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3781	$x^2 y'' - xy' + 5y = 0$ i.c.	[[_Emden, _Fowler]]	✓
3782	$t^2 y'' + ty' + 25y = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
4139	$(x^2 + 1)y'' + xy' - 4y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
4140	$x^2 y'' - 2xy' + 2y = x^2 + 2$	[[_2nd_order, _with_linear_symmetries]]	✓
4510	$x^2 y'' + 3xy' + 5y = \frac{5 \ln(x)}{x^2}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
5991	$y'' - \frac{2y'}{x} + \frac{2y}{x^2} = x \ln(x)$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
5992	$x^2 y'' + xy' - 4y = x^3$	[[_2nd_order, _with_linear_symmetries]]	✓
5993	$x^2 y'' + xy' - y = x^2 e^{-x}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
6026	$x^2 y'' - 2xy' + 2y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
6193	$x^2 y'' + xy' - 4y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
6194	$x^2 y'' + 7xy' + 9y = 0$	[[_Emden, _Fowler]]	✓
6195	$x^2 y'' - xy' + 6y = 0$	[[_Emden, _Fowler]]	✓
6196	$x^2 y'' + xy' - 16y = 8x^4$	[[_2nd_order, _with_linear_symmetries]]	✓
6197	$x^2 y'' + xy' - y = x - \frac{1}{x}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
6201	$x^2 y'' + xy' + y = 2x$	[[_2nd_order, _with_linear_symmetries]]	✓
6249	$x^2 y'' - 3xy' + 3y = 0$	[[_Emden, _Fowler]]	✓

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Table 2.42 second order change of variable on x method 1

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#	ODE	CAS classification	Solved?
6410	$x^2y'' + xy' - 9y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
6411	$xy'' + \frac{y'}{2} + 2y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
6412	$x^2y'' - xy' + y = 0$	[[_Emden, _Fowler]]	✓
6533	$t^2N'' - 2tN' + 2N = t \ln(t)$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
6541	$y'' + \frac{y'}{x} - \frac{y}{x^2} = \ln(x)$	[[_2nd_order, _exact, _lin- ear, _nonhomogeneous]]	✓
6696	$x^2y'' - 3xy' + 4y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
6698	$xy'' - y' + 4x^3y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
6751	$x^2y'' - 2xy' + 2y = \ln(x)^2 - \ln(x^2)$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
6754	$(x+1)^2y'' + (x+1)y' - y = \ln(x+1)^2 + x - 1$	[[_2nd_order, _exact, _lin- ear, _nonhomogeneous]]	✓
6764	$xy'' - y' + 4x^3y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
6765	$x^4y'' + 2x^3y' + y = \frac{x+1}{x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6766	$x^8y'' + 4x^7y' + y = \frac{1}{x^3}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6768	$xy'' - 3y' + \frac{3y}{x} = x + 2$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
7155	$y'' + \frac{y'}{x} - \frac{y}{x^2} = 0$	[[_2nd_order, _exact, _lin- ear, _homogeneous]]	✓

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Table 2.42 second order change of variable on x method 1

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#	ODE	CAS classification	Solved?
7156	$(x^2 + 1)y'' + xy' + y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
7160	$(-x^2 + 1)y'' - xy' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
7163	$x^2y'' + 2xy' + 4y = 0$	[[_Emden, _Fowler]]	✓
7165	$(x^2 + 1)y'' + xy' + y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
7168	$x^2y'' + xy' - y = x^2 + 2x$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
7175	$(-x^2 + 1)y'' - xy' + \frac{y}{4} = -\frac{x^2}{2} + \frac{1}{2}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7203	$y'' - \frac{xy'}{-x^2 + 1} + \frac{y}{-x^2 + 1} = 0$	[_Gegenbauer, [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
7350	$y'' + \frac{y'}{x} - \frac{y}{x^2} = 0$ i.c.	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
7351	$y'' + \frac{y'}{x} - \frac{y}{x^2} = 0$ i.c.	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
7352	$(3x - 1)^2 y'' + (9x - 3)y' - 9y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
7373	$(-x^2 + 1)y'' - xy' + \alpha^2 y = 0$	[_Gegenbauer, [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
7377	$x^2y'' + xy' - 4y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
7378	$x^2y'' - 5xy' + 9y = x^2$	[[_2nd_order, _with_linear_symmetries]]	✓
7380	$x^2y'' + xy' + 4y = 1$	[[_2nd_order, _with_linear_symmetries]]	✓
7381	$x^2y'' - 3xy' + 5y = 0$	[[_Emden, _Fowler]]	✓
7383	$x^2y'' + xy' - 4\pi y = x$	[[_2nd_order, _with_linear_symmetries]]	✓

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Table 2.42 second order change of variable on x method 1

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#	ODE	CAS classification	Solved?
7637	$x^2y'' + 3xy' + 10y = 0$	[[_Emden, _Fowler]]	✓
7638	$2x^2y'' + 10xy' + 8y = 0$	[[_Emden, _Fowler]]	✓
7641	$x^2y'' - 3xy' + 4y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
7643	$x^2y'' + 2xy' + 3y = 0$	[[_Emden, _Fowler]]	✓
7644	$x^2y'' + xy' - 2y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
7645	$x^2y'' + xy' - 16y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
7680	$x^2y'' - 2xy' + 2y = xe^{-x}$	[[_2nd_order, _with_linear_symmetries]]	✓
8283	$2x^2y'' - 3xy' + 2y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
8287	$x^2y'' + xy' - 9y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
8288	$x^2y'' - 3xy' + 4y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
8289	$x^2y'' - 5xy' + 9y = 0$	[[_Emden, _Fowler]]	✓
8290	$x^2y'' + 5xy' + 5y = 0$	[[_Emden, _Fowler]]	✓
8437	$t^2y'' - 3ty' + 5y = 0$	[[_Emden, _Fowler]]	✓
8441	$ty'' - y' + 4t^3y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
8529	$y'' - \frac{y'}{x} - x^2y - x^3 - \frac{1}{x} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8549	$x^4y'' + x^3y' - 4x^2y = 1$	[[_2nd_order, _with_linear_symmetries]]	✓

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Table 2.42 second order change of variable on x method 1

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#	ODE	CAS classification	Solved?
8550	$x^4 y'' + x^3 y' - 4x^2 y = x$	[[_2nd_order, _with_linear_symmetries]]	✓
8551	$x^2 y'' + x y' - 4y = x$	[[_2nd_order, _with_linear_symmetries]]	✓
8637	$y'' \sin(2x)^2 + y' \sin(4x) - 4y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
8815	$y'' + \frac{2y'}{x} + \frac{a^2 y}{x^4} = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
8816	$(-x^2 + 1) y'' - x y' - c^2 y = 0$	[_Gegenbauer, [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
8817	$x^6 y'' + 3x^5 y' + a^2 y = \frac{1}{x^2}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8818	$x^2 y'' - 3x y' + 3y = 2x^3 - x^2$	[[_2nd_order, _with_linear_symmetries]]	✓
8822	$x y'' - y' + 4x^3 y = 8x^3 \sin(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8823	$x y'' - y' + 4x^3 y = x^5$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8824	$\cos(x) y'' + \sin(x) y' - 2y \cos(x)^3 = 2 \cos(x)^5$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8825	$y'' + \left(1 - \frac{1}{x}\right) y' + 4x^2 y e^{-2x} = 4(x^3 + x^2) e^{-3x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8845	$x^2 y'' - 4x y' + 6y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
10718	$y'' + y' + a e^{-2x} y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
10719	$y'' - y' + e^{2x} y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓

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Table 2.42 second order change of variable on x method 1

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#	ODE	CAS classification	Solved?
10752	$y'' + \tan(x)y' - \cos(x)^2 y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10763	$y'' - \frac{af'(x)y'}{f(x)} + bf(x)^{2a}y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
10780	$xy'' - y' - yax^3 = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
10812	$2xy'' + y' + ay = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
10817	$4xy'' + 2y' - y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
10841	$x^2y'' + xy' - y - x^2a = 0$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
10842	$x^2y'' + xy' + ay = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
10848	$x^2y'' - xy' + y - 3x^3 = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10856	$x^2y'' - 2xy' + 2y - x^5 \ln(x) = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10864	$x^2y'' - 3xy' + 4y - 5x = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10866	$x^2y'' - 4xy' + 6y - x^4 + x^2 = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
10868	$x^2y'' - 5xy' + 8y - \sin(x)x^3 = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
10904	$(x^2 + 1)y'' + xy' + 2y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
10905	$(x^2 + 1)y'' + xy' - 9y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓

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Table 2.42 second order change of variable on x method 1

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#	ODE	CAS classification	Solved?
10906	$(x^2 + 1)y'' + xy' + ay = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
10916	$(x^2 - 1)y'' + xy' + ay = 0$	[_Gegenbauer, [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
10967	$(3x - 1)^2 y'' + 3(3x - 1)y' - 9y - \ln(3x - 1)^2 = 0$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
10971	$(27x^2 + 4)y'' + 27xy' - 3y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
10973	$50x(x - 1)y'' + 25(2x - 1)y' - 2y = 0$	[_Jacobi, [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
10978	$(x^2 a + 1)y'' + axy' + by = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
10995	$x(x^2 - 1)y'' + y' + ya x^3 = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
11017	$y'' = -\frac{(3x + a + 2b)y'}{2(x + a)(x + b)} - \frac{(-b + a)y}{4(x + a)^2(x + b)}$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
11030	$y'' = -\frac{2y'}{x} - \frac{a^2 y}{x^4}$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
11046	$y'' = -\frac{2xy'}{x^2 + 1} - \frac{y}{(x^2 + 1)^2}$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
11050	$y'' = -\frac{2xy'}{x^2 - 1} + \frac{a^2 y}{(x^2 - 1)^2}$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓

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Table 2.42 second order change of variable on x method 1

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#	ODE	CAS classification	Solved?
11056	$y'' = -\frac{(2x^2 + a)y'}{x(x^2 + a)} - \frac{by}{x^2(x^2 + a)}$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
11089	$y'' = -ax^{2a-1}x^{-2a}y' - b^2x^{-2a}y$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
11092	$y'' = \frac{y'}{x \ln(x)} + \ln(x)^2 y$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
11109	$y'' = -\frac{\cos(x)y'}{\sin(x)} + \frac{y}{\sin(x)^2}$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
12237	$xy'' + \frac{y'}{2} + ay = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
12241	$xy'' + ny' + bx^{1-2n}y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
12327	$(x^2 - 1)y'' + xy' + ay = 0$	[_Gegenbauer, [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
12328	$(-x^2 + 1)y'' - xy' + n^2y = 0$	[_Gegenbauer, [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
12338	$(x^2a + b)y'' + axy' + cy = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
12350	$(2ax + x^2 + b)y'' + (x + a)y' - m^2y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
12353	$(x^2a + 2bx + c)y'' + (ax + b)y' + dy = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓

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Table 2.42 second order change of variable on x method 1

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#	ODE	CAS classification	Solved?
12401	$(x^2a + b)^2 y'' + 2ax(x^2a + b) y' + cy = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
12428	$x(x^{2n} + a) y'' + (x^{2n} + a - an) y' - b^2 x^{2n-1} y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
12449	$y'' - ay' + b e^{2ax} y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
12627	$(x + 1)^2 y'' - (x + 1) y' + 6y = x$	[[_2nd_order, _with_linear_symmetries]]	✓
12650	$(-x^2 + 1) y'' - xy' + 4y = 0$	[_Gegenbauer, [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
12652	$x^6 y'' + 3x^5 y' + y = \frac{1}{x^2}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12676	$x^2 y'' + 3xy' + y = x$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
12832	$t^2 x'' + 3tx' + x = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
12833	$tx'' + 4x' + \frac{2x}{t} = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
12834	$t^2 x'' - 7tx' + 16x = 0$	[[_Emden, _Fowler]]	✓
12837	$t^2 x'' - tx' + 2x = 0$	[[_Emden, _Fowler]]	✓
12846	$t^2 x'' - 3tx' + 3x = 4t^7$	[[_2nd_order, _with_linear_symmetries]]	✓
13070	$x^2 y'' - 2xy' + 2y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
13071	$x^2 y'' + xy' - 4y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓

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Table 2.42 second order change of variable on x method 1

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#	ODE	CAS classification	Solved?
13199	$x^2y'' - 6xy' + 10y = 3x^4 + 6x^3$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13200	$(x + 1)^2 y'' - 2(x + 1) y' + 2y = 1$	[[_2nd_order, _with_linear_symmetries]]	✓
13207	$x^2y'' - 3xy' + 3y = 0$	[[_Emden, _Fowler]]	✓
13208	$x^2y'' + xy' - 4y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]]']]	✓
13209	$4x^2y'' - 4xy' + 3y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]]']]	✓
13210	$x^2y'' - 3xy' + 4y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]]']]	✓
13211	$x^2y'' + xy' + 4y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]]']]	✓
13212	$x^2y'' - 3xy' + 13y = 0$	[[_Emden, _Fowler]]	✓
13213	$3x^2y'' - 4xy' + 2y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]]']]	✓
13214	$x^2y'' + xy' + 9y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]]']]	✓
13215	$9x^2y'' + 3xy' + y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]]']]	✓
13216	$x^2y'' - 5xy' + 10y = 0$	[[_Emden, _Fowler]]	✓
13220	$x^2y'' - 4xy' + 6y = 4x - 6$	[[_2nd_order, _with_linear_symmetries]]	✓
13221	$x^2y'' - 5xy' + 8y = 2x^3$	[[_2nd_order, _with_linear_symmetries]]	✓
13222	$x^2y'' + 4xy' + 2y = 4 \ln(x)$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓

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Table 2.42 second order change of variable on x method 1

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#	ODE	CAS classification	Solved?
13223	$x^2y'' + xy' + 4y = 2x \ln(x)$	[[_2nd_order, _with_linear_symmetries]]	✓
13224	$x^2y'' + xy' + 4y = 4 \sin(\ln(x))$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13227 i.c.	$x^2y'' - 4xy' + 6y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
13228 i.c.	$x^2y'' + 5xy' + 3y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
13230 i.c.	$x^2y'' - 4xy' + 4y = -6x^3 + 4x^2$	[[_2nd_order, _with_linear_symmetries]]	✓
13232 i.c.	$x^2y'' - 5xy' + 8y = 2x^3$	[[_2nd_order, _with_linear_symmetries]]	✓
13338	$tx'' - 2x' + 9t^5x = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
13342	$t^2x'' + 3tx' + 3x = 0$	[[_Emden, _Fowler]]	✓
13349	$t^2x'' + tx' + x = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
13358 i.c.	$y' + xy'' + \frac{\lambda y}{x} = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
13359 i.c.	$y' + xy'' + \frac{\lambda y}{x} = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
13360 i.c.	$2xy' + (x^2 + 1)y'' + \frac{\lambda y}{x^2 + 1} = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
13361 i.c.	$-\frac{6y'x}{(3x^2 + 1)^2} + \frac{y''}{3x^2 + 1} + \lambda(3x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓

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Table 2.42 second order change of variable on x method 1

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#	ODE	CAS classification	Solved?
13472	$x^2 y'' - 4xy' + 6y = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]]	✓
13474	$t^2 x'' - 5tx' + 10x = 0$ i.c.	[[_Emden, _Fowler]]	✓
13475	$t^2 x'' + tx' - x = 0$ i.c.	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
13476	$x^2 z'' + 3xz' + 4z = 0$ i.c.	[[_Emden, _Fowler]]	✓
13478	$4t^2 x'' + 8tx' + 5x = 0$ i.c.	[[_Emden, _Fowler]]	✓
13479	$x^2 y'' - 5xy' + 5y = 0$ i.c.	[[_Emden, _Fowler]]	✓
13481	$t^2 x'' + 3tx' + 13x = 0$ i.c.	[[_Emden, _Fowler]]	✓
13580	$x^2 y'' - 4xy' + 6y = 2$	[[_2nd_order, _with_linear_symmetries]]	✓
13607	$(x+1)^2 y'' + (x+1)y' + y = 2 \cos(\ln(x+1))$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13679	$y'' + \cot(x)y' - y \csc(x)^2 = \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13763	$t^2 y'' + 3ty' + y = t^7$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
13836	$(-x^2 + 1)y'' - xy' - a^2 y = 0$	[_Gegenbauer, [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
13986	$x^2 y'' + xy' - y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
14004	$x^2 y'' + 6xy' + 4y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
14005	$x^2 y'' - 5xy' + 9y = 0$	[[_Emden, _Fowler]]	✓
14021	$x^2 y'' - 4xy' + 6y = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
14022	$x^2 y'' - 4xy' + 6y = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓

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Table 2.42 second order change of variable on x method 1

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#	ODE	CAS classification	Solved?
14023 i.c.	$x^2y'' - 4xy' + 6y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
14024 i.c.	$x^2y'' - 4xy' + 6y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
14025 i.c.	$x^2y'' - 4xy' + 6y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
14171 i.c.	$x^2y'' + xy' - 4y = -3x - \frac{3}{x}$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
14976 i.c.	$x^2y'' - 4xy' + 6y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
14977 i.c.	$4x^2y'' + 4xy' - y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
14979 i.c.	$xy'' - y' + 4x^3y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
14980 i.c.	$(x+1)^2y'' - 2(x+1)y' + 2y = 0$	[[_2nd_order, _with_lin- ear_symmetries], [_2nd_or- der, _linear, '_with_sym- metry_[0,F(x)]']]	✓
14981	$x^2y'' - 4xy' + 6y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
14982	$xy'' - y' + 4x^3y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
15055	$x^2y'' - 5xy' + 8y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓

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Table 2.42 second order change of variable on x method 1

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#	ODE	CAS classification	Solved?
15058	$2x^2y'' - xy' + y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
15059	$x^2y'' - 5xy' + 9y = 0$	[[_Emden, _Fowler]]	✓
15060	$x^2y'' + 5xy' + 4y = 0$	[[_Emden, _Fowler]]	✓
15062	$x^2y'' - 19xy' + 100y = 0$	[[_Emden, _Fowler]]	✓
15063	$x^2y'' - 5xy' + 29y = 0$	[[_Emden, _Fowler]]	✓
15064	$x^2y'' - xy' + 10y = 0$	[[_Emden, _Fowler]]	✓
15065	$x^2y'' + 5xy' + 29y = 0$	[[_Emden, _Fowler]]	✓
15066	$x^2y'' + xy' + y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
15067	$2x^2y'' + 5xy' + y = 0$	[[_2nd_order, _exact, _lin- ear, _homogeneous]]	✓
15070	$x^2y'' + xy' - 25y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
15071	$4x^2y'' + 8xy' + 5y = 0$	[[_Emden, _Fowler]]	✓
15072	$3x^2y'' - 7xy' + 3y = 0$	[[_Emden, _Fowler]]	✓
15074	$4x^2y'' + 4xy' - y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
15077	$x^2y'' - xy' + 2y = 0$	[[_Emden, _Fowler]]	✓
15078	$x^2y'' - 3xy' + 13y = 0$	[[_Emden, _Fowler]]	✓
15095	$x^2y'' - 4xy' + 6y = 10x + 12$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
15101	$x^2y'' - 4xy' + 6y = 1$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
15102	$x^2y'' - 4xy' + 6y = x$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
15103	$x^2y'' - 4xy' + 6y = 22x + 24$	[[_2nd_order, _with_lin- ear_symmetries]]	✓

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Table 2.42 second order change of variable on x method 1

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#	ODE	CAS classification	Solved?
15104	$x^2y'' - 7xy' + 15y = x^2$	[[_2nd_order, _with_linear_symmetries]]	✓
15105	$x^2y'' - 7xy' + 15y = x$	[[_2nd_order, _with_linear_symmetries]]	✓
15106	$x^2y'' - 7xy' + 15y = 1$	[[_2nd_order, _with_linear_symmetries]]	✓
15107	$x^2y'' - 7xy' + 15y = 4x^2 + 2x + 3$	[[_2nd_order, _with_linear_symmetries]]	✓
15181	$x^2y'' - 5xy' + 8y = \frac{5}{x^3}$	[[_2nd_order, _with_linear_symmetries]]	✓
15182	$2x^2y'' - xy' + y = \frac{50}{x^3}$	[[_2nd_order, _with_linear_symmetries]]	✓
15183	$2x^2y'' + 5xy' + y = 85 \cos(2 \ln(x))$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
15185	$3x^2y'' - 7xy' + 3y = 4x^3$	[[_2nd_order, _with_linear_symmetries]]	✓
15186	$2x^2y'' + 5xy' + y = \frac{10}{x}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
15189	$x^2y'' - 2xy' + 2y = 3\sqrt{x}$	[[_2nd_order, _with_linear_symmetries]]	✓
15195	$x^2y'' + xy' - y = \sqrt{x}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
15196	$x^2y'' + xy' - 9y = 12x^3$	[[_2nd_order, _with_linear_symmetries]]	✓
15200	$xy'' - y' - 4x^3y = x^3e^{x^2}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15213	$x^2y'' + xy' - 9y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, 'with_symmetry_[0,F(x)]']]	✓
15216	$x^2y'' - 7xy' + 16y = 0$	[[_Emden, _Fowler]]	✓
15221	$x^2y'' + 7xy' + 9y = 0$	[[_Emden, _Fowler]]	✓
15227	$x^2y'' + xy' + 9y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, 'with_symmetry_[0,F(x)]']]	✓
15232	$4x^2y'' + 8xy' + y = 0$	[[_Emden, _Fowler]]	✓

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Table 2.42 second order change of variable on x method 1

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#	ODE	CAS classification	Solved?
15234	$2x^2y'' - 3xy' + 2y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]]	✓
15235	$9x^2y'' + 3xy' + y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]]	✓
15245	$x^2y'' + xy' - 9y = 3\sqrt{x}$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
15253	$x^2y'' + 3xy' + 2y = 6$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
15254	$x^2y'' + xy' - y = \frac{1}{x^2 + 1}$	[[_2nd_order, _exact, _lin- ear, _nonhomogeneous]]	✓
15461	$t^2y'' + ty' + 2y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]]	✓
15476	$x^2y'' - 12xy' + 42y = 0$	[[_Emden, _Fowler]]	✓
15477	$t^2y'' + 3ty' + 5y = 0$	[[_Emden, _Fowler]]	✓
15502	$t^2y'' - 12ty' + 42y = 0$	[[_Emden, _Fowler]]	✓
	<i>i.c.</i>		
15503	$x^2y'' + 3xy' + 5y = 0$	[[_Emden, _Fowler]]	✓
	<i>i.c.</i>		
15523	$x^2y'' + 3xy' + 2y = 0$	[[_Emden, _Fowler]]	✓
15865	$t^2y'' + ty' - y = 0$	[[_2nd_order, _exact, _lin- ear, _homogeneous]]	✓
15916	$3t^2y'' - 2ty' + 2y = 0$	[[_Emden, _Fowler]]	✓
15917	$t^2y'' - ty' + y = 0$	[[_Emden, _Fowler]]	✓
16031	$t^2y'' + ty' + 4y = t$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
16116	$4x^2y'' - 8xy' + 5y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]]	✓
16117	$3x^2y'' - 4xy' + 2y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]]	✓

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Table 2.42 second order change of variable on x method 1

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#	ODE	CAS classification	Solved?
16118	$2x^2y'' - 8xy' + 8y = 0$	[[_Emden, _Fowler]]	✓
16119	$2x^2y'' - 7xy' + 7y = 0$	[[_Emden, _Fowler]]	✓
16121	$9x^2y'' - 9xy' + 10y = 0$	[[_Emden, _Fowler]]	✓
16122	$2x^2y'' - 2xy' + 20y = 0$	[[_Emden, _Fowler]]	✓
16123	$x^2y'' - 5xy' + 10y = 0$	[[_Emden, _Fowler]]	✓
16124	$4x^2y'' + 8xy' + y = 0$	[[_Emden, _Fowler]]	✓
16126	$x^2y'' - 5xy' + 9y = 0$	[[_Emden, _Fowler]]	✓
16127	$x^2y'' + 7xy' + 9y = 0$	[[_Emden, _Fowler]]	✓
16138	$x^2y'' + xy' + y = \frac{1}{x^2}$	[[_2nd_order, _with_linear_symmetries]]	✓
16139	$x^2y'' + xy' + 4y = \frac{1}{x^2}$	[[_2nd_order, _with_linear_symmetries]]	✓
16141	$x^2y'' + xy' - 16y = \ln(x)$	[[_2nd_order, _with_linear_symmetries]]	✓
16142	$x^2y'' + xy' + 4y = 8$	[[_2nd_order, _with_linear_symmetries]]	✓
16143	$x^2y'' + xy' + 36y = x^2$	[[_2nd_order, _with_linear_symmetries]]	✓
16146	$3x^2y'' - 4xy' + 2y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
16147	$2x^2y'' - 7xy' + 7y = 0$	[[_Emden, _Fowler]]	✓
16148	$x^2y'' + xy' + 4y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
16149	$x^2y'' + xy' + 2y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
16155	$x^2y'' + 4xy' + 2y = \ln(x)$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
16157	$9x^2y'' + 27xy' + 10y = \frac{1}{x}$	[[_2nd_order, _with_linear_symmetries]]	✓

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Table 2.42 second order change of variable on x method 1

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#	ODE	CAS classification	Solved?
16158	$x^2 y'' - xy' + 2y = 0$	[[_Emden, _Fowler]]	✓
16159	$x^2 y'' + 4xy' + 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
16160	$x^2 y'' + xy' + y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
16165	$(x^2 + 1)^2 y'' + 2x(x^2 + 1) y' + 4y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
16166	$(x^2 + 1)^2 y'' + 2x(x^2 + 1) y' + 4y = \arctan(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16167	<i>i.c.</i> $(x^2 + 1)^2 y'' + 2x(x^2 + 1) y' + 4y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
16168	<i>i.c.</i> $(x^2 + 1)^2 y'' + 2x(x^2 + 1) y' + 4y = \arctan(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16169	$(x^4 - 1) y'' + (x^3 - x) y' + (x^2 - 1) y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
16170	$(x^4 - 1) y'' + (x^3 - x) y' + (4x^2 - 4) y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
16171	<i>i.c.</i> $(x^4 - 1) y'' + (x^3 - x) y' + (x^2 - 1) y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
16172	$x^2 y'' + 4xy' + 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
16173	$x^2 y'' + xy' + y = x^2$	[[_2nd_order, _with_linear_symmetries]]	✓
16174	<i>i.c.</i> $x^2 y'' + xy' + 4y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
16282	$t^2 y'' - 5ty' + 5y = 0$	[[_Emden, _Fowler]]	✓

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Table 2.42 second order change of variable on x method 1

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#	ODE	CAS classification	Solved?
16283	$x^2y'' + 7xy' + 8y = 0$	[[_Emden, _Fowler]]	✓
16284	$x^2y'' - 4xy' + 6y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
16285	$x^2y'' + xy' + y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
16286	$2x^2y'' + 5xy' + y = 0$	[[_2nd_order, _exact, _lin- ear, _homogeneous]]	✓
16287	$5x^2y'' - xy' + 2y = 0$	[[_Emden, _Fowler]]	✓
16288	$x^2y'' - 7xy' + 25y = 0$	[[_Emden, _Fowler]]	✓
16289	$x^2y'' - 7xy' + 15y = 8x$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
16793	$x^2y'' + xy' - y = 0$	[[_2nd_order, _exact, _lin- ear, _homogeneous]]	✓
16794	$x^2y'' + 3xy' + y = 0$	[[_2nd_order, _exact, _lin- ear, _homogeneous]]	✓
16795	$x^2y'' + 2xy' + 6y = 0$	[[_Emden, _Fowler]]	✓
16798	$(2x + 1)^2 y'' - 2(2x + 1) y' + 4y = 0$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
16803	$x^2y'' + xy' + y = x(6 - \ln(x))$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
16807	$x^2y'' + xy' - y = x^m$	[[_2nd_order, _exact, _lin- ear, _nonhomogeneous]]	✓
16808	$x^2y'' + 4xy' + 2y = 2 \ln(x)^2 + 12x$	[[_2nd_order, _exact, _lin- ear, _nonhomogeneous]]	✓
16839	$4xy'' + 2y' + y = \frac{6+x}{x^2}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16897	$xy'' + \frac{y'}{2} + \frac{y}{4} = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
17239	$(-x^2 + 1) y'' - 2xy' + \frac{\alpha(1 + \alpha) \mu^2 y}{-x^2 + 1} = 0$	[[_2nd_order, _with_lin- ear_symmetries], [_2nd_or- der, _linear, '_with_sym- metry_[0,F(x)]']]	✓

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Table 2.42 second order change of variable on x method 1

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#	ODE	CAS classification	Solved?
17303	$x^2y'' + xy' + 4y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]]	✓
17304	$x^2y'' + 4xy' + 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
17305	$x^2y'' + 3xy' + \frac{5y}{4} = 0$	[[_Emden, _Fowler]]	✓
17308	$x^2y'' - 5xy' + 9y = 0$	[[_Emden, _Fowler]]	✓
17309	$x^2y'' + 2xy' + 4y = 0$	[[_Emden, _Fowler]]	✓
17310	$2x^2y'' - 4xy' + 6y = 0$	[[_Emden, _Fowler]]	✓
17312	$4x^2y'' + 8xy' + 17y = 0$	[[_Emden, _Fowler]]	✓
17314	$x^2y'' + 3xy' + 5y = 0$	[[_Emden, _Fowler]]	✓
17349	$x^2y'' + 7xy' + 5y = x$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
17350	$x^2y'' - 2xy' + 2y = 3x^2 + 2 \ln(x)$	[[_2nd_order, _with_linear_symmetries]]	✓
17351	$x^2y'' + xy' + 4y = \sin(\ln(x))$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17383	$t^2y'' - 2ty' + 2y = 4t^2$	[[_2nd_order, _with_linear_symmetries]]	✓
17384	$t^2y'' + 7ty' + 5y = t$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
17677	$x^2y'' - 2xy' + 2y = 2x^3$	[[_2nd_order, _with_linear_symmetries]]	✓
17685	$\sin(x)^2 y'' + \sin(x) \cos(x) y' = y$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]]	✓
17703	$x^2y'' - 4xy' + 6y = x$	[[_2nd_order, _with_linear_symmetries]]	✓
17704	$x^2y'' - xy' + 2y = x \ln(x)$	[[_2nd_order, _with_linear_symmetries]]	✓
17707	$(x+1)^2 y'' + (x+1) y' + y = 4 \cos(\ln(x+1))$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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Table 2.42 second order change of variable on x method 1

Continued from previous page

#	ODE	CAS classification	Solved?
17711	$xy'' - y' - x^3y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]]	✓
17928	$x^3y'' + x^2y' + xy = 1$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
17939	<i>i.c.</i> $x^2y'' - 2xy' + 2y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]]	✓
17988	$x^2y'' + 3xy' + 10y = 0$	[[_Emden, _Fowler]]	✓
17989	$2x^2y'' + 10xy' + 8y = 0$	[[_Emden, _Fowler]]	✓
17992	$x^2y'' - 3xy' + 4y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]]	✓
17994	$x^2y'' + 2xy' + 3y = 0$	[[_Emden, _Fowler]]	✓
17995	$x^2y'' + xy' - 2y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]]	✓
17996	$x^2y'' + xy' - 16y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]]	✓
17997	$xy'' + (x^2 - 1)y' + x^3y = 0$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
18032	$x^2y'' - 2xy' + 2y = xe^{-x}$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
18189	$t^2x'' - 6tx' + 12x = 0$	[[_Emden, _Fowler]]	✓
18192	$t^2x'' - 2tx' + 2x = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]]	✓
18282	$x^2y'' - 5xy' + 5y = \frac{1}{x}$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
18291	$x^2y'' + xy' + y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]]	✓

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Table 2.42 second order change of variable on x method 1

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#	ODE	CAS classification	Solved?
18294	$v'' + \frac{2xv'}{x^2+1} + \frac{v}{(x^2+1)^2} = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
18400	$y'' - \frac{2y'}{x} + \frac{2y}{x^2} = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
18604	$x^2y'' + 5xy' + 4y = x^4$	[[_2nd_order, _with_linear_symmetries]]	✓
18606	$x^2y'' + 7xy' + 5y = x^5$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
18610	$x^2y'' + 4xy' + 2y = e^x$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
18616	$x^2y'' + xy' - y = x^m$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
18622	$x^2y'' - 3xy' + y = \frac{\ln(x) \sin(\ln(x)) + 1}{x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

## 2.4.15 second order change of variable on y method 1

Table 2.43: second order change of variable on y method 1

#	ODE	CAS classification	Solved?
227	<i>i.c.</i> $x^2y'' - 2xy' + 2y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
262	$x^2y'' - 2xy' + 2y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
377	$x^2y'' - 4xy' + 6y = x^3$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
526	$xy'' + 2y' + xy = 0$	[_Lienard]	✓
819	<i>i.c.</i> $x^2y'' - 2xy' + 2y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
903	$x^2y'' - 4xy' + 6y = x^3$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
905	$4x^2y'' - 4xy' + 3y = 8x^{4/3}$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
1294	$t^2y'' + 4ty' + 2y = 0$	[[_2nd_order, _exact, _lin- ear, _homogeneous]]	✓
1297	$t^2y'' - 4ty' + 6y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
1346	$t^2y'' - t(t+2)y' + (t+2)y = 2t^3$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
1350	$x^2y'' + xy' + \left(x^2 - \frac{1}{4}\right)y = g(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1742	<i>i.c.</i> $(x^2 - 1)y'' + 4xy' + 2y = 0$	[[_2nd_order, _exact, _lin- ear, _homogeneous]]	✓
1749	$4x^2y'' - 4xy' + (-16x^2 + 3)y = 0$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
1751	$x^2y'' - 2xy' + (x^2 + 2)y = 0$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
1754	$(x^2 - 4)y'' + 4xy' + 2y = 0$	[[_2nd_order, _exact, _lin- ear, _homogeneous]]	✓
1812	$xy'' + (2 - 2x)y' + (-2 + x)y = e^{2x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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Table 2.43 second order change of variable on y method 1

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#	ODE	CAS classification	Solved?
1813	$4x^2y'' + (-8x^2 + 4x)y' + (4x^2 - 4x - 1)y = 4\sqrt{x}e^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1815	$x^2y'' - 4xy' + 6y = x^{5/2}$	[[_2nd_order, _with_linear_symmetries]]	✓
1821	$x^2y'' - 2xy' + (x^2 + 2)y = x^3 \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1824	$4x^2y'' - 4xy' + (-16x^2 + 3)y = 8x^{5/2}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1825	$4x^2y'' - 4xy' + (4x^2 + 3)y = x^{7/2}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1826	$x^2y'' - 2xy' - (x^2 - 2)y = 3x^4$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1827	$x^2y'' - 2x(x + 1)y' + (x^2 + 2x + 2)y = x^3e^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1829	$x^2y'' - x(4 + x)y' + 2(x + 3)y = x^4e^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1831	$x^2y'' - 4xy' + (x^2 + 6)y = x^4$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1833	$4x^2y'' - 4x(x + 1)y' + (2x + 3)y = x^{5/2}e^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1836	$(x - 1)^2y'' - (x^2 - 1)y' + (x + 1)y = (x - 1)^3e^x$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
2394	$y'' - 4ty' + (4t^2 - 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
2399	$t^2y'' + ty' + \left(t^2 - \frac{1}{4}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
2434	$(t - 1)^2y'' - 2(t - 1)y' + 2y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
2630	$(t - 1)^2y'' - 2(t - 1)y' + 2y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
3230	$x^2y'' - 2xy' + 2y = 4x + \sin(\ln(x))$	[[_2nd_order, _with_linear_symmetries]]	✓
3500	$y'' + 4xy' + (4x^2 + 6)y = e^{-x^2} \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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Table 2.43 second order change of variable on y method 1

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#	ODE	CAS classification	Solved?
3569	$x^2y'' - 4xy' + 6y = x^4 \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3773	$x^2y'' + 4xy' + 2y = 4 \ln(x)$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
3774	$x^2y'' + 4xy' + 2y = \cos(x)$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
3777	$x^2y'' - 4xy' + 6y = x^4 \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3778	$x^2y'' + 6xy' + 6y = 4e^{2x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4140	$x^2y'' - 2xy' + 2y = x^2 + 2$	[[_2nd_order, _with_linear_symmetries]]	✓
5991	$y'' - \frac{2y'}{x} + \frac{2y}{x^2} = x \ln(x)$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
6026	$x^2y'' - 2xy' + 2y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, _with_symmetry_[0,F(x)]]]	✓
6078	$u'' + \frac{2u'}{x} - a^2u = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
6079	$u'' + \frac{2u'}{x} + a^2u = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
6084	$x^2y'' + xy' - \left(x^2 + \frac{1}{4}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
6255	$y'' - 4xy' + (4x^2 - 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
6409	$x(1-x)y'' + 2(-2x+1)y' - 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
6533	$t^2N'' - 2tN' + 2N = t \ln(t)$	[[_2nd_order, _with_linear_symmetries]]	✓
6751	$x^2y'' - 2xy' + 2y = \ln(x)^2 - \ln(x^2)$	[[_2nd_order, _with_linear_symmetries]]	✓
6760	$y'' - 2 \tan(x)y' - 10y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
6770	$x^2y'' - 4xy' + (9x^2 + 6)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
6771	$xy'' + 2y' + 4xy = 4$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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Table 2.43 second order change of variable on y method 1

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#	ODE	CAS classification	Solved?
7174	$xy'' + 2y' + xy = \sec(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7199	$y'' + 2x^2y' + (x^4 + 2x - 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
7201	$\sin(x)u'' + 2\cos(x)u' + \sin(x)u = 0$	[_Lienard]	✓
7211	$u'' - (2x + 1)u' + (x^2 + x - 1)u = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
7221	$x^2y'' - 2xy' + (x^2 + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
7362	$x^2y'' + 4xy' + (x^2 + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
7680	$x^2y'' - 2xy' + 2y = xe^{-x}$	[[_2nd_order, _with_linear_symmetries]]	✓
7743	<i>i.c.</i> $x^2y'' - 2xy' + 2y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
7970	$x^2y'' + xy' + \left(36x^2 - \frac{1}{4}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
7984	$x^2y'' + 4xy' + (x^2 + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
7986	$4x^2y'' - 4xy' + (16x^2 + 3)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8639	$y'' + 2xy' + (x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8640	$y'' + 2\cot(x)y' - y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8641	$x^2y'' + xy' + \left(x^2 - \frac{1}{4}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8642	$4x^2y'' + (-8x^2 + 4x)y' + (4x^2 - 4x - 1)y = 4\sqrt{x}e^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8828	$\cos(x)^2y'' - 2\sin(x)\cos(x)y' + \cos(x)^2y = 0$	[_Lienard]	✓
8829	$y'' - 4xy' + (4x^2 - 1)y = -3e^{x^2}\sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8830	$y'' - 2bxy' + b^2x^2y = x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8831	$y'' - 4xy' + (4x^2 - 3)y = e^{x^2}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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Table 2.43 second order change of variable on y method 1

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#	ODE	CAS classification	Solved?
8832	$y'' - 2 \tan(x) y' + 5y = e^{x^2} \sec(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8833	$x^2 y'' - 2xy' + 2(x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8836	$xy'' + 2y' - xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8837	$xy'' + 2y' + xy = 0$	[_Lienard]	✓
8845	$x^2 y'' - 4xy' + 6y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, ' _with_symmetry_[0,F(x)]']]	✓
10732	$y'' + 4xy' + (4x^2 + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10735	$y'' - 4xy' + (4x^2 - 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10736	$y'' - 4xy' + (4x^2 - 3)y - e^{x^2} = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
10738	$y'' + 2axy' + a^2 x^2 y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10746	$y'' + y' \sqrt{x} + \left( \frac{1}{4\sqrt{x}} + \frac{x}{4} - 9 \right) y - x e^{-\frac{x^3}{3}} = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
10756	$y'' + 2ay' \cot(ax) + (-a^2 + b^2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10762	$y'' + f(x)y' + \left( \frac{f(x)^2}{4} + \frac{f'(x)}{2} + a \right) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10772	$a^2 y'' + a(a^2 - 2b e^{-ax})y' + b^2 e^{-2ax} y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10782	$xy'' + 2y' - xy - e^x = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
10783	$xy'' + 2y' + axy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10856	$x^2 y'' - 2xy' + 2y - x^5 \ln(x) = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10858	$x^2 y'' - 2xy' + (x^2 + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10859	$x^2 y'' - 2xy' + (x^2 + 2)y - \frac{x^2}{\cos(x)} = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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Table 2.43 second order change of variable on y method 1

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#	ODE	CAS classification	Solved?
10860	$x^2 y'' - 2xy' + (x^2 + 2)y - \frac{x^3}{\cos(x)} = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
10861	$x^2 y'' - 2xy' + (a^2 x^2 + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10884	$x^2 y'' - 2x(x+1)y' + 2(x+1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10911	$(x^2 + 1)y'' + 4xy' + 2y - 2\cos(x) + 2x = 0$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
10924	$(x^2 - 1)y'' + 4xy' + (x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10958	$4x^2 y'' + 4xy' - (x^2 a + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10962	$4x^2 y'' - 4x(2x - 1)y' + (4x^2 - 4x - 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12206	$y'' + 2(ax + b)y' + (a^2 x^2 + 2abx + c)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12212	$y'' + (2x^2 + a)y' + (x^4 + x^2 a + b + 2x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12222	$y'' + 2a x^n y' + a(a x^{2n} + n x^{n-1})y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12305	$x^2 y'' - 2axy' + (b^2 x^2 + a(a + 1))y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12306	$x^2 y'' - 2axy' + (-b^2 x^2 + a(a + 1))y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12368	$x^2(ax + b)y'' - 2x(ax + 2b)y' + 2(ax + 3b)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12453	$y'' + 2a e^{\lambda x} y' + a e^{\lambda x} (a e^{\lambda x} + \lambda)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12457	$y'' - (a + 2b e^{ax})y' + b^2 e^{2ax}y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12464	$y'' + (2a e^{\lambda x} + b)y' + (a^2 e^{2\lambda x} + a(b + \lambda)e^{\lambda x} + c)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12645	$\sin(x)y'' + 2\cos(x)y' + 3\sin(x)y = e^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12646	$y'' - 2\tan(x)y' - (a^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12648	$xy'' + 2y' - xy = 2e^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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Table 2.43 second order change of variable on y method 1

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#	ODE	CAS classification	Solved?
12649	$y'' + (2e^x - 1)y' + e^{2x}y = e^{4x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12656	$x^2y'' + 4xy' + (-x^2 + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12659	$x^2y'' - 4xy' + (x^2 + 6)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12661	$x^2y'' - 2x(x + 1)y' + 2(x + 1)y = x^3$	[[_2nd_order, _with_linear_symmetries]]	✓
12677	$(x - 1)^2y'' + 4(x - 1)y' + 2y = \cos(x)$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
12833	$tx'' + 4x' + \frac{2x}{t} = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
12925	$(x^2 + 1)y'' + 4xy' + 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
13070 i.c.	$x^2y'' - 2xy' + 2y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
13200	$(x + 1)^2y'' - 2(x + 1)y' + 2y = 1$	[[_2nd_order, _with_linear_symmetries]]	✓
13202	$x^2y'' - x(x + 2)y' + (x + 2)y = x^3$	[[_2nd_order, _with_linear_symmetries]]	✓
13205	$\sin(x)^2y'' - 2\sin(x)\cos(x)y' + (\cos(x)^2 + 1)y = \sin(x)^3$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13209	$4x^2y'' - 4xy' + 3y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
13220	$x^2y'' - 4xy' + 6y = 4x - 6$	[[_2nd_order, _with_linear_symmetries]]	✓
13222	$x^2y'' + 4xy' + 2y = 4\ln(x)$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
13227 i.c.	$x^2y'' - 4xy' + 6y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓

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Table 2.43 second order change of variable on y method 1

*Continued from previous page*

#	ODE	CAS classification	Solved?
13472	$x^2y'' - 4xy' + 6y = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
13580	$x^2y'' - 4xy' + 6y = 2$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
13673	$y'' + 4xy' + (4x^2 + 2)y = 0$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
13680	$x \ln(x)y'' + 2y' - \frac{y}{x} = 1$	[[_2nd_order, _exact, _lin- ear, _nonhomogeneous]]	✓
13810	$y'' + \frac{y'}{x} + \left(1 - \frac{1}{4x^2}\right)y = x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
14021	$x^2y'' - 4xy' + 6y = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
14022	$x^2y'' - 4xy' + 6y = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
14023	$x^2y'' - 4xy' + 6y = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
14024	$x^2y'' - 4xy' + 6y = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
14025	$x^2y'' - 4xy' + 6y = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
14976	$x^2y'' - 4xy' + 6y = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
14977	$4x^2y'' + 4xy' - y = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓

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Table 2.43 second order change of variable on y method 1

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#	ODE	CAS classification	Solved?
14980	$(x+1)^2 y'' - 2(x+1)y' + 2y = 0$ i.c.	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
14981	$x^2 y'' - 4xy' + 6y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
15074	$4x^2 y'' + 4xy' - y = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
15095	$x^2 y'' - 4xy' + 6y = 10x + 12$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
15101	$x^2 y'' - 4xy' + 6y = 1$	[[_2nd_order, _with_linear_symmetries]]	✓
15102	$x^2 y'' - 4xy' + 6y = x$	[[_2nd_order, _with_linear_symmetries]]	✓
15103	$x^2 y'' - 4xy' + 6y = 22x + 24$	[[_2nd_order, _with_linear_symmetries]]	✓
15189	$x^2 y'' - 2xy' + 2y = 3\sqrt{x}$	[[_2nd_order, _with_linear_symmetries]]	✓
15201	$xy'' + (2x+2)y' + 2y = 8e^{2x}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
15476	$x^2 y'' - 12xy' + 42y = 0$	[[_Emden, _Fowler]]	✓
15502	$t^2 y'' - 12ty' + 42y = 0$ i.c.	[[_Emden, _Fowler]]	✓
16036	$t^2 y'' - 4ty' + (t^2 + 6)y = t^3 + 2t$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
16038	$ty'' + 2y' + ty = -t$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
16040	$4t^2 y'' + 4ty' + (16t^2 - 1)y = 16t^{3/2}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16155	$x^2 y'' + 4xy' + 2y = \ln(x)$ i.c.	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
16159	$x^2 y'' + 4xy' + 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
16172	$x^2 y'' + 4xy' + 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓

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Table 2.43 second order change of variable on y method 1

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#	ODE	CAS classification	Solved?
16279	$y'' - 2ty' + t^2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
16284	$x^2y'' - 4xy' + 6y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
16808	$x^2y'' + 4xy' + 2y = 2\ln(x)^2 + 12x$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
16893	$x^2y'' + xy' + \left(x^2 - \frac{1}{4}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
17245	$x^2y'' - x(x+2)y' + (x+2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
17304	$x^2y'' + 4xy' + 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
17350	$x^2y'' - 2xy' + 2y = 3x^2 + 2\ln(x)$	[[_2nd_order, _with_linear_symmetries]]	✓
17375	$t^2y'' - t(t+2)y' + (t+2)y = 2t^3$	[[_2nd_order, _with_linear_symmetries]]	✓
17378	$x^2y'' + xy' + \left(x^2 - \frac{1}{4}\right)y = 3x^{3/2}\sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17380	$x^2y'' + xy' + \left(x^2 - \frac{1}{4}\right)y = g(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17672	$y'' + \frac{2y'}{x} + y = 0$	[_Lienard]	✓
17677	$x^2y'' - 2xy' + 2y = 2x^3$	[[_2nd_order, _with_linear_symmetries]]	✓
17703	$x^2y'' - 4xy' + 6y = x$	[[_2nd_order, _with_linear_symmetries]]	✓
17709	$y'' + \frac{2y'}{x} + y = 0$	[_Lienard]	✓
17712	$y'' - 4xy' + (4x^2 - 1)y = -3e^{x^2}\sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17937	$x^2y'' - 4xy' + (x^2 + 6)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
17939	$x^2y'' - 2xy' + 2y = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓

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Table 2.43 second order change of variable on y method 1

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#	ODE	CAS classification	Solved?
17947	$y'' + 2xy' + (x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
18032	$x^2y'' - 2xy' + 2y = xe^{-x}$	[[_2nd_order, _with_linear_symmetries]]	✓
18189	$t^2x'' - 6tx' + 12x = 0$	[[_Emden, _Fowler]]	✓
18192	$t^2x'' - 2tx' + 2x = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
18278	$xy'' + 2y' = xy$	[[_2nd_order, _with_linear_symmetries]]	✓
18294	$v'' + \frac{2xv'}{x^2 + 1} + \frac{v}{(x^2 + 1)^2} = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
18367	$(x^2 - 1)y'' + 4xy' + 2y = 2x$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
18368	$(x^2 + 1)y'' + 4xy' + 2y = x$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
18371	$(3x^2 + x)y'' + 2(1 + 6x)y' + 6y = \sin(x)$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
18400	$y'' - \frac{2y'}{x} + \frac{2y}{x^2} = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
18610	$x^2y'' + 4xy' + 2y = e^x$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
18612	$(x + a)^2y'' - 4(x + a)y' + 6y = x$	[[_2nd_order, _with_linear_symmetries]]	✓

## 2.4.16 second order change of variable on y method 2

Table 2.44: second order change of variable on y method 2

#	ODE	CAS classification	Solved?
227	$x^2y'' - 2xy' + 2y = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
228	$x^2y'' + 2xy' - 6y = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
229	$x^2y'' - xy' + y = 0$ i.c.	[[_Emden, _Fowler]]	✓
230	$x^2y'' + xy' + y = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
244	$x^2y'' + xy' - y = 0$	[[_2nd_order, _exact, _lin- ear, _homogeneous]]	✓
245	$x^2y'' + 2xy' - 12y = 0$	[[_Emden, _Fowler]]	✓
246	$4x^2y'' + 8xy' - 3y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
248	$x^2y'' - 3xy' + 4y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
262	$x^2y'' - 2xy' + 2y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
315	$x^2y'' + xy' + 9y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
316	$x^2y'' + 7xy' + 25y = 0$	[[_Emden, _Fowler]]	✓
376	$x^2y'' + xy' - y = 72x^5$	[[_2nd_order, _exact, _lin- ear, _nonhomogeneous]]	✓
377	$x^2y'' - 4xy' + 6y = x^3$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
378	$x^2y'' - 3xy' + 4y = x^4$	[[_2nd_order, _with_lin- ear_symmetries]]	✓

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Table 2.44 second order change of variable on y method 2

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#	ODE	CAS classification	Solved?
379	$4x^2y'' - 4xy' + 3y = 8x^{4/3}$	[[_2nd_order, _with_linear_symmetries]]	✓
380	$x^2y'' + xy' + y = \ln(x)$	[[_2nd_order, _with_linear_symmetries]]	✓
381	$(x^2 - 1)y'' - 2xy' + 2y = x^2 - 1$	[[_2nd_order, _with_linear_symmetries]]	✓
819	$x^2y'' - 2xy' + 2y = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
820	$x^2y'' + 2xy' - 6y = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
821	$x^2y'' - xy' + y = 0$ i.c.	[[_Emden, _Fowler]]	✓
822	$x^2y'' + xy' + y = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
833	$x^2y'' + xy' - y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
834	$x^2y'' + 2xy' - 12y = 0$	[[_Emden, _Fowler]]	✓
835	$4x^2y'' + 8xy' - 3y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
837	$x^2y'' - 3xy' + 4y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
860	$x^2y'' + xy' + 9y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
861	$x^2y'' + 7xy' + 25y = 0$	[[_Emden, _Fowler]]	✓
902	$x^2y'' + xy' - y = 72x^5$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
903	$x^2y'' - 4xy' + 6y = x^3$	[[_2nd_order, _with_linear_symmetries]]	✓

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Table 2.44 second order change of variable on y method 2

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#	ODE	CAS classification	Solved?
904	$x^2y'' - 3xy' + 4y = x^4$	[[_2nd_order, _with_linear_symmetries]]	✓
905	$4x^2y'' - 4xy' + 3y = 8x^{4/3}$	[[_2nd_order, _with_linear_symmetries]]	✓
906	$x^2y'' + xy' + y = \ln(x)$	[[_2nd_order, _with_linear_symmetries]]	✓
907	$(x^2 - 1)y'' - 2xy' + 2y = x^2 - 1$	[[_2nd_order, _with_linear_symmetries]]	✓
1293	$t^2y'' + ty' + y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
1294	$t^2y'' + 4ty' + 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
1295	$t^2y'' + 3ty' + \frac{5y}{4} = 0$	[[_Emden, _Fowler]]	✓
1296	$t^2y'' - 4ty' - 6y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
1297	$t^2y'' - 4ty' + 6y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
1298	$t^2y'' - ty' + 5y = 0$	[[_Emden, _Fowler]]	✓
1299	$t^2y'' + 3ty' - 3y = 0$	[[_Emden, _Fowler]]	✓
1300	$t^2y'' + 7ty' + 10y = 0$	[[_Emden, _Fowler]]	✓
1327	$t^2y'' - 3ty' + 4y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
1328	$t^2y'' + 2ty' + \frac{y}{4} = 0$	[[_Emden, _Fowler]]	✓
1329	$2t^2y'' - 5ty' + 5y = 0$	[[_Emden, _Fowler]]	✓
1330	$t^2y'' + 3ty' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
1331	$4t^2y'' - 8ty' + 9y = 0$	[[_Emden, _Fowler]]	✓
1332	$t^2y'' + 5ty' + 13y = 0$	[[_Emden, _Fowler]]	✓
1346	$t^2y'' - t(t+2)y' + (t+2)y = 2t^3$	[[_2nd_order, _with_linear_symmetries]]	✓

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Table 2.44 second order change of variable on y method 2

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#	ODE	CAS classification	Solved?
1348	$(-t + 1)y'' + ty' - y = 2(t - 1)^2 e^{-t}$	[[_2nd_order, _with_linear_symmetries]]	✓
1349	$x^2 y'' - 3xy' + 4y = x^2 \ln(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1351	$t^2 y'' - 2ty' + 2y = 4t^2$	[[_2nd_order, _with_linear_symmetries]]	✓
1352	$t^2 y'' + 7ty' + 5y = t$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
1354	$(-t + 1)y'' + ty' - y = 2(t - 1)e^{-t}$	[[_2nd_order, _with_linear_symmetries]]	✓
1746	$x^2 y'' + xy' - y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
1747	$x^2 y'' - xy' + y = 0$	[[_Emden, _Fowler]]	✓
1748	$x^2 y'' - (2a - 1)xy' + a^2 y = 0$	[[_Emden, _Fowler]]	✓
1750	$(x - 1)y'' - xy' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
1752	$4x^2 \sin(x)y'' - 4x(x \cos(x) + \sin(x))y' + (2x \cos(x) + 3 \sin(x))y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
1756	$(x^2 - 2x)y'' + (-x^2 + 2)y' + (2x - 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
1811	$x^2 y'' + xy' - y = 2x^2 + 2$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
1815	$x^2 y'' - 4xy' + 6y = x^{5/2}$	[[_2nd_order, _with_linear_symmetries]]	✓
1816	$x^2 y'' - 3xy' + 3y = 2x^4 \sin(x)$	[[_2nd_order, _with_linear_symmetries]]	✓
1820	$x^2 y'' - (2a - 1)xy' + a^2 y = x^{a+1}$	[[_2nd_order, _with_linear_symmetries]]	✓
1828	$x^2 y'' - xy' - 3y = x^{3/2}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
1829	$x^2 y'' - x(4 + x)y' + 2(x + 3)y = x^4 e^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1832	$(x - 1)y'' - xy' + y = 2(x - 1)^2 e^x$	[[_2nd_order, _with_linear_symmetries]]	✓
1833	$4x^2 y'' - 4x(x + 1)y' + (2x + 3)y = x^{5/2} e^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1838	$x^2 y'' + 2xy' - 2y = -2x^2$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓

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Table 2.44 second order change of variable on y method 2

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#	ODE	CAS classification	Solved?
2362	$2t^2y'' + 3ty' - y = 0$ i.c.	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
2373	$t^2y'' + \alpha ty' + \beta y = 0$	[[_Emden, _Fowler]]	✓
2374	$t^2y'' + 5ty' - 5y = 0$	[[_Emden, _Fowler]]	✓
2375	$t^2y'' - ty' - 2y = 0$ i.c.	[[_Emden, _Fowler]]	✓
2385	$t^2y'' + ty' + y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
2386	$t^2y'' + 2ty' + 2y = 0$	[[_Emden, _Fowler]]	✓
2395	$(-t^2 + 1)y'' - 2ty' + 2y = 0$	[_Gegenbauer]	✓
2396	$(t^2 + 1)y'' - 2ty' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
2400	$t^2y'' + 3ty' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
2401	$t^2y'' - ty' + y = 0$	[[_Emden, _Fowler]]	✓
2411	$y'' - \frac{2ty'}{t^2 + 1} + \frac{2y}{t^2 + 1} = t^2 + 1$	[[_2nd_order, _with_linear_symmetries]]	✓
2431	$t^2y'' - 5ty' + 9y = 0$	[[_Emden, _Fowler]]	✓
2432	$t^2y'' + 5ty' - 5y = 0$	[[_Emden, _Fowler]]	✓
2433	$2t^2y'' + 3ty' - y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
2435	$t^2y'' + 3ty' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
2436	$t^2y'' - ty' + y = 0$	[[_Emden, _Fowler]]	✓
2438	$t^2y'' + ty' + y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
2439	$t^2y'' - ty' + 2y = 0$ i.c.	[[_Emden, _Fowler]]	✓
2440	$t^2y'' - 3ty' + 4y = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓

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Table 2.44 second order change of variable on y method 2

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#	ODE	CAS classification	Solved?
2543	$2t^2y'' + 3ty' - y = 0$ i.c.	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
2554	$t^2y'' + \alpha ty' + \beta y = 0$	[[_Emden, _Fowler]]	✓
2555	$t^2y'' + 5ty' - 2y = 0$ i.c.	[[_Emden, _Fowler]]	✓
2565	$t^2y'' + ty' + y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
2566	$t^2y'' + 2ty' + 2y = 0$	[[_Emden, _Fowler]]	✓
2581	$t^2y'' + 3ty' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
2582	$t^2y'' - ty' + y = 0$	[[_Emden, _Fowler]]	✓
2593	$y'' - \frac{2ty'}{t^2+1} + \frac{2y}{t^2+1} = t^2 + 1$	[[_2nd_order, _with_linear_symmetries]]	✓
2628	$t^2y'' + 5ty' - 5y = 0$	[[_Emden, _Fowler]]	✓
2629	$2t^2y'' + 3ty' - y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
2631	$t^2y'' + 3ty' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
2632	$t^2y'' - ty' + y = 0$	[[_Emden, _Fowler]]	✓
2634	$t^2y'' + ty' + y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
2635	$t^2y'' + 3ty' + 2y = 0$	[[_Emden, _Fowler]]	✓
2636	$t^2y'' - ty' - 2y = 0$ i.c.	[[_Emden, _Fowler]]	✓
2637	$t^2y'' - 3ty' + 4y = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
3221	$x^2y'' - 4xy' + y = 0$	[[_Emden, _Fowler]]	✓
3222	$x^2y'' + xy' + 16y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
3223	$4x^2y'' - 16xy' + 25y = 0$	[[_Emden, _Fowler]]	✓

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#	ODE	CAS classification	Solved?
3224	$x^2y'' + 5xy' + 10y = 0$	[[_Emden, _Fowler]]	✓
3225	$2x^2y'' - 3xy' - 18y = \ln(x)$	[[_2nd_order, _with_linear_symmetries]]	✓
3226	$2x^2y'' - 3xy' + 2y = \ln(x^2)$	[[_2nd_order, _with_linear_symmetries]]	✓
3227	$x^2y'' - 3xy' + 4y = x^3$	[[_2nd_order, _with_linear_symmetries]]	✓
3228	$x^2y'' + 3xy' + y = 1 - x$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
3230	$x^2y'' - 2xy' + 2y = 4x + \sin(\ln(x))$	[[_2nd_order, _with_linear_symmetries]]	✓
3231	$x^2y'' - xy' + 2y = x^2 \ln(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3232	$x^2y'' + 4xy' + 3y = (x - 1) \ln(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3493	$x^2y'' - xy' + y = x$	[[_2nd_order, _with_linear_symmetries]]	✓
3565	$x^2y'' + 5xy' + 3y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
3566	$x^2y'' - 3xy' + 4y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, ' _with_symmetry_[0,F(x)]']]	✓
3567	$x^2y'' - 3xy' + 13y = 0$	[[_Emden, _Fowler]]	✓
3568	$2x^2y'' - xy' + y = 9x^2$	[[_2nd_order, _with_linear_symmetries]]	✓
3569	$x^2y'' - 4xy' + 6y = x^4 \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3575	$x^2y'' + xy' - y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
3576	$x^2y'' + 5xy' + 4y = 0$	[[_Emden, _Fowler]]	✓
3591	$x^2y'' - xy' - 8y = 0$	[[_Emden, _Fowler]]	✓
3592	$x^2y'' - 3xy' + 4y = x^2 \ln(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3707	$x^2y'' + 3xy' - 8y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, ' _with_symmetry_[0,F(x)]']]	✓

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#	ODE	CAS classification	Solved?
3708	$2x^2y'' + 5xy' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
3773	$x^2y'' + 4xy' + 2y = 4 \ln(x)$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
3774	$x^2y'' + 4xy' + 2y = \cos(x)$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
3775	$x^2y'' + xy' + 9y = 9 \ln(x)$	[[_2nd_order, _with_linear_symmetries]]	✓
3776	$x^2y'' - xy' + 5y = 8x \ln(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3777	$x^2y'' - 4xy' + 6y = x^4 \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3778	$x^2y'' + 6xy' + 6y = 4e^{2x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3779	$x^2y'' - 3xy' + 4y = \frac{x^2}{\ln(x)}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3780	$x^2y'' - (2m - 1)xy' + m^2y = x^m \ln(x)^k$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3781	$x^2y'' - xy' + 5y = 0$ i.c.	[[_Emden, _Fowler]]	✓
3782	$t^2y'' + ty' + 25y = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
4140	$x^2y'' - 2xy' + 2y = x^2 + 2$	[[_2nd_order, _with_linear_symmetries]]	✓
4509	$x^2y'' - xy' + y = \ln(x)$	[[_2nd_order, _with_linear_symmetries]]	✓
4510	$x^2y'' + 3xy' + 5y = \frac{5 \ln(x)}{x^2}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
5990	$x^2y'' - xy' + y = x$	[[_2nd_order, _with_linear_symmetries]]	✓
5991	$y'' - \frac{2y'}{x} + \frac{2y}{x^2} = x \ln(x)$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
5992	$x^2y'' + xy' - 4y = x^3$	[[_2nd_order, _with_linear_symmetries]]	✓
5993	$x^2y'' + xy' - y = x^2e^{-x}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
5994	$2x^2y'' + 3xy' - y = \frac{1}{x}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
6026	$x^2y'' - 2xy' + 2y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
6192	$x^2y'' + 3xy' - 3y = 0$	[[_Emden, _Fowler]]	✓
6193	$x^2y'' + xy' - 4y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
6194	$x^2y'' + 7xy' + 9y = 0$	[[_Emden, _Fowler]]	✓
6195	$x^2y'' - xy' + 6y = 0$	[[_Emden, _Fowler]]	✓
6196	$x^2y'' + xy' - 16y = 8x^4$	[[_2nd_order, _with_linear_symmetries]]	✓
6197	$x^2y'' + xy' - y = x - \frac{1}{x}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
6198	$x^2y'' - 5xy' + 9y = 2x^3$	[[_2nd_order, _with_linear_symmetries]]	✓
6199	$x^2y'' - 3xy' + 4y = 6x^2 \ln(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6201	$x^2y'' + xy' + y = 2x$	[[_2nd_order, _with_linear_symmetries]]	✓
6215	$x^2y'' - xy' + y = x$	[[_2nd_order, _with_linear_symmetries]]	✓
6249	$x^2y'' - 3xy' + 3y = 0$	[[_Emden, _Fowler]]	✓
6251	$(x^2 + 2x)y'' - 2(x + 1)y' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
6253	$(x^2 + 1)y'' - 2xy' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
6409	$x(1 - x)y'' + 2(-2x + 1)y' - 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
6410	$x^2y'' + xy' - 9y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
6412	$x^2y'' - xy' + y = 0$	[[_Emden, _Fowler]]	✓

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#	ODE	CAS classification	Solved?
6533	$t^2 N'' - 2tN' + 2N = t \ln(t)$	[[_2nd_order, _with_linear_symmetries]]	✓
6541	$y'' + \frac{y'}{x} - \frac{y}{x^2} = \ln(x)$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
6575	$(x-1)y'' - xy' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
6696	$x^2 y'' - 3xy' + 4y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]]]	✓
6750	$x^2 y'' - 3xy' + 4y = x + x^2 \ln(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6751	$x^2 y'' - 2xy' + 2y = \ln(x)^2 - \ln(x^2)$	[[_2nd_order, _with_linear_symmetries]]	✓
6757	$(x^2 + 1)y'' - 2xy' + 2y = 2$	[[_2nd_order, _with_linear_symmetries]]	✓
6758	$(x^2 + 4)y'' - 2xy' + 2y = 8$	[[_2nd_order, _with_linear_symmetries]]	✓
6767	$(x \sin(x) + \cos(x))y'' - x \cos(x)y' + y \cos(x) = x$	[[_2nd_order, _with_linear_symmetries]]	✓
6768	$xy'' - 3y' + \frac{3y}{x} = x + 2$	[[_2nd_order, _with_linear_symmetries]]	✓
6772	$(x^2 + 1)y'' - 2xy' + 2y = \frac{-x^2 + 1}{x}$	[[_2nd_order, _with_linear_symmetries]]	✓
7155	$y'' + \frac{y'}{x} - \frac{y}{x^2} = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
7160	$(-x^2 + 1)y'' - xy' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
7163	$x^2 y'' + 2xy' + 4y = 0$	[[_Emden, _Fowler]]	✓
7167	$xy'' + xy' - y = x^2 + 2x$	[[_2nd_order, _with_linear_symmetries]]	✓
7168	$x^2 y'' + xy' - y = x^2 + 2x$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
7169	$x^3 y'' + xy' - y = \cos\left(\frac{1}{x}\right)$	[[_2nd_order, _with_linear_symmetries]]	✓
7170	$x(x+1)y'' + (x+2)y' - y = x + \frac{1}{x}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓

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Table 2.44 second order change of variable on y method 2

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#	ODE	CAS classification	Solved?
7173	$x^2(\ln(x) - 1)y'' - xy' + y = x(1 - \ln(x))^2$	[[_2nd_order, _with_linear_symmetries]]	✓
7200	$px^2u'' + qxu' + ru = f(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7203	$y'' - \frac{xy'}{-x^2 + 1} + \frac{y}{-x^2 + 1} = 0$	[_Gegenbauer, [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
7350	<i>i.c.</i> $y'' + \frac{y'}{x} - \frac{y}{x^2} = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
7351	<i>i.c.</i> $y'' + \frac{y'}{x} - \frac{y}{x^2} = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
7375	$x^2y'' + 2xy' - 6y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
7376	$2x^2y'' + xy' - y = 0$	[[_Emden, _Fowler]]	✓
7377	$x^2y'' + xy' - 4y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
7378	$x^2y'' - 5xy' + 9y = x^2$	[[_2nd_order, _with_linear_symmetries]]	✓
7380	$x^2y'' + xy' + 4y = 1$	[[_2nd_order, _with_linear_symmetries]]	✓
7381	$x^2y'' - 3xy' + 5y = 0$	[[_Emden, _Fowler]]	✓
7382	$x^2y'' + (-2 - i)xy' + 3iy = 0$	[[_Emden, _Fowler]]	✓
7383	$x^2y'' + xy' - 4\pi y = x$	[[_2nd_order, _with_linear_symmetries]]	✓
7637	$x^2y'' + 3xy' + 10y = 0$	[[_Emden, _Fowler]]	✓
7638	$2x^2y'' + 10xy' + 8y = 0$	[[_Emden, _Fowler]]	✓
7639	$x^2y'' + 2xy' - 12y = 0$	[[_Emden, _Fowler]]	✓
7641	$x^2y'' - 3xy' + 4y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓

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#	ODE	CAS classification	Solved?
7642	$x^2y'' + 2xy' - 6y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
7643	$x^2y'' + 2xy' + 3y = 0$	[[_Emden, _Fowler]]	✓
7644	$x^2y'' + xy' - 2y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
7645	$x^2y'' + xy' - 16y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
7676	$(x^2 - 1)y'' - 2xy' + 2y = (x^2 - 1)^2$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
7677	$(x^2 + x)y'' + (-x^2 + 2)y' - (x + 2)y = x(x + 1)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7678	$(1 - x)y'' + xy' - y = (1 - x)^2$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
7680	$x^2y'' - 2xy' + 2y = xe^{-x}$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
7690	$y'' - xf(x)y' + f(x)y = 0$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
7737	$x^2y'' + 3xy' + y = \frac{2}{x}$	[[_2nd_order, _exact, _lin- ear, _nonhomogeneous]]	✓
8282	$2x^2y'' + xy' - y = 0$	[[_Emden, _Fowler]]	✓
8283	$2x^2y'' - 3xy' + 2y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
8285	$2x^2y'' + 5xy' - 2y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
8286	$x^2y'' + 2xy' - 12y = 0$	[[_Emden, _Fowler]]	✓
8287	$x^2y'' + xy' - 9y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓

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#	ODE	CAS classification	Solved?
8288	$x^2y'' - 3xy' + 4y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
8289	$x^2y'' - 5xy' + 9y = 0$	[[_Emden, _Fowler]]	✓
8290	$x^2y'' + 5xy' + 5y = 0$	[[_Emden, _Fowler]]	✓
8437	$t^2y'' - 3ty' + 5y = 0$	[[_Emden, _Fowler]]	✓
8549	$x^4y'' + x^3y' - 4x^2y = 1$	[[_2nd_order, _with_linear_symmetries]]	✓
8550	$x^4y'' + x^3y' - 4x^2y = x$	[[_2nd_order, _with_linear_symmetries]]	✓
8551	$x^2y'' + xy' - 4y = x$	[[_2nd_order, _with_linear_symmetries]]	✓
8818	$x^2y'' - 3xy' + 3y = 2x^3 - x^2$	[[_2nd_order, _with_linear_symmetries]]	✓
8826	$y'' - x^2y' + xy = x^{m+1}$	[[_2nd_order, _with_linear_symmetries]]	✓
8845	$x^2y'' - 4xy' + 6y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
10725	$y'' + xy' - y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10741	$y'' - x^2y' + xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10744	$y'' + x^4y' - x^3y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10803	$xy'' - (x^2 - x)y' + (x - 1)y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
10810	$xy'' + (xf(x) + 2)y' + f(x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10841	$x^2y'' + xy' - y - x^2a = 0$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
10842	$x^2y'' + xy' + ay = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓

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#	ODE	CAS classification	Solved?
10848	$x^2y'' - xy' + y - 3x^3 = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10856	$x^2y'' - 2xy' + 2y - x^5 \ln(x) = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10857	$x^2y'' - 2xy' - 4y - x \sin(x) - (x^2a + 12a + 4) \cos(x) = 0$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
10864	$x^2y'' - 3xy' + 4y - 5x = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10865	$x^2y'' - 3xy' - 5y - x^2 \ln(x) = 0$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
10866	$x^2y'' - 4xy' + 6y - x^4 + x^2 = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
10868	$x^2y'' - 5xy' + 8y - \sin(x)x^3 = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
10869	$x^2y'' + axy' + by = 0$	[[_Emden, _Fowler]]	✓
10878	$x^2y'' - x(x-1)y' + (x-1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10884	$x^2y'' - 2x(x+1)y' + 2(x+1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10890	$x^2y'' + x^3y' + (x^2 - 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10907	$(x^2 + 1)y'' - xy' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10909	$(x^2 + 1)y'' - 2xy' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10934	$x(x+1)y'' + (2+3x)y' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
10960	$4x^2y'' + 5xy' - y - \ln(x) = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10980	$(a^2x^2 - 1)y'' + 2a^2xy' - 2a^2y = 0$	[_Gegenbauer]	✓
10981	$(x^2a + bx)y'' + 2by' - 2ay = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
10988	$x^3y'' - x^2y' + xy - \ln(x)^3 = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10990	$x^3y'' + 3x^2y' + xy - 1 = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
11001	$x^2(x+1)y'' - x(2x+1)y' + (2x+1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓

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Table 2.44 second order change of variable on y method 2

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#	ODE	CAS classification	Solved?
11003	$y'' = -\frac{2(-2+x)y'}{x(x-1)} + \frac{2(x+1)y}{x^2(x-1)}$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)']]]	✓
11004	$y'' = \frac{(5x-4)y'}{x(x-1)} - \frac{(9x-6)y}{x^2(x-1)}$	[[_2nd_order, _with_linear_symmetries]]	✓
11011	$y'' = \frac{(x-4)y'}{2x(-2+x)} - \frac{(x-3)y}{2x^2(-2+x)}$	[[_2nd_order, _with_linear_symmetries]]	✓
11012	$y'' = \frac{y'}{x+1} - \frac{(3x+1)y}{4x^2(x+1)}$	[[_2nd_order, _with_linear_symmetries]]	✓
11020	$y'' = \frac{2(ax+2b)y'}{x(ax+b)} - \frac{(2ax+6b)y}{(ax+b)x^2}$	[[_2nd_order, _with_linear_symmetries]]	✓
11038	$y'' = \frac{(x^2-2)y'}{x(x^2-1)} - \frac{(x^2-2)y}{x^2(x^2-1)}$	[[_2nd_order, _with_linear_symmetries]]	✓
11041	$y'' = \frac{2xy'}{x^2-1} - \frac{(a(a+1)-ax^2(a+3))y}{x^2(x^2-1)}$	[[_2nd_order, _with_linear_symmetries]]	✓
11071	$y'' = \frac{(7x^2a+5)y'}{x(x^2a+1)} - \frac{(15x^2a+5)y}{x^2(x^2a+1)}$	[[_2nd_order, _with_linear_symmetries]]	✓
11077	$y'' = -\frac{y'}{x^4} + \frac{y}{x^5}$	[[_2nd_order, _with_linear_symmetries]]	✓
11093	$y'' = \frac{y'}{x(\ln(x)-1)} - \frac{y}{x^2(\ln(x)-1)}$	[[_2nd_order, _with_linear_symmetries]]	✓
11098	$y'' = -\frac{x \sin(x)y'}{x \cos(x) - \sin(x)} + \frac{\sin(x)y}{x \cos(x) - \sin(x)}$	[[_2nd_order, _with_linear_symmetries]]	✓
11099	$y'' = -\frac{(\sin(x)x^2 - 2x \cos(x))y'}{x^2 \cos(x)} - \frac{(2 \cos(x) - x \sin(x))y}{x^2 \cos(x)}$	[[_2nd_order, _with_linear_symmetries]]	✓
11122	$y'' = -\frac{xy'}{f(x)} + \frac{y}{f(x)}$	[[_2nd_order, _with_linear_symmetries]]	✓
12231	$y'' + (ax^n + bx^m)y' - (ax^{n-1} + bx^{m-1})y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12259	$xy'' + (x^2a + bx + c)y' + (c-1)(ax+b)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12262	$xy'' + (ax^3 + b)y' + a(b-1)x^2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓

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Table 2.44 second order change of variable on y method 2

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#	ODE	CAS classification	Solved?
12266	$xy'' + (ax^3 + bx^2 + cx + d)y' + (d-1)(x^2a + bx + c)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12268	$xy'' + (ax^n + 2)y' + ax^{n-1}y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12271	$xy'' + (ax^n + b)y' + a(b-1)x^{n-1}y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12279	$xy'' + (ax^n + bx^m + c)y' + (c-1)(ax^{n-1} + bx^{m-1})y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12299	$x^2y'' + axy' + by = 0$	[[_Emden, _Fowler]]	✓
12321	$x^2y'' + x(ax^n + b)y' + b(ax^n - 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12368	$x^2(ax + b)y'' - 2x(ax + 2b)y' + 2(ax + 3b)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12626	$x^2y'' + 3xy' + y = \frac{1}{(1-x)^2}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
12641	$y'' - x^2y' + xy = x$	[[_2nd_order, _with_linear_symmetries]]	✓
12643	$(x^2 + 1)y'' + 2xy' - 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12644	$(1-x)y'' + xy' - y = (1-x)^2$	[[_2nd_order, _with_linear_symmetries]]	✓
12657	$(x^2 + 1)y'' - 2xy' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12660	$(2x^3 - 1)y'' - 6x^2y' + 6xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12661	$x^2y'' - 2x(x+1)y' + 2(x+1)y = x^3$	[[_2nd_order, _with_linear_symmetries]]	✓
12676	$x^2y'' + 3xy' + y = x$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
12680	$x^5y'' + (2x^4 - x)y' - (2x^3 - 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12832	$t^2x'' + 3tx' + x = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
12833	$tx'' + 4x' + \frac{2x}{t} = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, 'with_symmetry_[0,F(x)]]]	✓

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Table 2.44 second order change of variable on y method 2

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#	ODE	CAS classification	Solved?
12834	$t^2x'' - 7tx' + 16x = 0$	[[_Emden, _Fowler]]	✓
12835	$t^2x'' + 3tx' - 8x = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
12837	$t^2x'' - tx' + 2x = 0$	[[_Emden, _Fowler]]	✓
12846	$t^2x'' - 3tx' + 3x = 4t^7$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
13070	$x^2y'' - 2xy' + 2y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
13071	$x^2y'' + xy' - 4y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
13199	$x^2y'' - 6xy' + 10y = 3x^4 + 6x^3$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13201	$(x^2 + 2x)y'' - 2(x + 1)y' + 2y = (x + 2)^2$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
13202	$x^2y'' - x(x + 2)y' + (x + 2)y = x^3$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
13203	$x(-2 + x)y'' - (x^2 - 2)y' + 2(x - 1)y = 3x^2(-2 + x)^2 e^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13204	$(2x + 1)(x + 1)y'' + 2xy' - 2y = (2x + 1)^2$	[[_2nd_order, _exact, _lin- ear, _nonhomogeneous]]	✓
13207	$x^2y'' - 3xy' + 3y = 0$	[[_Emden, _Fowler]]	✓
13208	$x^2y'' + xy' - 4y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
13209	$4x^2y'' - 4xy' + 3y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
13210	$x^2y'' - 3xy' + 4y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓

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Table 2.44 second order change of variable on y method 2

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#	ODE	CAS classification	Solved?
13211	$x^2y'' + xy' + 4y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
13212	$x^2y'' - 3xy' + 13y = 0$	[[_Emden, _Fowler]]	✓
13213	$3x^2y'' - 4xy' + 2y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
13214	$x^2y'' + xy' + 9y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
13215	$9x^2y'' + 3xy' + y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
13216	$x^2y'' - 5xy' + 10y = 0$	[[_Emden, _Fowler]]	✓
13220	$x^2y'' - 4xy' + 6y = 4x - 6$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
13221	$x^2y'' - 5xy' + 8y = 2x^3$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
13222	$x^2y'' + 4xy' + 2y = 4 \ln(x)$	[[_2nd_order, _exact, _lin- ear, _nonhomogeneous]]	✓
13223	$x^2y'' + xy' + 4y = 2x \ln(x)$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
13224	$x^2y'' + xy' + 4y = 4 \sin(\ln(x))$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13226	<i>i.c.</i> $x^2y'' - 2xy' - 10y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
13227	<i>i.c.</i> $x^2y'' - 4xy' + 6y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
13228	<i>i.c.</i> $x^2y'' + 5xy' + 3y = 0$	[[_2nd_order, _exact, _lin- ear, _homogeneous]]	✓
13230	<i>i.c.</i> $x^2y'' - 4xy' + 4y = -6x^3 + 4x^2$	[[_2nd_order, _with_lin- ear_symmetries]]	✓

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Table 2.44 second order change of variable on y method 2

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#	ODE	CAS classification	Solved?
13231	$x^2 y'' + 2xy' - 6y = 10x^2$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
13232	$x^2 y'' - 5xy' + 8y = 2x^3$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
13340	$(t^3 - 2t^2)x'' - (t^3 + 2t^2 - 6t)x' + (3t^2 - 6)x = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
13342	$t^2 x'' + 3tx' + 3x = 0$	[[_Emden, _Fowler]]	✓
13344	$t^2 x'' + (2t^3 + 7t)x' + (8t^2 + 8)x = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
13348	$\frac{(t+1)x''}{t} - \frac{x'}{t^2} + \frac{x}{t^3} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
13349	$t^2 x'' + tx' + x = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
13358	$y' + xy'' + \frac{\lambda y}{x} = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
13359	$y' + xy'' + \frac{\lambda y}{x} = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
13472	$x^2 y'' - 4xy' + 6y = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
13474	$t^2 x'' - 5tx' + 10x = 0$ i.c.	[[_Emden, _Fowler]]	✓
13475	$t^2 x'' + tx' - x = 0$ i.c.	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
13476	$x^2 z'' + 3xz' + 4z = 0$ i.c.	[[_Emden, _Fowler]]	✓
13477	$x^2 y'' - xy' - 3y = 0$ i.c.	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
13478	$4t^2 x'' + 8tx' + 5x = 0$ i.c.	[[_Emden, _Fowler]]	✓
13479	$x^2 y'' - 5xy' + 5y = 0$ i.c.	[[_Emden, _Fowler]]	✓

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Table 2.44 second order change of variable on y method 2

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#	ODE	CAS classification	Solved?
13480	$3x^2z'' + 5xz' - z = 0$ i.c.	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
13481	$t^2x'' + 3tx' + 13x = 0$ i.c.	[[_Emden, _Fowler]]	✓
13580	$x^2y'' - 4xy' + 6y = 2$	[[_2nd_order, _with_linear_symmetries]]	✓
13666	$(x - 1)y'' - xy' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
13689	$y'' + \frac{y'}{x+1} - \frac{(x+2)y}{x^2(x+1)} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
13763	$t^2y'' + 3ty' + y = t^7$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
13986	$x^2y'' + xy' - y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
13988	$2x^2y'' + 3xy' - y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
13996	$2x^2y'' + xy' - y = 0$	[[_Emden, _Fowler]]	✓
14004	$x^2y'' + 6xy' + 4y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
14005	$x^2y'' - 5xy' + 9y = 0$	[[_Emden, _Fowler]]	✓
14021	$x^2y'' - 4xy' + 6y = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
14022	$x^2y'' - 4xy' + 6y = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
14023	$x^2y'' - 4xy' + 6y = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
14024	$x^2y'' - 4xy' + 6y = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
14025	$x^2y'' - 4xy' + 6y = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓

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Table 2.44 second order change of variable on y method 2

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#	ODE	CAS classification	Solved?
14164	$x^2y'' + 2xy' - 2y = 0$	[[_Emden, _Fowler]]	✓
14168	$x^2y'' - xy' + y = 0$ i.c.	[[_Emden, _Fowler]]	✓
14171	$x^2y'' + xy' - 4y = -3x - \frac{3}{x}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
14976	$x^2y'' - 4xy' + 6y = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]]']]	✓
14977	$4x^2y'' + 4xy' - y = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]]']]	✓
14978	$x^2y'' - xy' + y = 0$ i.c.	[[_Emden, _Fowler]]	✓
14981	$x^2y'' - 4xy' + 6y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]]']]	✓
15055	$x^2y'' - 5xy' + 8y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]]']]	✓
15058	$2x^2y'' - xy' + y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]]']]	✓
15059	$x^2y'' - 5xy' + 9y = 0$	[[_Emden, _Fowler]]	✓
15060	$x^2y'' + 5xy' + 4y = 0$	[[_Emden, _Fowler]]	✓
15062	$x^2y'' - 19xy' + 100y = 0$	[[_Emden, _Fowler]]	✓
15063	$x^2y'' - 5xy' + 29y = 0$	[[_Emden, _Fowler]]	✓
15064	$x^2y'' - xy' + 10y = 0$	[[_Emden, _Fowler]]	✓
15065	$x^2y'' + 5xy' + 29y = 0$	[[_Emden, _Fowler]]	✓
15066	$x^2y'' + xy' + y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]]']]	✓
15067	$2x^2y'' + 5xy' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓

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#	ODE	CAS classification	Solved?
15070	$x^2y'' + xy' - 25y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
15071	$4x^2y'' + 8xy' + 5y = 0$	[[_Emden, _Fowler]]	✓
15072	$3x^2y'' - 7xy' + 3y = 0$	[[_Emden, _Fowler]]	✓
15073 i.c.	$x^2y'' - 2xy' - 10y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
15074 i.c.	$4x^2y'' + 4xy' - y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
15075 i.c.	$x^2y'' - 11xy' + 36y = 0$	[[_Emden, _Fowler]]	✓
15076 i.c.	$x^2y'' - xy' + y = 0$	[[_Emden, _Fowler]]	✓
15077 i.c.	$x^2y'' - xy' + 2y = 0$	[[_Emden, _Fowler]]	✓
15078 i.c.	$x^2y'' - 3xy' + 13y = 0$	[[_Emden, _Fowler]]	✓
15095 i.c.	$x^2y'' - 4xy' + 6y = 10x + 12$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
15101	$x^2y'' - 4xy' + 6y = 1$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
15102	$x^2y'' - 4xy' + 6y = x$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
15103	$x^2y'' - 4xy' + 6y = 22x + 24$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
15104	$x^2y'' - 7xy' + 15y = x^2$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
15105	$x^2y'' - 7xy' + 15y = x$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
15106	$x^2y'' - 7xy' + 15y = 1$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
15107	$x^2y'' - 7xy' + 15y = 4x^2 + 2x + 3$	[[_2nd_order, _with_lin- ear_symmetries]]	✓

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Table 2.44 second order change of variable on y method 2

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#	ODE	CAS classification	Solved?
15181	$x^2y'' - 5xy' + 8y = \frac{5}{x^3}$	[[_2nd_order, _with_linear_symmetries]]	✓
15182	$2x^2y'' - xy' + y = \frac{50}{x^3}$	[[_2nd_order, _with_linear_symmetries]]	✓
15183	$2x^2y'' + 5xy' + y = 85 \cos(2 \ln(x))$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
15185	$3x^2y'' - 7xy' + 3y = 4x^3$	[[_2nd_order, _with_linear_symmetries]]	✓
15186	$2x^2y'' + 5xy' + y = \frac{10}{x}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
15187	$x^2y'' - 5xy' + 9y = 6x^3$	[[_2nd_order, _with_linear_symmetries]]	✓
15188	$x^2y'' + 5xy' + 4y = 64x^2 \ln(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15189	$x^2y'' - 2xy' + 2y = 3\sqrt{x}$	[[_2nd_order, _with_linear_symmetries]]	✓
15195	$x^2y'' + xy' - y = \sqrt{x}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
15196	$x^2y'' + xy' - 9y = 12x^3$	[[_2nd_order, _with_linear_symmetries]]	✓
15197	$x^2y'' - 3xy' + 4y = x^2$	[[_2nd_order, _with_linear_symmetries]]	✓
15198	$x^2y'' + 5xy' + 4y = \ln(x)$	[[_2nd_order, _with_linear_symmetries]]	✓
15201	$xy'' + (2x + 2)y' + 2y = 8e^{2x}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
15202	$(x + 1)y'' + xy' - y = (x + 1)^2$	[[_2nd_order, _with_linear_symmetries]]	✓
15203	$x^2y'' - 2xy' - 4y = \frac{10}{x}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
	<i>i.c.</i>		
15213	$x^2y'' + xy' - 9y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, _with_symmetry_[0,F(x)]]]	✓
15216	$x^2y'' - 7xy' + 16y = 0$	[[_Emden, _Fowler]]	✓
15221	$x^2y'' + 7xy' + 9y = 0$	[[_Emden, _Fowler]]	✓

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Table 2.44 second order change of variable on y method 2

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#	ODE	CAS classification	Solved?
15227	$x^2y'' + xy' + 9y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
15229	$x^2y'' + 2xy' - 30y = 0$	[[_Emden, _Fowler]]	✓
15232	$4x^2y'' + 8xy' + y = 0$	[[_Emden, _Fowler]]	✓
15234	$2x^2y'' - 3xy' + 2y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
15235	$9x^2y'' + 3xy' + y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
15245	$x^2y'' + xy' - 9y = 3\sqrt{x}$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
15248	$x^2y'' + 2xy' - 6y = 18 \ln(x)$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
15250	$2x^2y'' - xy' - 2y = 10x^2$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
15253	$x^2y'' + 3xy' + 2y = 6$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
15254	$x^2y'' + xy' - y = \frac{1}{x^2 + 1}$	[[_2nd_order, _exact, _lin- ear, _nonhomogeneous]]	✓
15259	$x^2y'' + 3xy' + y = \frac{1}{(x + 1)^2}$	[[_2nd_order, _exact, _lin- ear, _nonhomogeneous]]	✓
15260	$x^2y'' + 3xy' + y = \frac{1}{x}$	[[_2nd_order, _exact, _lin- ear, _nonhomogeneous]]	✓
15461	$t^2y'' + ty' + 2y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
15476	$x^2y'' - 12xy' + 42y = 0$	[[_Emden, _Fowler]]	✓
15477	$t^2y'' + 3ty' + 5y = 0$	[[_Emden, _Fowler]]	✓
15502	$t^2y'' - 12ty' + 42y = 0$	[[_Emden, _Fowler]]	✓
15503	$x^2y'' + 3xy' + 5y = 0$	[[_Emden, _Fowler]]	✓
	<i>i.c.</i>		
	<i>i.c.</i>		

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Table 2.44 second order change of variable on y method 2

Continued from previous page

#	ODE	CAS classification	Solved?
15522	$x^2y'' - xy' - 16y = 0$	[[_Emden, _Fowler]]	✓
15523	$x^2y'' + 3xy' + 2y = 0$	[[_Emden, _Fowler]]	✓
15534	$x^2y'' + 5xy' + 4y = 0$	[[_Emden, _Fowler]]	✓
	<i>i.c.</i>		
15677	$y'' - \frac{y'}{t} + \frac{y}{t^2} = \frac{1}{t}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
15855	$2t^2y'' - 3ty' - 3y = 0$	[[_Emden, _Fowler]]	✓
15859	$3t^2y'' - 5ty' - 3y = 0$	[[_Emden, _Fowler]]	✓
	<i>i.c.</i>		
15860	$t^2y'' + 7ty' - 7y = 0$	[[_Emden, _Fowler]]	✓
	<i>i.c.</i>		
15865	$t^2y'' + ty' - y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
15877	$t^2y'' + aty' + by = 0$	[[_Emden, _Fowler]]	✓
15916	$3t^2y'' - 2ty' + 2y = 0$	[[_Emden, _Fowler]]	✓
15917	$t^2y'' - ty' + y = 0$	[[_Emden, _Fowler]]	✓
16030	$t^2y'' + 3ty' + y = \ln(t)$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
16031	$t^2y'' + ty' + 4y = t$	[[_2nd_order, _with_linear_symmetries]]	✓
16032	$t^2y'' - 4ty' - 6y = 2\ln(t)$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
16041	$t^2(\ln(t) - 1)y'' - ty' + y = -\frac{3(1 + \ln(t))}{4\sqrt{t}}$	[[_2nd_order, _with_linear_symmetries]]	✓
	<i>i.c.</i>		
16042	$(\sin(t) - t \cos(t))y'' - t \sin(t)y' + \sin(t)y = t$	[[_2nd_order, _with_linear_symmetries]]	✓
	<i>i.c.</i>		
16116	$4x^2y'' - 8xy' + 5y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
16117	$3x^2y'' - 4xy' + 2y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
16118	$2x^2y'' - 8xy' + 8y = 0$	[[_Emden, _Fowler]]	✓
16119	$2x^2y'' - 7xy' + 7y = 0$	[[_Emden, _Fowler]]	✓

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Table 2.44 second order change of variable on y method 2

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#	ODE	CAS classification	Solved?
16121	$9x^2y'' - 9xy' + 10y = 0$	[[_Emden, _Fowler]]	✓
16122	$2x^2y'' - 2xy' + 20y = 0$	[[_Emden, _Fowler]]	✓
16123	$x^2y'' - 5xy' + 10y = 0$	[[_Emden, _Fowler]]	✓
16124	$4x^2y'' + 8xy' + y = 0$	[[_Emden, _Fowler]]	✓
16126	$x^2y'' - 5xy' + 9y = 0$	[[_Emden, _Fowler]]	✓
16127	$x^2y'' + 7xy' + 9y = 0$	[[_Emden, _Fowler]]	✓
16136	$x^2y'' + 5xy' + 4y = \frac{1}{x^5}$	[[_2nd_order, _with_linear_symmetries]]	✓
16137	$x^2y'' - 5xy' + 9y = x^3$	[[_2nd_order, _with_linear_symmetries]]	✓
16138	$x^2y'' + xy' + y = \frac{1}{x^2}$	[[_2nd_order, _with_linear_symmetries]]	✓
16139	$x^2y'' + xy' + 4y = \frac{1}{x^2}$	[[_2nd_order, _with_linear_symmetries]]	✓
16140	$x^2y'' + 2xy' - 6y = 2x$	[[_2nd_order, _with_linear_symmetries]]	✓
16141	$x^2y'' + xy' - 16y = \ln(x)$	[[_2nd_order, _with_linear_symmetries]]	✓
16142	$x^2y'' + xy' + 4y = 8$	[[_2nd_order, _with_linear_symmetries]]	✓
16143	$x^2y'' + xy' + 36y = x^2$	[[_2nd_order, _with_linear_symmetries]]	✓
16146	$3x^2y'' - 4xy' + 2y = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
16147	$2x^2y'' - 7xy' + 7y = 0$ i.c.	[[_Emden, _Fowler]]	✓
16148	$x^2y'' + xy' + 4y = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
16149	$x^2y'' + xy' + 2y = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓

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Table 2.44 second order change of variable on y method 2

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#	ODE	CAS classification	Solved?
16154	$2x^2y'' + 3xy' - y = \frac{1}{x^2}$ i.c.	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
16155	$x^2y'' + 4xy' + 2y = \ln(x)$ i.c.	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
16157	$9x^2y'' + 27xy' + 10y = \frac{1}{x}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
16158	$x^2y'' - xy' + 2y = 0$	[[_Emden, _Fowler]]	✓
16159	$x^2y'' + 4xy' + 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
16160	$x^2y'' + xy' + y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]]']]	✓
16172	$x^2y'' + 4xy' + 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
16173	$x^2y'' + xy' + y = x^2$	[[_2nd_order, _with_linear_symmetries]]	✓
16174	$x^2y'' + xy' + 4y = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]]']]	✓
16175	$x^2y'' - xy' + y = 0$ i.c.	[[_Emden, _Fowler]]	✓
16182	$6x^2y'' + 5xy' - y = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]]']]	✓
16282	$t^2y'' - 5ty' + 5y = 0$	[[_Emden, _Fowler]]	✓
16283	$x^2y'' + 7xy' + 8y = 0$	[[_Emden, _Fowler]]	✓
16284	$x^2y'' - 4xy' + 6y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]]']]	✓
16285	$x^2y'' + xy' + y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]]']]	✓
16286	$2x^2y'' + 5xy' + y = 0$ i.c.	[[_2nd_order, _exact, _linear, _homogeneous]]	✓

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Table 2.44 second order change of variable on y method 2

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#	ODE	CAS classification	Solved?
16287	$5x^2y'' - xy' + 2y = 0$	[[_Emden, _Fowler]]	✓
16288	$x^2y'' - 7xy' + 25y = 0$	[[_Emden, _Fowler]]	✓
16289	$x^2y'' - 7xy' + 15y = 8x$	[[_2nd_order, __with_linear_symmetries]]	✓
16793	$x^2y'' + xy' - y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
16794	$x^2y'' + 3xy' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
16795	$x^2y'' + 2xy' + 6y = 0$	[[_Emden, _Fowler]]	✓
16803	$x^2y'' + xy' + y = x(6 - \ln(x))$	[[_2nd_order, __with_linear_symmetries]]	✓
16805	$x^2y'' - xy' - 3y = -\frac{16 \ln(x)}{x}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
16806	$x^2y'' - 2xy' - 2y = x^2 - 2x + 2$	[[_2nd_order, __with_linear_symmetries]]	✓
16807	$x^2y'' + xy' - y = x^m$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
16808	$x^2y'' + 4xy' + 2y = 2 \ln(x)^2 + 12x$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
16812	$(x^2 - x)y'' + (2x - 3)y' - 2y = 0$	[_Jacobi]	✓
16813	$(2x^2 + 3x)y'' - 6(x + 1)y' + 6y = 6$	[[_2nd_order, __with_linear_symmetries]]	✓
16842	$2x^2(2 - \ln(x))y'' + x(4 - \ln(x))y' - y = \frac{(2 - \ln(x))^2}{\sqrt{x}}$ i.c.	[[_2nd_order, __linear, _nonhomogeneous]]	✓
16844	$x^3(\ln(x) - 1)y'' - x^2y' + xy = 2 \ln(x)$ i.c.	[[_2nd_order, __with_linear_symmetries]]	✓
17227	$ax^2y'' + bxy' + cy = d$	[[_2nd_order, __with_linear_symmetries]]	✓
17245	$x^2y'' - x(x + 2)y' + (x + 2)y = 0$	[[_2nd_order, __with_linear_symmetries]]	✓
17246	$(1 - x \cot(x))y'' - xy' + y = 0$	[[_2nd_order, __with_linear_symmetries]]	✓
17302	$ax^2y'' + bxy' + cy = 0$	[[_Emden, _Fowler]]	✓

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Table 2.44 second order change of variable on y method 2

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#	ODE	CAS classification	Solved?
17303	$x^2y'' + xy' + 4y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)']]	✓
17304	$x^2y'' + 4xy' + 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
17305	$x^2y'' + 3xy' + \frac{5y}{4} = 0$	[[_Emden, _Fowler]]	✓
17306	$x^2y'' - 4xy' - 6y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
17308	$x^2y'' - 5xy' + 9y = 0$	[[_Emden, _Fowler]]	✓
17309	$x^2y'' + 2xy' + 4y = 0$	[[_Emden, _Fowler]]	✓
17310	$2x^2y'' - 4xy' + 6y = 0$	[[_Emden, _Fowler]]	✓
17311	$2x^2y'' + xy' - 3y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
17312	$4x^2y'' + 8xy' + 17y = 0$	[[_Emden, _Fowler]]	✓
17313	$x^2y'' - 5xy' + 9y = 0$	[[_Emden, _Fowler]]	✓
17314	$x^2y'' + 3xy' + 5y = 0$	[[_Emden, _Fowler]]	✓
17348	$x^2y'' - 3xy' + 4y = \ln(x)$	[[_2nd_order, _with_linear_symmetries]]	✓
17349	$x^2y'' + 7xy' + 5y = x$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
17350	$x^2y'' - 2xy' + 2y = 3x^2 + 2\ln(x)$	[[_2nd_order, _with_linear_symmetries]]	✓
17351	$x^2y'' + xy' + 4y = \sin(\ln(x))$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17375	$t^2y'' - t(t+2)y' + (t+2)y = 2t^3$	[[_2nd_order, _with_linear_symmetries]]	✓
17377	$(-t+1)y'' + ty' - y = 2(t-1)^2e^{-t}$	[[_2nd_order, _with_linear_symmetries]]	✓
17379	$(1-x)y'' + xy' - y = g(x)$	[[_2nd_order, _with_linear_symmetries]]	✓
17382	$x^2y'' - 3xy' + 4y = x^2\ln(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17383	$t^2y'' - 2ty' + 2y = 4t^2$	[[_2nd_order, _with_linear_symmetries]]	✓

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Table 2.44 second order change of variable on y method 2

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#	ODE	CAS classification	Solved?
17384	$t^2y'' + 7ty' + 5y = t$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
17677	$x^2y'' - 2xy' + 2y = 2x^3$	[[_2nd_order, _with_linear_symmetries]]	✓
17678	$y'' + \frac{xy'}{1-x} - \frac{y}{1-x} = x - 1$	[[_2nd_order, _with_linear_symmetries]]	✓
17702	$y'' + \frac{2y'}{x} - \frac{n(n+1)y}{x^2} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
17703	$x^2y'' - 4xy' + 6y = x$	[[_2nd_order, _with_linear_symmetries]]	✓
17704	$x^2y'' - xy' + 2y = x \ln(x)$	[[_2nd_order, _with_linear_symmetries]]	✓
17928	$x^3y'' + x^2y' + xy = 1$	[[_2nd_order, _with_linear_symmetries]]	✓
17934	$(x-1)y'' - xy' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
17936	$x^2y'' - 3xy' - 5y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
17939	$x^2y'' - 2xy' + 2y = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
17957	$y'' - xf(x)y' + f(x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
17988	$x^2y'' + 3xy' + 10y = 0$	[[_Emden, _Fowler]]	✓
17989	$2x^2y'' + 10xy' + 8y = 0$	[[_Emden, _Fowler]]	✓
17990	$x^2y'' + 2xy' - 12y = 0$	[[_Emden, _Fowler]]	✓
17992	$x^2y'' - 3xy' + 4y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
17993	$x^2y'' + 2xy' - 6y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
17994	$x^2y'' + 2xy' + 3y = 0$	[[_Emden, _Fowler]]	✓

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Table 2.44 second order change of variable on y method 2

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#	ODE	CAS classification	Solved?
17995	$x^2y'' + xy' - 2y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
17996	$x^2y'' + xy' - 16y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
18028	$(x^2 - 1)y'' - 2xy' + 2y = (x^2 - 1)^2$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
18029	$(x^2 + x)y'' + (-x^2 + 2)y' - (x + 2)y = x(x + 1)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18030	$(1 - x)y'' + xy' - y = (1 - x)^2$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
18032	$x^2y'' - 2xy' + 2y = xe^{-x}$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
18189	$t^2x'' - 6tx' + 12x = 0$	[[_Emden, _Fowler]]	✓
18192	$t^2x'' - 2tx' + 2x = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
18271	$x^2y'' + 3xy' + y = \frac{1}{x}$	[[_2nd_order, _exact, _lin- ear, _nonhomogeneous]]	✓
18282	$x^2y'' - 5xy' + 5y = \frac{1}{x}$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
18291	$x^2y'' + xy' + y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
18361	$x^2y'' + 3xy' - 8y = x$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
18366	$x^2y'' - xy' + y = \ln(x)$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
18370	$(x^2 - x)y'' + (3x - 2)y' + y = 0$	[[_2nd_order, _exact, _lin- ear, _homogeneous]]	✓
18371	$(3x^2 + x)y'' + 2(1 + 6x)y' + 6y = \sin(x)$	[[_2nd_order, _exact, _lin- ear, _nonhomogeneous]]	✓
18400	$y'' - \frac{2y'}{x} + \frac{2y}{x^2} = 0$	[[_2nd_order, _exact, _lin- ear, _homogeneous]]	✓

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Table 2.44 second order change of variable on y method 2

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#	ODE	CAS classification	Solved?
18599	$x^2y'' - xy' + y = 2 \ln(x)$	[[_2nd_order, __with_linear_symmetries]]	✓
18603	$x^2y'' - 2xy' - 4y = x^4$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
18604	$x^2y'' + 5xy' + 4y = x^4$	[[_2nd_order, __with_linear_symmetries]]	✓
18605	$x^2y'' + 2xy' - 20y = (x + 1)^2$	[[_2nd_order, __with_linear_symmetries]]	✓
18606	$x^2y'' + 7xy' + 5y = x^5$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
18610	$x^2y'' + 4xy' + 2y = e^x$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
18616	$x^2y'' + xy' - y = x^m$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
18617	$x^2y'' - 3xy' + 4y = x^m$	[[_2nd_order, __with_linear_symmetries]]	✓
18620	$x^2y'' + 3xy' + y = \frac{1}{(1-x)^2}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
18621	$x^2y'' - (2m - 1)xy' + (m^2 + n^2)y = n^2x^m \ln(x)$	[[_2nd_order, __linear, _nonhomogeneous]]	✓
18622	$x^2y'' - 3xy' + y = \frac{\ln(x) \sin(\ln(x)) + 1}{x}$	[[_2nd_order, __linear, _nonhomogeneous]]	✓

### 2.4.17 second order nonlinear solved by mainardi lioville method

Table 2.45: second order nonlinear solved by mainardi lioville method

#	ODE	CAS classification	Solved?
153	$yy'' + y'^2 = yy'$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
3259	$y'' = y'^2 + y'$	[[_2nd_order, _missing_x], _Liouville, [_2nd_order, _reducible, _mu_xy]]	✓
3267	$yy'' + y'^2 = yy'$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
3483	<i>i.c.</i> $y'' + y'^2 + y' = 0$	[[_2nd_order, _missing_x], _Liouville, [_2nd_order, _reducible, _mu_xy]]	✓
4407	$yy'' - yy' = y'^2$	[[_2nd_order, _missing_x], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
6016	$xyy'' - 2xy'^2 + yy' = 0$	[_Liouville, [_2nd_order, _with_linear_symmetries], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
6017	$xyy'' + xy'^2 - yy' = 0$	[[_2nd_order, _exact, _nonlinear], _Liouville, [_2nd_order, _with_linear_symmetries], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
6231	$x(yy'' + y'^2) = yy'$	[[_2nd_order, _exact, _nonlinear], _Liouville, [_2nd_order, _with_linear_symmetries], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓

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Table 2.45 second order nonlinear solved by mainardi lioville method

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#	ODE	CAS classification	Solved?
8197	$xy'' = y'(2 - 3xy')$	[[_2nd_order, _missing_y], _Liouville, [_2nd_order, _reducible, _mu_xy]]	✓
8800	$y'' + xy' + yy'^2 = 0$	[_Liouville, [_2nd_order, _reducible, _mu_xy]]	✓
8801	$y'' + \sin(x)y' + yy'^2 = 0$	[_Liouville, [_2nd_order, _reducible, _mu_xy]]	✓
8808	$y'' + xy' + yy'^2 = 0$	[_Liouville, [_2nd_order, _reducible, _mu_xy]]	✓
8809	$y'' + \sin(x)y' + y'^2 = 0$	[[_2nd_order, _missing_y], _Liouville, [_2nd_order, _reducible, _mu_xy]]	✓
8810	$3y'' + \cos(x)y' + \sin(y)y'^2 = 0$	[_Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
8811	$10y'' + x^2y' + \frac{3y'^2}{y} = 0$	[_Liouville, [_2nd_order, _with_linear_symmetries], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
11316	$y'' + f(y)y'^2 + g(x)y' = 0$	[_Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
11431	$ayy'' + by'^2 - \frac{yy'}{\sqrt{c^2 + x^2}} = 0$	[_Liouville, [_2nd_order, _with_linear_symmetries], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
11434	$xyy'' + xy'^2 - yy' = 0$	[[_2nd_order, _ex- act, _nonlinear], _Li- ouville, [_2nd_order, _with_linear_symmetries], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
11438	$xyy'' + 2xy'^2 + ayy' = 0$	[_Liouville, [_2nd_order, _with_linear_symmetries], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓

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Table 2.45 second order nonlinear solved by mainardi liouville method

Continued from previous page

#	ODE	CAS classification	Solved?
11440	$xyy'' - 2xy'^2 + ayy' = 0$	[_Liouville, [_2nd_order, _with_linear_symmetries], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
11441	$xyy'' - 4xy'^2 + 4yy' = 0$	[_Liouville, [_2nd_order, _with_linear_symmetries], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
11444	$2xyy'' - xy'^2 + yy' = 0$	[_Liouville, [_2nd_order, _with_linear_symmetries], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
13596	$yy'' + y'^2 = \frac{yy'}{\sqrt{x^2 + 1}}$	[_Liouville, [_2nd_order, _with_linear_symmetries], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
13612	$xyy'' - xy'^2 - yy' = 0$	[_Liouville, [_2nd_order, _with_linear_symmetries], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
14908	$yy'' + y'^2 = 2yy'$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
14918	$y'' = y'(y' - 2)$	[[_2nd_order, _missing_x], _Liouville, [_2nd_order, _reducible, _mu_xy]]	✓
14928	<i>i.c.</i> $yy'' + 2y'^2 = 3yy'$	[[_2nd_order, _missing_x], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
16612	$y'' = y'(y' + 1)$	[[_2nd_order, _missing_x], _Liouville, [_2nd_order, _reducible, _mu_xy]]	✓

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Table 2.45 second order nonlinear solved by mainardi lioville method

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#	ODE	CAS classification	Solved?
17654	$xyy'' + xy'^2 - yy' = 0$	[[_2nd_order, _exact, _nonlinear], _Liouville, [_2nd_order, _with_linear_symmetries], [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓
17881	$yy'' + y'^2 - 2yy' = 0$	[[_2nd_order, _missing_x], [_2nd_order, _exact, _nonlinear], _Liouville, [_2nd_order, _reducible, _mu_x_y1], [_2nd_order, _reducible, _mu_xy]]	✓

## 2.4.18 second order ode non constant coeff transformation on B

Table 2.46: second order ode non constant coeff transformation on B

#	ODE	CAS classification	Solved?
147	$xy'' = y'$	[[_2nd_order, _missing_y]]	✓
150	$xy'' + y' = 4x$	[[_2nd_order, _missing_y]]	✓
227	$x^2y'' - 2xy' + 2y = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
229	$x^2y'' - xy' + y = 0$ i.c.	[[_Emden, _Fowler]]	✓
244	$x^2y'' + xy' - y = 0$	[[_2nd_order, _exact, _lin- ear, _homogeneous]]	✓
262	$x^2y'' - 2xy' + 2y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
376	$x^2y'' + xy' - y = 72x^5$	[[_2nd_order, _exact, _lin- ear, _nonhomogeneous]]	✓
381	$(x^2 - 1)y'' - 2xy' + 2y = x^2 - 1$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
819	$x^2y'' - 2xy' + 2y = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
821	$x^2y'' - xy' + y = 0$ i.c.	[[_Emden, _Fowler]]	✓
833	$x^2y'' + xy' - y = 0$	[[_2nd_order, _exact, _lin- ear, _homogeneous]]	✓
902	$x^2y'' + xy' - y = 72x^5$	[[_2nd_order, _exact, _lin- ear, _nonhomogeneous]]	✓
907	$(x^2 - 1)y'' - 2xy' + 2y = x^2 - 1$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
1299	$t^2y'' + 3ty' - 3y = 0$	[[_Emden, _Fowler]]	✓
1329	$2t^2y'' - 5ty' + 5y = 0$	[[_Emden, _Fowler]]	✓
1347	$ty'' - (t + 1)y' + y = t^2e^{2t}$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
1348	$(-t + 1)y'' + ty' - y = 2(t - 1)^2e^{-t}$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
1351	$t^2y'' - 2ty' + 2y = 4t^2$	[[_2nd_order, _with_lin- ear_symmetries]]	✓

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Table 2.46 second order ode non constant coeff transformation on B  
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#	ODE	CAS classification	Solved?
1353	$ty'' - (t + 1)y' + y = t^2 e^{2t}$	[[_2nd_order, _with_linear_symmetries]]	✓
1354	$(-t + 1)y'' + ty' - y = 2(t - 1)e^{-t}$	[[_2nd_order, _with_linear_symmetries]]	✓
1746	$x^2 y'' + xy' - y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
1747	$x^2 y'' - xy' + y = 0$	[[_Emden, _Fowler]]	✓
1750	$(x - 1)y'' - xy' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
1811	$x^2 y'' + xy' - y = 2x^2 + 2$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
1816	$x^2 y'' - 3xy' + 3y = 2x^4 \sin(x)$	[[_2nd_order, _with_linear_symmetries]]	✓
1832	$(x - 1)y'' - xy' + y = 2(x - 1)^2 e^x$	[[_2nd_order, _with_linear_symmetries]]	✓
1835	<i>i.c.</i> $(x - 1)^2 y'' - 2(x - 1)y' + 2y = (x - 1)^2$	[[_2nd_order, _with_linear_symmetries]]	✓
1838	<i>i.c.</i> $x^2 y'' + 2xy' - 2y = -2x^2$	[[_2nd_order, _with_linear_symmetries]]	✓
1839	<i>i.c.</i> $(x + 1)(2x + 3)y'' + 2(x + 2)y' - 2y = (2x + 3)^2$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
2374	$t^2 y'' + 5ty' - 5y = 0$	[[_Emden, _Fowler]]	✓
2393	$y'' - \frac{2(t + 1)y'}{t^2 + 2t - 1} + \frac{2y}{t^2 + 2t - 1} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
2395	$(-t^2 + 1)y'' - 2ty' + 2y = 0$	[_Gegenbauer]	✓
2396	$(t^2 + 1)y'' - 2ty' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
2398	$(2t + 1)y'' - 4(t + 1)y' + 4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
2401	$t^2 y'' - ty' + y = 0$	[[_Emden, _Fowler]]	✓
2432	$t^2 y'' + 5ty' - 5y = 0$	[[_Emden, _Fowler]]	✓
2434	$(t - 1)^2 y'' - 2(t - 1)y' + 2y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, ' _with_symmetry_[0,F(x)]']]	✓
2436	$t^2 y'' - ty' + y = 0$	[[_Emden, _Fowler]]	✓
2582	$t^2 y'' - ty' + y = 0$	[[_Emden, _Fowler]]	✓

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Table 2.46 second order ode non constant coeff transformation on B

Continued from previous page

#	ODE	CAS classification	Solved?
2628	$t^2 y'' + 5ty' - 5y = 0$	[[_Emden, _Fowler]]	✓
2630	$(t - 1)^2 y'' - 2(t - 1)y' + 2y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
2632	$t^2 y'' - ty' + y = 0$	[[_Emden, _Fowler]]	✓
3230	$x^2 y'' - 2xy' + 2y = 4x + \sin(\ln(x))$	[[_2nd_order, _with_linear_symmetries]]	✓
3250	$(1 - x)y'' = y'$	[[_2nd_order, _missing_y]]	✓
3253	$xy'' + x = y'$	[[_2nd_order, _missing_y]]	✓
3493	$x^2 y'' - xy' + y = x$	[[_2nd_order, _with_linear_symmetries]]	✓
3568	$2x^2 y'' - xy' + y = 9x^2$	[[_2nd_order, _with_linear_symmetries]]	✓
3575	$x^2 y'' + xy' - y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
4140	$x^2 y'' - 2xy' + 2y = x^2 + 2$	[[_2nd_order, _with_linear_symmetries]]	✓
4426	$xy'' = y' + x$	[[_2nd_order, _missing_y]]	✓
4509	$x^2 y'' - xy' + y = \ln(x)$	[[_2nd_order, _with_linear_symmetries]]	✓
5990	$x^2 y'' - xy' + y = x$	[[_2nd_order, _with_linear_symmetries]]	✓
5993	$x^2 y'' + xy' - y = x^2 e^{-x}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
5999	$xy'' - y' = x^2$	[[_2nd_order, _missing_y]]	✓
6015	$xy'' - y' = x^2$	[[_2nd_order, _missing_y]]	✓
	<i>i.c.</i>		
6026	$x^2 y'' - 2xy' + 2y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
6192	$x^2 y'' + 3xy' - 3y = 0$	[[_Emden, _Fowler]]	✓
6197	$x^2 y'' + xy' - y = x - \frac{1}{x}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
6215	$x^2 y'' - xy' + y = x$	[[_2nd_order, _with_linear_symmetries]]	✓

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Table 2.46 second order ode non constant coeff transformation on B

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#	ODE	CAS classification	Solved?
6219	$xy'' + y' = 4x$	[[_2nd_order, _missing_y]]	✓
6249	$x^2y'' - 3xy' + 3y = 0$	[[_Emden, _Fowler]]	✓
6251	$(x^2 + 2x)y'' - 2(x + 1)y' + 2y = 0$	[[_2nd_order, __with_linear_symmetries]]	✓
6253	$(x^2 + 1)y'' - 2xy' + 2y = 0$	[[_2nd_order, __with_linear_symmetries]]	✓
6412	$x^2y'' - xy' + y = 0$	[[_Emden, _Fowler]]	✓
6533	$t^2N'' - 2tN' + 2N = t \ln(t)$	[[_2nd_order, __with_linear_symmetries]]	✓
6541	$y'' + \frac{y'}{x} - \frac{y}{x^2} = \ln(x)$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
6575	$(x - 1)y'' - xy' + y = 0$	[[_2nd_order, __with_linear_symmetries]]	✓
6751	$x^2y'' - 2xy' + 2y = \ln(x)^2 - \ln(x^2)$	[[_2nd_order, __with_linear_symmetries]]	✓
6754	$(x + 1)^2y'' + (x + 1)y' - y = \ln(x + 1)^2 + x - 1$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
6757	$(x^2 + 1)y'' - 2xy' + 2y = 2$	[[_2nd_order, __with_linear_symmetries]]	✓
6758	$(x^2 + 4)y'' - 2xy' + 2y = 8$	[[_2nd_order, __with_linear_symmetries]]	✓
6769	$(x + 1)y'' - (3x + 4)y' + 3y = (2 + 3x)e^{3x}$	[[_2nd_order, __with_linear_symmetries]]	✓
6772	$(x^2 + 1)y'' - 2xy' + 2y = \frac{-x^2 + 1}{x}$	[[_2nd_order, __with_linear_symmetries]]	✓
6775	$xy'' - y' = -\frac{2}{x} - \ln(x)$	[[_2nd_order, _missing_y]]	✓
7155	$y'' + \frac{y'}{x} - \frac{y}{x^2} = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
7160	$(-x^2 + 1)y'' - xy' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
7167	$xy'' + xy' - y = x^2 + 2x$	[[_2nd_order, __with_linear_symmetries]]	✓
7168	$x^2y'' + xy' - y = x^2 + 2x$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
7169	$x^3y'' + xy' - y = \cos\left(\frac{1}{x}\right)$	[[_2nd_order, __with_linear_symmetries]]	✓

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Table 2.46 second order ode non constant coeff transformation on B

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#	ODE	CAS classification	Solved?
7170	$x(x+1)y'' + (x+2)y' - y = x + \frac{1}{x}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
7171	$2xy'' + (-2+x)y' - y = x^2 - 1$	[[_2nd_order, _with_linear_symmetries]]	✓
7173	$x^2(\ln(x) - 1)y'' - xy' + y = x(1 - \ln(x))^2$	[[_2nd_order, _with_linear_symmetries]]	✓
7176	$(\cos(x) + \sin(x))y'' - 2\cos(x)y' + (\cos(x) - \sin(x))y = (\cos(x) + \sin(x))^2 e^{2x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7203	$y'' - \frac{xy'}{-x^2+1} + \frac{y}{-x^2+1} = 0$	[_Gegenbauer, [_2nd_order, _linear, '_with_symmetry_[0,F(x)]]']	✓
7350	$y'' + \frac{y'}{x} - \frac{y}{x^2} = 0$ i.c.	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
7351	$y'' + \frac{y'}{x} - \frac{y}{x^2} = 0$ i.c.	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
7352	$(3x-1)^2 y'' + (9x-3)y' - 9y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
7376	$2x^2 y'' + xy' - y = 0$	[[_Emden, _Fowler]]	✓
7440	$xy'' - 2y' = x^3$	[[_2nd_order, _missing_y]]	✓
7587	$xy'' + y' = 4x$	[[_2nd_order, _missing_y]]	✓
7612	$xy'' - 3y' = 5x$	[[_2nd_order, _missing_y]]	✓
7676	$(x^2 - 1)y'' - 2xy' + 2y = (x^2 - 1)^2$	[[_2nd_order, _with_linear_symmetries]]	✓
7678	$(1-x)y'' + xy' - y = (1-x)^2$	[[_2nd_order, _with_linear_symmetries]]	✓
7679	$xy'' - (x+1)y' + y = x^2 e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓
7680	$x^2 y'' - 2xy' + 2y = x e^{-x}$	[[_2nd_order, _with_linear_symmetries]]	✓
7743	$x^2 y'' - 2xy' + 2y = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]]']	✓
8038	$ty'' - y' = 2t^2$ i.c.	[[_2nd_order, _missing_y]]	✓

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Table 2.46 second order ode non constant coeff transformation on B  
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#	ODE	CAS classification	Solved?
8172	$xy'' = y' + x^5$ i.c.	[[_2nd_order, _missing_y]]	✓
8173	$xy'' + y' + x = 0$ i.c.	[[_2nd_order, _missing_y]]	✓
8178	$\cos(x)y'' = y'$	[[_2nd_order, _missing_y]]	✓
8185	$x^3y'' - x^2y' = -x^2 + 3$	[[_2nd_order, _missing_y]]	✓
8282	$2x^2y'' + xy' - y = 0$	[[_Emden, _Fowler]]	✓
8435	$ty'' + 4y' = t^2$	[[_2nd_order, _missing_y]]	✓
8438	$ty'' + y' = 0$	[[_2nd_order, _missing_y]]	✓
8439	$t^2y'' - 2y' = 0$	[[_2nd_order, _missing_y]]	✓
8818	$x^2y'' - 3xy' + 3y = 2x^3 - x^2$	[[_2nd_order, _with_linear_symmetries]]	✓
10725	$y'' + xy' - y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10775	$xy'' + y' = 0$	[[_2nd_order, _missing_y]]	✓
10793	$xy'' - (x + 1)y' + y = 0$	[_Laguerre]	✓
10841	$x^2y'' + xy' - y - x^2a = 0$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
10847	$x^2y'' + (x + a)y' - y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
10848	$x^2y'' - xy' + y - 3x^3 = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10856	$x^2y'' - 2xy' + 2y - x^5 \ln(x) = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10907	$(x^2 + 1)y'' - xy' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10909	$(x^2 + 1)y'' - 2xy' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10932	$x(x + 1)y'' - (x - 1)y' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10967	$(3x - 1)^2 y'' + 3(3x - 1)y' - 9y - \ln(3x - 1)^2 = 0$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
10980	$(a^2x^2 - 1)y'' + 2a^2xy' - 2a^2y = 0$	[_Gegenbauer]	✓

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Table 2.46 second order ode non constant coeff transformation on B  
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#	ODE	CAS classification	Solved?
11109	$y'' = -\frac{\cos(x)y'}{\sin(x)} + \frac{y}{\sin(x)^2}$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
11122	$y'' = -\frac{xy'}{f(x)} + \frac{y}{f(x)}$	[[_2nd_order, _with_linear_symmetries]]	✓
12200	$y'' + (ax + b)y' - ay = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12352	$(x^2a + bx + c)y'' + (kx + d)y' - ky = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12419	$x^n y'' + (ax + b)y' - ay = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12437	$(ax^n + bx^m + c)y'' + (\lambda - x)y' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12643	$(x^2 + 1)y'' + 2xy' - 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12644	$(1 - x)y'' + xy' - y = (1 - x)^2$	[[_2nd_order, _with_linear_symmetries]]	✓
12645	$\sin(x)y'' + 2\cos(x)y' + 3\sin(x)y = e^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12657	$(x^2 + 1)y'' - 2xy' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12694	$y'' + \frac{y'}{x} = 0$	[[_2nd_order, _missing_y]]	✓
12719	$x' + tx'' = 1$	[[_2nd_order, _missing_y]]	✓
	i.c.		
12846	$t^2x'' - 3tx' + 3x = 4t^7$	[[_2nd_order, _with_linear_symmetries]]	✓
13070	$x^2y'' - 2xy' + 2y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
	i.c.		
13200	$(x + 1)^2 y'' - 2(x + 1)y' + 2y = 1$	[[_2nd_order, _with_linear_symmetries]]	✓
13201	$(x^2 + 2x)y'' - 2(x + 1)y' + 2y = (x + 2)^2$	[[_2nd_order, _with_linear_symmetries]]	✓
13204	$(2x + 1)(x + 1)y'' + 2xy' - 2y = (2x + 1)^2$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
13207	$x^2y'' - 3xy' + 3y = 0$	[[_Emden, _Fowler]]	✓

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Table 2.46 second order ode non constant coeff transformation on B  
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#	ODE	CAS classification	Solved?
13230	$x^2y'' - 4xy' + 4y = -6x^3 + 4x^2$ i.c.	[[_2nd_order, __with_linear_symmetries]]	✓
13235	$(2x - 3)^2 y'' - 6(2x - 3) y' + 12y = 0$	[[_2nd_order, __with_linear_symmetries]]	✓
13475	$t^2 x'' + tx' - x = 0$ i.c.	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
13479	$x^2y'' - 5xy' + 5y = 0$ i.c.	[[_Emden, _Fowler]]	✓
13595	$u'' + \frac{2u'}{r} = 0$	[[_2nd_order, __missing_y]]	✓
13666	$(x - 1) y'' - xy' + y = 0$	[[_2nd_order, __with_linear_symmetries]]	✓
13672	$(-x^2 + 1) y'' + (1 - x) y' + y = -2x + 1$	[[_2nd_order, _exact, _linear, __nonhomogeneous]]	✓
13679	$y'' + \cot(x) y' - \csc(x)^2 y = \cos(x)$	[[_2nd_order, __linear, __nonhomogeneous]]	✓
13837	$y'' + \frac{2y'}{x} = 0$	[[_2nd_order, __missing_y]]	✓
13906	$xy'' - y' = e^x x^2$ i.c.	[[_2nd_order, __missing_y]]	✓
13986	$x^2y'' + xy' - y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
13996	$2x^2y'' + xy' - y = 0$	[[_Emden, _Fowler]]	✓
14158	$x(x - 3) y'' + 3y' = x^2$ i.c.	[[_2nd_order, __missing_y]]	✓
14159	$x(x - 3) y'' + 3y' = x^2$ i.c.	[[_2nd_order, __missing_y]]	✓
14164	$x^2y'' + 2xy' - 2y = 0$	[[_Emden, _Fowler]]	✓
14168	$x^2y'' - xy' + y = 0$ i.c.	[[_Emden, _Fowler]]	✓
14885	$xy'' + 4y' = 18x^2$	[[_2nd_order, __missing_y]]	✓
14886	$xy'' = 2y'$	[[_2nd_order, __missing_y]]	✓
14913	$xy'' - y' = 6x^5$	[[_2nd_order, __missing_y]]	✓
14919	$xy'' + 4y' = 18x^2$ i.c.	[[_2nd_order, __missing_y]]	✓
14920	$xy'' = 2y'$ i.c.	[[_2nd_order, __missing_y]]	✓

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Table 2.46 second order ode non constant coeff transformation on B  
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#	ODE	CAS classification	Solved?
14925	$xy'' + 2y' = 6$ i.c.	[[_2nd_order, _missing_y]]	✓
14978	$x^2y'' - xy' + y = 0$ i.c.	[[_Emden, _Fowler]]	✓
14980	$(x+1)^2y'' - 2(x+1)y' + 2y = 0$ i.c.	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
15058	$2x^2y'' - xy' + y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
15076	$x^2y'' - xy' + y = 0$ i.c.	[[_Emden, _Fowler]]	✓
15182	$2x^2y'' - xy' + y = \frac{50}{x^3}$	[[_2nd_order, _with_linear_symmetries]]	✓
15189	$x^2y'' - 2xy' + 2y = 3\sqrt{x}$	[[_2nd_order, _with_linear_symmetries]]	✓
15195	$x^2y'' + xy' - y = \sqrt{x}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
15202	$(x+1)y'' + xy' - y = (x+1)^2$	[[_2nd_order, _with_linear_symmetries]]	✓
15217	$2xy'' + y' = \sqrt{x}$	[[_2nd_order, _missing_y]]	✓
15239	$xy'' = 3y'$	[[_2nd_order, _missing_y]]	✓
15254	$x^2y'' + xy' - y = \frac{1}{x^2+1}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
15860	$t^2y'' + 7ty' - 7y = 0$ i.c.	[[_Emden, _Fowler]]	✓
15865	$t^2y'' + ty' - y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
15916	$3t^2y'' - 2ty' + 2y = 0$	[[_Emden, _Fowler]]	✓
15917	$t^2y'' - ty' + y = 0$	[[_Emden, _Fowler]]	✓
16041	$t^2(\ln(t) - 1)y'' - ty' + y = -\frac{3(1 + \ln(t))}{4\sqrt{t}}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
16118	$2x^2y'' - 8xy' + 8y = 0$	[[_Emden, _Fowler]]	✓
16119	$2x^2y'' - 7xy' + 7y = 0$	[[_Emden, _Fowler]]	✓

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Table 2.46 second order ode non constant coeff transformation on B  
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#	ODE	CAS classification	Solved?
16147	$2x^2y'' - 7xy' + 7y = 0$ i.c.	[[_Emden, _Fowler]]	✓
16175	$x^2y'' - xy' + y = 0$ i.c.	[[_Emden, _Fowler]]	✓
16282	$t^2y'' - 5ty' + 5y = 0$	[[_Emden, _Fowler]]	✓
16596	$xy'' = y'$	[[_2nd_order, _missing_y]]	✓
16597	$xy'' + y' = 0$	[[_2nd_order, _missing_y]]	✓
16599	$xy'' = y' + x^2$	[[_2nd_order, _missing_y]]	✓
16600	$x \ln(x) y'' = y'$	[[_2nd_order, _missing_y]]	✓
16793	$x^2y'' + xy' - y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
16796	$xy'' + y' = 0$	[[_2nd_order, _missing_y]]	✓
16797	$(x + 2)^2 y'' + 3(x + 2) y' - 3y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
16798	$(2x + 1)^2 y'' - 2(2x + 1) y' + 4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
16807	$x^2y'' + xy' - y = x^m$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
16812	$(x^2 - x) y'' + (2x - 3) y' - 2y = 0$	[_Jacobi]	✓
16813	$(2x^2 + 3x) y'' - 6(x + 1) y' + 6y = 6$	[[_2nd_order, _with_linear_symmetries]]	✓
16834	$y'' - 2 \tan(x) y' = 1$	[[_2nd_order, _missing_y]]	✓
16835	$x \ln(x) y'' - y' = \ln(x)^2$	[[_2nd_order, _missing_y]]	✓
16871	$xy'' + y' = 0$	[[_2nd_order, _missing_y]]	✓
17246	$(1 - x \cot(x)) y'' - xy' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
17350	$x^2y'' - 2xy' + 2y = 3x^2 + 2 \ln(x)$	[[_2nd_order, _with_linear_symmetries]]	✓
17376	$ty'' - (t + 1) y' + y = t^2 e^{2t}$	[[_2nd_order, _with_linear_symmetries]]	✓
17377	$(-t + 1) y'' + ty' - y = 2(t - 1)^2 e^{-t}$	[[_2nd_order, _with_linear_symmetries]]	✓
17379	$(1 - x) y'' + xy' - y = g(x)$	[[_2nd_order, _with_linear_symmetries]]	✓

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Table 2.46 second order ode non constant coeff transformation on B

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#	ODE	CAS classification	Solved?
17383	$t^2 y'' - 2ty' + 2y = 4t^2$	[[_2nd_order, _with_linear_symmetries]]	✓
17677	$x^2 y'' - 2xy' + 2y = 2x^3$	[[_2nd_order, _with_linear_symmetries]]	✓
17869	$xy'' + y' = 4x$	[[_2nd_order, _missing_y]]	✓
17925	$xy'' - y' = 3x^2$	[[_2nd_order, _missing_y]]	✓
17926	$xy'' + y' = 0$	[[_2nd_order, _missing_y]]	✓
17934	$(x - 1)y'' - xy' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
17939	<i>i.c.</i> $x^2 y'' - 2xy' + 2y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]]']	✓
17960	$xy'' - (x + 1)y' + y = 0$	[_Laguerre]	✓
18028	$(x^2 - 1)y'' - 2xy' + 2y = (x^2 - 1)^2$	[[_2nd_order, _with_linear_symmetries]]	✓
18030	$(1 - x)y'' + xy' - y = (1 - x)^2$	[[_2nd_order, _with_linear_symmetries]]	✓
18031	$xy'' - (x + 1)y' + y = x^2 e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓
18032	$x^2 y'' - 2xy' + 2y = x e^{-x}$	[[_2nd_order, _with_linear_symmetries]]	✓
18192	$t^2 x'' - 2tx' + 2x = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]]']	✓
18282	$x^2 y'' - 5xy' + 5y = \frac{1}{x}$	[[_2nd_order, _with_linear_symmetries]]	✓
18284	$v'' + \frac{2v'}{r} = 0$	[[_2nd_order, _missing_y]]	✓
18365	$xy'' + 2y' = 2x$	[[_2nd_order, _missing_y]]	✓
18366	$x^2 y'' - xy' + y = \ln(x)$	[[_2nd_order, _with_linear_symmetries]]	✓
18381	$xy'' + 3y' = 3x$	[[_2nd_order, _missing_y]]	✓
18385	$V'' + \frac{2V'}{r} = 0$	[[_2nd_order, _missing_y]]	✓
18386	$V'' + \frac{V'}{r} = 0$	[[_2nd_order, _missing_y]]	✓

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Table 2.46 second order ode non constant coeff transformation on B  
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#	ODE	CAS classification	Solved?
18401	$v'' + \frac{2v'}{r} = 0$	[[_2nd_order, _missing_y]]	✓
18599	$x^2 y'' - xy' + y = 2 \ln(x)$	[[_2nd_order, _with_linear_symmetries]]	✓
18608	$(2x - 1)^3 y'' + (2x - 1) y' - 2y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
18616	$x^2 y'' + xy' - y = x^m$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓

## 2.4.19 second order bessel ode

Table 2.47: second order bessel ode

#	ODE	CAS classification	Solved?
514	$x^2 y'' - xy' + (x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
515	$xy'' + 3y' + xy = 0$	[_Lienard]	✓
516	$xy'' - y' + 36x^3 y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
517	$x^2 y'' - 5xy' + (8 + x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
518	$36x^2 y'' + 60xy' + (9x^3 - 5)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
519	$16x^2 y'' + 24xy' + (144x^3 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
520	$x^2 y'' + 3xy' + (x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
521	$4x^2 y'' - 12xy' + (15 + 16x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
522	$16x^2 y'' - (-144x^3 + 5)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
523	$2x^2 y'' - 3xy' - 2(-x^5 + 14)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
524	$y'' + x^4 y = 0$	[[_Emden, _Fowler]]	✓
525	$xy'' + 4x^3 y = 0$	[[_Emden, _Fowler]]	✓
526	$xy'' + 2y' + xy = 0$	[_Lienard]	✓
1350	$x^2 y'' + xy' + \left(x^2 - \frac{1}{4}\right)y = g(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1749	$4x^2 y'' - 4xy' + (-16x^2 + 3)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
1751	$x^2 y'' - 2xy' + (x^2 + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
1818	$2xy'' + 2y' + 2y = \sin(\sqrt{x})$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1821	$x^2 y'' - 2xy' + (x^2 + 2)y = x^3 \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1822	$xy'' - y' - 4x^3 y = 8x^5$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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Table 2.47 second order bessel ode  
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#	ODE	CAS classification	Solved?
1824	$4x^2y'' - 4xy' + (-16x^2 + 3)y = 8x^{5/2}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1825	$4x^2y'' - 4xy' + (4x^2 + 3)y = x^{7/2}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1826	$x^2y'' - 2xy' - (x^2 - 2)y = 3x^4$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1831	$x^2y'' - 4xy' + (x^2 + 6)y = x^4$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2399	$t^2y'' + ty' + \left(t^2 - \frac{1}{4}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
2410	$y'' + \frac{t^2y}{4} = f \cos(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3805	$y'' + xy = \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6076	$u'' - \frac{a^2u}{x^{2/3}} = 0$	[[_Emden, _Fowler]]	✓
6077	$u'' - \frac{2u'}{x} - a^2u = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
6078	$u'' + \frac{2u'}{x} - a^2u = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
6079	$u'' + \frac{2u'}{x} + a^2u = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
6080	$u'' + \frac{4u'}{x} - a^2u = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
6081	$u'' + \frac{4u'}{x} + a^2u = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
6082	$y'' - a^2y = \frac{6y}{x^2}$	[[_2nd_order, _with_linear_symmetries]]	✓
6083	$y'' + n^2y = \frac{6y}{x^2}$	[[_2nd_order, _with_linear_symmetries]]	✓
6084	$x^2y'' + xy' - \left(x^2 + \frac{1}{4}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
6085	$x^2y'' + xy' + \frac{(-9a^2 + 4x^2)y}{4a^2} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
6086	$x^2y'' + xy' + \left(x^2 - \frac{25}{4}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓

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Table 2.47 second order besse1 ode  
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#	ODE	CAS classification	Solved?
6088	$y'' + e^{2x}y = n^2y$	[[_2nd_order, _with_linear_symmetries]]	✓
6089	$y'' + \frac{y}{4x} = 0$	[[_Emden, _Fowler]]	✓
6090	$xy'' + y' + y = 0$	[[_Emden, _Fowler]]	✓
6091	$xy'' + 3y' + 4x^3y = 0$	[[_Emden, _Fowler]]	✓
6411	$xy'' + \frac{y'}{2} + 2y = 0$	[[_Emden, _Fowler], [_2nd_order, linear, 'with_symmetry_[0,F(x)]]]	✓
6413	$2xy'' - y' + 2y = 0$	[[_Emden, _Fowler]]	✓
6698	$xy'' - y' + 4x^3y = 0$	[[_Emden, _Fowler], [_2nd_order, linear, 'with_symmetry_[0,F(x)]]]	✓
6764	$xy'' - y' + 4x^3y = 0$	[[_Emden, _Fowler], [_2nd_order, linear, 'with_symmetry_[0,F(x)]]]	✓
6765	$x^4y'' + 2x^3y' + y = \frac{x+1}{x}$	[[_2nd_order, linear, _nonhomogeneous]]	✓
6766	$x^8y'' + 4x^7y' + y = \frac{1}{x^3}$	[[_2nd_order, linear, _nonhomogeneous]]	✓
6770	$x^2y'' - 4xy' + (9x^2 + 6)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
6771	$xy'' + 2y' + 4xy = 4$	[[_2nd_order, linear, _nonhomogeneous]]	✓
7158	$y'' + \frac{y'}{x} + x^2y = 0$	[[_Emden, _Fowler]]	✓
7174	$xy'' + 2y' + xy = \sec(x)$	[[_2nd_order, linear, _nonhomogeneous]]	✓
7221	$x^2y'' - 2xy' + (x^2 + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
7362	$x^2y'' + 4xy' + (x^2 + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
7963	$x^2y'' + xy' + \left(x^2 - \frac{1}{9}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
7964	$x^2y'' + xy' + (x^2 - 1)y = 0$	[_Bessel]	✓

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Table 2.47 second order bessel ode

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#	ODE	CAS classification	Solved?
7965	$4x^2y'' + 4xy' + (4x^2 - 25)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
7966	$16x^2y'' + 16xy' + (16x^2 - 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
7967	$xy'' + y' + xy = 0$	[_Lienard]	✓
7968	$y' + xy'' + \left(x - \frac{4}{x}\right)y = 0$	[_Bessel]	✓
7969	$x^2y'' + xy' + (9x^2 - 4)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
7970	$x^2y'' + xy' + \left(36x^2 - \frac{1}{4}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
7971	$x^2y'' + xy' + \left(25x^2 - \frac{4}{9}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
7972	$x^2y'' + xy' + (2x^2 - 64)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
7973	$xy'' + 2y' + 4y = 0$	[[_Emden, _Fowler]]	✓
7974	$xy'' + 3y' + xy = 0$	[_Lienard]	✓
7975	$xy'' - y' + xy = 0$	[_Lienard]	✓
7976	$xy'' - 5y' + xy = 0$	[_Lienard]	✓
7977	$x^2y'' + (x^2 - 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
7978	$4x^2y'' + (16x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
7979	$xy'' + 3y' + x^3y = 0$	[[_Emden, _Fowler]]	✓
7980	$9x^2y'' + 9xy' + (x^6 - 36)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
7981	$y'' - x^2y = 0$	[[_Emden, _Fowler]]	✓
7982	$xy'' + y' - 7x^3y = 0$	[[_Emden, _Fowler]]	✓
7984	$x^2y'' + 4xy' + (x^2 + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
7985	$16x^2y'' + 32xy' + (x^4 - 12)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
7986	$4x^2y'' - 4xy' + (16x^2 + 3)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓

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Table 2.47 second order bessel ode  
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#	ODE	CAS classification	Solved?
8302	$xy'' + y' - xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8333	$x^2y'' + xy' + (x^2 - 1)y = 0$	[_Bessel]	✓
8441	$ty'' - y' + 4t^3y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
8511	$y'' - xy - x = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8515	$y'' - x^2y - x^2 = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8516	$y'' - x^2y - x^3 = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8517	$y'' - x^2y - x^4 = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8518	$y'' - x^2y - x^4 + 2 = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8519	$y'' - 2x^2y - x^4 + 1 = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8520	$y'' - x^3y - x^3 = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8521	$y'' - x^3y - x^4 = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8528	$y'' - \frac{y'}{x} - xy - x^2 - \frac{1}{x} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8529	$y'' - \frac{y'}{x} - x^2y - x^3 - \frac{1}{x} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8530	$y'' - \frac{y'}{x} - x^3y - x^4 - \frac{1}{x} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8641	$x^2y'' + xy' + \left(x^2 - \frac{1}{4}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8815	$y'' + \frac{2y'}{x} + \frac{a^2y}{x^4} = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
8817	$x^6y'' + 3x^5y' + a^2y = \frac{1}{x^2}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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Table 2.47 second order bessel ode  
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#	ODE	CAS classification	Solved?
8822	$xy'' - y' + 4x^3y = 8x^3 \sin(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8823	$xy'' - y' + 4x^3y = x^5$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8833	$x^2y'' - 2xy' + 2(x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8836	$xy'' + 2y' - xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8837	$xy'' + 2y' + xy = 0$	[_Lienard]	✓
8844	$x^2y'' + xy' + (x^2 - 5)y = 0$	[_Bessel]	✓
10700	$y'' - cx^ay = 0$	[[_Emden, _Fowler]]	✓
10703	$y'' + (e^{2x} - v^2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10704	$y'' + ae^{bx}y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10718	$y'' + y' + ae^{-2x}y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
10719	$y'' - y' + e^{2x}y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
10768	$4y'' + 9xy = 0$	[[_Emden, _Fowler]]	✓
10773	$x(y'' + y) - \cos(x) = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
10776	$xy'' + y' + ay = 0$	[[_Emden, _Fowler]]	✓
10777	$xy'' + y' + lxy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10779	$xy'' - y' + ay = 0$	[[_Emden, _Fowler]]	✓
10780	$xy'' - y' - yax^3 = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
10782	$xy'' + 2y' - xy - e^x = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
10783	$xy'' + 2y' + axy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓

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Table 2.47 second order bessel ode  
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#	ODE	CAS classification	Solved?
10784	$xy'' + 2y' + ax^2y = 0$	[[_Emden, _Fowler]]	✓
10785	$xy'' - 2y' + ay = 0$	[[_Emden, _Fowler]]	✓
10786	$xy'' + vy' + ay = 0$	[[_Emden, _Fowler]]	✓
10787	$xy'' + ay' + bxy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10788	$xy'' + ay' + bx^{a1}y = 0$	[[_Emden, _Fowler]]	✓
10812	$2xy'' + y' + ay = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]]]	✓
10817	$4xy'' + 2y' - y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]]]	✓
10822	$axy'' + by' + cy = 0$	[[_Emden, _Fowler]]	✓
10831	$x^2y'' + (ax + b)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10832	$x^2y'' + (x^2 - 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10833	$x^2y'' - (x^2a + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10834	$x^2y'' + (a^2x^2 - 6)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10835	$x^2y'' + (x^2a - v(v - 1))y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10837	$x^2y'' + (ax^k - b(b - 1))y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10843	$x^2y'' + xy' - (x + a)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10844	$x^2y'' + xy' + (-v^2 + x^2)y = 0$	[_Bessel]	✓
10845	$x^2y'' + xy' + (-v^2 + x^2)y - f(x) = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
10846	$x^2y'' + xy' + (lx^2 - v^2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10849	$x^2y'' - xy' + (ax^m + b)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10851	$x^2y'' + 2xy' + (ax - b^2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓

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Table 2.47 second order bessel ode  
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#	ODE	CAS classification	Solved?
10852	$x^2 y'' + 2xy' + (x^2 a + b)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10858	$x^2 y'' - 2xy' + (x^2 + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10859	$x^2 y'' - 2xy' + (x^2 + 2)y - \frac{x^2}{\cos(x)} = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
10860	$x^2 y'' - 2xy' + (x^2 + 2)y - \frac{x^3}{\cos(x)} = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
10861	$x^2 y'' - 2xy' + (a^2 x^2 + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10862	$x^2 y'' + 3xy' + (-v^2 + x^2 + 1)y - f(x) = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
10867	$x^2 y'' + 5xy' - (2x^3 - 4)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10871	$x^2 y'' + axy' + (bx^m + c)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10953	$4x^2 y'' + (4a^2 x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10955	$4x^2 y'' + 4xy' + (-v^2 + x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10957	$4x^2 y'' + 4xy' - (4x^2 + 1)y - 4\sqrt{x^3}e^x = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
10958	$4x^2 y'' + 4xy' - (x^2 a + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10969	$16x^2 y'' + (4x + 3)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10970	$16x^2 y'' + 32xy' - (4x + 5)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
11022	$y'' = -\frac{ay}{x^4}$	[[_Emden, _Fowler]]	✓
11027	$y'' = -\frac{y'}{x} - \frac{y}{x^4}$	[[_Emden, _Fowler]]	✓
11030	$y'' = -\frac{2y'}{x} - \frac{a^2 y}{x^4}$	[[_Emden, _Fowler], [_2nd_order, _linear, 'with_symmetry_[0,F(x)]]]	✓
11080	$y'' = \frac{y'}{x} - \frac{ay}{x^6}$	[[_Emden, _Fowler]]	✓

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Table 2.47 second order bessel ode  
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#	ODE	CAS classification	Solved?
11349	$x^2y'' - (2a + b - 1)xy' + (c^2b^2x^{2b} + a(a + b))y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12183	$y'' - ax^n y = 0$	[[_Emden, _Fowler]]	✓
12237	$xy'' + \frac{y'}{2} + ay = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, 'with_symmetry_[0,F(x)]]]	✓
12238	$xy'' + ay' + by = 0$	[[_Emden, _Fowler]]	✓
12239	$xy'' + ay' + bxy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12243	$xy'' + ay' + bx^n y = 0$	[[_Emden, _Fowler]]	✓
12287	$x^2y'' + (ax + b)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12288	$x^2y'' + (a^2x^2 - n(n + 1))y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12289	$x^2y'' - (a^2x^2 + n(n + 1))y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12292	$x^2y'' - \left(ax^3 + \frac{5}{16}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12294	$x^2y'' + (ax^n + b)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12300	$x^2y'' + xy' + \left(x^2 - \left(n + \frac{1}{2}\right)^2\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12301	$x^2y'' + xy' - \left(x^2 + \left(n + \frac{1}{2}\right)^2\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12302	$x^2y'' + xy' + (-\nu^2 + x^2)y = 0$	[_Bessel]	✓
12303	$x^2y'' + xy' - (\nu^2 + x^2)y = 0$	[[_Bessel, _modified]]	✓
12304	$x^2y'' + 2xy' - (a^2x^2 + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12305	$x^2y'' - 2axy' + (b^2x^2 + a(a + 1))y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12306	$x^2y'' - 2axy' + (-b^2x^2 + a(a + 1))y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12308	$x^2y'' + axy' + (bx^n + c)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓

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Table 2.47 second order bessel ode  
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#	ODE	CAS classification	Solved?
12358	$x^3 y'' + (ax + b)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12387	$x^4 y'' + ay = 0$	[[_Emden, _Fowler]]	✓
12415	$x^6 y'' - x^5 y' + ay = 0$	[[_Emden, _Fowler]]	✓
12441	$y'' + a e^{\lambda x} y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12442	$y'' + (a e^x - b)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12448	$y'' + ay' + b e^{2ax} y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12449	$y'' - ay' + b e^{2ax} y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
12450	$y'' + ay' + (b e^{\lambda x} + c)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12648	$xy'' + 2y' - xy = 2 e^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12652	$x^6 y'' + 3x^5 y' + y = \frac{1}{x^2}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12656	$x^2 y'' + 4xy' + (-x^2 + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12659	$x^2 y'' - 4xy' + (x^2 + 6)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
13338	$tx'' - 2x' + 9t^5 x = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
13346	$t^3 x'' + 3t^2 x' + x = 0$	[[_Emden, _Fowler]]	✓
13591	$x^2 y'' + xy' + \left(9x^2 - \frac{1}{25}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
13634	$y'' + x^2 y = 0$	[[_Emden, _Fowler]]	✓
13810	$y'' + \frac{y'}{x} + \left(1 - \frac{1}{4x^2}\right)y = x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13822	$y'' - x^2 y = 0$	[[_Emden, _Fowler]]	✓
13823	$xy'' + y' + y = 0$	[[_Emden, _Fowler]]	✓
13824	$xy'' + x^2 y = 0$	[[_Emden, _Fowler]]	✓

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Table 2.47 second order bessel ode  
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#	ODE	CAS classification	Solved?
13829	$x^2 y'' + xy' + (-\nu^2 + x^2)y = \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
14979 i.c.	$xy'' - y' + 4x^3y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
14982	$xy'' - y' + 4x^3y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
15200	$xy'' - y' - 4x^3y = x^3 e^{x^2}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16036 i.c.	$t^2 y'' - 4ty' + (t^2 + 6)y = t^3 + 2t$	[[_2nd_order, _with_linear_symmetries]]	✓
16038 i.c.	$ty'' + 2y' + ty = -t$	[[_2nd_order, _with_linear_symmetries]]	✓
16040 i.c.	$4t^2 y'' + 4ty' + (16t^2 - 1)y = 16t^{3/2}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16839 i.c.	$4xy'' + 2y' + y = \frac{6+x}{x^2}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16843 i.c.	$y'' + \frac{2y'}{x} - y = 4e^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16892	$x^2 y'' + xy' + \left(4x^2 - \frac{1}{9}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
16893	$x^2 y'' + xy' + \left(x^2 - \frac{1}{4}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
16894	$y'' + \frac{y'}{x} + \frac{y}{9} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
16895	$y'' + \frac{y'}{x} + 4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
16896	$x^2 y'' - 2xy' + 4(x^4 - 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
16897	$xy'' + \frac{y'}{2} + \frac{y}{4} = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
16898	$y'' + \frac{5y'}{x} + y = 0$	[_Lienard]	✓

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Table 2.47 second order bessel ode  
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#	ODE	CAS classification	Solved?
16899	$y'' + \frac{3y'}{x} + 4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
17221	$y'' + ty = 0$	[[_Emden, _Fowler]]	✓
17224	$x^2y'' + xy' + (-\nu^2 + x^2)y = 0$	[_Bessel]	✓
17226	$y'' - ty = \frac{1}{\pi}$	unknown	✓
17233	$ty'' + 3y = t$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
17378	$x^2y'' + xy' + \left(x^2 - \frac{1}{4}\right)y = 3x^{3/2} \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17380	$x^2y'' + xy' + \left(x^2 - \frac{1}{4}\right)y = g(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17672	$y'' + \frac{2y'}{x} + y = 0$	[_Lienard]	✓
17708	$y'' - \frac{y'}{x} + \left(1 - \frac{m^2}{x^2}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
17709	$y'' + \frac{2y'}{x} + y = 0$	[_Lienard]	✓
17710	$y'' + \frac{2py'}{x} + y = 0$	[_Lienard]	✓
17711	$xy'' - y' - x^3y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
17937	$x^2y'' - 4xy' + (x^2 + 6)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
18209	$y'' + \frac{y'}{x} + k^2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
18278	$xy'' + 2y' = xy$	[[_2nd_order, _with_linear_symmetries]]	✓

## 2.4.20 second order bessel ode form A

Table 2.48: second order bessel ode form A

#	ODE	CAS classification	Solved?
6088	$y'' + e^{2x}y = n^2y$	[[_2nd_order, _with_linear_symmetries]]	✓
10703	$y'' + (e^{2x} - v^2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10704	$y'' + a e^{bx}y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10718	$y'' + y' + a e^{-2x}y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
10719	$y'' - y' + e^{2x}y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
12441	$y'' + a e^{\lambda x}y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12442	$y'' + (a e^x - b)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12448	$y'' + ay' + b e^{2ax}y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12449	$y'' - ay' + b e^{2ax}y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
12450	$y'' + ay' + (b e^{\lambda x} + c)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓

## 2.4.21 second order kovacic

Table 2.49: second order kovacic

#	ODE	CAS classification	Solved?
11	$x'' = 50$ i.c.	[[_2nd_order, _quadrature]]	✓
12	$x'' = -20$ i.c.	[[_2nd_order, _quadrature]]	✓
13	$x'' = 3t$ i.c.	[[_2nd_order, _quadrature]]	✓
14	$x'' = 2t + 1$ i.c.	[[_2nd_order, _quadrature]]	✓
15	$x'' = 4(3 + t)^2$ i.c.	[[_2nd_order, _quadrature]]	✓
16	$x'' = \frac{1}{\sqrt{t+4}}$ i.c.	[[_2nd_order, _quadrature]]	✓
17	$x'' = \frac{1}{(t+1)^3}$ i.c.	[[_2nd_order, _quadrature]]	✓
18	$x'' = 50 \sin(5t)$ i.c.	[[_2nd_order, _quadrature]]	✓
147	$xy'' = y'$	[[_2nd_order, _missing_y]]	✓
149	$y'' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
150	$xy'' + y' = 4x$	[[_2nd_order, _missing_y]]	✓
152	$x^2y'' + 3xy' = 2$	[[_2nd_order, _missing_y]]	✓
215	$y'' - y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
216	$y'' - 9y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
217	$y'' + 4y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
218	$y'' + 25y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
219	$y'' - 3y' + 2y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
220	$y'' + y' - 6y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
221	$y'' + y' = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
222	$y'' - 3y' = 0$ i.c.	[[_2nd_order, _missing_x]]	✓

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Table 2.49 second order kovacic  
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#	ODE	CAS classification	Solved?
223	$y'' + 2y' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
224	$y'' - 10y' + 25y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
225	$y'' - 2y' + 2y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
226	$y'' + 6y' + 13y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
227	$x^2y'' - 2xy' + 2y = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
228	$x^2y'' + 2xy' - 6y = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
229	$x^2y'' - xy' + y = 0$ i.c.	[[_Emden, _Fowler]]	✓
230	$x^2y'' + xy' + y = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
234	$y'' - 3y' + 2y = 0$	[[_2nd_order, _missing_x]]	✓
235	$y'' + 2y' - 15y = 0$	[[_2nd_order, _missing_x]]	✓
236	$y'' + 5y' = 0$	[[_2nd_order, _missing_x]]	✓
237	$2y'' + 3y' = 0$	[[_2nd_order, _missing_x]]	✓
238	$2y'' - y' - y = 0$	[[_2nd_order, _missing_x]]	✓
239	$4y'' + 8y' + 3y = 0$	[[_2nd_order, _missing_x]]	✓
240	$4y'' + 4y' + y = 0$	[[_2nd_order, _missing_x]]	✓
241	$9y'' - 12y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
242	$6y'' - 7y' - 20y = 0$	[[_2nd_order, _missing_x]]	✓
243	$35y'' - y' - 12y = 0$	[[_2nd_order, _missing_x]]	✓
244	$x^2y'' + xy' - y = 0$	[[_2nd_order, _exact, _lin- ear, _homogeneous]]	✓
245	$x^2y'' + 2xy' - 12y = 0$	[[_Emden, _Fowler]]	✓

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Table 2.49 second order kovacic  
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#	ODE	CAS classification	Solved?
246	$4x^2y'' + 8xy' - 3y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]]	✓
247	$x^2y'' + xy' = 0$	[[_2nd_order, _missing_y]]	✓
248	$x^2y'' - 3xy' + 4y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]]	✓
257	$y'' + y = 3x$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
258	$y'' - 4y = 12$	[[_2nd_order, _missing_x]]	✓
259	$y'' - 2y' - 3y = 6$	[[_2nd_order, _missing_x]]	✓
260	$y'' - 2y' + 2y = 2x$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
261	$y'' + 2y = 4 + 6x$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
262	$x^2y'' - 2xy' + 2y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]]	✓
263	$y'' - 2y' - 5y = 0$	[[_2nd_order, _missing_x]]	✓
271	$y'' - 4y = 0$	[[_2nd_order, _missing_x]]	✓
272	$2y'' - 3y' = 0$	[[_2nd_order, _missing_x]]	✓
273	$y'' + y' - 10y = 0$	[[_2nd_order, _missing_x]]	✓
274	$2y'' - 7y' + 3y = 0$	[[_2nd_order, _missing_x]]	✓
275	$y'' + 6y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓
276	$y'' + 5y' + 5y = 0$	[[_2nd_order, _missing_x]]	✓
277	$4y'' - 12y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓
278	$y'' - 6y' + 13y = 0$	[[_2nd_order, _missing_x]]	✓
279	$y'' + 8y' + 25y = 0$	[[_2nd_order, _missing_x]]	✓
291	$y'' - 4y' + 3y = 0$	[[_2nd_order, _missing_x]]	✓

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#	ODE	CAS classification	Solved?
292	$9y'' + 6y' + 4y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
293	$y'' - 6y' + 25y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
309	$y'' + 2iy' + 3y = 0$	[[_2nd_order, _missing_x]]	✓
310	$y'' - iy' + 6y = 0$	[[_2nd_order, _missing_x]]	✓
311	$y'' = (-2 + 2i\sqrt{3})y$	[[_2nd_order, _missing_x]]	✓
315	$x^2y'' + xy' + 9y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]]	✓
316	$x^2y'' + 7xy' + 25y = 0$	[[_Emden, _Fowler]]	✓
322	$y'' + 16y = e^{3x}$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
323	$y'' - y' + 2y = 3x + 4$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
324	$y'' - y' - 6y = 2 \sin(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
325	$4y'' + 4y' + y = 3x e^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
326	$y'' + y' + y = \sin(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
327	$2y'' + 4y' + 7y = x^2$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
328	$y'' - 4y = \sinh(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
329	$y'' - 4y = \cosh(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
330	$y'' + 2y' - 3y = 1 + x e^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
331	$2y'' + 9y = 2 \cos(3x) + 3 \sin(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
334	$y'' + 2y' + 5y = e^x \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
337	$y'' + 9y = 2x^2 e^{3x} + 5$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
338	$y'' + y = \sin(x) + x \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
342	$y'' - 2y' + 2y = e^x \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
344	$y'' + 4y = 3x \cos(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
346	$y'' + 3y' + 2y = x(e^{-x} - e^{-2x})$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
347	$y'' - 6y' + 13y = x e^{3x} \sin(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
351	$y'' + 4y = 2x$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
352	$y'' + 3y' + 2y = e^x$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
353	$y'' + 9y = \sin(2x)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
354	$y'' + y = \cos(x)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
355	$y'' - 2y' + 2y = x + 1$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
358	$y'' + 2y' + 2y = \sin(3x)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
363	$y'' + y' + y = \sin(x) \sin(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
364	$y'' + 9y = \sin(x)^4$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
365	$y'' + y = x \cos(x)^3$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
366	$y'' + 3y' + 2y = 4e^x$	[[_2nd_order, _with_linear_symmetries]]	✓
367	$y'' - 2y' - 8y = 3e^{-2x}$	[[_2nd_order, _with_linear_symmetries]]	✓
368	$y'' - 4y' + 4y = 2e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓
369	$y'' - 4y = \sinh(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
370	$y'' + 4y = \cos(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
371	$y'' + 9y = \sin(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
372	$y'' + 9y = 2 \sec(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
373	$y'' + y = \csc(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
374	$y'' + 4y = \sin(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
375	$y'' - 4y = x e^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
376	$x^2 y'' + x y' - y = 72x^5$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
377	$x^2 y'' - 4x y' + 6y = x^3$	[[_2nd_order, _with_linear_symmetries]]	✓
378	$x^2 y'' - 3x y' + 4y = x^4$	[[_2nd_order, _with_linear_symmetries]]	✓
379	$4x^2 y'' - 4x y' + 3y = 8x^{4/3}$	[[_2nd_order, _with_linear_symmetries]]	✓
380	$x^2 y'' + x y' + y = \ln(x)$	[[_2nd_order, _with_linear_symmetries]]	✓
381	$(x^2 - 1) y'' - 2x y' + 2y = x^2 - 1$	[[_2nd_order, _with_linear_symmetries]]	✓
382	$y'' + y = 2 \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
383	<i>i.c.</i> $x'' + 9x = 10 \cos(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
384	<i>i.c.</i> $x'' + 4x = 5 \sin(3t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
385	<i>i.c.</i> $x'' + 100x = 225 \cos(5t) + 300 \sin(5t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
386	<i>i.c.</i> $x'' + 25x = 90 \cos(4t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
387	<i>i.c.</i> $m x'' + kx = F_0 \cos(\omega t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
388	$x'' + 4x' + 4x = 10 \cos(3t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
389	$x'' + 3x' + 5x = -4 \cos(5t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
390	$2x'' + 2x' + x = 3 \sin(10t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
391	$x'' + 3x' + 3x = 8 \cos(10t) + 6 \sin(10t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
392	$x'' + 4x' + 5x = 10 \cos(3t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
393	$x'' + 6x' + 13x = 10 \sin(5t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
394	$x'' + 2x' + 26x = 600 \cos(10t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
395	$x'' + 8x' + 25x = 200 \cos(t) + 520 \sin(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
396	$x'' + 2x' + 2x = 2 \cos(\omega t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
397	$x'' + 4x' + 5x = 10 \cos(\omega t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
398	$x'' + 6x' + 45x = 50 \cos(\omega t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
399	$x'' + 10x' + 650x = 100 \cos(\omega t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
516	$xy'' - y' + 36x^3y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, _with_symmetry_[0,F(x)]]]	✓
522	$16x^2y'' - (-144x^3 + 5)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
526	$xy'' + 2y' + xy = 0$	[_Lienard]	✓
807	$y'' - y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
808	$y'' - 9y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
809	$y'' + 4y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
810	$y'' + 25y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
811	$y'' - 3y' + 2y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
812	$y'' + y' - 6y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
813	$y'' + y' = 0$ i.c.	[[_2nd_order, _missing_x]]	✓

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#	ODE	CAS classification	Solved?
814	$y'' - 3y' = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
815	$y'' + 2y' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
816	$y'' - 10y' + 25y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
817	$y'' - 2y' + 2y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
818	$y'' + 6y' + 13y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
819	$x^2y'' - 2xy' + 2y = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
820	$x^2y'' + 2xy' - 6y = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
821	$x^2y'' - xy' + y = 0$ i.c.	[[_Emden, _Fowler]]	✓
822	$x^2y'' + xy' + y = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
823	$y'' - 3y' + 2y = 0$	[[_2nd_order, _missing_x]]	✓
824	$y'' + 2y' - 15y = 0$	[[_2nd_order, _missing_x]]	✓
825	$y'' + 5y' = 0$	[[_2nd_order, _missing_x]]	✓
826	$2y'' + 3y' = 0$	[[_2nd_order, _missing_x]]	✓
827	$2y'' - y' - y = 0$	[[_2nd_order, _missing_x]]	✓
828	$4y'' + 8y' + 3y = 0$	[[_2nd_order, _missing_x]]	✓
829	$4y'' + 4y' + y = 0$	[[_2nd_order, _missing_x]]	✓
830	$9y'' - 12y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
831	$6y'' - 7y' - 20y = 0$	[[_2nd_order, _missing_x]]	✓
832	$35y'' - y' - 12y = 0$	[[_2nd_order, _missing_x]]	✓
833	$x^2y'' + xy' - y = 0$	[[_2nd_order, _exact, _lin- ear, _homogeneous]]	✓
834	$x^2y'' + 2xy' - 12y = 0$	[[_Emden, _Fowler]]	✓

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#	ODE	CAS classification	Solved?
835	$4x^2y'' + 8xy' - 3y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]]	✓
836	$x^2y'' + xy' = 0$	[[_2nd_order, _missing_y]]	✓
837	$x^2y'' - 3xy' + 4y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]]	✓
838	$y'' + y = 3x$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
839	$y'' - 4y = 12$	[[_2nd_order, _missing_x]]	✓
840	$y'' - 2y' - 3y = 6$	[[_2nd_order, _missing_x]]	✓
841	$y'' - 2y' + 2y = 2x$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
842	$y'' + 2y = 4$	[[_2nd_order, _missing_x]]	✓
843	$y'' + 2y = 6x$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
844	$y'' + 2y = 4 + 6x$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
845	$y'' - 4y = 0$	[[_2nd_order, _missing_x]]	✓
846	$2y'' - 3y' = 0$	[[_2nd_order, _missing_x]]	✓
847	$y'' + 3y' - 10y = 0$	[[_2nd_order, _missing_x]]	✓
848	$2y'' - 7y' + 3y = 0$	[[_2nd_order, _missing_x]]	✓
849	$y'' + 6y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓
850	$y'' + 5y' + 5y = 0$	[[_2nd_order, _missing_x]]	✓
851	$4y'' - 12y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓
852	$y'' - 6y' + 13y = 0$	[[_2nd_order, _missing_x]]	✓
853	$y'' + 8y' + 25y = 0$	[[_2nd_order, _missing_x]]	✓
854	$y'' - 4y' + 3y = 0$	[[_2nd_order, _missing_x]]	✓
855	$9y'' + 6y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
856	$y'' - 6y' + 25y = 0$	[[_2nd_order, _missing_x]]	✓

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#	ODE	CAS classification	Solved?
857	$y'' - 2iy' + 3y = 0$	[[_2nd_order, _missing_x]]	✓
858	$y'' - iy' + 6y = 0$	[[_2nd_order, _missing_x]]	✓
859	$y'' = (-2 + 2i\sqrt{3})y$	[[_2nd_order, _missing_x]]	✓
860	$x^2y'' + xy' + 9y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
861	$x^2y'' + 7xy' + 25y = 0$	[[_Emden, _Fowler]]	✓
862	$\frac{x''}{2} + 3x' + 4x = 0$	[[_2nd_order, _missing_x]]	✓
863	$3x'' + 30x' + 63x = 0$	[[_2nd_order, _missing_x]]	✓
864	$x'' + 8x' + 16x = 0$	[[_2nd_order, _missing_x]]	✓
865	$2x'' + 12x' + 50x = 0$	[[_2nd_order, _missing_x]]	✓
866	$4x'' + 20x' + 169x = 0$	[[_2nd_order, _missing_x]]	✓
867	$2x'' + 16x' + 40x = 0$	[[_2nd_order, _missing_x]]	✓
868	$x'' + 10x' + 125x = 0$	[[_2nd_order, _missing_x]]	✓
869	$y'' + 16y = e^{3x}$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
870	$y'' - y' - 2y = 3x + 4$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
871	$y'' - y' - 6y = 2 \sin(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
872	$4y'' + 4y' + y = 3x e^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
873	$y'' + y' + y = \sin(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
874	$2y'' + 4y' + 7y = x^2$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
875	$y'' - 4y = \sinh(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
876	$y'' - 4y = \cosh(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
877	$y'' + 2y' - 3y = 1 + x e^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
878	$y'' + 9y = 2 \cos(3x) + 3 \sin(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
879	$y'' + 9y = 2x^2 e^{3x} + 5$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
880	$y'' - 2y' + 2y = e^x \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
881	$y'' + 4y = 3x \cos(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
882	$y'' + 3y' + 2y = x(e^{-x} - e^{-2x})$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
883	$y'' - 6y' + 13y = x e^{3x} \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
884	$y'' + 4y = 2x$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
885	$y'' + 3y' + 2y = e^x$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
886	$y'' + 9y = \sin(2x)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
887	$y'' + y = \cos(x)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
888	$y'' - 2y' + 2y = x + 1$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
889	$y'' + y' + y = \sin(x) \sin(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
890	$y'' + 9y = \sin(x)^4$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
891	$y'' + y = x \cos(x)^3$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
892	$y'' + 3y' + 2y = 4e^x$	[[_2nd_order, _with_linear_symmetries]]	✓
893	$y'' - 2y' - 8y = 3e^{-2x}$	[[_2nd_order, _with_linear_symmetries]]	✓
894	$y'' - 4y' + 4y = 2e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓
895	$y'' - 4y = \sinh(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
896	$y'' + 4y = \cos(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
897	$y'' + 9y = \sin(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
898	$y'' + 9y = 2 \sec(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
899	$y'' + y = \csc(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
900	$y'' + 4y = \sin(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
901	$y'' - 4y = x e^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
902	$x^2 y'' + x y' - y = 72x^5$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
903	$x^2 y'' - 4x y' + 6y = x^3$	[[_2nd_order, _with_linear_symmetries]]	✓
904	$x^2 y'' - 3x y' + 4y = x^4$	[[_2nd_order, _with_linear_symmetries]]	✓
905	$4x^2 y'' - 4x y' + 3y = 8x^{4/3}$	[[_2nd_order, _with_linear_symmetries]]	✓
906	$x^2 y'' + x y' + y = \ln(x)$	[[_2nd_order, _with_linear_symmetries]]	✓
907	$(x^2 - 1) y'' - 2x y' + 2y = x^2 - 1$	[[_2nd_order, _with_linear_symmetries]]	✓
908	$x'' + 9x = 10 \cos(2t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
909	$x'' + 4x = 5 \sin(3t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
910	$x'' + 100x = 225 \cos(5t) + 300 \sin(5t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
911	$x'' + 25x = 90 \cos(4t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
912	$m x'' + kx = F_0 \cos(\omega t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
913	$x'' + 4x' + 4x = 10 \cos(3t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
914	$x'' + 3x' + 5x = -4 \cos(5t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
915	$2x'' + 2x' + x = 3 \sin(10t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
916	$x'' + 3x' + 3x = 8 \cos(10t) + 6 \sin(10t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
917	$x'' + 4x' + 5x = 10 \cos(3t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
918	$x'' + 6x' + 13x = 10 \sin(5t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
919	$x'' + 6x' + 13x = 10 \sin(5t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
920	$x'' + 2x' + 26x = 600 \cos(10t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
921	$x'' + 8x' + 25x = 200 \cos(t) + 520 \sin(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1249	$y'' + 2y' - 3y = 0$	[[_2nd_order, _missing_x]]	✓
1250	$y'' + 3y' + 2y = 0$	[[_2nd_order, _missing_x]]	✓
1251	$6y'' - y' - y = 0$	[[_2nd_order, _missing_x]]	✓
1252	$2y'' - 3y' + y = 0$	[[_2nd_order, _missing_x]]	✓
1253	$y'' + 5y' = 0$	[[_2nd_order, _missing_x]]	✓
1254	$4y'' - 9y = 0$	[[_2nd_order, _missing_x]]	✓
1255	$y'' - 9y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓
1256	$y'' - 2y' - 2y = 0$	[[_2nd_order, _missing_x]]	✓
1257	$y'' + y' - 2y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
1258	$y'' + 4y' + 3y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
1259	$6y'' - 5y' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
1260	$y'' + 3y' = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
1261	$y'' + 5y' + 3y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
1262	$2y'' + y' - 4y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
1263	$y'' + 8y' - 9y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓

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#	ODE	CAS classification	Solved?
1264	$4y'' - y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
1265	$y'' - y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
1266	$2y'' - 3y' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
1267	$y'' - y' - 2y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
1268	$4y'' - y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
1269	$y'' - (2\alpha - 1)y' + \alpha(\alpha - 1)y = 0$	[[_2nd_order, _missing_x]]	✓
1270	$y'' + (3 - \alpha)y' - 2(\alpha - 1)y = 0$	[[_2nd_order, _missing_x]]	✓
1271	$2y'' + 3y' - 2y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
1272	$y'' + 5y' + 6y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
1273	$y'' - 2y' + 2y = 0$	[[_2nd_order, _missing_x]]	✓
1274	$y'' - 2y' + 6y = 0$	[[_2nd_order, _missing_x]]	✓
1275	$y'' + 2y' - 8y = 0$	[[_2nd_order, _missing_x]]	✓
1276	$y'' + 2y' + 2y = 0$	[[_2nd_order, _missing_x]]	✓
1277	$y'' + 6y' + 13y = 0$	[[_2nd_order, _missing_x]]	✓
1278	$4y'' + 9y = 0$	[[_2nd_order, _missing_x]]	✓
1279	$y'' + 2y' + \frac{5y}{4} = 0$	[[_2nd_order, _missing_x]]	✓
1280	$9y'' + 9y' - 4y = 0$	[[_2nd_order, _missing_x]]	✓
1281	$y'' + y' + \frac{5y}{4} = 0$	[[_2nd_order, _missing_x]]	✓
1282	$y'' + 4y' + \frac{25y}{4} = 0$	[[_2nd_order, _missing_x]]	✓
1283	$y'' + 4y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
1284	$y'' + 4y' + 5y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
1285	$y'' - 2y' + 5y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
1286	$y'' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓

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#	ODE	CAS classification	Solved?
1287	$y'' + y' + \frac{5y}{4} = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
1288	$y'' + 2y' + 2y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
1289	$u'' - u' + 2u = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
1290	$5u'' + 2u' + 7u = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
1291	$y'' + 2y' + 6y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
1292	$y'' + 2ay' + (a^2 + 1)y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
1293	$t^2y'' + ty' + y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
1294	$t^2y'' + 4ty' + 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
1295	$t^2y'' + 3ty' + \frac{5y}{4} = 0$	[[_Emden, _Fowler]]	✓
1296	$t^2y'' - 4ty' - 6y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
1297	$t^2y'' - 4ty' + 6y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
1298	$t^2y'' - ty' + 5y = 0$	[[_Emden, _Fowler]]	✓
1299	$t^2y'' + 3ty' - 3y = 0$	[[_Emden, _Fowler]]	✓
1300	$t^2y'' + 7ty' + 10y = 0$	[[_Emden, _Fowler]]	✓
1302	$ty'' + (t^2 - 1)y' + t^3y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
1303	$y'' - 2y' + y = 0$	[[_2nd_order, _missing_x]]	✓
1304	$9y'' + 6y' + y = 0$	[[_2nd_order, _missing_x]]	✓
1305	$4y'' - 4y' - 3y = 0$	[[_2nd_order, _missing_x]]	✓
1306	$4y'' + 12y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓
1307	$y'' - 2y' + 10y = 0$	[[_2nd_order, _missing_x]]	✓
1308	$y'' - 6y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓

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#	ODE	CAS classification	Solved?
1309	$4y'' + 17y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
1310	$16y'' + 24y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓
1311	$25y'' - 20y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
1312	$2y'' + 2y' + y = 0$	[[_2nd_order, _missing_x]]	✓
1313	$9y'' - 12y' + 4y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
1314	$y'' - 6y' + 9y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
1315	$9y'' + 6y' + 82y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
1316	$y'' + 4y' + 4y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
1317	$4y'' + 12y' + 9y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
1318	$y'' - y' + \frac{y}{4} = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
1327	$t^2y'' - 3ty' + 4y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
1328	$t^2y'' + 2ty' + \frac{y}{4} = 0$	[[_Emden, _Fowler]]	✓
1329	$2t^2y'' - 5ty' + 5y = 0$	[[_Emden, _Fowler]]	✓
1330	$t^2y'' + 3ty' + y = 0$	[[_2nd_order, _exact, _lin- ear, _homogeneous]]	✓
1331	$4t^2y'' - 8ty' + 9y = 0$	[[_Emden, _Fowler]]	✓
1332	$t^2y'' + 5ty' + 13y = 0$	[[_Emden, _Fowler]]	✓
1333	$y'' - 5y' + 6y = 2e^t$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
1334	$y'' - y' - 2y = 2e^{-t}$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
1335	$y'' + 2y' + y = 3e^{-t}$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
1336	$4y'' - 4y' + y = 16e^{\frac{t}{2}}$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
1337	$y'' + y = \tan(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
1338	$y'' + 9y = 9 \sec(3t)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1339	$y'' + 4y' + 4y = \frac{e^{-2t}}{t^2}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1340	$y'' + 4y = 3 \csc(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1341	$y'' + y = 2 \sec\left(\frac{t}{2}\right)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1342	$y'' - 2y' + y = \frac{e^t}{t^2 + 1}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1343	$y'' - 5y' + 6y = g(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1344	$y'' + 4y = g(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1345	$t^2 y'' - 2y = 3t^2 - 1$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
1346	$t^2 y'' - t(t+2)y' + (t+2)y = 2t^3$	[[_2nd_order, _with_linear_symmetries]]	✓
1347	$ty'' - (t+1)y' + y = t^2 e^{2t}$	[[_2nd_order, _with_linear_symmetries]]	✓
1348	$(-t+1)y'' + ty' - y = 2(t-1)^2 e^{-t}$	[[_2nd_order, _with_linear_symmetries]]	✓
1349	$x^2 y'' - 3xy' + 4y = x^2 \ln(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1350	$x^2 y'' + xy' + \left(x^2 - \frac{1}{4}\right)y = g(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1351	$t^2 y'' - 2ty' + 2y = 4t^2$	[[_2nd_order, _with_linear_symmetries]]	✓
1352	$t^2 y'' + 7ty' + 5y = t$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
1353	$ty'' - (t+1)y' + y = t^2 e^{2t}$	[[_2nd_order, _with_linear_symmetries]]	✓
1354	$(-t+1)y'' + ty' - y = 2(t-1)e^{-t}$	[[_2nd_order, _with_linear_symmetries]]	✓
1355	$u'' + 2u = 0$	[[_2nd_order, _missing_x]]	✓
1356	$u'' + \frac{u'}{4} + 2u = 0$	[[_2nd_order, _missing_x]]	✓
	<i>i.c.</i>		

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#	ODE	CAS classification	Solved?
1357	$u'' + \frac{u'}{8} + 4u = 3 \cos\left(\frac{t}{4}\right)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1358	$u'' + \frac{u'}{8} + 4u = 3 \cos(2t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1359	$u'' + \frac{u'}{8} + 4u = 3 \cos(6t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1517	$y'' + 2y' + 2y = f(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1737	$y'' - 7y' + 10y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
1738	$y'' - 2y' + 2y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
1739	$y'' - 2y' + 2y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
1740	$y'' - 2y' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
1741	$y'' - 2y' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
1742	$(x^2 - 1)y'' + 4xy' + 2y = 0$ i.c.	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
1743	$y'' - 2y' - 3y = 0$	[[_2nd_order, _missing_x]]	✓
1744	$y'' - 6y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓
1745	$y'' - 2ay' + a^2y = 0$	[[_2nd_order, _missing_x]]	✓
1746	$x^2y'' + xy' - y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
1747	$x^2y'' - xy' + y = 0$	[[_Emden, _Fowler]]	✓
1748	$x^2y'' - (2a - 1)xy' + a^2y = 0$	[[_Emden, _Fowler]]	✓
1749	$4x^2y'' - 4xy' + (-16x^2 + 3)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
1750	$(x - 1)y'' - xy' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
1751	$x^2y'' - 2xy' + (x^2 + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
1754	$(x^2 - 4)y'' + 4xy' + 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓

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#	ODE	CAS classification	Solved?
1756	$(x^2 - 2x)y'' + (-x^2 + 2)y' + (2x - 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
1805	$y'' + 9y = \tan(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1806	$y'' + 4y = \sin(2x)\sec(2x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1807	$y'' - 3y' + 2y = \frac{4}{1 + e^{-x}}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1808	$y'' - 2y' + 2y = 3e^x \sec(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1809	$y'' - 2y' + y = 14x^{3/2}e^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1810	$y'' - y = \frac{4e^{-x}}{1 - e^{-2x}}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1811	$x^2y'' + xy' - y = 2x^2 + 2$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
1812	$xy'' + (2 - 2x)y' + (-2 + x)y = e^{2x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1813	$4x^2y'' + (-8x^2 + 4x)y' + (4x^2 - 4x - 1)y = 4\sqrt{x}e^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1814	$y'' + 4xy' + (4x^2 + 2)y = 4e^{-x(x+2)}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1815	$x^2y'' - 4xy' + 6y = x^{5/2}$	[[_2nd_order, _with_linear_symmetries]]	✓
1816	$x^2y'' - 3xy' + 3y = 2x^4 \sin(x)$	[[_2nd_order, _with_linear_symmetries]]	✓
1817	$(2x + 1)y'' - 2y' - (2x + 3)y = (2x + 1)^2 e^{-x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1819	$xy'' - (2x + 2)y' + (x + 2)y = 6x^3 e^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1820	$x^2y'' - (2a - 1)xy' + a^2y = x^{a+1}$	[[_2nd_order, _with_linear_symmetries]]	✓
1821	$x^2y'' - 2xy' + (x^2 + 2)y = x^3 \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1822	$xy'' - y' - 4x^3y = 8x^5$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1824	$4x^2y'' - 4xy' + (-16x^2 + 3)y = 8x^{5/2}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
1825	$4x^2y'' - 4xy' + (4x^2 + 3)y = x^{7/2}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1826	$x^2y'' - 2xy' - (x^2 - 2)y = 3x^4$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1827	$x^2y'' - 2x(x+1)y' + (x^2 + 2x + 2)y = x^3e^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1828	$x^2y'' - xy' - 3y = x^{3/2}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
1829	$x^2y'' - x(4+x)y' + 2(x+3)y = x^4e^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1830	$x^2y'' - 2x(x+2)y' + (x^2 + 4x + 6)y = 2xe^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1831	$x^2y'' - 4xy' + (x^2 + 6)y = x^4$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1832	$(x-1)y'' - xy' + y = 2(x-1)^2e^x$	[[_2nd_order, _with_linear_symmetries]]	✓
1833	$4x^2y'' - 4x(x+1)y' + (2x+3)y = x^{5/2}e^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1834	$(3x-1)y'' - (2+3x)y' - (6x-8)y = (3x-1)^2e^{2x}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1835	$(x-1)^2y'' - 2(x-1)y' + 2y = (x-1)^2$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
1836	$(x-1)^2y'' - (x^2-1)y' + (x+1)y = (x-1)^3e^x$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
1837	$(x-1)^2y'' + 4xy' + 2y = 2x$ i.c.	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
1838	$x^2y'' + 2xy' - 2y = -2x^2$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
1839	$(x+1)(2x+3)y'' + 2(x+2)y' - 2y = (2x+3)^2$ i.c.	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
2362	$2t^2y'' + 3ty' - y = 0$ i.c.	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
2363	$y'' + ty' + y = 0$ i.c.	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
2364	$y'' - y = 0$	[[_2nd_order, _missing_x]]	✓
2365	$6y'' - 7y' + y = 0$	[[_2nd_order, _missing_x]]	✓
2366	$y'' - 3y' + y = 0$	[[_2nd_order, _missing_x]]	✓

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#	ODE	CAS classification	Solved?
2367	$3y'' + 6y' + 3y = 0$	[[_2nd_order, _missing_x]]	✓
2368	$y'' - 3y' - 4y = 0$	[[_2nd_order, _missing_x]]	✓
	<i>i.c.</i>		
2369	$2y'' + y' - 10y = 0$	[[_2nd_order, _missing_x]]	✓
	<i>i.c.</i>		
2370	$5y'' + 5y' - y = 0$	[[_2nd_order, _missing_x]]	✓
	<i>i.c.</i>		
2371	$y'' - 6y' + y = 0$	[[_2nd_order, _missing_x]]	✓
	<i>i.c.</i>		
2372	$y'' + 5y' + 6y = 0$	[[_2nd_order, _missing_x]]	✓
	<i>i.c.</i>		
2373	$t^2y'' + \alpha ty' + \beta y = 0$	[[_Emden, _Fowler]]	✓
2374	$t^2y'' + 5ty' - 5y = 0$	[[_Emden, _Fowler]]	✓
2375	$t^2y'' - ty' - 2y = 0$	[[_Emden, _Fowler]]	✓
	<i>i.c.</i>		
2376	$y'' + 2y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
	<i>i.c.</i>		
2377	$y'' + y' + y = 0$	[[_2nd_order, _missing_x]]	✓
2378	$2y'' + 3y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
2379	$y'' + 2y' + 3y = 0$	[[_2nd_order, _missing_x]]	✓
2380	$4y'' - y' + y = 0$	[[_2nd_order, _missing_x]]	✓
2381	$y'' + y' + 2y = 0$	[[_2nd_order, _missing_x]]	✓
	<i>i.c.</i>		
2382	$y'' + 2y' + 5y = 0$	[[_2nd_order, _missing_x]]	✓
	<i>i.c.</i>		
2383	$2y'' - y' + 3y = 0$	[[_2nd_order, _missing_x]]	✓
	<i>i.c.</i>		
2384	$3y'' - 2y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
	<i>i.c.</i>		
2385	$t^2y'' + ty' + y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]]	✓
2386	$t^2y'' + 2ty' + 2y = 0$	[[_Emden, _Fowler]]	✓
2387	$y'' - 6y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓
2388	$4y'' - 12y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓

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#	ODE	CAS classification	Solved?
2389	$9y'' + 6y' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
2390	$4y'' - 4y' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
2391	$y'' + 2y' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
2392	$9y'' - 12y' + 4y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
2393	$y'' - \frac{2(t+1)y'}{t^2+2t-1} + \frac{2y}{t^2+2t-1} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
2394	$y'' - 4ty' + (4t^2 - 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
2395	$(-t^2 + 1)y'' - 2ty' + 2y = 0$	[_Gegenbauer]	✓
2396	$(t^2 + 1)y'' - 2ty' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
2397	$(-t^2 + 1)y'' - 2ty' + 6y = 0$	[_Gegenbauer]	✓
2398	$(2t + 1)y'' - 4(t + 1)y' + 4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
2399	$t^2y'' + ty' + \left(t^2 - \frac{1}{4}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
2400	$t^2y'' + 3ty' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
2401	$t^2y'' - ty' + y = 0$	[[_Emden, _Fowler]]	✓
2402	$y'' + y = \sec(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2403	$y'' - 4y' + 4y = te^{2t}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2404	$2y'' - 3y' + y = (t^2 + 1)e^t$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2405	$y'' - 3y' + 2y = te^{3t} + 1$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2406	$3y'' + 4y' + y = \sin(t)e^{-t}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2407	$y'' + 4y' + 4y = t^{5/2}e^{-2t}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2408	$y'' - 3y' + 2y = \sqrt{t+1}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
2409	$y'' - y = f(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2411	$y'' - \frac{2ty'}{t^2 + 1} + \frac{2y}{t^2 + 1} = t^2 + 1$	[[_2nd_order, _with_linear_symmetries]]	✓
2412	$my'' + cy' + ky = F_0 \cos(\omega t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2431	$t^2 y'' - 5ty' + 9y = 0$	[[_Emden, _Fowler]]	✓
2432	$t^2 y'' + 5ty' - 5y = 0$	[[_Emden, _Fowler]]	✓
2433	$2t^2 y'' + 3ty' - y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
2434	$(t - 1)^2 y'' - 2(t - 1)y' + 2y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, ' _with_symmetry_[0,F(x)]']]	✓
2435	$t^2 y'' + 3ty' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
2436	$t^2 y'' - ty' + y = 0$	[[_Emden, _Fowler]]	✓
2437	$(t - 2)^2 y'' + 5(t - 2)y' + 4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
2438	$t^2 y'' + ty' + y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, ' _with_symmetry_[0,F(x)]']]	✓
2439	$t^2 y'' - ty' + 2y = 0$ i.c.	[[_Emden, _Fowler]]	✓
2440	$t^2 y'' - 3ty' + 4y = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _linear, ' _with_symmetry_[0,F(x)]']]	✓
2543	$2t^2 y'' + 3ty' - y = 0$ i.c.	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
2544	$y'' + ty' + y = 0$ i.c.	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
2545	$y'' - y = 0$	[[_2nd_order, _missing_x]]	✓
2546	$6y'' - 7y' + y = 0$	[[_2nd_order, _missing_x]]	✓
2547	$y'' - 3y' + y = 0$	[[_2nd_order, _missing_x]]	✓
2548	$3y'' + 6y' + 2y = 0$	[[_2nd_order, _missing_x]]	✓

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#	ODE	CAS classification	Solved?
2549	$y'' - 3y' - 4y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
2550	$2y'' + y' - 10y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
2551	$5y'' + 5y' - y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
2552	$y'' - 6y' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
2553	$y'' + 5y' + 6y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
2554	$t^2y'' + \alpha ty' + \beta y = 0$	[[_Emden, _Fowler]]	✓
2555	$t^2y'' + 5ty' - 2y = 0$ i.c.	[[_Emden, _Fowler]]	✓
2556	$y'' + y' + y = 0$	[[_2nd_order, _missing_x]]	✓
2557	$2y'' + 3y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
2558	$y'' + 2y' + 3y = 0$	[[_2nd_order, _missing_x]]	✓
2559	$4y'' - y' + y = 0$	[[_2nd_order, _missing_x]]	✓
2560	$y'' + y' + 2y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
2561	$y'' + 2y' + 5y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
2562	$2y'' - y' + 3y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
2563	$3y'' - 2y' + 4y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
2564	$y'' + w^2y = 0$	[[_2nd_order, _missing_x]]	✓
2565	$t^2y'' + ty' + y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]]]	✓
2566	$t^2y'' + 2ty' + 2y = 0$	[[_Emden, _Fowler]]	✓
2567	$y'' - 6y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓
2568	$4y'' - 12y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓
2569	$9y'' + 6y' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
2570	$4y'' - 4y' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓

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#	ODE	CAS classification	Solved?
2571	$6y'' + 2y' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
2572	$9y'' - 12y' + 4y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
2581	$t^2y'' + 3ty' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
2582	$t^2y'' - ty' + y = 0$	[[_Emden, _Fowler]]	✓
2583	$y'' + y = \sec(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2584	$y'' - 4y' + 4y = te^{2t}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2585	$2y'' - 3y' + y = (t^2 + 1)e^t$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2586	$y'' - 3y' + 2y = te^{3t} + 1$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2587	$3y'' + 4y' + y = \sin(t)e^{-t}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2588	$y'' + 4y' + 4y = t^{5/2}e^{-2t}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2589	$y'' - 3y' + 2y = \sqrt{t+1}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2590	$y'' - y = f(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2591	$t^2y'' - 2y = t^2$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
2593	$y'' - \frac{2ty'}{t^2+1} + \frac{2y}{t^2+1} = t^2 + 1$	[[_2nd_order, _with_linear_symmetries]]	✓
2594	$y'' + 3y = t^3 - 1$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2595	$y'' + 4y' + 4y = te^{xt}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2596	$y'' - y = t^2e^t$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2597	$y'' + y' + y = t^2 + t + 1$	[[_2nd_order, _with_linear_symmetries]]	✓
2598	$y'' + 2y' + y = e^{-t}$	[[_2nd_order, _with_linear_symmetries]]	✓
2599	$y'' + 5y' + 4y = t^2e^{7t}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
2600	$y'' + 4y = t \sin(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2601	$y'' - 6y' + 9y = (3t^7 - 5t^4) e^{3t}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2602	$y'' - 2y' + 5y = 2 \cos(t)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2603	$y'' - 2y' + 5y = 2 \cos(t)^2 e^t$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2604	$y'' + y' - 6y = \sin(t) + t e^{2t}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2605	$y'' + y' + 4y = t^2 + (2t + 3)(1 + \cos(t))$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2606	$y'' - 3y' + 2y = e^t + e^{2t}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2607	$y'' + 2y' = 1 + t^2 + e^{-2t}$	[[_2nd_order, _missing_y]]	✓
2608	$y'' + y = \cos(t) \cos(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2609	$y'' + y = \cos(t) \cos(2t) \cos(3t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2610	$y'' - 6y' + 9y = t^{3/2} e^{3t}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2628	$t^2 y'' + 5ty' - 5y = 0$	[[_Emden, _Fowler]]	✓
2629	$2t^2 y'' + 3ty' - y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
2630	$(t - 1)^2 y'' - 2(t - 1)y' + 2y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
2631	$t^2 y'' + 3ty' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
2632	$t^2 y'' - ty' + y = 0$	[[_Emden, _Fowler]]	✓
2633	$(t - 2)^2 y'' + 5(t - 2)y' + 4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
2634	$t^2 y'' + ty' + y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
2635	$t^2 y'' + 3ty' + 2y = 0$	[[_Emden, _Fowler]]	✓

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#	ODE	CAS classification	Solved?
2636	$t^2 y'' - ty' - 2y = 0$ i.c.	[[_Emden, _Fowler]]	✓
2637	$t^2 y'' - 3ty' + 4y = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
2835	$y'' + \lambda y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
2836	$y'' + \lambda y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
2837	$y'' - \lambda y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
2838	$y'' + \lambda y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
2839	$y'' - 2y' + (1 + \lambda)y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
2840	$y'' + \lambda y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
3059	$y'' - 4y = 0$	[[_2nd_order, _missing_x]]	✓
3060	$y'' + 7y' + 12y = 0$	[[_2nd_order, _missing_x]]	✓
3061	$y'' - 3y' + 2y = 0$	[[_2nd_order, _missing_x]]	✓
3062	$y'' - 7y' + 6y = 0$	[[_2nd_order, _missing_x]]	✓
3063	$2y'' + 3y' - 2y = 0$	[[_2nd_order, _missing_x]]	✓
3064	$y'' - 2y' - y = 0$	[[_2nd_order, _missing_x]]	✓
3065	$y'' - 2y' - 2y = 0$	[[_2nd_order, _missing_x]]	✓
3066	$y'' - 3y' + y = 0$	[[_2nd_order, _missing_x]]	✓
3067	$2y'' + 2y' - y = 0$	[[_2nd_order, _missing_x]]	✓
3088	$y'' - 2y' + y = 0$	[[_2nd_order, _missing_x]]	✓
3089	$y'' = 0$	[[_2nd_order, _quadra- ture]]	✓
3100	$y'' - 2y' + 3y = 0$	[[_2nd_order, _missing_x]]	✓
3111	$y'' - 4y = 3 \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3112	$y'' + y = \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
3113	$y'' + y' - 2y = e^x$	[[_2nd_order, _with_linear_symmetries]]	✓
3114	$y'' + 3y' + 2y = e^{-2x}$	[[_2nd_order, _with_linear_symmetries]]	✓
3115	$y'' + y' + y = \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3116	$y'' + y' + y = x^2$	[[_2nd_order, _with_linear_symmetries]]	✓
3117	$y'' + 3y' + 2y = x e^{-x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3119	$y'' - 4y = x + e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓
3120	$y'' - 9y = e^{3x} + \sin(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3121	$y'' - y' - 6y = x^3$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3122	$-2y'' + 3y = x e^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3123	$y'' + 4y = x \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3125	$y'' + y' + y = e^x \sin(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3128	$y'' + 4y' + 4y = x^3 e^{2x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3131	$y'' + 2ny' + n^2y = 5 \cos(6x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3132	$y'' + 9y = (1 + \sin(3x)) \cos(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3133	$y'' + 4y' + 5y = 2x - e^{-4x} + \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3135	$y'' + 4y = 8 \sin(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3137	$y'' - 5y' - 6y = e^{3x}$	[[_2nd_order, _with_linear_symmetries]]	✓
3138	$y'' + 4y = 12 \cos(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3139	$y'' - 3y' + 2y = x e^{-x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
3140	$y'' + y = e^x \sin(x)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3141	$2y'' + y' = 8 \sin(2x) + e^{-x}$ i.c.	[[_2nd_order, _missing_y]]	✓
3142	$y'' + y = 3x \sin(x)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3143	$2y'' + 5y' - 3y = \sin(x) - 8x$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3144	$8y'' - y = x e^{-\frac{x}{2}}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3145	$y'' + y = \sec(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3146	$y'' + 4y' + 4y = e^x$	[[_2nd_order, _with_linear_symmetries]]	✓
3147	$y'' + 4y = x^2$	[[_2nd_order, _with_linear_symmetries]]	✓
3148	$y'' - 2y' + y = e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓
3149	$y'' + y = 4 \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3150	$y'' + 4y = 2x - 2 \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3151	$y'' - y = 3x + 5e^x$	[[_2nd_order, _with_linear_symmetries]]	✓
3152	$y'' + 9y = e^x + \sin(4x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3155	$y'' + y = \tan(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3156	$y'' + a^2y = \sec(ax)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3160	$y'' - 2y' + y = \frac{e^x}{(1-x)^2}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3161	$y'' - 3y' + 2y = \sin(e^{-x})$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3162	$y'' + 4y = \sec(x) \tan(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3163	$y'' - 2y = e^{-x} \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
3164	$y'' + 9y = \sec(x) \csc(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3165	$y'' + 9y = \csc(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3166	$y'' + y = \tan\left(\frac{x}{3}\right)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3168	$4y'' - 4y' + y = e^{\frac{x}{2}} \ln(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3170	$y'' - 6y' + 9y = e^{3x}$	[[_2nd_order, _with_linear_symmetries]]	✓
3172	$y'' - 5y' + 6y = x^2$	[[_2nd_order, _with_linear_symmetries]]	✓
3173	$y'' + 4y = 2e^x$	[[_2nd_order, _with_linear_symmetries]]	✓
3174	$y'' + 3y = 3e^{-4x}$	[[_2nd_order, _with_linear_symmetries]]	✓
3175	$y'' + 4y' + 4y = \frac{e^x}{2} + \frac{e^{-x}}{2}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3176	$y'' + y' - 2y = e^{-2x}$	[[_2nd_order, _with_linear_symmetries]]	✓
3177	$y'' + 2y = \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3178	$y'' + 4y' + 4y = \frac{e^{3x}}{2} - \frac{e^{-3x}}{2}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3179	$y'' + 3y' - 2y = \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3180	$y'' + 3y' + 2y = e^x \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3184	$y'' + y = e^{3x}(1 + \sin(2x))$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3185	$y'' + 2n^2y' + n^4y = \sin(kx)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3186	$y'' + 4y' + 5y = \frac{e^x}{2} + \frac{e^{-x}}{2}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3187	$y'' + y' - 2y = xe^{-x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3188	$y'' + 4y = xe^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
3189	$y'' + 2y = x^2 e^{-x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3190	$y'' - y' - 2y = x^2 - 8$	[[_2nd_order, _with_linear_symmetries]]	✓
3205	$y'' + 4y = x \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3206	$y'' + y = x^2 \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3207	$y'' - y = x^2 \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3210	$2y'' + 3y' - 2y = e^x x^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3214	$y'' + 3y' + 2y = x^2 \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3215	$y'' - 4y' + 3y = x^2 \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3216	$y'' - y = x \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3217	$y'' + 2y' = x^3 \sin(2x)$	[[_2nd_order, _missing_y]]	✓
3218	$y'' - y' = x e^{2x} \sin(x)$	[[_2nd_order, _missing_y]]	✓
3219	$y'' - 4y = x e^{2x} \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3220	$y'' + 2y' = x^2 e^{-x} \sin(x)$	[[_2nd_order, _missing_y]]	✓
3221	$x^2 y'' - 4xy' + y = 0$	[[_Emden, _Fowler]]	✓
3222	$x^2 y'' + xy' + 16y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, 'with_symmetry_[0,F(x)]]]	✓
3223	$4x^2 y'' - 16xy' + 25y = 0$	[[_Emden, _Fowler]]	✓
3224	$x^2 y'' + 5xy' + 10y = 0$	[[_Emden, _Fowler]]	✓
3225	$2x^2 y'' - 3xy' - 18y = \ln(x)$	[[_2nd_order, _with_linear_symmetries]]	✓
3226	$2x^2 y'' - 3xy' + 2y = \ln(x^2)$	[[_2nd_order, _with_linear_symmetries]]	✓
3227	$x^2 y'' - 3xy' + 4y = x^3$	[[_2nd_order, _with_linear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
3228	$x^2y'' + 3xy' + y = 1 - x$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
3230	$x^2y'' - 2xy' + 2y = 4x + \sin(\ln(x))$	[[_2nd_order, _with_linear_symmetries]]	✓
3231	$x^2y'' - xy' + 2y = x^2 \ln(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3232	$x^2y'' + 4xy' + 3y = (x - 1) \ln(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3244	$y'' = \cos(t)$	[[_2nd_order, _quadrature]]	✓
3245	$y'' = k^2y$	[[_2nd_order, _missing_x]]	✓
3246	$x'' + k^2x = 0$	[[_2nd_order, _missing_x]]	✓
3249	$xy'' = x^2 + 1$	[[_2nd_order, _quadrature]]	✓
3250	$(1 - x)y'' = y'$	[[_2nd_order, _missing_y]]	✓
3251	$(x^2 + 1)y'' + 2x(y' + 1) = 0$	[[_2nd_order, _missing_y]]	✓
3253	$xy'' + x = y'$	[[_2nd_order, _missing_y]]	✓
3254	$x'' + tx' = t^3$	[[_2nd_order, _missing_y]]	✓
3255	$x^2y'' = xy' + 1$	[[_2nd_order, _missing_y]]	✓
3257	$(-x^2 + 1)y'' + xy' = 1$	[[_2nd_order, _missing_y]]	✓
3266	$y'' = y$	[[_2nd_order, _missing_x]]	✓
3272	$y'' = \sec(x) \tan(x)$	[[_2nd_order, _quadrature]]	✓
3282	$x'' - k^2x = 0$	[[_2nd_order, _missing_x]]	✓
3484	$x'' + \omega_0^2x = a \cos(\omega t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3485	$f'' + 2f' + 5f = 0$	[[_2nd_order, _missing_x]]	✓
3486	$f'' + 2f' + 5f = e^{-t} \cos(3t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3487	$f'' + 6f' + 9f = e^{-t}$	[[_2nd_order, _with_linear_symmetries]]	✓
3488	$f'' + 8f' + 12f = 12e^{-4t}$	[[_2nd_order, _with_linear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
3489	$f'' + 8f' + 12f = 12e^{-4t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
3490	$y'' + 2y' + y = 4e^{-x}$	[[_2nd_order, _with_linear_symmetries]]	✓
3493	$x^2y'' - xy' + y = x$	[[_2nd_order, _with_linear_symmetries]]	✓
3494	$(x+1)^2y'' + 3(x+1)y' + y = x^2$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
3495	$(-2+x)y'' + 3y' + \frac{4y}{x^2} = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, ' _with_symmetry_[0,F(x)]']]	✓
3496	$y'' - y = x^n$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3497	$y'' - 2y' + y = 2xe^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3500	$y'' + 4xy' + (4x^2 + 6)y = e^{-x^2} \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3558	$y'' - 25y = 0$	[[_2nd_order, _missing_x]]	✓
3559	$y'' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
3560	$y'' + y' - 2y = 0$	[[_2nd_order, _missing_x]]	✓
3563	$y'' + 2y' + 5y = 0$	[[_2nd_order, _missing_x]]	✓
3564	$y'' - 9y = 0$	[[_2nd_order, _missing_x]]	✓
3565	$x^2y'' + 5xy' + 3y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
3566	$x^2y'' - 3xy' + 4y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, ' _with_symmetry_[0,F(x)]']]	✓
3567	$x^2y'' - 3xy' + 13y = 0$	[[_Emden, _Fowler]]	✓
3568	$2x^2y'' - xy' + y = 9x^2$	[[_2nd_order, _with_linear_symmetries]]	✓
3569	$x^2y'' - 4xy' + 6y = x^4 \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3570	$y'' - (a+b)y' + aby = 0$	[[_2nd_order, _missing_x]]	✓
3571	$y'' - 2ay' + a^2y = 0$	[[_2nd_order, _missing_x]]	✓
3572	$y'' - 2ay' + (a^2 + b^2)y = 0$	[[_2nd_order, _missing_x]]	✓

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#	ODE	CAS classification	Solved?
3573	$y'' - y' - 6y = 0$	[[_2nd_order, _missing_x]]	✓
3574	$y'' + 6y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓
3575	$x^2y'' + xy' - y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
3576	$x^2y'' + 5xy' + 4y = 0$	[[_Emden, _Fowler]]	✓
3584	$y'' = x e^x$	[[_2nd_order, _quadrature]]	✓
3585	$y'' = x^n$	[[_2nd_order, _quadrature]]	✓
3587	$y'' = \cos(x)$ i.c.	[[_2nd_order, _quadrature]]	✓
3589	$y'' = x e^x$ i.c.	[[_2nd_order, _quadrature]]	✓
3590	$y'' + y' - 6y = 0$	[[_2nd_order, _missing_x]]	✓
3591	$x^2y'' - xy' - 8y = 0$	[[_Emden, _Fowler]]	✓
3592	$x^2y'' - 3xy' + 4y = x^2 \ln(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3631	$y'' + \frac{y'}{x} = 9x$	[[_2nd_order, _missing_y]]	✓
3696	$y'' - 2y' - 3y = 0$	[[_2nd_order, _missing_x]]	✓
3697	$y'' + 7y' + 10y = 0$	[[_2nd_order, _missing_x]]	✓
3698	$y'' - 36y = 0$	[[_2nd_order, _missing_x]]	✓
3699	$y'' + 4y' = 0$	[[_2nd_order, _missing_x]]	✓
3707	$x^2y'' + 3xy' - 8y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, _with_symmetry_[0,F(x)]]]	✓
3708	$2x^2y'' + 5xy' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
3711	$y'' + y' - 6y = 18e^{5x}$	[[_2nd_order, _with_linear_symmetries]]	✓
3712	$y'' + y' - 2y = 4x^2 + 5$	[[_2nd_order, _with_linear_symmetries]]	✓
3716	$y'' + y = 6e^x$	[[_2nd_order, _with_linear_symmetries]]	✓
3717	$y'' + 4y' + 4y = 5xe^{-2x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
3718	$y'' + 4y = 8 \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3719	$y'' - y' - 2y = 5e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓
3720	$y'' + 2y' + 5y = 3 \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3724	$y'' + 9y = 5 \cos(2x)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3725	$y'' - y = 9xe^{2x}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3726	$y'' + y' - 2y = -10 \sin(x)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3727	$y'' + y' - 2y = 4 \cos(x) - 2 \sin(x)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3728	$y'' + \omega^2 y = \frac{F_0 \cos(\omega t)}{m}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3729	$y'' - 4y' + 6y = 7e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓
3732	$y'' + 2y' - 3y = \sin(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3733	$y'' + 6y = \sin(x)^2 \cos(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3734	$y'' - 16y = 20 \cos(4x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3735	$y'' + 2y' + y = 50 \sin(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3736	$y'' - y = 10e^{2x} \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3737	$y'' + 4y' + 4y = 169 \sin(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3738	$y'' - y' - 2y = 40 \sin(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3739	$y'' + y = 3e^x \cos(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3740	$y'' + 2y' + 2y = 2e^{-x} \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3741	$y'' - 4y = 100xe^x \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
3742	$y'' + 2y' + 5y = 4e^{-x} \cos(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3743	$y'' - 2y' + 10y = 24e^x \cos(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3744	$y'' + 16y = 34e^x + 16 \cos(4x) - 8 \sin(4x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3745	$y'' - 6y' + 9y = 4e^{3x} \ln(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3746	$y'' + 4y' + 4y = \frac{e^{-2x}}{x^2}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3747	$y'' + 9y = 18 \sec(3x)^3$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3748	$y'' + 6y' + 9y = \frac{2e^{-3x}}{x^2 + 1}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3749	$y'' - 4y = \frac{8}{e^{2x} + 1}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3750	$y'' - 4y' + 5y = e^{2x} \tan(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3751	$y'' + 9y = \frac{36}{4 - \cos(3x)^2}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3752	$y'' - 10y' + 25y = \frac{2e^{5x}}{x^2 + 4}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3753	$y'' - 6y' + 13y = 4e^{3x} \sec(2x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3754	$y'' + y = \sec(x) + 4e^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3755	$y'' + y = \csc(x) + 2x^2 + 5x + 1$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3756	$y'' - y = 2 \tanh(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3757	$y'' - 2my' + m^2y = \frac{e^{mx}}{x^2 + 1}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3758	$y'' - 2y' + y = \frac{4e^x \ln(x)}{x^3}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3759	$y'' + 2y' + y = \frac{e^{-x}}{\sqrt{-x^2 + 4}}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
3760	$y'' + 2y' + 17y = \frac{64e^{-x}}{3 + \sin(4x)^2}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3761	$y'' + 4y' + 4y = \frac{4e^{-2x}}{x^2 + 1} + 2x^2 - 1$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3762	$y'' + 4y' + 4y = 15e^{-2x} \ln(x) + 25 \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3767	$y'' - 9y = F(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3768	$y'' + 5y' + 4y = F(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3769	$y'' + y' - 2y = F(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3770	$y'' + 4y' - 12y = F(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3771	$y'' - 4y' + 4y = 5xe^{2x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3772	$y'' + y = \sec(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3773	$x^2y'' + 4xy' + 2y = 4 \ln(x)$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
3774	$x^2y'' + 4xy' + 2y = \cos(x)$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
3775	$x^2y'' + xy' + 9y = 9 \ln(x)$	[[_2nd_order, _with_linear_symmetries]]	✓
3776	$x^2y'' - xy' + 5y = 8x \ln(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3777	$x^2y'' - 4xy' + 6y = x^4 \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3778	$x^2y'' + 6xy' + 6y = 4e^{2x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3779	$x^2y'' - 3xy' + 4y = \frac{x^2}{\ln(x)}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3780	$x^2y'' - (2m - 1)xy' + m^2y = x^m \ln(x)^k$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3781	$x^2y'' - xy' + 5y = 0$	[[_Emden, _Fowler]]	✓

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#	ODE	CAS classification	Solved?
3782	<i>i.c.</i> $t^2 y'' + ty' + 25y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, _with_symme- try_[0,F(x)]]]	✓
3797	$y'' + 6y' + 9y = 4e^{-3x}$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
3798	$y'' + 6y' + 9y = 4e^{-2x}$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
3802	$y'' - 4y = 5e^x$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
3803	$y'' + 2y' + y = 2xe^{-x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3804	$y'' - y = 4e^x$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
3806	$y'' + 4y = \ln(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3807	$y'' + 2y' - 3y = 5e^x$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
3808	$y'' + y = \tan(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3809	$y'' + y = 4\cos(2x) + 3e^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4118	$y'' + 8y' + 15y = 0$	[[_2nd_order, _missing_x]]	✓
4119	$y'' + 2y' - 15y = 0$	[[_2nd_order, _missing_x]]	✓
4120	$y'' + 6y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓
4121	$y'' + 6y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓
4122	$y'' - 3y' + 2y = 0$	[[_2nd_order, _missing_x]]	✓
4123	$y'' - 4y' + 13y = 0$	[[_2nd_order, _missing_x]]	✓
4124	$2y'' + 3y' = 0$	[[_2nd_order, _missing_x]]	✓
4125	$y'' + 25y = 0$	[[_2nd_order, _missing_x]]	✓
4126	$4y'' + y' + y = 0$	[[_2nd_order, _missing_x]]	✓
4127	$y'' = 0$	[[_2nd_order, _quadra- ture]]	✓
4128	<i>i.c.</i> $y'' - 6y' + 5y = 0$	[[_2nd_order, _missing_x]]	✓
4129	$y'' - 4y' + 3y = 1$	[[_2nd_order, _missing_x]]	✓

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#	ODE	CAS classification	Solved?
4130	$y'' + y' - 2y = -2x^2 + 2x + 2$	[[_2nd_order, _with_linear_symmetries]]	✓
4131	$y'' + y = x^3 + x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4132	$y'' - 6y' + 9y = e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓
4133	$y'' + 2y = x + e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓
4134	$y'' + 2y = e^x + 2$	[[_2nd_order, _with_linear_symmetries]]	✓
4135	$y'' - y = 2e^x$	[[_2nd_order, _with_linear_symmetries]]	✓
4136	$y'' + y = \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4137	$y'' - y = 4xe^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4138	$y'' - 2y' + 3y = x^3 + \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4139	$(x^2 + 1)y'' + xy' - 4y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, ' _with_symmetry_[0,F(x)]']]	✓
4140	$x^2y'' - 2xy' + 2y = x^2 + 2$	[[_2nd_order, _with_linear_symmetries]]	✓
4141	<i>i.c.</i> $y'' + 2ny' + n^2y = A \cos(xp)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4152	$y'' - 3y' + 2y = \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4153	$y'' + 2y' - 2y = x^2 + 1$	[[_2nd_order, _with_linear_symmetries]]	✓
4154	$y'' + \frac{y'}{2} + \frac{y}{8} = \frac{\sin(x)}{8} - \frac{\cos(x)}{4}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4155	$y'' + 3y' + 2y = e^x - 2e^{2x} + \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4156	$y'' - 4y' + 4y = x^3e^{2x} + xe^{2x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4157	$y'' + 3y' + 2y = x \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
4158	$y'' - 6y' + 9y = e^x \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4161	$y'' - 3y' + 2y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
4162	$y'' + 9y = 8 \sin(x)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4163	$25y'' - 30y' + 9y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
4164	$9y'' - 6y' + y = (4x^2 + 24x + 18)e^x$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4426	$xy'' = y' + x$	[[_2nd_order, _missing_y]]	✓
4456	$y'' + 6y' + 10y = 3xe^{-3x} - 2e^{3x} \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4457	$y'' - 8y' + 17y = e^{4x}(x^2 - 3x \sin(x))$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4458	$y'' - 2y' + 2y = (x + e^x) \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4459	$y'' + 4y = \sinh(x) \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4460	$y'' + 2y' + 2y = \cosh(x) \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4470	$y'' - y' - 2y = 36xe^{2x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4474	$y'' + 3y' + 5y = 5e^{-x} \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4476	$y'' + 4y = 8 \sin(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4479	$y'' - 4y' + 4y = (x + 1)e^x + 2e^{2x} + 3e^{3x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4480	$y'' - 2y' + 5y = 4e^x \cos(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4481	$y'' + 4y = 4 \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4482	$y'' - y = 12e^x x^2 + 3e^{2x} + 10 \cos(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4483	$y'' + y = 2 \sin(x) - 3 \cos(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4484	$y'' - y' = e^x(x^2 + 10)$	[[_2nd_order, _missing_y]]	✓

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#	ODE	CAS classification	Solved?
4485	$y'' - 4y = 96x^2e^{2x} + 4e^{-2x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4486	$y'' + 2y' + 2y = 5 \cos(x) + 10 \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4487	$y'' - 2y' + 2y = 4x - 2 + 2e^x \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4488	$y'' - 4y' + 4y = 4xe^{2x} \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4497	$y'' - y = \frac{1}{x} - \frac{2}{x^3}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4498	$y'' - y = \frac{1}{\sinh(x)}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4499	$y'' - 2y' + y = \frac{e^x}{x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4500	$y'' + 3y' + 2y = \sin(e^x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4501	$y'' - 3y' + 2y = \sin(e^{-x})$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4502	$y'' + y = \sec(x)^3$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4503	$y'' - y = \frac{1}{\sqrt{1 - e^{2x}}}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4504	$y'' - y = e^{-2x} \sin(e^{-x})$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4505	$y'' + 2y' + y = 15e^{-x}\sqrt{x+1}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4506	$y'' + 4y = 2 \tan(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4507	$y'' - 2y' + y = \frac{e^{2x}}{(1 + e^x)^2}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4508	$y'' + y' = \frac{1}{1 + e^x}$	[[_2nd_order, _missing_y]]	✓
4509	$x^2y'' - xy' + y = \ln(x)$	[[_2nd_order, _with_linear_symmetries]]	✓
4510	$x^2y'' + 3xy' + 5y = \frac{5 \ln(x)}{x^2}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
4512	$(-2 + x)^2 y'' - 3(-2 + x)y' + 4y = x$	[[_2nd_order, _with_linear_symmetries]]	✓
5916	$y'' + 2y' = 0$	[[_2nd_order, _missing_x]]	✓
5917	$y'' - 3y' + 2y = 0$	[[_2nd_order, _missing_x]]	✓
5918	$y'' - y = 0$	[[_2nd_order, _missing_x]]	✓
5919	$6y'' - 11y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
5920	$y'' + 2y' - y = 0$	[[_2nd_order, _missing_x]]	✓
5925	$y'' - 2ky' - 2y = 0$	[[_2nd_order, _missing_x]]	✓
5926	$y'' + 4ky' - 12k^2y = 0$	[[_2nd_order, _missing_x]]	✓
5928	$y'' + 4y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
5931	$y'' - 2ay' + a^2y = 0$	[[_2nd_order, _missing_x]]	✓
5937	$y'' - 2y' + 5y = 0$	[[_2nd_order, _missing_x]]	✓
5938	$y'' - y' + y = 0$	[[_2nd_order, _missing_x]]	✓
5940	$y'' - 4y' + 20y = 0$	[[_2nd_order, _missing_x]]	✓
5945	$y'' = 0$ i.c.	[[_2nd_order, _quadrature]]	✓
5946	$y'' + 4y' + 4y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
5947	$y'' - 2y' + 5y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
5948	$y'' - 4y' + 20y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
5950	$y'' + 3y' + 2y = 4$	[[_2nd_order, _missing_x]]	✓
5951	$y'' + 3y' + 2y = 12e^x$	[[_2nd_order, _with_linear_symmetries]]	✓
5952	$y'' + 3y' + 2y = e^{ix}$	[[_2nd_order, _with_linear_symmetries]]	✓
5953	$y'' + 3y' + 2y = \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
5954	$y'' + 3y' + 2y = \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
5955	$y'' + 3y' + 2y = 8 + 6e^x + 2\sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
5956	$y'' + y' + y = x^2$	[[_2nd_order, _with_linear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
5957	$y'' - 2y' - 8y = 9x e^x + 10e^{-x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
5958	$y'' - 3y' = 2e^{2x} \sin(x)$	[[_2nd_order, _missing_y]]	✓
5959	$y'' + y' = x^2 + 2x$	[[_2nd_order, _missing_y]]	✓
5960	$y'' + y' = x + \sin(2x)$	[[_2nd_order, _missing_y]]	✓
5961	$y'' + y = 4x \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
5962	$y'' + 4y = x \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
5963	$y'' + 2y' + y = x^2 e^{-x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
5964	$y'' + 3y' + 2y = e^{-2x} + x^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
5965	$y'' - 3y' + 2y = x e^{-x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
5966	$y'' + y' - 6y = x + e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓
5967	$y'' + y = \sin(x) + e^{-x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
5968	$y'' + y = \sin(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
5969	$y'' + y = \sin(2x) \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
5970	$y'' - 5y' - 6y = e^{3x}$	[[_2nd_order, _with_linear_symmetries]]	✓
5971	$y'' - y' - 2y = 5 \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
5972	$y'' + 9y = 8 \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
5973	$y'' - 5y' + 6y = e^x(2x - 3)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
5974	$y'' - 3y' + 2y = e^{-x}$	[[_2nd_order, _with_linear_symmetries]]	✓
5975	$y'' + y = \sec(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
5976	$y'' + y = \cot(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
5977	$y'' + y = \sec(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
5978	$y'' - y = \sin(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
5979	$y'' + y = \sin(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
5980	$y'' + 3y' + 2y = 12e^x$	[[_2nd_order, _with_linear_symmetries]]	✓
5981	$y'' + 2y' + y = x^2e^{-x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
5982	$y'' + y = 4x \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
5983	$y'' + 2y' + y = e^{-x} \ln(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
5984	$y'' + y = \csc(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
5985	$y'' + y = \tan(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
5986	$y'' + 2y' + y = \frac{e^{-x}}{x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
5987	$y'' + y = \sec(x) \csc(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
5988	$y'' - 2y' + y = e^x \ln(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
5989	$y'' - 3y' + 2y = \cos(e^{-x})$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
5990	$x^2y'' - xy' + y = x$	[[_2nd_order, _with_linear_symmetries]]	✓
5991	$y'' - \frac{2y'}{x} + \frac{2y}{x^2} = x \ln(x)$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
5992	$x^2y'' + xy' - 4y = x^3$	[[_2nd_order, _with_linear_symmetries]]	✓
5993	$x^2y'' + xy' - y = x^2e^{-x}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
5994	$2x^2y'' + 3xy' - y = \frac{1}{x}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
5998	$x^2y'' + xy' = 1$	[[_2nd_order, _missing_y]]	✓
5999	$xy'' - y' = x^2$	[[_2nd_order, _missing_y]]	✓

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#	ODE	CAS classification	Solved?
6009	$(x^2 + 1)y'' + 2x(y' + 1) = 0$	[[_2nd_order, _missing_y]]	✓
6014	$x^2y'' + xy' = 1$ i.c.	[[_2nd_order, _missing_y]]	✓
6015	$xy'' - y' = x^2$ i.c.	[[_2nd_order, _missing_y]]	✓
6026	$x^2y'' - 2xy' + 2y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, ' _with_symme- try_[0,F(x)]]]	✓
6077	$u'' - \frac{2u'}{x} - a^2u = 0$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
6078	$u'' + \frac{2u'}{x} - a^2u = 0$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
6079	$u'' + \frac{2u'}{x} + a^2u = 0$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
6080	$u'' + \frac{4u'}{x} - a^2u = 0$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
6081	$u'' + \frac{4u'}{x} + a^2u = 0$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
6082	$y'' - a^2y = \frac{6y}{x^2}$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
6083	$y'' + n^2y = \frac{6y}{x^2}$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
6084	$x^2y'' + xy' - \left(x^2 + \frac{1}{4}\right)y = 0$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
6085	$x^2y'' + xy' + \frac{(-9a^2 + 4x^2)y}{4a^2} = 0$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
6086	$x^2y'' + xy' + \left(x^2 - \frac{25}{4}\right)y = 0$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
6087	$y'' + qy' = \frac{2y}{x^2}$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
6091	$xy'' + 3y' + 4x^3y = 0$	[[_Emden, _Fowler]]	✓
6135	$y'' + y' - 2y = 0$	[[_2nd_order, _missing_x]]	✓
6136	$y'' - 4y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
6137	$y'' + 9y' = 0$	[[_2nd_order, _missing_x]]	✓

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#	ODE	CAS classification	Solved?
6138	$y'' + 2y' + 2y = 0$	[[_2nd_order, _missing_x]]	✓
6139	$y'' - 2y' + 6y = 0$	[[_2nd_order, _missing_x]]	✓
6140	$y'' + 16y = 0$	[[_2nd_order, _missing_x]]	✓
6141	$y'' - 5y' + 6y = 0$	[[_2nd_order, _missing_x]]	✓
6142	$y'' + 5y' = 0$	[[_2nd_order, _missing_x]]	✓
6143	$y'' - 4y' + 13y = 0$	[[_2nd_order, _missing_x]]	✓
6144	$2y'' + y' - y = 0$	[[_2nd_order, _missing_x]]	✓
6145	$y'' + (1 + 2i)y' + (-1 + i)y = 0$	[[_2nd_order, _missing_x]]	✓
6146	$y'' + (1 + 2i)y' + (-1 + i)y = 0$	[[_2nd_order, _missing_x]]	✓
6151	$y'' - 4y' = 10$	[[_2nd_order, _missing_x]]	✓
6152	$y'' - 4y' + 4y = 16$	[[_2nd_order, _missing_x]]	✓
6153	$y'' + y' - 2y = e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓
6154	$y'' - 2y' - 3y = 24e^{-3x}$	[[_2nd_order, _with_linear_symmetries]]	✓
6155	$y'' + y = 2e^x$	[[_2nd_order, _with_linear_symmetries]]	✓
6156	$y'' + 6y' + 9y = 12e^{-x}$	[[_2nd_order, _with_linear_symmetries]]	✓
6157	$y'' - y' - 2y = 3e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓
6158	$y'' - 16y = 40e^{4x}$	[[_2nd_order, _with_linear_symmetries]]	✓
6159	$y'' + 2y' + y = 2e^{-x}$	[[_2nd_order, _with_linear_symmetries]]	✓
6160	$y'' - 6y' + 9y = 6e^{3x}$	[[_2nd_order, _with_linear_symmetries]]	✓
6161	$y'' + 2y' + 10y = 100 \cos(4x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6162	$y'' + 4y' + 12y = 80 \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6163	$y'' - 2y' + y = 2 \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6164	$y'' + 8y' + 25y = 120 \sin(5x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
6165	$5y'' + 12y' + 20y = 120 \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6166	$y'' + 9y = 30 \sin(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6167	$y'' + 16y = 16 \cos(4x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6168	$y'' + 2y' + 17y = 60 e^{-4x} \sin(5x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6169	$4y'' + 4y' + 5y = 40 e^{-\frac{3x}{2}} \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6170	$y'' + 4y' + 8y = 30 e^{-\frac{x}{2}} \cos\left(\frac{5x}{2}\right)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6171	$5y'' + 6y' + 2y = x^2 + 6x$	[[_2nd_order, _with_linear_symmetries]]	✓
6172	$2y'' + y' = 2x$	[[_2nd_order, _missing_y]]	✓
6173	$y'' + y = 2x e^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6174	$y'' - 6y' + 9y = 12x e^{3x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6175	$y'' - 2y' - 3y = 16x^2 e^{-x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6176	$y'' + y = 8x \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6177	$y'' + y = x^3 - 1 + 2 \cos(x) + (2 - 4x) e^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6178	$y'' - 5y' + 6y = 2 e^x + 6x - 5$	[[_2nd_order, _with_linear_symmetries]]	✓
6179	$y'' - y = \sinh(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6180	$y'' + y = 2 \sin(x) + 4x \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6181	$y'' + 2y' + y = 4 e^x + (1 - x)(-1 + e^{2x})$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6182	$y'' - 2y' = 9x e^{-x} - 6x^2 + 4 e^{2x}$	[[_2nd_order, _missing_y]]	✓
6187	$y'' + 2xy' = 0$	[[_2nd_order, _missing_y]]	✓
6192	$x^2 y'' + 3xy' - 3y = 0$	[[_Emden, _Fowler]]	✓

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#	ODE	CAS classification	Solved?
6193	$x^2y'' + xy' - 4y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, _with_symme- try_[0,F(x)]]]	✓
6194	$x^2y'' + 7xy' + 9y = 0$	[[_Emden, _Fowler]]	✓
6195	$x^2y'' - xy' + 6y = 0$	[[_Emden, _Fowler]]	✓
6196	$x^2y'' + xy' - 16y = 8x^4$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
6197	$x^2y'' + xy' - y = x - \frac{1}{x}$	[[_2nd_order, _exact, _lin- ear, _nonhomogeneous]]	✓
6198	$x^2y'' - 5xy' + 9y = 2x^3$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
6199	$x^2y'' - 3xy' + 4y = 6x^2 \ln(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6200	$x^2y'' + y = 3x^2$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
6201	$x^2y'' + xy' + y = 2x$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
6211	$r'' - 6r' + 9r = 0$	[[_2nd_order, _missing_x]]	✓
6213	$y'' + 2y' + 2y = 10e^x + 6e^{-x} \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6215	$x^2y'' - xy' + y = x$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
6219	$xy'' + y' = 4x$	[[_2nd_order, _missing_y]]	✓
6220	$y'' + 4y' + 5y = 26e^{3x}$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
6221	$y'' + 4y' + 5y = 2e^{-2x} \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6222	$y'' - 4y' + 4y = 6e^{2x}$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
6223	$y'' - 5y' + 6y = e^{2x}$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
6227	$y'' - 2y' + 5y = 5x + 4e^x(1 + \sin(2x))$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6234	$y'' + y' - 6y = 6$	[[_2nd_order, _missing_x]]	✓
	<i>i.c.</i>		
6243	$y'' = -4y$	[[_2nd_order, _missing_x]]	✓

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#	ODE	CAS classification	Solved?
6245	$y'' = y$	[[_2nd_order, _missing_x]]	✓
6247	$y'' - 2y' + y = 0$	[[_2nd_order, _missing_x]]	✓
6249	$x^2y'' - 3xy' + 3y = 0$	[[_Emden, _Fowler]]	✓
6251	$(x^2 + 2x)y'' - 2(x + 1)y' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
6253	$(x^2 + 1)y'' - 2xy' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
6255	$y'' - 4xy' + (4x^2 - 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
6389	$x'' - \omega^2x = 0$	[[_2nd_order, _missing_x]]	✓
6391	$x'' + 42x' + x = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
6394	$x'' + 2\gamma x' + \omega_0x = F \cos(\omega t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6395	$y'' - y' - 2y = e^{2x}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
6396	$y'' - 2y' + y = 2 \cos(x)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6397	$y'' + 16y = 16 \cos(4x)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6398	$y'' - y = \cosh(x)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6408	$x(x + 1)^2y'' + (-x^2 + 1)y' + (x - 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
6409	$x(1 - x)y'' + 2(-2x + 1)y' - 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
6410	$x^2y'' + xy' - 9y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
6411	$xy'' + \frac{y'}{2} + 2y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
6412	$x^2y'' - xy' + y = 0$	[[_Emden, _Fowler]]	✓
6413	$2xy'' - y' + 2y = 0$	[[_Emden, _Fowler]]	✓
6414	$xy'' + xy' - 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
6415	$x(x-1)^2 y'' - 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
6480	$y'' - y' - 2y = 8$	[[_2nd_order, _missing_x]]	✓
6481	$y'' - 4y = 10 e^{3x}$	[[_2nd_order, _with_linear_symmetries]]	✓
6482	$y'' + 2y' + y = e^{-2x}$	[[_2nd_order, _with_linear_symmetries]]	✓
6483	$y'' + 25y = 5x^2 + x$	[[_2nd_order, _with_linear_symmetries]]	✓
6484	$y'' - 2y' + y = 4 \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6485	$y'' + 4y' + 5y = 2 e^{-2x}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
6486	$3y'' - 2y' - y = 2x - 3$	[[_2nd_order, _with_linear_symmetries]]	✓
6487	$y'' - 6y' + 8y = 8 e^{4x}$	[[_2nd_order, _with_linear_symmetries]]	✓
6488	$2y'' - 7y' - 4y = e^{3x}$	[[_2nd_order, _with_linear_symmetries]]	✓
6489	$y'' - 6y' + 9y = 54x + 18$	[[_2nd_order, _with_linear_symmetries]]	✓
6490	$y'' - 5y' + 6y = 100 \sin(4x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6491	$y'' + 2y' + y = 4 \sinh(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6492	$y'' + y' - 2y = 2 \cosh(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6493	$y'' - y' + 10y = 20 - e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓
6494	$y'' + 4y' + 4y = 2 \cos(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6495	$y'' - 4y' + 3y = x + e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓
6496	$y'' - 2y' + 3y = x^2 - 1$	[[_2nd_order, _with_linear_symmetries]]	✓
6497	$y'' - 9y = e^{3x} + \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6498	$x'' + 4x' + 3x = e^{-3t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
6499	$y'' + 4y' + 5y = 6 \sin(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6500	$x'' - 3x' + 2x = \sin(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6501	$y'' + 3y' + 2y = 3 \sin(x)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6502	$y'' + 6y' + 10y = 50x$	[[_2nd_order, _with_linear_symmetries]]	✓
6503	$x'' + 2x' + 2x = 85 \sin(3t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6504	$y'' = 3 \sin(x) - 4y$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6505	$\frac{x''}{2} = -48x$ i.c.	[[_2nd_order, _missing_x]]	✓
6506	$x'' + 5x' + 6x = \cos(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6507	$y'' - y' - 2y = 4x^2$	[[_2nd_order, _with_linear_symmetries]]	✓
6508	$y'' - y' - 2y = e^{3x}$	[[_2nd_order, _with_linear_symmetries]]	✓
6509	$y'' - y' - 2y = \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6510	$y'' - 6y' + 25y = 2 \sin\left(\frac{t}{2}\right) - \cos\left(\frac{t}{2}\right)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6511	$y'' - 6y' + 25y = 64e^{-t}$	[[_2nd_order, _with_linear_symmetries]]	✓
6512	$y'' - 6y' + 25y = 50t^3 - 36t^2 - 63t + 18$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6514	$y'' = 9x^2 + 2x - 1$	[[_2nd_order, _quadrature]]	✓
6515	$y'' - 5y = 2e^{5x}$	[[_2nd_order, _with_linear_symmetries]]	✓
6519	$y'' - 2y' + y = x^2 - 1$	[[_2nd_order, _with_linear_symmetries]]	✓
6520	$y'' - 2y' + y = 4e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓
6521	$y'' - 2y' + y = 4 \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
6522	$y'' - 2y' + y = 3e^x$	[[_2nd_order, _with_linear_symmetries]]	✓
6523	$y'' - 2y' + y = xe^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6530	$y'' - 2y' + y = \frac{e^x}{x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6531	$y'' - y' - 2y = e^{3x}$	[[_2nd_order, _with_linear_symmetries]]	✓
6532	$x'' + 4x = \sin(2t)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6533	$t^2N'' - 2tN' + 2N = t \ln(t)$	[[_2nd_order, _with_linear_symmetries]]	✓
6536	$y'' - 2y' + y = \frac{e^x}{x^5}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6537	$y'' + y = \sec(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6538	$y'' - y' - 2y = e^{3x}$	[[_2nd_order, _with_linear_symmetries]]	✓
6539	$y'' - 60y' - 900y = 5e^{10x}$	[[_2nd_order, _with_linear_symmetries]]	✓
6540	$y'' - 7y' = -3$	[[_2nd_order, _missing_x]]	✓
6541	$y'' + \frac{y'}{x} - \frac{y}{x^2} = \ln(x)$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
6542	$x^2y'' - xy' = x^3e^x$	[[_2nd_order, _missing_y]]	✓
6574	$y'' - 2y' + y = 0$	[[_2nd_order, _missing_x]]	✓
6575	$(x-1)y'' - xy' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
6576	$y'' - y = 0$	[[_2nd_order, _missing_x]]	✓
6577	$y'' - y = 4 - x$	[[_2nd_order, _with_linear_symmetries]]	✓
6578	$y'' - 3y' + 2y = 0$	[[_2nd_order, _missing_x]]	✓
6579	$y'' - 3y' + 2y = 2e^x(1-x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6692	$y'' + y' - 6y = 0$	[[_2nd_order, _missing_x]]	✓
6694	$y'' - 3y' + 2y = e^{5x}$	[[_2nd_order, _with_linear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
6695	$y'' + 9y = x \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6696	$x^2y'' - 3xy' + 4y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
6698	$xy'' - y' + 4x^3y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
6702	$y'' + 2y' - 15y = 0$	[[_2nd_order, _missing_x]]	✓
6704	$y'' + 6y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓
6706	$y'' - 4y' + 13y = 0$	[[_2nd_order, _missing_x]]	✓
6707	$y'' + 25y = 0$	[[_2nd_order, _missing_x]]	✓
6712	$y'' - 4y' + 3y = 1$	[[_2nd_order, _missing_x]]	✓
6713	$y'' - 4y' = 5$	[[_2nd_order, _missing_x]]	✓
6717	$y'' - 6y' + 9y = e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓
6718	$y'' + y' - 2y = -2x^2 + 2x + 2$	[[_2nd_order, _with_linear_symmetries]]	✓
6719	$y'' - y = 4x e^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6720	$y'' - y = \sin(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6721	$y'' - y = \frac{1}{(1 + e^{-x})^2}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6722	$y'' + y = \csc(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6723	$y'' - 3y' + 2y = \sin(e^{-x})$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6724	$y'' + y = \csc(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6725	$y'' + 4y = 4 \sec(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6726	$y'' - 4y' + 3y = \frac{1}{1 + e^{-x}}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
6727	$y'' - y = e^{-x} \sin(e^{-x}) + \cos(e^{-x})$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6728	$y'' - y = \frac{1}{(1 + e^{-x})^2}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6729	$y'' + 2y = 2 + e^x$	[[_2nd_order, _with_linear_symmetries]]	✓
6730	$y'' - y = e^x \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6731	$y'' + 2y' + 2y = x^2 + \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6732	$y'' - 9y = x + e^{2x} - \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6734	$y'' + y = -2 \sin(x) + 4x \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6736	$y'' + y' + y = e^{3x} + 6e^x - 3e^{-2x} + 5$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6737	$y'' - y = e^x$	[[_2nd_order, _with_linear_symmetries]]	✓
6738	$y'' - 4y' + 4y = e^x + x e^{2x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6741	$y'' + 4y = \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6742	$y'' + 5y = \cos(\sqrt{5}x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6744	$y'' - y = x^2$	[[_2nd_order, _with_linear_symmetries]]	✓
6745	$y'' + 2y = x^3 + x^2 + e^{-2x} + \cos(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6746	$y'' - 2y' - y = e^x \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6747	$y'' - 4y' + 4y = \frac{e^{2x}}{x^2}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6748	$y'' - y = x e^{3x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6749	$y'' + 5y' + 6y = e^{-2x} \sec(x)^2 (2 \tan(x) + 1)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6750	$x^2 y'' - 3xy' + 4y = x + x^2 \ln(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
6751	$x^2 y'' - 2xy' + 2y = \ln(x)^2 - \ln(x^2)$	[[_2nd_order, _with_linear_symmetries]]	✓
6754	$(x+1)^2 y'' + (x+1)y' - y = \ln(x+1)^2 + x - 1$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
6755	$(2x+1)^2 y'' - 2(2x+1)y' - 12y = 6x$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
6756	$xy'' - (x+2)y' + 2y = 0$	[_Laguerre]	✓
6757	$(x^2+1)y'' - 2xy' + 2y = 2$	[[_2nd_order, _with_linear_symmetries]]	✓
6758	$(x^2+4)y'' - 2xy' + 2y = 8$	[[_2nd_order, _with_linear_symmetries]]	✓
6759	$(x+1)y'' - (2x+3)y' + (x+2)y = (x^2+2x+1)e^{2x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6760	$y'' - 2 \tan(x)y' - 10y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
6761	$x^2 y'' - x(2x+3)y' + (x^2+3x+3)y = (-x^2+6)e^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6762	$4x^2 y'' + 4x^3 y' + (x^2+1)^2 y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
6763	$x^2 y'' + (-4x^2+x)y' + (4x^2-2x+1)y = (x^2-x+1)e^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6764	$xy'' - y' + 4x^3 y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
6765	$x^4 y'' + 2x^3 y' + y = \frac{x+1}{x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6766	$x^8 y'' + 4x^7 y' + y = \frac{1}{x^3}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6768	$xy'' - 3y' + \frac{3y}{x} = x + 2$	[[_2nd_order, _with_linear_symmetries]]	✓
6769	$(x+1)y'' - (3x+4)y' + 3y = (2+3x)e^{3x}$	[[_2nd_order, _with_linear_symmetries]]	✓
6770	$x^2 y'' - 4xy' + (9x^2+6)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
6771	$xy'' + 2y' + 4xy = 4$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
6772	$(x^2 + 1)y'' - 2xy' + 2y = \frac{-x^2 + 1}{x}$	[[_2nd_order, _with_linear_symmetries]]	✓
6774	$(x^2 + 1)y'' + 2xy' = \frac{2}{x^3}$	[[_2nd_order, _missing_y]]	✓
6775	$xy'' - y' = -\frac{2}{x} - \ln(x)$	[[_2nd_order, _missing_y]]	✓
7154	$y'' + 2y' - y = 0$	[[_2nd_order, _missing_x]]	✓
7155	$y'' + \frac{y'}{x} - \frac{y}{x^2} = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
7156	$(x^2 + 1)y'' + xy' + y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
7159	$x^2(-x^2 + 1)y'' + 2x(-x^2 + 1)y' - 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
7160	$(-x^2 + 1)y'' - xy' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
7163	$x^2y'' + 2xy' + 4y = 0$	[[_Emden, _Fowler]]	✓
7165	$(x^2 + 1)y'' + xy' + y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
7166	$y'' + xy' + y = 2xe^x - 1$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
7167	$xy'' + xy' - y = x^2 + 2x$	[[_2nd_order, _with_linear_symmetries]]	✓
7168	$x^2y'' + xy' - y = x^2 + 2x$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
7169	$x^3y'' + xy' - y = \cos\left(\frac{1}{x}\right)$	[[_2nd_order, _with_linear_symmetries]]	✓
7170	$x(x + 1)y'' + (x + 2)y' - y = x + \frac{1}{x}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
7171	$2xy'' + (-2 + x)y' - y = x^2 - 1$	[[_2nd_order, _with_linear_symmetries]]	✓
7174	$xy'' + 2y' + xy = \sec(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7175	$(-x^2 + 1)y'' - xy' + \frac{y}{4} = -\frac{x^2}{2} + \frac{1}{2}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
7193	$y'' - 2y' - 3y = 0$	[[_2nd_order, _missing_x]]	✓
7194	$s'' + 2s' + s = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
7195	$y'' - 2y' + 5y = 0$	[[_2nd_order, _missing_x]]	✓
7196	$y'' - 2y' - 3y = 3x + 1$	[[_2nd_order, _with_linear_symmetries]]	✓
7197	$y'' - 3y' + 2y = xe^{2x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7198	$y'' + y = 4\sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7199	$y'' + 2x^2y' + (x^4 + 2x - 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
7200	$px^2u'' + qxu' + ru = f(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7201	$\sin(x)u'' + 2\cos(x)u' + \sin(x)u = 0$	[_Lienard]	✓
7203	$y'' - \frac{xy'}{-x^2+1} + \frac{y}{-x^2+1} = 0$	[_Gegenbauer, [_2nd_order, _linear, ' _with_symmetry_[0,F(x)]']]	✓
7211	$u'' - (2x + 1)u' + (x^2 + x - 1)u = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
7212	$y'' + 6y' + 9y = 50e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓
7213	$y'' - 4y' + 4y = 50e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓
7214	$y'' + 3y' + 2y = \cos(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7216	$y'' + 4y = x^2$	[[_2nd_order, _with_linear_symmetries]]	✓
7217	$y'' - 4y' + 3y = x^3$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7218	$y'' + 2y' + \left(1 + \frac{2}{(3x+1)^2}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
7221	$x^2y'' - 2xy' + (x^2 + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
7222	$y'' + \frac{2y'}{x} - \frac{2y}{(x+1)^2} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
7233	$y'' - \frac{y'}{\sqrt{x}} + \frac{(x + \sqrt{x} - 8)y}{4x^2} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
7257	$y'' = x + 2$	[[_2nd_order, _quadrature]]	✓
7261	$y'' - y = 0$	[[_2nd_order, _missing_x]]	✓
7262	$y'' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
7263	$y'' + k^2y = 0$	[[_2nd_order, _missing_x]]	✓
7265	$y'' = 3x + 1$	[[_2nd_order, _quadrature]]	✓
7288	$y'' - 4y = 0$	[[_2nd_order, _missing_x]]	✓
7289	$3y'' + 2y = 0$	[[_2nd_order, _missing_x]]	✓
7290	$y'' + 16y = 0$	[[_2nd_order, _missing_x]]	✓
7291	$y'' = 0$	[[_2nd_order, _quadrature]]	✓
7292	$y'' + 2iy' + y = 0$	[[_2nd_order, _missing_x]]	✓
7293	$y'' - 4y' + 5y = 0$	[[_2nd_order, _missing_x]]	✓
7294	$y'' + (-1 + 3i)y' - 3iy = 0$	[[_2nd_order, _missing_x]]	✓
7295	$y'' + y' - 6y = 0$	[[_2nd_order, _missing_x]]	✓
7296	$y'' + y' - 6y = 0$	[[_2nd_order, _missing_x]]	✓
7297	$y'' + y = 0$	[[_2nd_order, _missing_x]]	✓
7298	$y'' + y = 0$	[[_2nd_order, _missing_x]]	✓
7299	$y'' + y = 0$	[[_2nd_order, _missing_x]]	✓
7300	$y'' + y = 0$	[[_2nd_order, _missing_x]]	✓
7301	$y'' - 2y' - 3y = 0$	[[_2nd_order, _missing_x]]	✓
7302	$y'' + (1 + 4i)y' + y = 0$	[[_2nd_order, _missing_x]]	✓
7303	$y'' + (-1 + 3i)y' - 3iy = 0$	[[_2nd_order, _missing_x]]	✓

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#	ODE	CAS classification	Solved?
7304	$y'' + 10y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
7305	$y'' + 4y = \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7306	$y'' + 9y = \sin(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7307	$y'' + y = \tan(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7308	$y'' + 2iy' + y = x$	[[_2nd_order, _with_linear_symmetries]]	✓
7309	$y'' - 4y' + 5y = 3e^{-x} + 2x^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7310	$y'' - 7y' + 6y = \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7311	$y'' + y = 2 \sin(x) \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7312	$y'' + y = \sec(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7313	$4y'' - y = e^x$	[[_2nd_order, _with_linear_symmetries]]	✓
7314	$6y'' + 5y' - 6y = x$	[[_2nd_order, _with_linear_symmetries]]	✓
7315	$y'' + \omega^2 y = A \cos(\omega x)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7326	$y'' + y = 0$	[[_2nd_order, _missing_x]]	✓
7327	$y'' - y = 0$	[[_2nd_order, _missing_x]]	✓
7333	$y'' - 2iy' - y = 0$	[[_2nd_order, _missing_x]]	✓
7340	$y'' - 2iy' - y = e^{ix} - 2e^{-ix}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7341	$y'' + 4y = \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7342	$y'' + 4y = \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7343	$y'' - 4y = 3e^{2x} + 4e^{-x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7344	$y'' - y' - 2y = x^2 + \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
7345	$y'' + 9y = x^2 e^{3x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7346	$y'' + y = x e^x \cos(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7347	$y'' + iy' + 2y = 2 \cosh(2x) + e^{-2x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7350 i.c.	$y'' + \frac{y'}{x} - \frac{y}{x^2} = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
7351 i.c.	$y'' + \frac{y'}{x} - \frac{y}{x^2} = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
7352	$(3x - 1)^2 y'' + (9x - 3)y' - 9y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
7362	$x^2 y'' + 4xy' + (x^2 + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
7373	$(-x^2 + 1)y'' - xy' + \alpha^2 y = 0$	[_Gegenbauer, [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
7375	$x^2 y'' + 2xy' - 6y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
7376	$2x^2 y'' + xy' - y = 0$	[[_Emden, _Fowler]]	✓
7377	$x^2 y'' + xy' - 4y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
7378	$x^2 y'' - 5xy' + 9y = x^2$	[[_2nd_order, _with_linear_symmetries]]	✓
7380	$x^2 y'' + xy' + 4y = 1$	[[_2nd_order, _with_linear_symmetries]]	✓
7381	$x^2 y'' - 3xy' + 5y = 0$	[[_Emden, _Fowler]]	✓
7382	$x^2 y'' + (-2 - i)xy' + 3iy = 0$	[[_Emden, _Fowler]]	✓
7383	$x^2 y'' + xy' - 4\pi y = x$	[[_2nd_order, _with_linear_symmetries]]	✓
7435	$y'' + y' = 1$	[[_2nd_order, _missing_x]]	✓
7438	$y'' + k^2 y = 0$	[[_2nd_order, _missing_x]]	✓
7440	$xy'' - 2y' = x^3$	[[_2nd_order, _missing_y]]	✓

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#	ODE	CAS classification	Solved?
7453	$y'' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
7454	$y'' - 4y = 0$	[[_2nd_order, _missing_x]]	✓
7480	$y'' - 5y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
7583	$y'' - k^2y = 0$	[[_2nd_order, _missing_x]]	✓
7587	$xy'' + y' = 4x$	[[_2nd_order, _missing_y]]	✓
7612	$xy'' - 3y' = 5x$	[[_2nd_order, _missing_y]]	✓
7613	$y'' + y' - 6y = 0$	[[_2nd_order, _missing_x]]	✓
7614	$y'' + 2y' + y = 0$	[[_2nd_order, _missing_x]]	✓
7615	$y'' + 8y = 0$	[[_2nd_order, _missing_x]]	✓
7616	$2y'' - 4y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
7617	$y'' - 4y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
7618	$y'' - 9y' + 20y = 0$	[[_2nd_order, _missing_x]]	✓
7619	$2y'' + 2y' + 3y = 0$	[[_2nd_order, _missing_x]]	✓
7620	$4y'' - 12y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓
7621	$y'' + y = 0$	[[_2nd_order, _missing_x]]	✓
7622	$y'' - 6y' + 25y = 0$	[[_2nd_order, _missing_x]]	✓
7623	$4y'' + 20y' + 25y = 0$	[[_2nd_order, _missing_x]]	✓
7624	$y'' + 2y' + 3y = 0$	[[_2nd_order, _missing_x]]	✓
7625	$y'' = 4y$	[[_2nd_order, _missing_x]]	✓
7626	$4y'' - 8y' + 7y = 0$	[[_2nd_order, _missing_x]]	✓
7627	$2y'' + y' - y = 0$	[[_2nd_order, _missing_x]]	✓
7628	$y'' + 4y' + 5y = 0$	[[_2nd_order, _missing_x]]	✓
7629	$y'' + 4y' + 5y = 0$	[[_2nd_order, _missing_x]]	✓
7630	$y'' + 4y' - 5y = 0$	[[_2nd_order, _missing_x]]	✓
7631	$y'' - 5y' + 6y = 0$	[[_2nd_order, _missing_x]]	✓
	<i>i.c.</i>		
7632	$y'' - 6y' + 5y = 0$	[[_2nd_order, _missing_x]]	✓
	<i>i.c.</i>		
7633	$y'' - 6y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓
	<i>i.c.</i>		
7634	$y'' + 4y' + 5y = 0$	[[_2nd_order, _missing_x]]	✓
	<i>i.c.</i>		

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#	ODE	CAS classification	Solved?
7635	$y'' + 4y' + 2y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
7636	$y'' + 8y' - 9y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
7637	$x^2y'' + 3xy' + 10y = 0$	[[_Emden, _Fowler]]	✓
7638	$2x^2y'' + 10xy' + 8y = 0$	[[_Emden, _Fowler]]	✓
7639	$x^2y'' + 2xy' - 12y = 0$	[[_Emden, _Fowler]]	✓
7640	$4x^2y'' - 3y = 0$	[[_Emden, _Fowler]]	✓
7641	$x^2y'' - 3xy' + 4y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
7642	$x^2y'' + 2xy' - 6y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
7643	$x^2y'' + 2xy' + 3y = 0$	[[_Emden, _Fowler]]	✓
7644	$x^2y'' + xy' - 2y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
7645	$x^2y'' + xy' - 16y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
7646	$y'' + 3y' - 10y = 6e^{4x}$	[[_2nd_order, _with_linear_symmetries]]	✓
7647	$y'' + 4y = 3\sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7648	$y'' + 10y' + 25y = 14e^{-5x}$	[[_2nd_order, _with_linear_symmetries]]	✓
7649	$y'' - 2y' + 5y = 25x^2 + 12$	[[_2nd_order, _with_linear_symmetries]]	✓
7650	$y'' - y' - 6y = 20e^{-2x}$	[[_2nd_order, _with_linear_symmetries]]	✓
7651	$y'' - 3y' + 2y = 14\sin(2x) - 18\cos(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7652	$y'' + y = 2\cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
7653	$y'' - 2y' = 12x - 10$	[[_2nd_order, _missing_y]]	✓
7654	$y'' - 2y' + y = 6e^x$	[[_2nd_order, _with_linear_symmetries]]	✓
7655	$y'' - 2y' + 2y = e^x \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7656	$y'' + y' = 10x^4 + 2$	[[_2nd_order, _missing_y]]	✓
7657	$y'' + 4y = 4 \cos(2x) + 6 \cos(x) + 8x^2 - 4x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7658	$y'' + 9y = 2 \sin(3x) + 4 \sin(x) - 26e^{-2x} + 27x^3$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7659	$y'' - 3y = e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓
7661	$y'' + 4y = \tan(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7662	$y'' + 2y' + y = e^{-x} \ln(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7663	$y'' - 2y' - 3y = 64xe^{-x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7664	$y'' + 2y' + 5y = e^{-x} \sec(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7665	$2y'' + 3y' + y = e^{-3x}$	[[_2nd_order, _with_linear_symmetries]]	✓
7666	$y'' - 3y' + 2y = \frac{1}{1 + e^{-x}}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7667	$y'' + y = \sec(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7668	$y'' + y = \cot(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7669	$y'' + y = \cot(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7670	$y'' + y = x \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7671	$y'' + y = \tan(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7672	$y'' + y = \sec(x) \tan(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7673	$y'' + y = \sec(x) \csc(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
7674	$y'' - 2y' + y = 2x$	[[_2nd_order, _with_linear_symmetries]]	✓
7675	$y'' - y' - 6y = e^{-x}$	[[_2nd_order, _with_linear_symmetries]]	✓
7676	$(x^2 - 1)y'' - 2xy' + 2y = (x^2 - 1)^2$	[[_2nd_order, _with_linear_symmetries]]	✓
7677	$(x^2 + x)y'' + (-x^2 + 2)y' - (x + 2)y = x(x + 1)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7678	$(1 - x)y'' + xy' - y = (1 - x)^2$	[[_2nd_order, _with_linear_symmetries]]	✓
7679	$xy'' - (x + 1)y' + y = x^2e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓
7680	$x^2y'' - 2xy' + 2y = xe^{-x}$	[[_2nd_order, _with_linear_symmetries]]	✓
7715	$y'' - 3y' + y = 0$	[[_2nd_order, _missing_x]]	✓
7716	$y'' + y' + y = 0$	[[_2nd_order, _missing_x]]	✓
7717	$y'' + 6y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓
7718	$y'' - y' + 6y = 0$	[[_2nd_order, _missing_x]]	✓
7719	$y'' - 2y' - 5y = x$	[[_2nd_order, _with_linear_symmetries]]	✓
7720	$y'' + y = e^x$	[[_2nd_order, _with_linear_symmetries]]	✓
7721	$y'' + y' + y = \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7722	$y'' - y = e^{3x}$	[[_2nd_order, _with_linear_symmetries]]	✓
7723	$y'' + 9y = 0$	[[_2nd_order, _missing_x]]	✓
7724	$y'' - y' + 4y = x$	[[_2nd_order, _with_linear_symmetries]]	✓
7725	$y'' + 2y' + 5y = e^x$	[[_2nd_order, _with_linear_symmetries]]	✓
7726	$y'' + 3y' + 4y = \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7727	$y'' + y = e^{-x}$	[[_2nd_order, _with_linear_symmetries]]	✓
7728	$y'' - y = \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
7729	$y'' = \tan(x)$ i.c.	[[_2nd_order, _quadrature]]	✓
7730	$y'' - 2y' = \ln(x)$ i.c.	[[_2nd_order, _missing_y]]	✓
7731	$y'' + 3y' + 2y = 2x - 1$	[[_2nd_order, _with_linear_symmetries]]	✓
7732	$y'' - 3y' + 2y = e^{-x}$	[[_2nd_order, _with_linear_symmetries]]	✓
7733	$y'' - y' - 2y = \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7734	$y'' + 2y' - y = x e^x \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7735	$y'' + 9y = \sec(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7736	$y'' + 4y' + 4y = x \ln(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7737	$x^2 y'' + 3xy' + y = \frac{2}{x}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
7738	$y'' + 4y = \tan(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7743	$x^2 y'' - 2xy' + 2y = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _linear, _with_symmetry_[0,F(x)]]]	✓
7744	$y'' + 9y = -3 \cos(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7746	$y'' = -3y$ i.c.	[[_2nd_order, _missing_x]]	✓
7895	$y'' + y = 0$	[[_2nd_order, _missing_x]]	✓
7897	$y'' - y = 0$	[[_2nd_order, _missing_x]]	✓
7899	$y'' - y' = 0$	[[_2nd_order, _missing_x]]	✓
7901	$y'' + 2y' = 0$	[[_2nd_order, _missing_x]]	✓
7965	$4x^2 y'' + 4xy' + (4x^2 - 25)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
7970	$x^2 y'' + xy' + \left(36x^2 - \frac{1}{4}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
7977	$x^2 y'' + (x^2 - 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
7979	$xy'' + 3y' + x^3y = 0$	[[_Emden, _Fowler]]	✓
7983	$y'' + y = 0$	[[_2nd_order, _missing_x]]	✓
7984	$x^2y'' + 4xy' + (x^2 + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
7985	$16x^2y'' + 32xy' + (x^4 - 12)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
7986	$4x^2y'' - 4xy' + (16x^2 + 3)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8038	$ty'' - y' = 2t^2$ i.c.	[[_2nd_order, _missing_y]]	✓
8039	$2y'' + ty' - 2y = 10$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
8172	$xy'' = y' + x^5$ i.c.	[[_2nd_order, _missing_y]]	✓
8173	$xy'' + y' + x = 0$ i.c.	[[_2nd_order, _missing_y]]	✓
8176	$y'' + \beta^2y = 0$	[[_2nd_order, _missing_x]]	✓
8185	$x^3y'' - x^2y' = -x^2 + 3$	[[_2nd_order, _missing_y]]	✓
8205	$y'' + y = -\cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8206	$y'' - 6y' + 9y = e^x$	[[_2nd_order, _with_linear_symmetries]]	✓
8207	$y'' + 3y' + 2y = 12x^2$	[[_2nd_order, _with_linear_symmetries]]	✓
8208	$y'' + 3y' + 2y = x^2 + 2x + 1$	[[_2nd_order, _with_linear_symmetries]]	✓
8282	$2x^2y'' + xy' - y = 0$	[[_Emden, _Fowler]]	✓
8283	$2x^2y'' - 3xy' + 2y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, _with_symmetry_[0,F(x)]]]	✓
8284	$9x^2y'' + 2y = 0$	[[_Emden, _Fowler]]	✓
8285	$2x^2y'' + 5xy' - 2y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, _with_symmetry_[0,F(x)]]]	✓
8286	$x^2y'' + 2xy' - 12y = 0$	[[_Emden, _Fowler]]	✓

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#	ODE	CAS classification	Solved?
8287	$x^2y'' + xy' - 9y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
8288	$x^2y'' - 3xy' + 4y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
8289	$x^2y'' - 5xy' + 9y = 0$	[[_Emden, _Fowler]]	✓
8290	$x^2y'' + 5xy' + 5y = 0$	[[_Emden, _Fowler]]	✓
8381	$y'' - y' - 2y = 5e^{2x}$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
8382	$y'' + 16y = 4\cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8383	$y'' - 4y' + 3y = 9x^2 + 4$ i.c.	[[_2nd_order, _with_lin- ear_symmetries]]	✓
8384	$y'' + y = \tan(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8428	$y'' + 2y' + y = 0$	[[_2nd_order, _missing_x]]	✓
8429	$5y'' + 2y' + 4y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
8430	$y'' + y' + 4y = 1$	[[_2nd_order, _missing_x]]	✓
8431	$y'' + y' + 4y = \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8435	$ty'' + 4y' = t^2$	[[_2nd_order, _missing_y]]	✓
8436	$(t^2 + 9)y'' + 2ty' = 0$ i.c.	[[_2nd_order, _missing_y]]	✓
8437	$t^2y'' - 3ty' + 5y = 0$	[[_Emden, _Fowler]]	✓
8438	$ty'' + y' = 0$	[[_2nd_order, _missing_y]]	✓
8439	$t^2y'' - 2y' = 0$	[[_2nd_order, _missing_y]]	✓
8441	$ty'' - y' + 4t^3y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
8442	$y'' = 0$	[[_2nd_order, _quadra- ture]]	✓
8443	$y'' = 1$	[[_2nd_order, _quadra- ture]]	✓

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#	ODE	CAS classification	Solved?
8444	$y'' = f(t)$	[[_2nd_order, _quadrature]]	✓
8445	$y'' = k$	[[_2nd_order, _quadrature]]	✓
8448	$y'' = 4 \sin(x) - 4$	[[_2nd_order, _quadrature]]	✓
8471	$z'' + 3z' + 2z = 24e^{-3t} - 24e^{-4t}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8476	$y'' + y' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
8477	$y'' + y' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
8478	$y'' + y' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
8481	$y'' - xy' - xy - x = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8482	$y'' - xy' - xy - 2x = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8483	$y'' - xy' - xy - 3x = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8484	$y'' - xy' - xy - x^2 - x = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8485	$y'' - xy' - xy - x^3 + 2 = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8486	$y'' - xy' - xy - x^4 - 6 = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8487	$y'' - xy' - xy - x^5 + 24 = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8488	$y'' - xy' - xy - x = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8489	$y'' - xy' - xy - x^2 = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8490	$y'' - xy' - xy - x^3 = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8524	$y'' - xy' - xy - x = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8529	$y'' - \frac{y'}{x} - x^2y - x^3 - \frac{1}{x} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8535	$y'' + cy' + ky = 0$	[[_2nd_order, _missing_x]]	✓

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#	ODE	CAS classification	Solved?
8537	$y'' + y = \sin(x)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8538	$y'' + y = \sin(x)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8539	$y'' + y = \sin(x)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8540	$y'' + y = \sin(x)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8541	$y'' + y = \sin(x)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8542	$y'' + y = \sin(x)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8543	$y'' + y = \sin(x)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8544	$y'' + y = \sin(x)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8545	$y'' + y' + y = \sin(x)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8546	$y'' + y' + y = \sin(x)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8547	$y'' + y' + y = \sin(x)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8549	$x^4 y'' + x^3 y' - 4x^2 y = 1$	[[_2nd_order, _with_linear_symmetries]]	✓
8550	$x^4 y'' + x^3 y' - 4x^2 y = x$	[[_2nd_order, _with_linear_symmetries]]	✓
8551	$x^2 y'' + x y' - 4y = x$	[[_2nd_order, _with_linear_symmetries]]	✓
8564	$4x^2 y'' + y = 8\sqrt{x}(\ln(x) + 1)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8633	$y'' = (x^2 + 3)y$	[[_2nd_order, _with_linear_symmetries]]	✓
8636	$y'' + 20y' + 500y = 100000 \cos(100x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8639	$y'' + 2xy' + (x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8640	$y'' + 2 \cot(x)y' - y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
8641	$x^2 y'' + xy' + \left(x^2 - \frac{1}{4}\right) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8642	$4x^2 y'' + (-8x^2 + 4x) y' + (4x^2 - 4x - 1) y = 4\sqrt{x} e^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8643	$xy'' - (2x + 2) y' + (x + 2) y = 6x^3 e^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8653	$y'' + 2y' - 24y = 16 - (x + 2) e^{4x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8657	$xy'' - (2x + 1) y' + (x + 1) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8748	$y'' = 0$	[[_2nd_order, _quadrature]]	✓
8751	$ay'' = 0$	[[_2nd_order, _quadrature]]	✓
8754	$y'' = 1$	[[_2nd_order, _quadrature]]	✓
8756	$y'' = x$	[[_2nd_order, _quadrature]]	✓
8759	$y'' + y' = 0$	[[_2nd_order, _missing_x]]	✓
8762	$y'' + y' = 1$	[[_2nd_order, _missing_x]]	✓
8765	$y'' + y' = x$	[[_2nd_order, _missing_y]]	✓
8768	$y'' + y' + y = 0$	[[_2nd_order, _missing_x]]	✓
8771	$y'' + y' + y = 1$	[[_2nd_order, _missing_x]]	✓
8772	$y'' + y' + y = x$	[[_2nd_order, _with_linear_symmetries]]	✓
8773	$y'' + y' + y = x + 1$	[[_2nd_order, _with_linear_symmetries]]	✓
8774	$y'' + y' + y = x^2 + x + 1$	[[_2nd_order, _with_linear_symmetries]]	✓
8775	$y'' + y' + y = x^3 + x^2 + x + 1$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8776	$y'' + y' + y = \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8777	$y'' + y' + y = \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8778	$y'' + y' = 1$	[[_2nd_order, _missing_x]]	✓
8779	$y'' + y' = x$	[[_2nd_order, _missing_y]]	✓

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#	ODE	CAS classification	Solved?
8780	$y'' + y' = x + 1$	[[_2nd_order, _missing_y]]	✓
8781	$y'' + y' = x^2 + x + 1$	[[_2nd_order, _missing_y]]	✓
8782	$y'' + y' = x^3 + x^2 + x + 1$	[[_2nd_order, _missing_y]]	✓
8783	$y'' + y' = \sin(x)$	[[_2nd_order, _missing_y]]	✓
8784	$y'' + y' = \cos(x)$	[[_2nd_order, _missing_y]]	✓
8785	$y'' + y = 1$	[[_2nd_order, _missing_x]]	✓
8786	$y'' + y = x$	[[_2nd_order, _with_linear_symmetries]]	✓
8787	$y'' + y = x + 1$	[[_2nd_order, _with_linear_symmetries]]	✓
8788	$y'' + y = x^2 + x + 1$	[[_2nd_order, _with_linear_symmetries]]	✓
8789	$y'' + y = x^3 + x^2 + x + 1$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8790	$y'' + y = \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8791	$y'' + y = \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8813	$y'' - \frac{2y}{x^2} = x e^{-\sqrt{x}}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8814	$y'' - \frac{y'}{\sqrt{x}} + \frac{(x + \sqrt{x} - 8)y}{4x^2} = x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8815	$y'' + \frac{2y'}{x} + \frac{a^2 y}{x^4} = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
8816	$(-x^2 + 1)y'' - xy' - c^2 y = 0$	[_Gegenbauer, [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
8818	$x^2 y'' - 3xy' + 3y = 2x^3 - x^2$	[[_2nd_order, _with_linear_symmetries]]	✓
8822	$xy'' - y' + 4x^3 y = 8x^3 \sin(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8823	$xy'' - y' + 4x^3 y = x^5$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8826	$y'' - x^2 y' + xy = x^{m+1}$	[[_2nd_order, _with_linear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
8827	$y'' - \frac{y'}{\sqrt{x}} + \frac{(x + \sqrt{x} - 8)y}{4x^2} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8829	$y'' - 4xy' + (4x^2 - 1)y = -3e^{x^2} \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8830	$y'' - 2bxy' + b^2x^2y = x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8831	$y'' - 4xy' + (4x^2 - 3)y = e^{x^2}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8832	$y'' - 2 \tan(x)y' + 5y = e^{x^2} \sec(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8833	$x^2y'' - 2xy' + 2(x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8834	$4x^2y'' + 4x^5y' + (x^8 + 6x^4 + 4)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8836	$xy'' + 2y' - xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8837	$xy'' + 2y' + xy = 0$	[_Lienard]	✓
8845	$x^2y'' - 4xy' + 6y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
8849	$(x^2 - 1)y'' - 2xy' + 2y = 0$	[_Gegenbauer]	✓
8850	$(x^2 - 1)y'' - 6xy' + 12y = 0$	[_Gegenbauer]	✓
8851	$(x^2 + 3)y'' - 7xy' + 16y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8852	$(x^2 - 1)y'' + 8xy' + 12y = 0$	[_Gegenbauer]	✓
8853	$3y'' + xy' - 4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8854	$5y'' - 2xy' + 10y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8855	$y'' - x^2y' - 3xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8856	$(x^2 + 1)y'' + 2xy' - 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8857	$y'' + xy' - 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
8858	$(x^2 - 6x + 10)y'' - 4(x - 3)y' + 6y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8859	$(x^2 + 6x)y'' + (3x + 9)y' - 3y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8860	$ty'' + (t^2 - 1)y' + t^2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8861	$t^2y'' - t(t + 2)y' + (t + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8862	$ty'' - (t + 1)y' + y = 0$	[_Laguerre]	✓
8863	$(-t + 1)y'' + ty' - y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8864	$x^2y'' + xy' + \left(x^2 - \frac{1}{4}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8865	$ty'' - (t + 1)y' + y = 0$	[_Laguerre]	✓
8866	$(-t + 1)y'' + ty' - y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8867	$y'' + xy' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8868	$(x^2 + 1)y'' - 4xy' + 6y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8869	$(1 - x)y'' + xy' - y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8870	$2y'' + xy' + 3y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8871	$y'' + xy' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8872	$(1 - x)y'' + xy' - y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8873	$y'' + xy' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8874	$(-x^2 + 4)y'' + xy' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8875	$4x^2y'' - 4xy' + (-16x^2 + 3)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8876	$(x - 1)y'' - xy' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8877	$x^2y'' - 2xy' + (x^2 + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
8878	$(x^2 - 2x)y'' + (-x^2 + 2)y' + (2x - 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8879	$4x^2y'' + (-8x^2 + 4x)y' + (4x^2 - 4x - 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8880	$y'' + 4xy' + (4x^2 + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8881	$(2x + 1)y'' - 2y' - (2x + 3)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8882	$xy'' - (2x + 2)y' + (x + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8883	$x^2y'' - 2xy' + (x^2 + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8884	$4x^2y'' - 4xy' + (-16x^2 + 3)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8885	$4x^2y'' - 4xy' + (4x^2 + 3)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8886	$x^2y'' - 2xy' - (x^2 - 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8887	$x^2y'' - 2x(x + 1)y' + (x^2 + 2x + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8888	$x^2y'' - 2x(x + 2)y' + (x^2 + 4x + 6)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8889	$x^2y'' - 4xy' + (x^2 + 6)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8890	$(x - 1)y'' - xy' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8891	$4x^2y'' - 4x(x + 1)y' + (2x + 3)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8892	$(3x - 1)y'' - (2 + 3x)y' - (6x - 8)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8893	$(x + 2)y'' + xy' + 3y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8894	$x^2(1 - x)y'' + x(4 + x)y' + (2 - x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8895	$x^2(x + 1)y'' + x(2x + 1)y' - (4 + 6x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8896	$x^2(2x^2 + 1)y'' + x(2x^2 + 4)y' + 2(-x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
8897	$x^2(x^2 + 2)y'' + 2x(x^2 + 5)y' + 2(-x^2 + 3)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8898	$(x^2 + 1)y'' + 6xy' + 6y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8899	$(x^2 + 1)y'' + 2xy' - 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8900	$(x^2 + 1)y'' - 8xy' + 20y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8901	$(-x^2 + 1)y'' - 8xy' - 12y = 0$	[_Gegenbauer]	✓
8902	$(2x^2 + 1)y'' + 7xy' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8903	$(-x^2 + 1)y'' - 5xy' - 4y = 0$	[_Gegenbauer]	✓
8904	$(x^2 + 1)y'' - 10xy' + 28y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8905	$y'' + xy' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8906	$(2x^2 + 1)y'' - 9xy' - 6y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8907	$(2x^2 - 8x + 11)y'' - 16(-2 + x)y' + 36y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8908	$y'' + (x - 3)y' + 3y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8909	$(x^2 - 8x + 14)y'' - 8(x - 4)y' + 20y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8910	$(2x^2 + 4x + 5)y'' - 20(x + 1)y' + 60y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8911	$(x^3 + 1)y'' + 7x^2y' + 9xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8912	$(2x^5 + 1)y'' + 14x^4y' + 10x^3y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8913	$y'' + x^6y' + 7x^5y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8914	$(x^8 + 1)y'' - 16x^7y' + 72x^6y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8915	$y'' + x^5y' + 6x^4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8916	$(3x + 1)y'' + xy' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
8917	$(3x^2 + x + 1)y'' + (2 + 15x)y' + 12y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8918	$(x + 2)y'' + (x + 1)y' + 3y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8919	$(4 + x)y'' + (x + 2)y' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8920	$(2x^2 + 3x)y'' + 10(x + 1)y' + 8y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8921	$x^2y'' - (6 - 7x)y' + 8y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8922	$(2x^2 + x + 1)y'' + (1 + 7x)y' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8923	$(x + 3)y'' + (2x + 1)y' - (2 - x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8924	$y'' + 3xy' + (2x^2 + 4)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8925	$(2 + 4x)y'' - 4y' - (6 + 4x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8926	$y'' - 3xy' + (2x^2 + 5)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8927	$2y'' + 5xy' + (2x^2 + 4)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8928	$y'' + 4xy' + (4x^2 + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8929	$y'' + 4xy' + (4x^2 + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8930	$2x^2(x^2 + x + 1)y'' + x(11x^2 + 11x + 9)y' + (7x^2 + 10x + 6)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8931	$3x^2y'' + 2x(-2x^2 + x + 1)y' + (-8x^2 + 2x)y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, ' _with_symmetry_[0,F(x)]']]	✓
8932	$12x^2(x + 1)y'' + x(3x^2 + 35x + 11)y' - (-5x^2 - 10x + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8933	$x^2(10x^2 + x + 5)y'' + x(48x^2 + 3x + 4)y' + (36x^2 + x)y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, ' _with_symmetry_[0,F(x)]']]	✓

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#	ODE	CAS classification	Solved?
8934	$18x^2(x+1)y'' + 3x(x^2+11x+5)y' - (-5x^2-2x+1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8935	$2x^2y'' + x(2x+3)y' - (1-x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8936	$2x^2y'' + x(x+5)y' - (2-3x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8937	$3x^2y'' + x(x+1)y' - y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8938	$2x^2y'' - xy' + (-2x+1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8939	$3x^2y'' + x(x+1)y' - (3x+1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8940	$2x^2(x+3)y'' + x(1+5x)y' + (x+1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8941	$x^2(4+x)y'' - x(1-3x)y' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8942	$2x^2y'' + 5xy' + (x+1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8943	$6x^2y'' + x(10-x)y' - (x+2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8944	$x^2(4x+3)y'' + x(11+4x)y' - (4x+3)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8945	$2x^2(2+3x)y'' + x(4+11x)y' - (1-x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8946	$x^2(x+2)y'' + 5x(1-x)y' - (2-8x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8947	$8x^2(-x^2+1)y'' + 2x(-13x^2+1)y' + (-9x^2+1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8948	$x^2(x^2+1)y'' - 2x(-x^2+2)y' + 4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8949	$x(x^2+3)y'' + (-x^2+2)y' - 8xy = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
8950	$4x^2(-x^2+1)y'' + x(-19x^2+7)y' - (14x^2+1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8951	$3x^2(-x^2+2)y'' + x(-11x^2+1)y' + (-5x^2+1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
8952	$2x^2(x^2+2)y'' - x(-7x^2+12)y' + (3x^2+7)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8953	$2x^2(x^2+2)y'' + x(7x^2+4)y' - (-3x^2+1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8954	$2x^2(2x^2+1)y'' + 5x(6x^2+1)y' - (-40x^2+2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8955	$x(x^2+1)y'' + (7x^2+4)y' + 8xy = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
8956	$2x^2(x^2+1)y'' + x(8x^2+3)y' - (-4x^2+3)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8957	$9x^2y'' + 3x(x^2+3)y' - (-5x^2+1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8958	$6x^2y'' + x(6x^2+1)y' + (9x^2+1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8959	$9x^2(x^2+1)y'' + 3x(13x^2+3)y' - (-25x^2+1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8960	$4x^2(x^2+1)y'' + 4x(6x^2+1)y' - (-25x^2+1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8961	$8x^2(2x^2+1)y'' + 2x(34x^2+5)y' - (-30x^2+1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8962	$2x^2(x+1)y'' - x(1-3x)y' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8963	$6x^2(2x^2+1)y'' + x(50x^2+1)y' + (30x^2+1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8964	$28x^2(1-3x)y'' - 7x(5+9x)y' + 7(2+9x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8965	$8x^2(-x^2+2)y'' + 2x(-21x^2+10)y' - (35x^2+2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8966	$4x^2(x^2+3x+1)y'' - 4x(-3x^2-3x+1)y' + 3(x^2-x+1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8967	$3x^2(x+1)^2y'' - x(-11x^2-10x+1)y' + (5x^2+1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8968	$4x^2(x^2+2x+3)y'' - x(-15x^2-14x+3)y' + (7x^2+3)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8969	$x^2(x^2-2x+1)y'' - x(x+3)y' + (4+x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
8970	$2x^2(x+2)y'' + 5x^2y' + (x+1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8971	$x^2(-x^2+2)y'' - 2x(2x^2+1)y' + (-2x^2+2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8972	$x^2y'' - x(5-x)y' + (9-4x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8973	$4x^2(x^2+x+1)y'' + 12x^2(x+1)y' + (3x^2+3x+1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8974	$x^2(x^2+x+1)y'' - x(-2x^2-4x+1)y' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8975	$9x^2y'' + 3x(-2x^2+3x+5)y' + (-14x^2+12x+1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8976	$x^2(2x+1)y'' + x(3x^2+14x+5)y' + (12x^2+18x+4)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8977	$16x^2y'' + 4x(2x^2+x+6)y' + (18x^2+5x+1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8978	$9x^2(x+1)y'' + 3x(-x^2+11x+5)y' + (-7x^2+16x+1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8979	$36x^2(-2x+1)y'' + 24x(1-9x)y' + (1-70x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8980	$x^2(x+1)y'' - x(3-x)y' + 4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8981	$x^2(-2x+1)y'' - x(5-4x)y' + (9-4x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8982	$2x^2(x+2)y'' + x^2y' + (1-x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8983	$2x^2(x+1)y'' - x(6-x)y' + (8-x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8984	$x^2(2x+1)y'' + x(5+9x)y' + (3x+4)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8985	$x^2(-2x+1)y'' - x(4x+5)y' + (9+4x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8986	$x^2(1-x)y'' + x(7+x)y' + (9-x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8987	$x^2y'' - x(-x^2+1)y' + (x^2+1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
8988	$x^2(x^2 + 1)y'' - 3x(-x^2 + 1)y' + 4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8989	$4x^2y'' + 2x^3y' + (3x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8990	$x^2(x^2 + 1)y'' - x(-2x^2 + 1)y' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8991	$2x^2(x^2 + 2)y'' + 7x^3y' + (3x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8992	$x^2(x^2 + 1)y'' - x(-4x^2 + 1)y' + (2x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8993	$4x^2(x^2 + 4)y'' + 3x(3x^2 + 8)y' + (-9x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8994	$3x^2(x^2 + 3)y'' + x(11x^2 + 3)y' + (5x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8995	$9x^2y'' - 3x(-2x^2 + 7)y' + (2x^2 + 25)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8996	$x^2y'' - x(-x^2 + 1)y' + (x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8997	$x^2(-2x + 1)y'' + 3xy' + (1 + 4x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8998	$x(x + 1)y'' + (1 - x)y' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8999	$x^2(1 - x)y'' - x(3 - 5x)y' + (4 - 5x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9000	$x^2(x^2 + 1)y'' - x(9x^2 + 1)y' + (25x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9001	$9x^2y'' + 3x(-x^2 + 1)y' + (7x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9002	$x(x^2 + 1)y'' + (-x^2 + 1)y' - 8xy = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
9003	$4x^2y'' + 2x(-x^2 + 4)y' + (7x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9004	$4x^2(x + 1)y'' + 8x^2y' + (x + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9005	$9x^2(x + 3)y'' + 3x(3 + 7x)y' + (4x + 3)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9006	$x^2(-x^2 + 2)y'' - x(3x^2 + 2)y' + (-x^2 + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
9007	$16x^2(x^2 + 1)y'' + 8x(9x^2 + 1)y' + (49x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9008	$x^2(3x + 4)y'' - x(4 - 3x)y' + 4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9009	$4x^2(x^2 + 3x + 1)y'' + 8x^2(2x + 3)y' + (9x^2 + 3x + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9010	$x^2(1 - x)^2y'' - x(-3x^2 + 2x + 1)y' + (x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9011	$9x^2(x^2 + x + 1)y'' + 3x(13x^2 + 7x + 1)y' + (25x^2 + 4x + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9012	$2x^2(x + 2)y'' - x(4 - 7x)y' - (5 - 3x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9013	$x^2(-2x + 1)y'' + x(8 - 9x)y' + (6 - 3x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9014	$x^2(x^2 + 1)y'' + x(10x^2 + 3)y' - (-14x^2 + 15)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9015	$x^2(-2x^2 + 1)y'' + x(-13x^2 + 7)y' - 14x^2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9016	$4x^2(x + 1)y'' + 4x(2x + 1)y' - (3x + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9017	$2x^2(2 + 3x)y'' + x(4 + 21x)y' - (1 - 9x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9018	$x^2y'' + x(x + 2)y' - (2 - 3x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9019	$4x^2(x + 1)y'' + 4x(3 + 8x)y' - (5 - 49x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9020	$x^2(x + 1)y'' - x(3 + 10x)y' + 30xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9021	$x^2y'' + x(x + 1)y' - 3(x + 3)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9022	$x^2(2x + 1)y'' + x(9 + 13x)y' + (7 + 5x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9023	$4x^2(2x + 1)y'' - 2x(4 - x)y' - (7 + 5x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9024	$3x^2(x + 3)y'' - x(15 + x)y' - 20y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9025	$x^2(x + 1)y'' + x(1 - 10x)y' - (9 - 10x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
9026	$x^2(x+1)y'' + 3x^2y' - (6-x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9027	$x^2(2x+1)y'' - 2x(3+14x)y' + (6+100x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9028	$x^2(x+1)y'' - x(6+11x)y' + (6+32x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9029	$4x^2(x+1)y'' + 4x(1+4x)y' - (49+27x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9030	$x^2(x^2+1)y'' - x(-2x^2+7)y' + 12y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9031	$x^2y'' - x(-x^2+7)y' + 12y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9032	$x^2y'' + x(2x^2+1)y' - (-10x^2+1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9033	$x^2y'' + x(-2x^2+1)y' - 4(2x^2+1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9034	$x^2y'' + x(-3x^2+1)y' - 4(-3x^2+1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9035	$x^2(x^2+1)y'' + x(11x^2+5)y' + 24x^2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9036	$4x^2(x^2+1)y'' + 8xy' - (-x^2+35)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9037	$x^2(x^2+1)y'' - x(-x^2+5)y' - (25x^2+7)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9038	$x^2(x^2+1)y'' + x(2x^2+5)y' - 21y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9039	$4x^2(x^2+1)y'' + 4x(x^2+2)y' - (x^2+15)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9040	$y'' - \frac{2(t+1)y'}{t^2+2t-1} + \frac{2y}{t^2+2t-1} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9041	$y'' - 4ty' + (4t^2-2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9042	$(-t^2+1)y'' - 2ty' + 2y = 0$	[_Gegenbauer]	✓
9043	$(t^2+1)y'' - 2ty' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9044	$(-t^2+1)y'' - 2ty' + 6y = 0$	[_Gegenbauer]	✓
9045	$(2t+1)y'' - 4(t+1)y' + 4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
9046	$t^2y'' + ty' + \left(t^2 - \frac{1}{4}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9047	$y'' - \frac{2ty'}{t^2 + 1} + \frac{2y}{t^2 + 1} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9048	$y'' + (t^2 + 2t + 1)y' - (4 + 4t)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9049	$2ty'' + (1 - 2t)y' - y = 0$	[_Laguerre]	✓
9050	$2ty'' + (t + 1)y' - 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9051	$2t^2y'' - ty' + (t + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9052	$2t^2y'' + (t^2 - t)y' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9053	$t^2y'' + (-t^2 + t)y' - y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9054	$ty'' - (t^2 + 2)y' + ty = 0$	[_Lienard]	✓
9055	$t^2y'' + t(t + 1)y' - y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9056	$ty'' - (t + 4)y' + 2y = 0$	[_Laguerre]	✓
9057	$t^2y'' + (t^2 - 3t)y' + 3y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9058	$ty'' + ty' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9059	$ty'' + (-t^2 + 1)y' + 4ty = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9060	$t^2y'' - t(t + 1)y' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9061	$y'' + 4xy' + (4x^2 + 6)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9062	$(-z^2 + 1)y'' - 3zy' + \lambda y = 0$	[_Gegenbauer]	✓
9063	$4zy'' + 2(1 - z)y' - y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9064	$f'' + 2(z - 1)f' + 4f = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9065	$zy'' - 2y' + yz = 0$	[_Lienard]	✓

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#	ODE	CAS classification	Solved?
9066	$zy'' + (2z - 3)y' + \frac{4y}{z} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9067	$y'' + 2xy' + 4y = 0$	[_erf]	✓
9068	$y'' + xy' + 3y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9069	$y'' - x^2y' - 3xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9070	$(-4x^2 + 1)y'' - 20xy' - 16y = 0$	[_Gegenbauer]	✓
9071	$(x^2 - 1)y'' - 6xy' + 12y = 0$	[_Gegenbauer]	✓
9072	$y'' + xy' + (x + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9073	$(2x^2 + 1)y'' + 7xy' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9074	$4y'' + xy' + 4y = 0$	[_Lienard]	✓
9075	$y'' + xy' - 4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9076	$4xy'' - xy' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9077	$6x^2y'' + x(1 + 18x)y' + (1 + 12x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9078	$3x^2y'' - x(8 + x)y' + 6y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9079	$2x^2y'' - x(2x + 1)y' + 2(4x - 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9080	$4x^2y'' - 4x^2y' + (2x + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9081	$x^2y'' + x(3 - 2x)y' + (-2x + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9082	$x^2y'' - x(x + 3)y' + (4 - x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9083	$x^2y'' + x(3 - x)y' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9084	$x^2y'' - (2\sqrt{5} - 1)xy' + \left(\frac{19}{4} - 3x^2\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9085	$x^2y'' + x(x - 3)y' + (4 - x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
9086	$x^2y'' + x^2y' - (x + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9087	$x^2y'' + 2x^2y' + \left(x - \frac{3}{4}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9088	$x^2(x + 1)y'' + x^2y' - 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9089	$x^2y'' + x(x^2 + 6)y' + 6y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9090	$x^2y'' + x(1 - x)y' - y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9091	$x^2y'' - x(x + 3)y' + 4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9092	$x^2y'' - x^2y' - 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9093	$x^2y'' - x^2y' - (2 + 3x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9094	$x^2y'' + x(5 - x)y' + 4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9095	$4x^2y'' + 4x(1 - x)y' + (2x - 9)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9096	$x^2y'' + 2x(x + 2)y' + 2(x + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9097	$x^2y'' - x(1 - x)y' + (1 - x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9098	$4x^2y'' + 4x(2x + 1)y' + (4x - 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9099	$x^2y'' + x(4 + x)y' + (x + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9100	$x^2y'' + xy' + \left(x^2 - \frac{9}{4}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9101	$xy'' + 2y' + xy = 0$	[_Lienard]	✓
9102	$2xy'' + 5(-2x + 1)y' - 5y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9103	$x^2y'' + xy' + \left(x^2 - \frac{1}{4}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9104	$xy'' + (x + n)y' + (n + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
9105	$x^4 y'' + xy' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9106	$x^2 y'' + (2x^2 + x) y' - 4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9107	$(4x^3 - 14x^2 - 2x) y'' - (6x^2 - 7x + 1) y' + (6x - 1) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9108	$x^2 y'' + x^2 y' + (-2 + x) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9109	$x^2 y'' - x^2 y' + (-2 + x) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9110	$x^2(1 - 4x) y'' - \frac{xy'}{2} - \frac{3xy}{4} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9111	$x^2 y'' + (x^2 + x) y' + (x - 9) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9112	$x^2 y'' + x(x + 1) y' + (3x - 1) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9113	$x^2 y'' - (x^2 + 4x) y' + 4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9114	$2x^2 y'' - (2 + 3x) y' + \frac{(2x - 1) y}{x} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9115	$x(1 - x) y'' + \left(\frac{3}{2} - 2x\right) y' - \frac{y}{4} = 0$	[_Jacobi]	✓
9116	$2x(1 - x) y'' + xy' - y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9117	$2x(1 - x) y'' + (1 - 11x) y' - 10y = 0$	[_Jacobi]	✓
9118	$x(1 - x) y'' + \frac{(-2x + 1) y'}{3} + \frac{20y}{9} = 0$	[_Jacobi]	✓
9119	$4y'' + \frac{3(-x^2 + 2) y}{(-x^2 + 1)^2} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9120	$u'' - \frac{2u'}{x} - a^2 u = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9121	$u'' + \frac{2u'}{x} - a^2 u = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9122	$u'' + \frac{2u'}{x} + a^2 u = 0$	[[_2nd_order, _with_linear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
9123	$u'' + \frac{4u'}{x} - a^2u = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9124	$u'' + \frac{4u'}{x} + a^2u = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9125	$y'' - a^2y = \frac{6y}{x^2}$	[[_2nd_order, _with_linear_symmetries]]	✓
9126	$y'' + n^2y = \frac{6y}{x^2}$	[[_2nd_order, _with_linear_symmetries]]	✓
9127	$x^2y'' + xy' - \left(x^2 + \frac{1}{4}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9128	$x^2y'' + xy' + \frac{(-9a^2 + 4x^2)y}{4a^2} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9129	$x^2y'' + xy' + \left(x^2 - \frac{25}{4}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9130	$y'' + qy' = \frac{2y}{x^2}$	[[_2nd_order, _with_linear_symmetries]]	✓
9131	$xy'' + 3y' + 4x^3y = 0$	[[_Emden, _Fowler]]	✓
9132	$(x^2 + 2x)y'' - 2(x + 1)y' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9133	$(x^2 + 2x)y'' - 2(x + 1)y' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9134	$(x^2 + 1)y'' - 2xy' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9135	$(x^2 + 1)y'' - 2xy' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9136	$y'' - 4xy' + (4x^2 - 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9137	$y'' - 4xy' + (4x^2 - 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9138	$(2x - 3)y'' - xy' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9139	$y'' - xy' - 3y = 0$	[_Hermite]	✓
9140	$(x^2 + 1)y'' - xy' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9141	$y'' - xy' + 2y = 0$	[_Hermite]	✓

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#	ODE	CAS classification	Solved?
9142	$(-x^2 + 1)y'' - y' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9143	$x(x + 1)^2 y'' + (-x^2 + 1)y' + (x - 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9144	$2xy'' - y' + 2y = 0$	[[_Emden, _Fowler]]	✓
9145	$xy'' + xy' - 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9146	$x(x - 1)^2 y'' - 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9147	$y'' - 2xy' + x^2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9148	$x(-x^2 + 2)y'' - (x^2 + 4x + 2)((1 - x)y' + y) = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9149	$x^2(x + 1)y'' - (2x + 1)(-y + xy') = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9150	$2(2 - x)x^2y'' - x(4 - x)y' + (3 - x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9151	$x^2(1 - x)y'' + (5x - 4)xy' + (6 - 9x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9152	$xy'' + (4x^2 + 1)y' + 4x(x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9153	$y'' - 2xy' + 8y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9154	$(-x^2 + 1)y'' - 2xy' + 12y = 0$	[_Gegenbauer]	✓
9155	$x(x + 2)y'' + 2(x + 1)y' - 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9156	$x(x + 2)y'' + (x + 1)y' - 4y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)']]]	✓
9157	$(x - 1)y'' - xy' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9158	$(x^2 + 1)y'' - 2xy' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9159	$(x^2 - 2x + 10)y'' + xy' - 4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9160	$(x^2 - 2x + 10)y'' + xy' - 4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
9161	$y'' - xy' + 2y = 0$	[_Hermite]	✓
9162	$(x + 2)y'' + xy' - y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9163	$(x^2 + 1)y'' - 6y = 0$	[[_Emden, _Fowler]]	✓
9164	$(x^2 + 2)y'' + 3xy' - y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9165	$(x - 1)y'' - xy' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9166	$x^2y'' + \left(\frac{5}{3}x + x^2\right)y' - \frac{y}{3} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9167	$2xy'' - y' + 2y = 0$	[[_Emden, _Fowler]]	✓
9168	$2xy'' - (2x + 3)y' + y = 0$	[_Laguerre]	✓
9169	$2x^2y'' + 3xy' + (2x - 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9170	$xy'' + 2y' - xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9171	$x^2y'' + xy' + \left(x^2 - \frac{1}{4}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9172	$xy'' + (x - 6)y' - 3y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9173	$x^4y'' + \lambda y = 0$	[[_Emden, _Fowler]]	✓
9174	$4x^2y'' + 4xy' + (4x^2 - 25)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9175	$x^2y'' + xy' + \left(36x^2 - \frac{1}{4}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9176	$x^2y'' + (x^2 - 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9177	$xy'' + 3y' + x^3y = 0$	[[_Emden, _Fowler]]	✓
9178	$x^2y'' + 4xy' + (x^2 + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9179	$16x^2y'' + 32xy' + (x^4 - 12)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9180	$y'' - x^2y' + xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9181	$xy'' - (x + 2)y' + 2y = 0$	[_Laguerre]	✓

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#	ODE	CAS classification	Solved?
9182	$y'' + xy' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9183	$(-x^2 + 1)y'' - 2xy' + 2y = 0$	[_Gegenbauer]	✓
9184	$y'' - 4xy' + (4x^2 - 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9185	$(-x^2 + 1)y'' - 2xy' + 30y = 0$	[_Gegenbauer]	✓
9186	$xy'' + 2y' + xy = 0$	[_Lienard]	✓
9187	$xy'' + (2x + 1)y' + (x + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9188	$2x(x - 1)y'' - (x + 1)y' + y = 0$	[_Jacobi]	✓
9189	$xy'' + 2y' + 4xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9190	$xy'' + (2 - 2x)y' + (-2 + x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9191	$x^2y'' + 6xy' + (4x^2 + 6)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9192	$xy'' + (-2x + 1)y' + (x - 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9193	$x(1 - x)y'' + \left(\frac{1}{2} + 2x\right)y' - 2y = 0$	[_Jacobi]	✓
9194	$4(t^2 - 3t + 2)y'' - 2y' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9195	$2(t^2 - 5t + 6)y'' + (2t - 3)y' - 8y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9196	$3t(t + 1)y'' + ty' - y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9197	$x^2y'' + \frac{(x + \frac{3}{4})y}{4} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9198	$x^2y'' + xy' + \frac{(x^2 - 1)y}{4} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9199	$xy'' + (-2x + 1)y' + (x - 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9200	$xy'' - (x + 1)y' + y = 0$	[_Laguerre]	✓
9201	$xy'' + 3y' + 4x^3y = 0$	[[_Emden, _Fowler]]	✓
9202	$x^2(-x^2 + 1)y'' + 2x(-x^2 + 1)y' - 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
9203	$2xy'' + (-2 + x)y' - y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9204	$xy'' + 2y' + xy = 0$	[_Lienard]	✓
9205	$y'' + 2x^2y' + (x^4 + 2x - 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9206	$u'' + \frac{u}{x^2} = 0$	[[_Emden, _Fowler]]	✓
9207	$u'' - (2x + 1)u' + (x^2 + x - 1)u = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9208	$y'' + 2y' + \left(1 + \frac{2}{(3x + 1)^2}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9209	$x^2y'' - 2xy' + (x^2 + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9210	$y'' + \frac{2y'}{x} - \frac{2y}{(x + 1)^2} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9211	$y'' + \frac{y}{2x^4} = 0$	[[_Emden, _Fowler]]	✓
9212	$y'' - xy' - xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9213	$y'' - xy' - xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9214	$y'' - xy' - xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9215	$y'' - xy' - xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9216	$y'' - xy' - xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9217	$y'' - xy' - xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9218	$y'' - xy' - xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9219	$y'' - xy' - xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9220	$y'' - xy' - xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9221	$y'' - xy' - xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9222	$y'' - xy' - xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
9223	$xy'' + 2y' + xy = 0$	[_Lienard]	✓
9224	$2x^2y'' + 3xy' - xy = 0$	[[_Emden, _Fowler]]	✓
9225	$x^2y'' + (3x^2 + 2x)y' - 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9226	$2x^2(x^2 + x + 1)y'' + x(11x^2 + 11x + 9)y' + (7x^2 + 10x + 6)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9227	$xy'' + (x + 1)y' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9228	$x^2(x^2 - 2x + 1)y'' - x(x + 3)y' + (4 + x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9229	$2x^2(x + 2)y'' + 5x^2y' + (x + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9230	$x^2y'' + 4xy' + (x^2 + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9231	$x^2y'' + xy' + \left(x^2 - \frac{1}{4}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9232	$x^2y'' - xy' - \left(x^2 + \frac{5}{4}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9233	$x^2y'' + xy' + \left(x^2 - \frac{1}{4}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9234	$x^2y'' + 3xy' + 4x^4y = 0$	[[_Emden, _Fowler]]	✓
9235	$y'' = (x^2 + 3)y$	[[_2nd_order, _with_linear_symmetries]]	✓
9236	$y'' + 2xy' + (x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9237	$x^3y'' + y' - \frac{y}{x} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9238	$x^2y'' + xy' + \left(x^2 - \frac{1}{4}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9239	$4x^2y'' + (-8x^2 + 4x)y' + (4x^2 - 4x - 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9240	$y'' - y' + y = 0$	[[_2nd_order, _missing_x]]	✓
9241	$(x^2 - 1)y'' - 2xy' + 2y = 0$	[_Gegenbauer]	✓
9242	$x^2y'' - x(x + 2)y' + (x + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
9243	$(x + 1)y'' - (x + 2)y' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9244	$(-x^2 + 1)y'' + 2xy' - 2y = 0$	[_Gegenbauer]	✓
9245	$(-x^2 + 1)y'' - 2xy' + 2y = 0$	[_Gegenbauer]	✓
9246	$x^2y'' + xy' + \left(x^2 - \frac{1}{4}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9247	$(x^2 - 1)y'' - 6xy' + 12y = 0$	[_Gegenbauer]	✓
9248	$(x^2 + 3)y'' - 7xy' + 16y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9249	$(x^2 - 1)y'' + 8xy' + 12y = 0$	[_Gegenbauer]	✓
9250	$3y'' + xy' - 4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9251	$5y'' - 2xy' + 10y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9252	$y'' - x^2y' - 3xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9253	$(x^2 + 1)y'' + 2xy' - 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9254	$y'' + xy' - 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9255	$(x^2 - 6x + 10)y'' - 4(x - 3)y' + 6y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9256	$(x^2 + 6x)y'' + (3x + 9)y' - 3y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9257	$ty'' + (t^2 - 1)y' + t^3y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9258	$t^2y'' - t(t + 2)y' + (t + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9259	$(x - 1)y'' - xy' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9260	$x^2y'' - \left(x - \frac{3}{16}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9261	$x^2y'' + xy' + \left(x^2 - \frac{1}{4}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9262	$t^2y'' - t(t + 2)y' + (t + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
9263	$ty'' - (t+1)y' + y = 0$	[_Laguerre]	✓
9264	$(-t+1)y'' + ty' - y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9265	$x^2y'' + xy' + \left(x^2 - \frac{1}{4}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9266	$ty'' - (t+1)y' + y = 0$	[_Laguerre]	✓
9267	$(-t+1)y'' + ty' - y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9268	$y'' + xy' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9269	$(x^2+1)y'' - 4xy' + 6y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9270	$(1-x)y'' + xy' - y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9271	$2y'' + xy' + 3y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9272	$y'' + xy' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9273	$(1-x)y'' + xy' - y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9274	$y'' + xy' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9275	$(-x^2+4)y'' + xy' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9276	$4x^2y'' - 4xy' + (-16x^2+3)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9277	$(x-1)y'' - xy' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9278	$x^2y'' - 2xy' + (x^2+2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9279	$(x^2-2x)y'' + (-x^2+2)y' + (2x-2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9280	$(2x+1)y'' - 2y' - (2x+3)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9281	$4x^2y'' + (-8x^2+4x)y' + (4x^2-4x-1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9282	$y'' + 4xy' + (4x^2+2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
9283	$x^2y'' + 2x(x-1)y' + (x^2 - 2x + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9284	$x^2y'' - x(2x-1)y' + (x^2 - x - 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9285	$(-2x+1)y'' + 2y' + (2x-3)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9286	$2xy'' + (1+4x)y' + (2x+1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9287	$xy'' - (2x+1)y' + (x+1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9288	$4x^2y'' - 4x(x+1)y' + (2x+3)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9289	$xy'' + (2-2x)y' + (-2+x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9290	$x^2y'' - 2xy' + 2y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
9291	$xy'' - (2x+2)y' + (x+2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9292	$x^2y'' - 2xy' + (x^2+2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9293	$xy'' - (1+4x)y' + (2+4x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9294	$4x^2y'' - 4xy' + (-16x^2+3)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9295	$(2x+1)xy'' - 2(2x^2-1)y' - 4(x+1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9296	$(x^2-2x)y'' + (-x^2+2)y' + (2x-2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9297	$xy'' - (1+4x)y' + (2+4x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9298	$(3x-1)y'' - (2+3x)y' - (6x-8)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9299	$(x+1)^2y'' - 2(x+1)y' - (x^2+2x-1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9300	$4x^2y'' + (-8x^2+4x)y' + (4x^2-4x-1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
9301	$y'' + 4xy' + (4x^2 + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9302	$(2x + 1)y'' - 2y' - (2x + 3)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9303	$xy'' - (2x + 2)y' + (x + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9304	$x^2y'' - 2xy' + (x^2 + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9305	$4x^2y'' - 4xy' + (-16x^2 + 3)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9306	$4x^2y'' - 4xy' + (4x^2 + 3)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9307	$x^2y'' - 2xy' - (x^2 - 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9308	$x^2y'' - 2x(x + 1)y' + (x^2 + 2x + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9309	$x^2y'' - 2x(x + 2)y' + (x^2 + 4x + 6)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9310	$x^2y'' - 4xy' + (x^2 + 6)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9311	$(x - 1)y'' - xy' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9312	$4x^2y'' - 4x(x + 1)y' + (2x + 3)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9313	$(3x - 1)y'' - (2 + 3x)y' - (6x - 8)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9314	$(x + 2)y'' + xy' + 3y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9315	$x^2(1 - x)y'' + x(4 + x)y' + (2 - x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9316	$x^2(x + 1)y'' + x(2x + 1)y' - (4 + 6x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9317	$x^2(2x^2 + 1)y'' + x(2x^2 + 4)y' + 2(-x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9318	$x^2(x^2 + 2)y'' + 2x(x^2 + 5)y' + 2(-x^2 + 3)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9319	$(x^2 + 1)y'' + 6xy' + 6y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
9320	$(x^2 + 1)y'' + 2xy' - 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9321	$(x^2 + 1)y'' - 8xy' + 20y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9322	$(-x^2 + 1)y'' - 8xy' - 12y = 0$	[_Gegenbauer]	✓
9323	$(2x^2 + 1)y'' + 7xy' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9324	$(-x^2 + 1)y'' - 5xy' - 4y = 0$	[_Gegenbauer]	✓
9325	$(x^2 + 1)y'' - 10xy' + 28y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9326	$y'' + xy' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9327	$(2x^2 - 8x + 11)y'' - 16(-2 + x)y' + 36y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9328	$y'' + (x - 3)y' + 3y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9329	$(x^2 - 8x + 14)y'' - 8(x - 4)y' + 20y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9330	$(2x^2 + 4x + 5)y'' - 20(x + 1)y' + 60y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9331	$(x^3 + 1)y'' + 7x^2y' + 9xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9332	$(2x^5 + 1)y'' + 14x^4y' + 10x^3y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9333	$y'' + x^6y' + 7x^5y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9334	$(x^8 + 1)y'' - 16x^7y' + 72x^6y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9335	$y'' + x^5y' + 6x^4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9336	$(3x + 1)y'' + xy' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9337	$(3x^2 + x + 1)y'' + (2 + 15x)y' + 12y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9338	$(x + 2)y'' + (x + 1)y' + 3y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9339	$(4 + x)y'' + (x + 2)y' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
9340	$(2x^2 + 3x)y'' + 10(x + 1)y' + 8y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9341	$x^2y'' - (6 - 7x)y' + 8y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9342	$(2x^2 + x + 1)y'' + (1 + 7x)y' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9343	$(x + 3)y'' + (2x + 1)y' - (2 - x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9344	$y'' + 3xy' + (2x^2 + 4)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9345	$(2 + 4x)y'' - 4y' - (6 + 4x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9346	$y'' - 3xy' + (2x^2 + 5)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9347	$2y'' + 5xy' + (2x^2 + 4)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9348	$y'' + 4xy' + (4x^2 + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9349	$y'' + 4xy' + (4x^2 + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9350	$2x^2(x^2 + x + 1)y'' + x(11x^2 + 11x + 9)y' + (7x^2 + 10x + 6)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9351	$3x^2y'' + 2x(-2x^2 + x + 1)y' + (-8x^2 + 2x)y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
9352	$12x^2(x + 1)y'' + x(3x^2 + 35x + 11)y' - (-5x^2 - 10x + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9353	$y'' + 3y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
9354	$18x^2(x + 1)y'' + 3x(x^2 + 11x + 5)y' - (-5x^2 - 2x + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9355	$2x^2y'' + x(2x + 3)y' - (1 - x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9356	$2x^2y'' + x(x + 5)y' - (2 - 3x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9357	$3x^2y'' + x(x + 1)y' - y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
9358	$2x^2y'' - xy' + (-2x + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9359	$3x^2y'' + x(x + 1)y' - (3x + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9360	$2x^2(x + 3)y'' + x(1 + 5x)y' + (x + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9361	$x^2(4 + x)y'' - x(1 - 3x)y' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9362	$2x^2y'' + 5xy' + (x + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9363	$6x^2y'' + x(10 - x)y' - (x + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9364	$x^2(4x + 3)y'' + x(11 + 4x)y' - (4x + 3)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9365	$2x^2(2 + 3x)y'' + x(4 + 11x)y' - (1 - x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9366	$x^2(x + 2)y'' + 5x(1 - x)y' - (2 - 8x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9367	$8x^2(-x^2 + 1)y'' + 2x(-13x^2 + 1)y' + (-9x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9368	$x^2(x^2 + 1)y'' - 2x(-x^2 + 2)y' + 4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9369	$x(x^2 + 3)y'' + (-x^2 + 2)y' - 8xy = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
9370	$4x^2(-x^2 + 1)y'' + x(-19x^2 + 7)y' - (14x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9371	$3x^2(-x^2 + 2)y'' + x(-11x^2 + 1)y' + (-5x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9372	$2x^2(x^2 + 2)y'' - x(-7x^2 + 12)y' + (3x^2 + 7)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9373	$2x^2(x^2 + 2)y'' + x(7x^2 + 4)y' - (-3x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9374	$2x^2(2x^2 + 1)y'' + 5x(6x^2 + 1)y' - (-40x^2 + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9375	$x(x^2 + 1)y'' + (7x^2 + 4)y' + 8xy = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
9376	$2x^2(x^2 + 1)y'' + x(8x^2 + 3)y' - (-4x^2 + 3)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
9377	$9x^2y'' + 3x(x^2 + 3)y' - (-5x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9378	$6x^2y'' + x(6x^2 + 1)y' + (9x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9379	$9x^2(x^2 + 1)y'' + 3x(13x^2 + 3)y' - (-25x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9380	$4x^2(x^2 + 1)y'' + 4x(6x^2 + 1)y' - (-25x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9381	$8x^2(2x^2 + 1)y'' + 2x(34x^2 + 5)y' - (-30x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9382	$2x^2(x + 1)y'' - x(1 - 3x)y' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9383	$6x^2(2x^2 + 1)y'' + x(50x^2 + 1)y' + (30x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9384	$28x^2(1 - 3x)y'' - 7x(5 + 9x)y' + 7(2 + 9x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9385	$8x^2(-x^2 + 2)y'' + 2x(-21x^2 + 10)y' - (35x^2 + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9386	$4x^2(x^2 + 3x + 1)y'' - 4x(-3x^2 - 3x + 1)y' + 3(x^2 - x + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9387	$3x^2(x + 1)^2y'' - x(-11x^2 - 10x + 1)y' + (5x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9388	$4x^2(x^2 + 2x + 3)y'' - x(-15x^2 - 14x + 3)y' + (7x^2 + 3)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9389	$x^2(x^2 - 2x + 1)y'' - x(x + 3)y' + (4 + x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9390	$2x^2(x + 2)y'' + 5x^2y' + (x + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9391	$x^2(-x^2 + 2)y'' - 2x(2x^2 + 1)y' + (-2x^2 + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9392	$x^2y'' - x(5 - x)y' + (9 - 4x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9393	$4x^2(x^2 + x + 1)y'' + 12x^2(x + 1)y' + (3x^2 + 3x + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9394	$x^2(x^2 + x + 1)y'' - x(-2x^2 - 4x + 1)y' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
9395	$9x^2y'' + 3x(-2x^2 + 3x + 5)y' + (-14x^2 + 12x + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9396	$x^2(2x + 1)y'' + x(3x^2 + 14x + 5)y' + (12x^2 + 18x + 4)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9397	$16x^2y'' + 4x(2x^2 + x + 6)y' + (18x^2 + 5x + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9398	$9x^2(x + 1)y'' + 3x(-x^2 + 11x + 5)y' + (-7x^2 + 16x + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9399	$36x^2(-2x + 1)y'' + 24x(1 - 9x)y' + (1 - 70x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9400	$x^2(x + 1)y'' - x(3 - x)y' + 4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9401	$x^2(-2x + 1)y'' - x(5 - 4x)y' + (9 - 4x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9402	$2x^2(x + 2)y'' + x^2y' + (1 - x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9403	$2x^2(x + 1)y'' - x(6 - x)y' + (8 - x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9404	$x^2(2x + 1)y'' + x(5 + 9x)y' + (3x + 4)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9405	$x^2(-2x + 1)y'' - x(5 + 4x)y' + (9 + 4x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9406	$x^2(1 - x)y'' + x(7 + x)y' + (9 - x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9407	$x^2y'' - x(-x^2 + 1)y' + (x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9408	$x^2(x^2 + 1)y'' - 3x(-x^2 + 1)y' + 4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9409	$4x^2y'' + 2x^3y' + (3x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9410	$x^2(x^2 + 1)y'' - x(-2x^2 + 1)y' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9411	$2x^2(x^2 + 2)y'' + 7x^3y' + (3x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9412	$x^2(x^2 + 1)y'' - x(-4x^2 + 1)y' + (2x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9413	$4x^2(x^2 + 4)y'' + 3x(3x^2 + 8)y' + (-9x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
9414	$3x^2(x^2 + 3)y'' + x(11x^2 + 3)y' + (5x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9415	$9x^2y'' - 3x(-2x^2 + 7)y' + (2x^2 + 25)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9416	$x^2y'' - x(-x^2 + 1)y' + (x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9417	$x^2(-2x + 1)y'' + 3xy' + (1 + 4x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9418	$x(x + 1)y'' + (1 - x)y' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9419	$x^2(1 - x)y'' - x(3 - 5x)y' + (4 - 5x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9420	$x^2(x^2 + 1)y'' - x(9x^2 + 1)y' + (25x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9421	$9x^2y'' + 3x(-x^2 + 1)y' + (7x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9422	$x(x^2 + 1)y'' + (-x^2 + 1)y' - 8xy = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
9423	$4x^2y'' + 2x(-x^2 + 4)y' + (7x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9424	$4x^2(x + 1)y'' + 8x^2y' + (x + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9425	$9x^2(x + 3)y'' + 3x(3 + 7x)y' + (4x + 3)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9426	$x^2(-x^2 + 2)y'' - x(3x^2 + 2)y' + (-x^2 + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9427	$16x^2(x^2 + 1)y'' + 8x(9x^2 + 1)y' + (49x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9428	$x^2(3x + 4)y'' - x(4 - 3x)y' + 4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9429	$4x^2(x^2 + 3x + 1)y'' + 8x^2(2x + 3)y' + (9x^2 + 3x + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9430	$x^2(1 - x)^2y'' - x(-3x^2 + 2x + 1)y' + (x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9431	$9x^2(x^2 + x + 1)y'' + 3x(13x^2 + 7x + 1)y' + (25x^2 + 4x + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9432	$2x^2(x + 2)y'' - x(4 - 7x)y' - (5 - 3x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
9433	$x^2(-2x+1)y'' + x(8-9x)y' + (6-3x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9434	$x^2(x^2+1)y'' + x(10x^2+3)y' - (-14x^2+15)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9435	$x^2(-2x^2+1)y'' + x(-13x^2+7)y' - 14x^2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9436	$4x^2(x+1)y'' + 4x(2x+1)y' - (3x+1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9437	$2x^2(2+3x)y'' + x(4+21x)y' - (1-9x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9438	$x^2y'' + x(x+2)y' - (2-3x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9439	$4x^2(x+1)y'' + 4x(3+8x)y' - (5-49x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9440	$x^2(x+1)y'' - x(3+10x)y' + 30xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9441	$x^2y'' + x(x+1)y' - 3(x+3)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9442	$x^2(2x+1)y'' + x(9+13x)y' + (7+5x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9443	$4x^2(2x+1)y'' - 2x(4-x)y' - (7+5x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9444	$3x^2(x+3)y'' - x(15+x)y' - 20y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9445	$x^2(x+1)y'' + x(1-10x)y' - (9-10x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9446	$x^2(x+1)y'' + 3x^2y' - (6-x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9447	$x^2(2x+1)y'' - 2x(3+14x)y' + (6+100x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9448	$x^2(x+1)y'' - x(6+11x)y' + (6+32x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9449	$4x^2(x+1)y'' + 4x(1+4x)y' - (49+27x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9450	$x^2(x^2+1)y'' - x(-2x^2+7)y' + 12y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9451	$x^2y'' - x(-x^2+7)y' + 12y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
9452	$x^2 y'' + x(2x^2 + 1) y' - (-10x^2 + 1) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9453	$x^2 y'' + x(-2x^2 + 1) y' - 4(2x^2 + 1) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9454	$x^2 y'' + x(-3x^2 + 1) y' - 4(-3x^2 + 1) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9455	$x^2(x^2 + 1) y'' + x(11x^2 + 5) y' + 24x^2 y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9456	$4x^2(x^2 + 1) y'' + 8xy' - (-x^2 + 35) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9457	$x^2(x^2 + 1) y'' - x(-x^2 + 5) y' - (25x^2 + 7) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9458	$x^2(x^2 + 1) y'' + x(2x^2 + 5) y' - 21y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9459	$4x^2(x^2 + 1) y'' + 4x(x^2 + 2) y' - (x^2 + 15) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9460	$y'' - \frac{2(t+1)y'}{t^2+2t-1} + \frac{2y}{t^2+2t-1} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9461	$y'' - 4ty' + (4t^2 - 2) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9462	$(-t^2 + 1) y'' - 2ty' + 2y = 0$	[_Gegenbauer]	✓
9463	$(t^2 + 1) y'' - 2ty' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9464	$(-t^2 + 1) y'' - 2ty' + 6y = 0$	[_Gegenbauer]	✓
9465	$(2t + 1) y'' - 4(t + 1) y' + 4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9466	$t^2 y'' + ty' + \left(t^2 - \frac{1}{4}\right) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9467	$y'' - \frac{2ty'}{t^2+1} + \frac{2y}{t^2+1} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9468	$y'' + (t^2 + 2t + 1) y' - (4 + 4t) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9469	$2ty'' + (1 - 2t) y' - y = 0$	[_Laguerre]	✓
9470	$2ty'' + (t + 1) y' - 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9471	$2t^2 y'' - ty' + (t + 1) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
9472	$2t^2y'' + (t^2 - t)y' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9473	$t^2y'' + (-t^2 + t)y' - y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9474	$ty'' - (t^2 + 2)y' + ty = 0$	[_Lienard]	✓
9475	$t^2y'' + t(t + 1)y' - y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9476	$ty'' - (t + 4)y' + 2y = 0$	[_Laguerre]	✓
9477	$t^2y'' + (t^2 - 3t)y' + 3y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9478	$ty'' + ty' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9479	$ty'' + (-t^2 + 1)y' + 4ty = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9480	$t^2y'' - t(t + 1)y' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9481	$y'' + 4xy' + (4x^2 + 6)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9482	$(-z^2 + 1)y'' - 3zy' + y = 0$	[_Gegenbauer]	✓
9483	$4zy'' + 2(1 - z)y' - y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9484	$f'' + 2(z - 1)f' + 4f = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9485	$zy'' - 2y' + zy = 0$	[_Lienard]	✓
9486	$zy'' + (2z - 3)y' + \frac{4y}{z} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9487	$xy'' + (-2x + 1)y' + (x - 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9488	$x^2y'' - 2xy' + (x^2 + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9489	$(-x^2 + 1)y'' - 2xy' + 2y = 0$	[_Gegenbauer]	✓
9490	$4x^2y'' + 4xy' + (4x^2 - 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9491	$xy'' - (2x + 1)y' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9492	$y'' + 2xy' + 4y = 0$	[_erf]	✓

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#	ODE	CAS classification	Solved?
9493	$y'' + xy' + 3y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9494	$y'' - x^2y' - 3xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9495	$(-4x^2 + 1)y'' - 20xy' - 16y = 0$	[_Gegenbauer]	✓
9496	$(x^2 - 1)y'' - 6xy' + 12y = 0$	[_Gegenbauer]	✓
9497	$y'' + xy' + (x + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9498	$(2x^2 + 1)y'' + 7xy' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9499	$4y'' + xy' + 4y = 0$	[_Lienard]	✓
9500	$y'' + xy' - 4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9501	$4xy'' - xy' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9502	$6x^2y'' + x(1 + 18x)y' + (1 + 12x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9503	$3x^2y'' - x(8 + x)y' + 6y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9504	$2x^2y'' - x(2x + 1)y' + 2(4x - 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9505	$4x^2y'' - 4x^2y' + (2x + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9506	$x^2y'' + x(3 - 2x)y' + (-2x + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9507	$x^2y'' - x(x + 3)y' + (4 - x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9508	$x^2y'' + x(3 - x)y' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9509	$x^2y'' - (2\sqrt{5} - 1)xy' + \left(\frac{19}{4} - 3x^2\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9510	$x^2y'' + x(x - 3)y' + (4 - x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9511	$x^2y'' + x^2y' - (x + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9512	$x^2y'' + 2x^2y' + \left(x - \frac{3}{4}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
9513	$x^2(x+1)y'' + x^2y' - 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9514	$x^2y'' + x(x^2+6)y' + 6y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9515	$x^2y'' + x(1-x)y' - y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9516	$x^2y'' - x(x+3)y' + 4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9517	$x^2y'' - x^2y' - 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9518	$x^2y'' - x^2y' - (2+3x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9519	$x^2y'' + x(5-x)y' + 4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9520	$4x^2y'' + 4x(1-x)y' + (2x-9)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9521	$x^2y'' + 2x(x+2)y' + 2(x+1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9522	$x^2y'' - x(1-x)y' + (1-x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9523	$4x^2y'' + 4x(2x+1)y' + (4x-1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9524	$x^2y'' + x(4+x)y' + (x+2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9525	$x^2y'' + xy' + \left(x^2 - \frac{9}{4}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9526	$xy'' + 2y' + xy = 0$	[_Lienard]	✓
9527	$2xy'' + 5(-2x+1)y' - 5y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9528	$x^2y'' + xy' + \left(x^2 - \frac{1}{4}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9529	$xy'' + (x+n)y' + (n+1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9530	$x^4y'' + xy' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9531	$x^2y'' + (2x^2+x)y' - 4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
9532	$(4x^3 - 14x^2 - 2x)y'' - (6x^2 - 7x + 1)y' + (6x - 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9533	$x^2y'' + x^2y' + (-2 + x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9534	$x^2y'' - x^2y' + (-2 + x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9535	$x^2(1 - 4x)y'' + \left(-\frac{1}{4}x - x^2\right)y' - \frac{5xy}{16} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9536	$x^2y'' + (x^2 + x)y' + (x - 9)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9537	$x^2y'' + x(x + 1)y' + (3x - 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9538	$x^2y'' - (x^2 + 4x)y' + 4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9539	$2x^2y'' - (2 + 3x)y' + \frac{(2x - 1)y}{x} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9540	$x(1 - x)y'' + \left(\frac{3}{2} - 2x\right)y' - \frac{y}{4} = 0$	[_Jacobi]	✓
9541	$2x(1 - x)y'' + xy' - y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9542	$2x(1 - x)y'' + (1 - 11x)y' - 10y = 0$	[_Jacobi]	✓
9543	$x(1 - x)y'' + \frac{(-2x + 1)y'}{3} + \frac{20y}{9} = 0$	[_Jacobi]	✓
9544	$4y'' + \frac{3(-x^2 + 2)y}{(-x^2 + 1)^2} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9545	$u'' - \frac{2u'}{x} - a^2u = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9546	$u'' + \frac{2u'}{x} - a^2u = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9547	$u'' + \frac{2u'}{x} + a^2u = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9548	$u'' + \frac{4u'}{x} - a^2u = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9549	$u'' + \frac{4u'}{x} + a^2u = 0$	[[_2nd_order, _with_linear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
9550	$y'' - a^2y = \frac{6y}{x^2}$	[[_2nd_order, _with_linear_symmetries]]	✓
9551	$y'' + n^2y = \frac{6y}{x^2}$	[[_2nd_order, _with_linear_symmetries]]	✓
9552	$x^2y'' + xy' - \left(x^2 + \frac{1}{4}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9553	$x^2y'' + xy' + \frac{(-9a^2 + 4x^2)y}{4a^2} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9554	$x^2y'' + xy' + \left(x^2 - \frac{25}{4}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9555	$y'' + qy' = \frac{2y}{x^2}$	[[_2nd_order, _with_linear_symmetries]]	✓
9556	$xy'' + 3y' + 4x^3y = 0$	[[_Emden, _Fowler]]	✓
9557	$(2 - x)x^2y'' + 2xy' - 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9558	$(x^2 + 1)y'' - 2xy' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9559	$xy'' - 2(x + 1)y' + (x + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9560	$3xy'' - 2(3x - 1)y' + (3x - 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9561	$x(x + 1)y'' - (x - 1)y' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9562	$(x^2 + 2x)y'' - 2(x + 1)y' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9563	$(x^2 + 2x)y'' - 2(x + 1)y' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9564	$(x^2 + 1)y'' - 2xy' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9565	$(x^2 + 1)y'' - 2xy' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9566	$y'' - 4xy' + (4x^2 - 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9567	$y'' - 4xy' + (4x^2 - 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9568	$(2x - 3)y'' - xy' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
9569	$y'' - xy' - 3y = 0$	[_Hermite]	✓
9570	$(x^2 + 1)y'' - xy' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9571	$y'' - xy' + 2y = 0$	[_Hermite]	✓
9572	$(-x^2 + 1)y'' - y' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9573	$x(x + 1)^2 y'' + (-x^2 + 1)y' + (x - 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9574	$2xy'' - y' + 2y = 0$	[[_Emden, _Fowler]]	✓
9575	$xy'' + xy' - 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9576	$x(x - 1)^2 y'' - 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9577	$y'' - 2xy' + x^2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9578	$x(-x^2 + 2)y'' - (x^2 + 4x + 2)((1 - x)y' + y) = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9579	$x^2(x + 1)y'' - (2x + 1)(-y + xy') = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9580	$2(2 - x)x^2y'' - x(4 - x)y' + (3 - x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9581	$x^2(1 - x)y'' + (5x - 4)xy' + (6 - 9x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9582	$xy'' + (4x^2 + 1)y' + 4x(x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9583	$(-x^2 + 1)y'' - 2xy' + 12y = 0$	[_Gegenbauer]	✓
9584	$x(x + 2)y'' + 2(x + 1)y' - 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9585	$x(x + 2)y'' + (x + 1)y' - 4y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, ' _with_symmetry_[0,F(x)]']]	✓
9586	$(x - 1)y'' - xy' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9587	$(x^2 + 1)y'' - 2xy' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9588	$(x^2 - 2x + 10)y'' + xy' - 4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
9589	$(x^2 - 2x + 10)y'' + xy' - 4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9590	$y'' - xy' + 2y = 0$	[_Hermite]	✓
9591	$(x + 2)y'' + xy' - y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9592	$(x^2 + 1)y'' - 6y = 0$	[[_Emden, _Fowler]]	✓
9593	$(x^2 + 2)y'' + 3xy' - y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9594	$(x - 1)y'' - xy' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9595	$x^2y'' + \left(\frac{5}{3}x + x^2\right)y' - \frac{y}{3} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9596	$2xy'' - y' + 2y = 0$	[[_Emden, _Fowler]]	✓
9597	$2xy'' - (2x + 3)y' + y = 0$	[_Laguerre]	✓
9598	$2x^2y'' + 3xy' + (2x - 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9599	$xy'' + 2y' - xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9600	$x^2y'' + xy' + \left(x^2 - \frac{1}{4}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9601	$xy'' + (x - 6)y' - 3y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9602	$x^4y'' + \lambda y = 0$	[[_Emden, _Fowler]]	✓
9603	$4x^2y'' + 4xy' + (4x^2 - 25)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9604	$x^2y'' + xy' + \left(36x^2 - \frac{1}{4}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9605	$x^2y'' + (x^2 - 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9606	$xy'' + 3y' + x^3y = 0$	[[_Emden, _Fowler]]	✓
9607	$x^2y'' + 4xy' + (x^2 + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9608	$16x^2y'' + 32xy' + (x^4 - 12)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9609	$y'' - x^2y' + xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
9610	$xy'' - (x+2)y' + 2y = 0$	[_Laguerre]	✓
9611	$y'' + xy' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9612	$(-x^2 + 1)y'' - 2xy' + 2y = 0$	[_Gegenbauer]	✓
9613	$y'' - 4xy' + (4x^2 - 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9614	$(-x^2 + 1)y'' - 2xy' + 30y = 0$	[_Gegenbauer]	✓
9615	$xy'' + 2y' + xy = 0$	[_Lienard]	✓
9616	$xy'' + (2x+1)y' + (x+1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9617	$2x(x-1)y'' - (x+1)y' + y = 0$	[_Jacobi]	✓
9618	$xy'' + 2y' + 4xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9619	$xy'' + (2-2x)y' + (-2+x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9620	$x^2y'' + 6xy' + (4x^2 + 6)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9621	$xy'' + (-2x+1)y' + (x-1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9622	$x(1-x)y'' + \left(\frac{1}{2} + 2x\right)y' - 2y = 0$	[_Jacobi]	✓
9623	$4(t^2 - 3t + 2)y'' - 2y' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9624	$2(t^2 - 5t + 6)y'' + (2t - 3)y' - 8y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9625	$3t(t+1)y'' + ty' - y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9626	$x^2y'' + \frac{(x + \frac{3}{4})y}{4} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9627	$x^2y'' + xy' + \frac{(x^2 - 1)y}{4} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9628	$xy'' + (-2x+1)y' + (x-1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9629	$xy'' - (x+1)y' + y = 0$	[_Laguerre]	✓
9630	$xy'' + 3y' + 4x^3y = 0$	[[_Emden, _Fowler]]	✓

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#	ODE	CAS classification	Solved?
9631	$x^2(-x^2 + 1)y'' + 2x(-x^2 + 1)y' - 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9632	$2xy'' + (-2 + x)y' - y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9633	$xy'' + 2y' + xy = 0$	[_Lienard]	✓
9634	$y'' + 2x^2y' + (x^4 + 2x - 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9635	$u'' + 2u' + u = 0$	[[_2nd_order, _missing_x]]	✓
9636	$u'' - (2x + 1)u' + (x^2 + x - 1)u = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9637	$y'' + 2y' + \left(1 + \frac{2}{(3x + 1)^2}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9638	$x^2y'' - 2xy' + (x^2 + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9639	$y'' + \frac{2y'}{x} - \frac{2y}{(x + 1)^2} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9640	$y'' - xy' - xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9641	$y'' - xy' - xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9642	$y'' - xy' - xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9643	$y'' - xy' - xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9644	$y'' - xy' - xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9645	$y'' - xy' - xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9646	$y'' - xy' - xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9647	$y'' - xy' - xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9648	$y'' - xy' - xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9649	$y'' - xy' - xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9650	$y'' - xy' - xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
9651	$xy'' + 2y' + xy = 0$	[[_Lienard]]	✓
9652	$2x^2y'' + 3xy' - xy = 0$	[[_Emden, _Fowler]]	✓
9653	$x^2y'' + (3x^2 + 2x)y' - 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9654	$2x^2(x^2 + x + 1)y'' + x(11x^2 + 11x + 9)y' + (7x^2 + 10x + 6)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9655	$xy'' + (x + 1)y' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9656	$x^2(x^2 - 2x + 1)y'' - x(x + 3)y' + (4 + x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9657	$2x^2(x + 2)y'' + 5x^2y' + (x + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9658	$x^2y'' + 4xy' + (x^2 + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9659	$x^2y'' + xy' + \left(x^2 - \frac{1}{4}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9660	$x^2y'' - xy' - \left(x^2 + \frac{5}{4}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9661	$x^2y'' + xy' + \left(x^2 - \frac{1}{4}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9662	$x^2y'' + 3xy' + 4x^4y = 0$	[[_Emden, _Fowler]]	✓
9663	$y'' = (x^2 + 3)y$	[[_2nd_order, _with_linear_symmetries]]	✓
9664	$y'' + 2xy' + (x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9665	$x^2y'' + xy' + \left(x^2 - \frac{1}{4}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9666	$4x^2y'' + (-8x^2 + 4x)y' + (4x^2 - 4x - 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9667	$y'' = 0$	[[_2nd_order, _quadrature]]	✓
9668	$y'' = \frac{2y}{x^2}$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
9669	$y'' = \frac{6y}{x^2}$	[[_Emden, _Fowler]]	✓

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#	ODE	CAS classification	Solved?
9670	$y'' = \left( -\frac{3}{16x^2} - \frac{2}{9(x-1)^2} + \frac{3}{16x(x-1)} \right) y$	[[_2nd_order, _with_linear_symmetries]]	✓
9671	$y'' = \frac{20y}{x^2}$	[[_Emden, _Fowler]]	✓
9672	$y'' = \frac{12y}{x^2}$	[[_Emden, _Fowler]]	✓
9673	$y'' - \frac{y}{4x^2} = 0$	[[_Emden, _Fowler]]	✓
9674	$xy'' - (2x+2)y' + (x+2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9675	$y'' + \frac{y}{x^2} = 0$	[[_Emden, _Fowler]]	✓
9676	$(-x^2+1)y'' + y' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9677	$(x^2-x)y'' - xy' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9678	$x^2(-x^2+2)y'' - x(4x^2+3)y' + (-2x^2+2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9679	$y'' = \frac{(4x^6 - 8x^5 + 12x^4 + 4x^3 + 7x^2 - 20x + 4)y}{4x^4}$	[[_2nd_order, _with_linear_symmetries]]	✓
9680	$y'' = \left( \frac{6}{x^2} - 1 \right) y$	[[_2nd_order, _with_linear_symmetries]]	✓
9681	$y'' = \left( \frac{x^2}{4} - \frac{11}{2} \right) y$	[[_2nd_order, _with_linear_symmetries]]	✓
9682	$y'' = \left( \frac{1}{x} - \frac{3}{16x^2} \right) y$	[[_2nd_order, _with_linear_symmetries]]	✓
9683	$y'' = \left( -\frac{3}{16x^2} - \frac{2}{9(x-1)^2} + \frac{3}{16x(x-1)} \right) y$	[[_2nd_order, _with_linear_symmetries]]	✓
9684	$y'' = -\frac{(5x^2+27)y}{36(x^2-1)^2}$	[[_2nd_order, _with_linear_symmetries]]	✓
9685	$y'' = -\frac{y}{4x^2}$	[[_Emden, _Fowler]]	✓
9686	$y'' = (x^2+3)y$	[[_2nd_order, _with_linear_symmetries]]	✓
9687	$x^2y'' = 2y$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓

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#	ODE	CAS classification	Solved?
9688	$y'' + 4xy' + (4x^2 + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9689	$x^2y'' - 2xy' + (x^2 + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
9690	$(-2 + x)^2y'' - (-2 + x)y' - 3y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
10687	$y'' = 0$	[[_2nd_order, _quadrature]]	✓
10688	$y'' + y = 0$	[[_2nd_order, _missing_x]]	✓
10689	$y'' + y - \sin(nx) = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
10690	$y'' + y - \cos(bx) = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
10691	$y'' + y - \sin(ax)\sin(bx) = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
10692	$y'' - y = 0$	[[_2nd_order, _missing_x]]	✓
10693	$y'' - 2y - 4x^2e^{x^2} = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
10694	$y'' + a^2y - \cot(ax) = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
10695	$y'' + ly = 0$	[[_2nd_order, _missing_x]]	✓
10697	$y'' - (x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10699	$y'' - (a^2x^2 + a)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10720	$y'' + ay' + by = 0$	[[_2nd_order, _missing_x]]	✓
10721	$y'' + ay' + by - f(x) = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
10724	$y'' + xy' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
10725	$y'' + xy' - y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10728	$y'' - xy' + 2y = 0$	[_Hermite]	✓
10730	$y'' - xy' + (x - 1)y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)']]]	✓

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#	ODE	CAS classification	Solved?
10732	$y'' + 4xy' + (4x^2 + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10734	$y'' - 4xy' + (4x^2 - 1)y - e^x = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
10735	$y'' - 4xy' + (4x^2 - 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10736	$y'' - 4xy' + (4x^2 - 3)y - e^{x^2} = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
10741	$y'' - x^2y' + xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10742	$y'' - x^2y' - (x + 1)^2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10743	$y'' - x^2(x + 1)y' + x(x^4 - 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10744	$y'' + x^4y' - x^3y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10746	$y'' + y'\sqrt{x} + \left(\frac{1}{4\sqrt{x}} + \frac{x}{4} - 9\right)y - xe^{-\frac{x^3}{3}} = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
10747	$y'' - \frac{y'}{\sqrt{x}} + \frac{(x + \sqrt{x} - 8)y}{4x^2} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10749	$y'' + ay' + \tan(x) + by = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
10756	$y'' + 2ay' \cot(ax) + (-a^2 + b^2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10762	$y'' + f(x)y' + \left(\frac{f(x)^2}{4} + \frac{f'(x)}{2} + a\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10773	$x(y'' + y) - \cos(x) = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
10775	$xy'' + y' = 0$	[[_2nd_order, _missing_y]]	✓
10780	$xy'' - y' - yax^3 = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]]]	✓
10782	$xy'' + 2y' - xy - e^x = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
10783	$xy'' + 2y' + axy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
10791	$xy'' - xy' - y - x(x+1)e^x = 0$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
10793	$xy'' - (x+1)y' + y = 0$	[_Laguerre]	✓
10794	$xy'' - (x+1)y' - 2(x-1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10801	$xy'' - 2(ax+b)y' + (a^2x+2ab)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10803	$xy'' - (x^2-x)y' + (x-1)y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]]	✓
10804	$xy'' - (x^2-x-2)y' - x(x+3)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10805	$xy'' - (2x^2a+1)y' + bx^3y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10807	$xy'' + (4x^2-1)y' - 4x^3y - 4x^5 = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
10808	$xy'' + (2ax^3-1)y' + (a^2x^3+a)x^2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10809	$xy'' + (2ax \ln(x) + 1)y' + (a^2x \ln(x)^2 + a \ln(x) + a)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10811	$(x-3)y'' - (4x-9)y' + (3x-6)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10812	$2xy'' + y' + ay = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]]	✓
10815	$(2x-1)y'' - (-4+3x)y' + (x-3)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10817	$4xy'' + 2y' - y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]]	✓
10818	$4xy'' + 4y' - (x+2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10828	$x^2y'' - 6y = 0$	[[_Emden, _Fowler]]	✓
10829	$x^2y'' - 12y = 0$	[[_Emden, _Fowler]]	✓
10830	$x^2y'' + ay = 0$	[[_Emden, _Fowler]]	✓

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#	ODE	CAS classification	Solved?
10832	$x^2 y'' + (x^2 - 2) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10833	$x^2 y'' - (x^2 a + 2) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10834	$x^2 y'' + (a^2 x^2 - 6) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10840	$x^2 y'' + a y' - (b^2 x^2 + ab) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10841	$x^2 y'' + x y' - y - x^2 a = 0$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
10842	$x^2 y'' + x y' + a y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, _with_symmetry_[0,F(x)]]]	✓
10848	$x^2 y'' - x y' + y - 3x^3 = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10850	$x^2 y'' + 2x y' = 0$	[[_2nd_order, _missing_y]]	✓
10856	$x^2 y'' - 2x y' + 2y - x^5 \ln(x) = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10857	$x^2 y'' - 2x y' - 4y - x \sin(x) - (x^2 a + 12a + 4) \cos(x) = 0$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
10858	$x^2 y'' - 2x y' + (x^2 + 2) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10859	$x^2 y'' - 2x y' + (x^2 + 2) y - \frac{x^2}{\cos(x)} = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
10860	$x^2 y'' - 2x y' + (x^2 + 2) y - \frac{x^3}{\cos(x)} = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
10861	$x^2 y'' - 2x y' + (a^2 x^2 + 2) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10863	$x^2 y'' + (3x - 1) y' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
10864	$x^2 y'' - 3x y' + 4y - 5x = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10865	$x^2 y'' - 3x y' - 5y - x^2 \ln(x) = 0$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
10866	$x^2 y'' - 4x y' + 6y - x^4 + x^2 = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
10868	$x^2y'' - 5xy' + 8y - \sin(x)x^3 = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
10869	$x^2y'' + axy' + by = 0$	[[_Emden, _Fowler]]	✓
10873	$x^2y'' + x^2y' - 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10874	$x^2y'' + (x^2 - 1)y' - y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10875	$x^2y'' + x(x + 1)y' + (x - 9)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10876	$x^2y'' + x(x + 1)y' + (3x - 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10878	$x^2y'' - x(x - 1)y' + (x - 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10880	$x^2y'' - (x^2 - 2x)y' - (2 + 3x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10881	$x^2y'' - x(4 + x)y' + 4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10883	$x^2y'' + x(2x + 1)y' - 4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10884	$x^2y'' - 2x(x + 1)y' + 2(x + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10885	$x^2y'' + ax^2y' - 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10886	$x^2y'' + (a + 2b)x^2y' + ((a + b)bx^2 - 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10890	$x^2y'' + x^3y' + (x^2 - 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10891	$x^2y'' + x(x^2 + 2)y' + (x^2 - 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10893	$x^2y'' + 4x^3y' + (4x^4 + 2x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10904	$(x^2 + 1)y'' + xy' + 2y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
10905	$(x^2 + 1)y'' + xy' - 9y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓

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#	ODE	CAS classification	Solved?
10906	$(x^2 + 1)y'' + xy' + ay = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
10907	$(x^2 + 1)y'' - xy' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10909	$(x^2 + 1)y'' - 2xy' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10910	$(x^2 + 1)y'' + 3xy' + ay = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10911	$(x^2 + 1)y'' + 4xy' + 2y - 2\cos(x) + 2x = 0$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
10915	$(x^2 - 1)y'' + xy' + 2 = 0$	[[_2nd_order, _missing_y]]	✓
10916	$(x^2 - 1)y'' + xy' + ay = 0$	[_Gegenbauer, [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
10918	$(x^2 - 1)y'' + 2xy' = 0$	[[_2nd_order, _missing_y]]	✓
10919	$(x^2 - 1)y'' + 2xy' - a = 0$	[[_2nd_order, _missing_y]]	✓
10923	$(x^2 - 1)y'' - (3x + 1)y' - (x^2 - x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10924	$(x^2 - 1)y'' + 4xy' + (x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10928	$(x^2 - 1)y'' + 2axy' + a(a - 1)y = 0$	[_Gegenbauer]	✓
10931	$(-a^2 + x^2)y'' + 8xy' + 12y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10932	$x(x + 1)y'' - (x - 1)y' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10934	$x(x + 1)y'' + (2 + 3x)y' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
10935	$(x^2 + x - 2)y'' + (x^2 - x)y' - (6x^2 + 7x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10943	$(x + 1)^2 y'' + (x^2 + x - 1)y' - (x + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10944	$x(x + 3)y'' + (3x - 1)y' + y - (20x + 30)(x^2 + 3x)^{7/3} = 0$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
10945	$(x^2 + 3x + 4)y'' + (x^2 + x + 1)y' - (2x + 3)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
10947	$(-2+x)^2 y'' - (-2+x)y' - 3y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
10948	$2x^2 y'' - (2x^2 + l - 5x)y' - (4x - 1)y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
10951	$(2x^2 + 6x + 4)y'' + (10x^2 + 21x + 8)y' + (12x^2 + 17x + 8)y = 0$	[[_2nd_order, __with_linear_symmetries]]	✓
10952	$4x^2 y'' + y = 0$	[[_Emden, _Fowler]]	✓
10957	$4x^2 y'' + 4xy' - (4x^2 + 1)y - 4\sqrt{x^3}e^x = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
10958	$4x^2 y'' + 4xy' - (x^2 a + 1)y = 0$	[[_2nd_order, __with_linear_symmetries]]	✓
10960	$4x^2 y'' + 5xy' - y - \ln(x) = 0$	[[_2nd_order, __with_linear_symmetries]]	✓
10961	$4x^2 y'' + 8xy' - (4x^2 + 12x + 3)y = 0$	[[_2nd_order, __with_linear_symmetries]]	✓
10962	$4x^2 y'' - 4x(2x - 1)y' + (4x^2 - 4x - 1)y = 0$	[[_2nd_order, __with_linear_symmetries]]	✓
10963	$4x^2 y'' + 4x^3 y' + (x^2 + 6)(x^2 - 4)y = 0$	[[_2nd_order, __with_linear_symmetries]]	✓
10964	$4x^2 y'' + 4x^2 \ln(x)y' + (x^2 \ln(x)^2 + 2x - 8)y - 4x^2 \sqrt{e^x x^{-x}} = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
10965	$(2x + 1)^2 y'' - 2(2x + 1)y' - 12y - 3x - 1 = 0$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
10967	$(3x - 1)^2 y'' + 3(3x - 1)y' - 9y - \ln(3x - 1)^2 = 0$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
10968	$9x(x - 1)y'' + 3(2x - 1)y' - 20y = 0$	[_Jacobi]	✓
10969	$16x^2 y'' + (4x + 3)y = 0$	[[_2nd_order, __with_linear_symmetries]]	✓
10970	$16x^2 y'' + 32xy' - (5 + 4x)y = 0$	[[_2nd_order, __with_linear_symmetries]]	✓
10971	$(27x^2 + 4)y'' + 27xy' - 3y = 0$	[[_2nd_order, __with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
10973	$50x(x - 1)y'' + 25(2x - 1)y' - 2y = 0$	[_Jacobi, [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓

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#	ODE	CAS classification	Solved?
10978	$(x^2a + 1)y'' + axy' + by = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
10979	$(a^2x^2 - 1)y'' + 2a^2xy' = 0$	[[_2nd_order, _missing_y]]	✓
10980	$(a^2x^2 - 1)y'' + 2a^2xy' - 2a^2y = 0$	[_Gegenbauer]	✓
10981	$(x^2a + bx)y'' + 2by' - 2ay = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
10984	$x^3y'' + xy' - (2x + 3)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10987	$x^3y'' + x(x + 1)y' - 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10988	$x^3y'' - x^2y' + xy - \ln(x)^3 = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10990	$x^3y'' + 3x^2y' + xy - 1 = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10992	$x(x^2 + 1)y'' + 2(x^2 - 1)y' - 2xy = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
10995	$x(x^2 - 1)y'' + y' + ya x^3 = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
10999	$x(x^2 + 2)y'' - y' - 6xy = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
11000	$x(x^2 - 2)y'' - (x^3 + 3x^2 - 2x - 2)y' + (x^2 + 4x + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
11001	$x^2(x + 1)y'' - x(2x + 1)y' + (2x + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
11002	$x^2(x + 1)y'' + 2x(2 + 3x)y' = 0$	[[_2nd_order, _missing_y]]	✓
11003	$y'' = -\frac{2(-2 + x)y'}{x(x - 1)} + \frac{2(x + 1)y}{x^2(x - 1)}$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
11004	$y'' = \frac{(5x - 4)y'}{x(x - 1)} - \frac{(9x - 6)y}{x^2(x - 1)}$	[[_2nd_order, _with_linear_symmetries]]	✓
11006	$y'' = -\frac{y'}{x + 1} - \frac{y}{x(x + 1)^2}$	[[_2nd_order, _with_linear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
11008	$y'' = \frac{2y}{x(x-1)^2}$	[[_2nd_order, _with_linear_symmetries]]	✓
11011	$y'' = \frac{(x-4)y'}{2x(-2+x)} - \frac{(x-3)y}{2x^2(-2+x)}$	[[_2nd_order, _with_linear_symmetries]]	✓
11012	$y'' = \frac{y'}{x+1} - \frac{(3x+1)y}{4x^2(x+1)}$	[[_2nd_order, _with_linear_symmetries]]	✓
11016	$y'' = -\frac{(1-3x)y}{(x-1)(2x-1)^2}$	[[_2nd_order, _with_linear_symmetries]]	✓
11017	$y'' = -\frac{(3x+a+2b)y'}{2(x+a)(x+b)} - \frac{(-b+a)y}{4(x+a)^2(x+b)}$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
11018	$y'' = \frac{(6x-1)y'}{3x(-2+x)} + \frac{y}{3x^2(-2+x)}$	[[_2nd_order, _with_linear_symmetries]]	✓
11020	$y'' = \frac{2(ax+2b)y'}{x(ax+b)} - \frac{(2ax+6b)y}{(ax+b)x^2}$	[[_2nd_order, _with_linear_symmetries]]	✓
11022	$y'' = -\frac{ay}{x^4}$	[[_Emden, _Fowler]]	✓
11025	$y'' = -\frac{y'}{x^3} + \frac{2y}{x^4}$	[[_2nd_order, _with_linear_symmetries]]	✓
11026	$y'' = \frac{(a+b)y'}{x^2} - \frac{(x(a+b)+ab)y}{x^4}$	[[_2nd_order, _with_linear_symmetries]]	✓
11030	$y'' = -\frac{2y'}{x} - \frac{a^2y}{x^4}$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
11031	$y'' = -\frac{(2x^2+1)y'}{x^3} + \frac{y}{x^4}$	[[_2nd_order, _with_linear_symmetries]]	✓
11032	$y'' = -\frac{2(x+a)y'}{x^2} - \frac{by}{x^4}$	[[_2nd_order, _with_linear_symmetries]]	✓
11033	$y'' = \frac{(2x^2-1)y'}{x^3} - \frac{y}{x^4}$	[[_2nd_order, _with_linear_symmetries]]	✓
11034	$y'' = \frac{(2x^2-1)y'}{x^3} - \frac{2y}{x^4}$	[[_2nd_order, _with_linear_symmetries]]	✓
11035	$y'' = -\frac{(x^3-1)y'}{x(x^3+1)} + \frac{xy}{x^3+1}$	[[_2nd_order, _with_linear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
11038	$y'' = \frac{(x^2 - 2)y'}{x(x^2 - 1)} - \frac{(x^2 - 2)y}{x^2(x^2 - 1)}$	[[_2nd_order, _with_linear_symmetries]]	✓
11041	$y'' = \frac{2xy'}{x^2 - 1} - \frac{(a(a + 1) - ax^2(a + 3))y}{x^2(x^2 - 1)}$	[[_2nd_order, _with_linear_symmetries]]	✓
11045	$y'' = -\frac{ay}{(x^2 + 1)^2}$	[_Halm]	✓
11046	$y'' = -\frac{2xy'}{x^2 + 1} - \frac{y}{(x^2 + 1)^2}$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, ' _with_symmetry_[0,F(x)]']]	✓
11049	$y'' = -\frac{ay}{(x^2 - 1)^2}$	[[_2nd_order, _with_linear_symmetries]]	✓
11050	$y'' = -\frac{2xy'}{x^2 - 1} + \frac{a^2y}{(x^2 - 1)^2}$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, ' _with_symmetry_[0,F(x)]']]	✓
11056	$y'' = -\frac{(2x^2 + a)y'}{x(x^2 + a)} - \frac{by}{x^2(x^2 + a)}$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, ' _with_symmetry_[0,F(x)]']]	✓
11057	$y'' = -\frac{b^2y}{(a^2 + x^2)^2}$	[[_Emden, _Fowler]]	✓
11058	$y'' = -\frac{2(x^2 - 1)y'}{x(x - 1)^2} - \frac{(-2x^2 + 2x + 2)y}{x^2(x - 1)^2}$	[[_2nd_order, _with_linear_symmetries]]	✓
11059	$y'' = \frac{12y}{(x + 1)^2(x^2 + 2x + 3)}$	[[_2nd_order, _with_linear_symmetries]]	✓
11060	$y'' = -\frac{by}{x^2(x - a)^2}$	[[_2nd_order, _with_linear_symmetries]]	✓
11061	$y'' = -\frac{by}{x^2(x - a)^2} + c$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
11062	$y'' = \frac{cy}{(x - a)^2(x - b)^2}$	[[_2nd_order, _with_linear_symmetries]]	✓
11063	$y'' = -\frac{((\alpha + \beta + 1)(x - a)^2(x - b) + (1 - \alpha - \beta)(x - b)^2(x - a))y'}{(x - a)^2(x - b)^2} - \frac{\alpha\beta(-b + a)^2y}{(x - a)^2(x - b)^2}$	[[_2nd_order, _with_linear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
11065	$y'' = -\frac{(x^2 a + a - 3)y}{4(x^2 + 1)^2}$	[_Halm]	✓
11066	$y'' = \frac{18y}{(2x + 1)^2(x^2 + x + 1)}$	[[_2nd_order, _with_linear_symmetries]]	✓
11067	$y'' = \frac{3y}{4(x^2 + x + 1)^2}$	[[_Emden, _Fowler]]	✓
11070	$y'' = -\frac{3y}{16x^2(x - 1)^2}$	[[_2nd_order, _with_linear_symmetries]]	✓
11074	$y'' = -\frac{2y'}{x} - \frac{cy}{x^2(ax + b)^2}$	[[_2nd_order, _with_linear_symmetries]]	✓
11075	$y'' = -\frac{y}{(ax + b)^4}$	[[_Emden, _Fowler]]	✓
11076	$y'' = -\frac{Ay}{(x^2 a + bx + c)^2}$	[[_Emden, _Fowler]]	✓
11077	$y'' = -\frac{y'}{x^4} + \frac{y}{x^5}$	[[_2nd_order, _with_linear_symmetries]]	✓
11079	$y'' = \frac{(3x + 1)y'}{(x - 1)(x + 1)} - \frac{36(x + 1)^2 y}{(x - 1)^2(3x + 5)^2}$	[[_2nd_order, _with_linear_symmetries]]	✓
11084	$y'' = -\frac{(2x^2 + 1)y'}{x^3} - \frac{(-2x^2 + 1)y}{4x^6}$	[[_2nd_order, _with_linear_symmetries]]	✓
11085	$y'' = \frac{(2x^2 + 1)y'}{x^3} - \frac{(ax^4 + 10x^2 + 1)y}{4x^6}$	[[_2nd_order, _with_linear_symmetries]]	✓
11086	$y'' = -\frac{27xy}{16(x^3 - 1)^2}$	[[_2nd_order, _with_linear_symmetries]]	✓
11101	$y'' = -\frac{a(n - 1)\sin(2ax)y'}{\cos(ax)^2} - \frac{na^2((n - 1)\sin(ax)^2 + \cos(ax)^2)y}{\cos(ax)^2}$	[[_2nd_order, _with_linear_symmetries]]	✓
11125	$y'' = -\frac{y'}{x} - \frac{(x - 1)y}{x^4}$	[[_2nd_order, _with_linear_symmetries]]	✓
11126	$y'' = -\frac{y'}{x} - \frac{(-x - 1)y}{x^4}$	[[_2nd_order, _with_linear_symmetries]]	✓
11127	$y'' = -\frac{b^2 y}{(-a^2 + x^2)^2}$	[[_2nd_order, _with_linear_symmetries]]	✓
12177	$y'' + ay = 0$	[[_2nd_order, _missing_x]]	✓

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#	ODE	CAS classification	Solved?
12179	$y'' - (a^2x^2 + a)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12181	$y'' + a^3x(-ax + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12187	$y'' + ay' + by = 0$	[[_2nd_order, _missing_x]]	✓
12190	$y'' + ay' + b(-bx^2 + ax + 1)y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
12191	$y'' + ay' + bx(-bx^3 + ax + 2)y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
12200	$y'' + (ax + b)y' - ay = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12201	$y'' + (ax + b)y' + ay = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
12202	$y'' + (ax + b)y' + c(ax + b - c)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12203	$y'' + (ax + 2b)y' + (abx + b^2 - a)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12206	$y'' + 2(ax + b)y' + (a^2x^2 + 2abx + c)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12209	$y'' + a(-b^2 + x^2)y' - a(ax + b)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12210	$y'' + (x^2a + b)y' + c(x^2a + b - c)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12211	$y'' + (x^2a + 2b)y' + (abx^2 - ax + b^2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12212	$y'' + (2x^2 + a)y' + (x^4 + x^2a + b + 2x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12214	$y'' + (abx^2 + bx + 2a)y' + a^2(bx^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12215	$y'' + (x^2a + bx + c)y' + x(abx^2 + bc + 2a)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12216	$y'' + (x^2a + bx + c)y' + (abx^3 + acx^2 + b)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12217	$y'' + (ax^3 + 2b)y' + (abx^3 - x^2a + b^2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
12218	$y'' + (ax^3 + bx)y' + 2(2x^2a + b)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12219	$y'' + (abx^3 + bx^2 + 2a)y' + a^2(bx^3 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12237	$xy'' + \frac{y'}{2} + ay = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
12245	$xy'' + axy' + ay = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
12248	$xy'' + (2ax + b)y' + a(ax + b)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12251	$xy'' - (ax + 1)y' - bx^2(bx + a)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12252	$xy'' - (2ax + 1)y' + (bx^3 + a^2x + a)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12256	$xy'' + (x^2a + bx)y' - (acx^2 + (bc + c^2 + a)x + b + 2c)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12257	$xy'' + (x^2a + bx + 2)y' + by = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12263	$xy'' + x(x^2a + b)y' + (3x^2a + b)y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
12264	$xy'' + (ax^3 + bx^2 + 2)y' + bxy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12265	$xy'' + (abx^3 + bx^2 + ax - 1)y' + a^2bx^3y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12286	$x^2y'' + ay = 0$	[[_Emden, _Fowler]]	✓
12292	$x^2y'' - \left(ax^3 + \frac{5}{16}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12299	$x^2y'' + axy' + by = 0$	[[_Emden, _Fowler]]	✓
12304	$x^2y'' + 2xy' - (a^2x^2 + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12305	$x^2y'' - 2axy' + (b^2x^2 + a(a + 1))y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12306	$x^2y'' - 2axy' + (-b^2x^2 + a(a + 1))y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
12316	$x^2y'' + (x^2a + (ab - 1)x + b)y' + a^2bxy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12327	$(x^2 - 1)y'' + xy' + ay = 0$	[_Gegenbauer, [_2nd_order, _linear, '_with_symmetry_[0,F(x)']]]	✓
12328	$(-x^2 + 1)y'' - xy' + n^2y = 0$	[_Gegenbauer, [_2nd_order, _linear, '_with_symmetry_[0,F(x)']]]	✓
12331	$(-x^2 + 1)y'' - 3xy' + n(2 + n)y = 0$	[_Gegenbauer]	✓
12338	$(x^2a + b)y'' + axy' + cy = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)']]]	✓
12340	$(-a^2 + x^2)y'' + 2bxy' + b(b - 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12341	$(a^2 + x^2)y'' + 2bxy' + b(b - 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12350	$(2ax + x^2 + b)y'' + (x + a)y' - m^2y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)']]]	✓
12353	$(x^2a + 2bx + c)y'' + (ax + b)y' + dy = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)']]]	✓
12354	$(x^2a + 2bx + c)y'' + 3(ax + b)y' + dy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12365	$x(x^2a + b)y'' + 2(x^2a + b)y' - 2axy = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
12368	$x^2(ax + b)y'' - 2x(ax + 2b)y' + 2(ax + 3b)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12369	$x^2(ax + b)y'' + (a(2 - n - m)x^2 - b(m + n)x)y' + (am(n - 1)x + bn(m + 1))y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12387	$x^4y'' + ay = 0$	[[_Emden, _Fowler]]	✓
12389	$x^4y'' - (a + b)x^2y' + (x(a + b) + ab)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12390	$x^4y'' + 2x^2(x + a)y' + by = 0$	[[_2nd_order, _with_linear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
12392	$x^2(x-a)^2 y'' + by = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12393	$x^2(x-a)^2 y'' + by = cx^2(x-a)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12396	$(x^2 + 1)^2 y'' + ay = 0$	[_Halm]	✓
12397	$(x^2 - 1)^2 y'' + ay = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12398	$(a^2 + x^2)^2 y'' + b^2 y = 0$	[[_Emden, _Fowler]]	✓
12399	$(-a^2 + x^2)^2 y'' + b^2 y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12400	$4(x^2 + 1)^2 y'' + (x^2 a + a - 3) y = 0$	[_Halm]	✓
12401	$(x^2 a + b)^2 y'' + 2ax(x^2 a + b) y' + cy = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)']]]	✓
12405	$(x^2 a + b)^2 y'' + (2ax + c)(x^2 a + b) y' + ky = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12409	$(x-a)^2(x-b)^2 y'' - cy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12410	$(x-a)^2(x-b)^2 y'' + (x-a)(x-b)(2x+\lambda) y' + \mu y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12411	$(x^2 a + bx + c)^2 y'' + Ay = 0$	[[_Emden, _Fowler]]	✓
12414	$(x^2 a + bx + c)^2 y'' + (2ax + k)(x^2 a + bx + c) y' + my = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12453	$y'' + 2ae^{\lambda x} y' + ae^{\lambda x}(ae^{\lambda x} + \lambda) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12595	$y'' - 3y' + 2y = 0$	[[_2nd_order, _missing_x]]	✓
12596	$y'' - 6y' + 25y = 0$	[[_2nd_order, _missing_x]]	✓
12606	$y'' + 3y' + 2y = e^{e^x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12608	$y'' - 2y' + y = \frac{e^x}{(1-x)^2}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12609	$y'' - 3y' + 2y = e^x$	[[_2nd_order, _with_linear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
12611	$y'' + y = \sec(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12613	$y'' + y = \sec(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12614	$y'' + y = \tan(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12615	$y'' + 4y = x^2 + \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12616	$y'' - 2y' + y = 2x e^{2x} - \sin(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12617	$y'' + y = 2e^x + x^3 - x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12618	$y'' + 2y' + y = 3e^{2x} - \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12622	$y'' - 2y' = e^{2x} + 1$	[[_2nd_order, _missing_y]]	✓
12626	$x^2 y'' + 3xy' + y = \frac{1}{(1-x)^2}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
12627	$(x+1)^2 y'' - (x+1)y' + 6y = x$	[[_2nd_order, _with_linear_symmetries]]	✓
12628	$y'' - 5y' + 6y = \cos(x) - e^{2x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12630	$y'' + 2y' + y = 2x^3 - x e^{3x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12635	$y'' + 4y = \sin(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12636	$y'' + 4y = \sec(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12638	$y'' + y = x \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12641	$y'' - x^2 y' + xy = x$	[[_2nd_order, _with_linear_symmetries]]	✓
12642	$xy'' - (2x+1)y' + (x+1)y = x^2 - x - 1$	[[_2nd_order, _with_linear_symmetries]]	✓
12643	$(x^2+1)y'' + 2xy' - 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12644	$(1-x)y'' + xy' - y = (1-x)^2$	[[_2nd_order, _with_linear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
12645	$\sin(x)y'' + 2\cos(x)y' + 3\sin(x)y = e^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12646	$y'' - 2\tan(x)y' - (a^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12648	$xy'' + 2y' - xy = 2e^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12650	$(-x^2 + 1)y'' - xy' + 4y = 0$	[_Gegenbauer, [_2nd_order, _linear, '_with_symmetry_[0,F(x)']]]	✓
12652	$x^6y'' + 3x^5y' + y = \frac{1}{x^2}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12653	$xy'' - (2x^2 + 1)y' - 8x^3y = 4x^3e^{-x^2}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12654	$xy'' - (x + 3)y' + 3y = 0$	[_Laguerre]	✓
12655	$(x - 3)y'' - (4x - 9)y' + (3x - 6)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12656	$x^2y'' + 4xy' + (-x^2 + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12657	$(x^2 + 1)y'' - 2xy' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12658	$xy'' - (2x - 1)y' + (x - 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12659	$x^2y'' - 4xy' + (x^2 + 6)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12660	$(2x^3 - 1)y'' - 6x^2y' + 6xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12661	$x^2y'' - 2x(x + 1)y' + 2(x + 1)y = x^3$	[[_2nd_order, _with_linear_symmetries]]	✓
12666	$y'' + xy' = x$	[[_2nd_order, _missing_y]]	✓
12667	$y'' = xe^x$	[[_2nd_order, _quadrature]]	✓
12676	$x^2y'' + 3xy' + y = x$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
12677	$(x - 1)^2y'' + 4(x - 1)y' + 2y = \cos(x)$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
12680	$x^5y'' + (2x^4 - x)y' - (2x^3 - 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12689	$(-x^2 + 1)y'' - xy' = 2$	[[_2nd_order, _missing_y]]	✓

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#	ODE	CAS classification	Solved?
12692	$(x^2 - x)y'' + (4x + 2)y' + 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
12694	$y'' + \frac{y'}{x} = 0$	[[_2nd_order, _missing_y]]	✓
12697	$(-x^2 + 1)y'' - \frac{y'}{x} + x^2 = 0$	[[_2nd_order, _missing_y]]	✓
12704	$x'' + 2x' + 2x = 0$	[[_2nd_order, _missing_x]]	✓
12708	$t^2x'' - 6x = 0$	[[_Emden, _Fowler]]	✓
12709	$2x'' - 5x' - 3x = 0$	[[_2nd_order, _missing_x]]	✓
12714	$x'' = -3\sqrt{t}$	[[_2nd_order, _quadrature]]	✓
12719	$x' + tx'' = 1$	[[_2nd_order, _missing_y]]	✓
12748	$\frac{x' + tx''}{t} = -2$	[[_2nd_order, _missing_y]]	✓
12772	$x'' + x' = 3t$	[[_2nd_order, _missing_y]]	✓
12788	$x'' - 4x' + 4x = 0$	[[_2nd_order, _missing_x]]	✓
12789	$x'' - 2x' = 0$	[[_2nd_order, _missing_x]]	✓
12790	$\frac{x''}{2} + x' + \frac{x}{2} = 0$	[[_2nd_order, _missing_x]]	✓
12791	$x'' + 4x' + 3x = 0$	[[_2nd_order, _missing_x]]	✓
12792	$x'' - 4x' + 4x = 0$	[[_2nd_order, _missing_x]]	✓
12793	$x'' - 2x' = 0$	[[_2nd_order, _missing_x]]	✓
12794	$\frac{x''}{2} + x' + \frac{x}{2} = 0$	[[_2nd_order, _missing_x]]	✓
12795	$x'' + 4x' + 3x = 0$	[[_2nd_order, _missing_x]]	✓
12796	$x'' + x' + 4x = 0$	[[_2nd_order, _missing_x]]	✓
12797	$x'' - 4x' + 6x = 0$	[[_2nd_order, _missing_x]]	✓
12798	$x'' + 9x = 0$	[[_2nd_order, _missing_x]]	✓

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#	ODE	CAS classification	Solved?
12799	$x'' - 12x = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
12800	$2x'' + 3x' + 3x = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
12801	$\frac{x''}{2} + \frac{5x'}{6} + \frac{2x}{9} = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
12802	$x'' + x' + x = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
12803	$x'' + \frac{x'}{8} + x = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
12804	$x'' + x' + x = 3t^3 - 1$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12805	$x'' + x' + x = 3 \cos(t) - 2 \sin(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12806	$x'' + x' + x = 12$	[[_2nd_order, _missing_x]]	✓
12807	$x'' + x' + x = t^2 e^{3t}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12808	$x'' + x' + x = 5 \sin(7t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12809	$x'' + x' + x = e^{2t} \cos(t) + t^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12810	$x'' + x' + x = t e^{-t} \sin(\pi t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12811	$x'' + x' + x = (t + 2) \sin(\pi t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12812	$x'' + x' + x = 4t + 5 e^{-t}$	[[_2nd_order, _with_linear_symmetries]]	✓
12813	$x'' + x' + x = 5 \sin(2t) + t e^t$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12814	$x'' + x' + x = t^3 + 1 - 4t \cos(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12815	$x'' + x' + x = -6 + 2 e^{2t} \sin(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12816	$x'' + 7x = t e^{3t}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12817	$x'' - x' = 6 + e^{2t}$	[[_2nd_order, _missing_y]]	✓
12818	$x'' + x = t^2$	[[_2nd_order, _with_linear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
12819	$x'' - 3x' - 4x = 2t^2$	[[_2nd_order, _with_linear_symmetries]]	✓
12820	$x'' + x = 9e^{-t}$	[[_2nd_order, _with_linear_symmetries]]	✓
12821	$x'' - 4x = \cos(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12822	$x'' + x' + 2x = t \sin(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12823 i.c.	$x'' - bx' + x = \sin(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12824 i.c.	$x'' - 3x' - 40x = 2e^{-t}$	[[_2nd_order, _with_linear_symmetries]]	✓
12825 i.c.	$x'' - 2x' = 4$	[[_2nd_order, _missing_x]]	✓
12826 i.c.	$x'' + 2x = \cos(\sqrt{2}t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12827 i.c.	$x'' + \frac{x'}{100} + 4x = \cos(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12828 i.c.	$x'' + w^2x = \cos(\beta t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12829 i.c.	$x'' + 3025x = \cos(45t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12830	$x'' = -\frac{x}{t^2}$	[[_Emden, _Fowler]]	✓
12831	$x'' = \frac{4x}{t^2}$	[[_Emden, _Fowler]]	✓
12832	$t^2x'' + 3tx' + x = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
12833	$tx'' + 4x' + \frac{2x}{t} = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, ' _with_symmetry_[0,F(x)]']]	✓
12834	$t^2x'' - 7tx' + 16x = 0$	[[_Emden, _Fowler]]	✓
12835 i.c.	$t^2x'' + 3tx' - 8x = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, ' _with_symmetry_[0,F(x)]']]	✓
12836 i.c.	$t^2x'' + tx' = 0$	[[_2nd_order, _missing_y]]	✓

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#	ODE	CAS classification	Solved?
12837	$t^2x'' - tx' + 2x = 0$ i.c.	[[_Emden, _Fowler]]	✓
12838	$x'' + t^2x' = 0$ i.c.	[[_2nd_order, _missing_y]]	✓
12839	$x'' + x = \tan(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12840	$x'' - x = te^t$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12841	$x'' - x = \frac{1}{t}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12842	$t^2x'' - 2x = t^3$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
12843	$x'' + x = \frac{1}{t+1}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12844	$x'' - 2x' + x = \frac{e^t}{2t}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12845	$x'' + \frac{x'}{t} = a$	[[_2nd_order, _missing_y]]	✓
12846	$t^2x'' - 3tx' + 3x = 4t^7$	[[_2nd_order, _with_linear_symmetries]]	✓
12847	$x'' - x = \frac{e^t}{1+e^t}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12923	$y'' - 7y' + 12y = 0$	[[_2nd_order, _missing_x]]	✓
12924	$y'' - 3y' + 2y = 4x^2$	[[_2nd_order, _with_linear_symmetries]]	✓
12925	$(x^2 + 1)y'' + 4xy' + 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
12930	$y'' - 2y' - 8y = 0$	[[_2nd_order, _missing_x]]	✓
12935	$y'' - 4y' + 4y = -8\sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12937	$y'' + y' - 6y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
12940	$y'' - y' - 12y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
12943	$y'' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
13065	$y'' + 5y' + 6y = e^x$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
13066	$y'' + 5y' + 6y = e^x$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
13068	$y'' - 4y' + 3y = 0$	[[_2nd_order, _missing_x]]	✓
13069	$y'' - 2y' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
13070	$x^2y'' - 2xy' + 2y = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
13071	$x^2y'' + xy' - 4y = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
13072	$y'' - 5y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
13081	$y'' - 3y' + 2y = 4x^2$	[[_2nd_order, _with_linear_symmetries]]	✓
13082	$y'' - 5y' + 6y = 2 - 12x + 6e^x$	[[_2nd_order, _with_linear_symmetries]]	✓
13083	$y'' - 5y' + 6y = 0$	[[_2nd_order, _missing_x]]	✓
13084	$y'' - 2y' - 3y = 0$	[[_2nd_order, _missing_x]]	✓
13085	$4y'' - 12y' + 5y = 0$	[[_2nd_order, _missing_x]]	✓
13086	$3y'' - 14y' - 5y = 0$	[[_2nd_order, _missing_x]]	✓
13089	$y'' - 8y' + 16y = 0$	[[_2nd_order, _missing_x]]	✓
13090	$4y'' + 4y' + y = 0$	[[_2nd_order, _missing_x]]	✓
13091	$y'' - 4y' + 13y = 0$	[[_2nd_order, _missing_x]]	✓
13092	$y'' + 6y' + 25y = 0$	[[_2nd_order, _missing_x]]	✓
13093	$y'' + 9y = 0$	[[_2nd_order, _missing_x]]	✓
13094	$4y'' + y = 0$	[[_2nd_order, _missing_x]]	✓
13107	$y'' - y' - 12y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
13108	$y'' + 7y' + 10y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
13109	$y'' - 6y' + 8y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
13110	$3y'' + 4y' - 4y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓

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#	ODE	CAS classification	Solved?
13111	$y'' + 6y' + 9y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
13112	$4y'' - 12y' + 9y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
13113	$y'' + 4y' + 4y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
13114	$9y'' - 6y' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
13115	$y'' - 4y' + 29y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
13116	$y'' + 6y' + 58y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
13117	$y'' + 6y' + 13y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
13118	$y'' + 2y' + 5y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
13119	$9y'' + 6y' + 5y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
13120	$4y'' + 4y' + 37y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
13127	$y'' - 3y' + 8y = 4x^2$	[[_2nd_order, _with_linear_symmetries]]	✓
13128	$y'' - 2y' - 8y = 4e^{2x} - 21e^{-3x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13129	$y'' + 2y' + 5y = 6\sin(2x) + 7\cos(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13130	$y'' + 2y' + 2y = 10\sin(4x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13131	$y'' + 2y' + 4y = \cos(4x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13132	$y'' - 3y' - 4y = 16x - 12e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓
13133	$y'' + 6y' + 5y = 2e^x + 10e^{5x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13134	$y'' + 2y' + 10y = 5xe^{-2x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13139	$y'' + y' - 6y = 10e^{2x} - 18e^{3x} - 6x - 11$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
13140	$y'' + y' - 2y = 6e^{-2x} + 3e^x - 4x^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13147	$y'' + y = x \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13148	$y'' + 4y = 12x^2 - 16x \cos(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13151 i.c.	$y'' - 4y' + 3y = 9x^2 + 4$	[[_2nd_order, _with_linear_symmetries]]	✓
13152 i.c.	$y'' + 5y' + 4y = 16x + 20e^x$	[[_2nd_order, _with_linear_symmetries]]	✓
13153 i.c.	$y'' - 8y' + 15y = 9xe^{2x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13154 i.c.	$y'' + 7y' + 10y = 4xe^{-3x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13155 i.c.	$y'' + 8y' + 16y = 8e^{-2x}$	[[_2nd_order, _with_linear_symmetries]]	✓
13156 i.c.	$y'' + 6y' + 9y = 27e^{-6x}$	[[_2nd_order, _with_linear_symmetries]]	✓
13157 i.c.	$y'' + 4y' + 13y = 18e^{-2x}$	[[_2nd_order, _with_linear_symmetries]]	✓
13158 i.c.	$y'' - 10y' + 29y = 8e^{5x}$	[[_2nd_order, _with_linear_symmetries]]	✓
13159 i.c.	$y'' - 4y' + 13y = 8 \sin(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13160 i.c.	$y'' - y' - 6y = 8e^{2x} - 5e^{3x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13161 i.c.	$y'' - 2y' + y = 2xe^{2x} + 6e^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13162 i.c.	$y'' - y = 3e^x x^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13163 i.c.	$y'' + y = 3x^2 - 4 \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13164 i.c.	$y'' + 4y = 8 \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13167	$y'' - 6y' + 8y = x^3 + x + e^{-2x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13168	$y'' + 9y = e^{3x} + e^{-3x} + e^{3x} \sin(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
13169	$y'' + 4y' + 5y = e^{-2x}(\cos(x) + 1)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13170	$y'' - 6y' + 9y = x^4e^x + x^3e^{2x} + x^2e^{3x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13171	$y'' + 6y' + 13y = xe^{-3x}\sin(2x) + x^2e^{-2x}\sin(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13181	$y'' + y = \cot(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13182	$y'' + y = \tan(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13183	$y'' + y = \sec(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13184	$y'' + y = \sec(x)^3$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13185	$y'' + 4y = \sec(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13186	$y'' + y = \tan(x)\sec(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13187	$y'' + 4y' + 5y = e^{-2x}\sec(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13188	$y'' - 2y' + 5y = e^x \tan(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13189	$y'' + 6y' + 9y = \frac{e^{-3x}}{x^3}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13190	$y'' - 2y' + y = xe^x \ln(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13191	$y'' + y = \sec(x)\csc(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13192	$y'' + y = \tan(x)^3$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13193	$y'' + 3y' + 2y = \frac{1}{1 + e^x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13194	$y'' + 3y' + 2y = \frac{1}{e^{2x} + 1}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13195	$y'' + y = \frac{1}{\sin(x) + 1}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13196	$y'' - 2y' + y = e^x \arcsin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
13197	$y'' + 3y' + 2y = \frac{e^{-x}}{x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13198	$y'' - 2y' + y = x \ln(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13199	$x^2y'' - 6xy' + 10y = 3x^4 + 6x^3$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13200	$(x+1)^2y'' - 2(x+1)y' + 2y = 1$	[[_2nd_order, _with_linear_symmetries]]	✓
13201	$(x^2+2x)y'' - 2(x+1)y' + 2y = (x+2)^2$	[[_2nd_order, _with_linear_symmetries]]	✓
13202	$x^2y'' - x(x+2)y' + (x+2)y = x^3$	[[_2nd_order, _with_linear_symmetries]]	✓
13203	$x(-2+x)y'' - (x^2-2)y' + 2(x-1)y = 3x^2(-2+x)^2e^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13204	$(2x+1)(x+1)y'' + 2xy' - 2y = (2x+1)^2$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
13207	$x^2y'' - 3xy' + 3y = 0$	[[_Emden, _Fowler]]	✓
13208	$x^2y'' + xy' - 4y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
13209	$4x^2y'' - 4xy' + 3y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
13210	$x^2y'' - 3xy' + 4y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
13211	$x^2y'' + xy' + 4y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
13212	$x^2y'' - 3xy' + 13y = 0$	[[_Emden, _Fowler]]	✓
13213	$3x^2y'' - 4xy' + 2y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓

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#	ODE	CAS classification	Solved?
13214	$x^2y'' + xy' + 9y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
13215	$9x^2y'' + 3xy' + y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
13216	$x^2y'' - 5xy' + 10y = 0$	[[_Emden, _Fowler]]	✓
13220	$x^2y'' - 4xy' + 6y = 4x - 6$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
13221	$x^2y'' - 5xy' + 8y = 2x^3$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
13222	$x^2y'' + 4xy' + 2y = 4\ln(x)$	[[_2nd_order, _exact, _lin- ear, _nonhomogeneous]]	✓
13223	$x^2y'' + xy' + 4y = 2x\ln(x)$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
13224	$x^2y'' + xy' + 4y = 4\sin(\ln(x))$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13226 i.c.	$x^2y'' - 2xy' - 10y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
13227 i.c.	$x^2y'' - 4xy' + 6y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
13228 i.c.	$x^2y'' + 5xy' + 3y = 0$	[[_2nd_order, _exact, _lin- ear, _homogeneous]]	✓
13229 i.c.	$x^2y'' - 2y = 4x - 8$	[[_2nd_order, _exact, _lin- ear, _nonhomogeneous]]	✓
13230 i.c.	$x^2y'' - 4xy' + 4y = -6x^3 + 4x^2$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
13231 i.c.	$x^2y'' + 2xy' - 6y = 10x^2$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
13232 i.c.	$x^2y'' - 5xy' + 8y = 2x^3$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
13233 i.c.	$x^2y'' - 6y = \ln(x)$	[[_2nd_order, _with_lin- ear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
13234	$(x+2)^2 y'' - (x+2)y' - 3y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
13235	$(2x-3)^2 y'' - 6(2x-3)y' + 12y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
13338	$tx'' - 2x' + 9t^5x = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
13340	$(t^3 - 2t^2)x'' - (t^3 + 2t^2 - 6t)x' + (3t^2 - 6)x = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
13342	$t^2x'' + 3tx' + 3x = 0$	[[_Emden, _Fowler]]	✓
13344	$t^2x'' + (2t^3 + 7t)x' + (8t^2 + 8)x = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
13345	$t^3x'' - (t^3 + 2t^2 - t)x' + (t^2 + t - 1)x = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
13348	$\frac{(t+1)x''}{t} - \frac{x'}{t^2} + \frac{x}{t^3} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
13349	$t^2x'' + tx' + x = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
13354	$y'' + \lambda y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
13355	$y'' + \lambda y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
13356	$y'' + \lambda y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
13357	$y'' + \lambda y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
13358	$y' + xy'' + \frac{\lambda y}{x} = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
13359	$y' + xy'' + \frac{\lambda y}{x} = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓

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#	ODE	CAS classification	Solved?
13360	$2xy' + (x^2 + 1)y'' + \frac{\lambda y}{x^2 + 1} = 0$ i.c.	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
13361	$-\frac{6y'x}{(3x^2 + 1)^2} + \frac{y''}{3x^2 + 1} + \lambda(3x^2 + 1)y = 0$ i.c.	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
13426	$x'' - 3x' + 2x = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
13427	$y'' - 4y' + 4y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
13428	$z'' - 4z' + 13z = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
13429	$y'' + y' - 6y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
13430	$y'' - 4y' = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
13431	$\theta'' + 4\theta = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
13432	$y'' + 2y' + 10y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
13433	$2z'' + 7z' - 4z = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
13434	$y'' + 2y' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
13435	$x'' + 6x' + 10x = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
13436	$4x'' - 20x' + 21x = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
13437	$y'' + y' - 2y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
13438	$y'' - 4y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
13439	$y'' + 4y' + 4y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
13440	$y'' + \omega^2 y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
13441	$x'' - 4x = t^2$	[[_2nd_order, _with_linear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
13442	$x'' - 4x' = t^2$	[[_2nd_order, _missing_y]]	✓
13443	$x'' + x' - 2x = 3e^{-t}$	[[_2nd_order, _with_linear_symmetries]]	✓
13444	$x'' + x' - 2x = e^t$	[[_2nd_order, _with_linear_symmetries]]	✓
13445	$x'' + 2x' + x = e^{-t}$	[[_2nd_order, _with_linear_symmetries]]	✓
13446	$x'' + \omega^2 x = \sin(\alpha t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13447	$x'' + \omega^2 x = \sin(\omega t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13448	$x'' + 2x' + 10x = e^{-t}$	[[_2nd_order, _with_linear_symmetries]]	✓
13449	$x'' + 2x' + 10x = e^{-t} \cos(3t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13450	$x'' + 6x' + 10x = e^{-2t} \cos(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13451	$x'' + 4x' + 4x = e^{2t}$	[[_2nd_order, _with_linear_symmetries]]	✓
13452	$x'' + x' - 2x = 12e^{-t} - 6e^t$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13453	$x'' + 4x = 289t e^t \sin(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13454	$x'' + \omega^2 x = \cos(\alpha t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13455	$x'' + \omega^2 x = \cos(\omega t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13466	$y'' - y' - 6y = e^x$	[[_2nd_order, _with_linear_symmetries]]	✓
13467	$x'' - x = \frac{1}{t}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13468	$y'' + 4y = \cot(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13469	$t^2 x'' - 2x = t^3$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
13470	$x'' - 4x' = \tan(t)$	[[_2nd_order, _missing_y]]	✓

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#	ODE	CAS classification	Solved?
13472	$x^2 y'' - 4xy' + 6y = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)][']]	✓
13473	$4x^2 y'' + y = 0$ i.c.	[[_Emden, _Fowler]]	✓
13474	$t^2 x'' - 5tx' + 10x = 0$ i.c.	[[_Emden, _Fowler]]	✓
13475	$t^2 x'' + tx' - x = 0$ i.c.	[[_2nd_order, _exact, _lin- ear, _homogeneous]]	✓
13476	$x^2 z'' + 3xz' + 4z = 0$ i.c.	[[_Emden, _Fowler]]	✓
13477	$x^2 y'' - xy' - 3y = 0$ i.c.	[[_2nd_order, _exact, _lin- ear, _homogeneous]]	✓
13478	$4t^2 x'' + 8tx' + 5x = 0$ i.c.	[[_Emden, _Fowler]]	✓
13479	$x^2 y'' - 5xy' + 5y = 0$ i.c.	[[_Emden, _Fowler]]	✓
13480	$3x^2 z'' + 5xz' - z = 0$ i.c.	[[_2nd_order, _exact, _lin- ear, _homogeneous]]	✓
13481	$t^2 x'' + 3tx' + 13x = 0$ i.c.	[[_Emden, _Fowler]]	✓
13482	$ay'' + (b - a)y' + cy = 0$	[[_2nd_order, _missing_x]]	✓
13576	$y'' - 6y' + 10y = 100$ i.c.	[[_2nd_order, _missing_x]]	✓
13577	$x'' + x = \sin(t) - \cos(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13579	$y'' + y = \frac{1}{\sin(x)^3}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13580	$x^2 y'' - 4xy' + 6y = 2$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
13581	$y'' + y = \cosh(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13583	$x'' - 4x' + 4x = e^t + e^{2t} + 1$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13594	$y'' + y = 1 - \frac{1}{\sin(x)}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13595	$u'' + \frac{2u'}{r} = 0$	[[_2nd_order, _missing_y]]	✓

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#	ODE	CAS classification	Solved?
13598	$x'' + 9x = t \sin(3t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13599	$y'' + 2y' + y = \sinh(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13601	$y'' - 2y' + 2y = x e^x \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13602	$(x^2 - 1)y'' - 6y = 1$	[[_2nd_order, _with_linear_symmetries]]	✓
13607	$(x + 1)^2 y'' + (x + 1)y' + y = 2 \cos(\ln(x + 1))$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13611	$x'' + 10x' + 25x = 2^t + t e^{-5t}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13617	$y'' + y = \sin(3x) \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13648	$x^2 y'' - y = \sin(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13649	$y'' = y + x^2$	[[_2nd_order, _with_linear_symmetries]]	✓
13656	$y'' + 4y' + y = 0$	[[_2nd_order, _missing_x]]	✓
13658	$2y'' - 3y' - 2y = 0$	[[_2nd_order, _missing_x]]	✓
13666	$(x - 1)y'' - xy' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
13669	$y'' + 2xy' + 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
13671	$y'' + 2x^2 y' + 4xy = 2x$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
13672	$(-x^2 + 1)y'' + (1 - x)y' + y = -2x + 1$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
13673	$y'' + 4xy' + (4x^2 + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
13675	$y'' + x^2 y' + 2xy = 2x$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
13677	$xy'' + x^2 y' + 2xy = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
13680	$x \ln(x) y'' + 2y' - \frac{y}{x} = 1$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
13687	$y'' + \frac{2xy'}{2x - 1} - \frac{4xy}{(2x - 1)^2} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
13688	$(x^2 + 2x)y'' + (x^2 + x + 10)y' = (25 - 6x)y$	[[_2nd_order, _with_linear_symmetries]]	✓
13689	$y'' + \frac{y'}{x+1} - \frac{(x+2)y}{x^2(x+1)} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
13690	$(x^2 - x)y'' + (2x^2 + 4x - 3)y' + 8xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
13691	$\frac{(x^2 - x)y''}{x} + \frac{(3x + 1)y'}{x} + \frac{y}{x} = 3x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13694	$y'' + (2x + 5)y' + (4x + 8)y = e^{-2x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13763	$t^2y'' + 3ty' + y = t^7$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
13768	$y'' + 2y' + y = 1$	[[_2nd_order, _missing_x]]	✓
13769	$y'' - 2y' + 5y = e^t$	[[_2nd_order, _with_linear_symmetries]]	✓
13770	$y'' - 3y' - 7y = 4$	[[_2nd_order, _missing_x]]	✓
13772	$3y'' + 5y' - 2y = 3t^2$	[[_2nd_order, _with_linear_symmetries]]	✓
13808	$y'' - 2y' + y = x^{3/2}e^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13809	$y'' + 4y = 2 \sec(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13810	$y'' + \frac{y'}{x} + \left(1 - \frac{1}{4x^2}\right)y = x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13811	$y'' + y = f(x)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13812	$x^2y'' + x\left(-\frac{1}{2} + x\right)y' + \frac{y}{2} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
13813	$x^2y'' + x(x+1)y' - y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
13825	$y'' + \alpha^2y = 0$	[[_2nd_order, _missing_x]]	✓
13826	$y'' - \alpha^2y = 0$	[[_2nd_order, _missing_x]]	✓
13827	$y'' + \beta y' + \gamma y = 0$	[[_2nd_order, _missing_x]]	✓
13835	$y'' - 2ky' + k^2y = e^x$	[[_2nd_order, _with_linear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
13836	$(-x^2 + 1)y'' - xy' - a^2y = 0$	[_Gegenbauer, [_2nd_order, _linear, ‘_with_symmetry_[0,F(x)]’]]	✓
13837	$y'' + \frac{2y'}{x} = 0$	[[_2nd_order, _missing_y]]	✓
13904	$y'' = a^2y$	[[_2nd_order, _missing_x]]	✓
13906	$xy'' - y' = e^x x^2$ i.c.	[[_2nd_order, _missing_y]]	✓
13913	$y'' = 9y$	[[_2nd_order, _missing_x]]	✓
13914	$y'' + y = 0$	[[_2nd_order, _missing_x]]	✓
13915	$y'' - y = 0$	[[_2nd_order, _missing_x]]	✓
13916	$y'' + 12y = 7y'$	[[_2nd_order, _missing_x]]	✓
13917	$y'' - 4y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
13918	$y'' + 2y' + 10y = 0$	[[_2nd_order, _missing_x]]	✓
13919	$y'' + 3y' - 2y = 0$	[[_2nd_order, _missing_x]]	✓
13920	$4y'' - 12y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓
13921	$y'' + y' + y = 0$	[[_2nd_order, _missing_x]]	✓
13930	$y'' - 7y' + 12y = x$	[[_2nd_order, _with_linear_symmetries]]	✓
13931	$s'' - a^2s = t + 1$	[[_2nd_order, _with_linear_symmetries]]	✓
13932	$y'' + y' - 2y = 8 \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13933	$y'' - y = 5x + 2$	[[_2nd_order, _with_linear_symmetries]]	✓
13934	$y'' - 2ay' + a^2y = e^x$	[[_2nd_order, _with_linear_symmetries]]	✓
13935	$y'' + 6y' + 5y = e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓
13936	$y'' + 9y = 6e^{3x}$	[[_2nd_order, _with_linear_symmetries]]	✓
13937	$y'' - 3y' = 2 - 6x$	[[_2nd_order, _missing_y]]	✓
13938	$y'' - 2y' + 3y = e^{-x} \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13939	$y'' + 4y = 2 \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
13943	$y'' + 2hy' + n^2y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
13944	$y'' + n^2y = h \sin(rx)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13945	$y'' - 7y' + 6y = \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13946	$y'' + y = \sec(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13947	$y'' + y = \frac{1}{\cos(2x)^{3/2}}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13954	$y'' + y = \sec(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13957	$y'' - 4y = e^{2x} \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13986	$x^2y'' + xy' - y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
13988	$2x^2y'' + 3xy' - y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
13989	$y'' - 3y' + 2y = 0$	[[_2nd_order, _missing_x]]	✓
13990	$x^2y'' - 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
13996	$2x^2y'' + xy' - y = 0$	[[_Emden, _Fowler]]	✓
13999	$y'' - 3y' - 10y = 0$	[[_2nd_order, _missing_x]]	✓
14000	$y'' + 2y' + y = 0$	[[_2nd_order, _missing_x]]	✓
14003	$x^2y'' - xy' = 0$	[[_2nd_order, _missing_y]]	✓
14004	$x^2y'' + 6xy' + 4y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
14005	$x^2y'' - 5xy' + 9y = 0$	[[_Emden, _Fowler]]	✓
14011	$y'' - y' - 6y = 0$	[[_2nd_order, _missing_x]]	✓
14013	$y'' - y = 0$	[[_2nd_order, _missing_x]]	✓
14016	$y'' - y' - 2y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
14017	$y'' - y' - 2y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
14018	$y'' - y' - 2y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓

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#	ODE	CAS classification	Solved?
14019	$y'' - y' - 2y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
14021	$x^2y'' - 4xy' + 6y = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]^c]]	✓
14022	$x^2y'' - 4xy' + 6y = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]^c]]	✓
14023	$x^2y'' - 4xy' + 6y = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]^c]]	✓
14024	$x^2y'' - 4xy' + 6y = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]^c]]	✓
14025	$x^2y'' - 4xy' + 6y = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]^c]]	✓
14156	$3y'' - 2y' + 4y = x$ i.c.	[[_2nd_order, _with_lin- ear_symmetries]]	✓
14158	$x(x-3)y'' + 3y' = x^2$ i.c.	[[_2nd_order, _missing_y]]	✓
14159	$x(x-3)y'' + 3y' = x^2$ i.c.	[[_2nd_order, _missing_y]]	✓
14162	$y'' - y = 0$	[[_2nd_order, _missing_x]]	✓
14163	$y'' + y = 0$	[[_2nd_order, _missing_x]]	✓
14164	$x^2y'' + 2xy' - 2y = 0$	[[_Emden, _Fowler]]	✓
14166	$y'' - y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
14168	$x^2y'' - xy' + y = 0$ i.c.	[[_Emden, _Fowler]]	✓
14169	$y'' - 4y = 31$ i.c.	[[_2nd_order, _missing_x]]	✓
14170	$y'' + 9y = 27x + 18$ i.c.	[[_2nd_order, _with_lin- ear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
14171	$x^2 y'' + xy' - 4y = -3x - \frac{3}{x}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
14172	$4y'' + 4y' - 3y = 0$	[[_2nd_order, _missing_x]]	✓
14182	$y'' + \alpha y = 0$	[[_2nd_order, _missing_x]]	✓
14538	$y'' - 6y' - 7y = 0$	[[_2nd_order, _missing_x]]	✓
14539	$y'' - y' - 12y = 0$	[[_2nd_order, _missing_x]]	✓
14569	$y'' + 5y' + 6y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
14570	$y'' + 2y' + 5y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
14571	$y'' + 2y' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
14572	$y'' + 2y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
14573	$y'' - y' - 6y = e^{4t}$	[[_2nd_order, _with_linear_symmetries]]	✓
14574	$y'' + 6y' + 8y = 2e^{-3t}$	[[_2nd_order, _with_linear_symmetries]]	✓
14575	$y'' - y' - 2y = 5e^{3t}$	[[_2nd_order, _with_linear_symmetries]]	✓
14576	$y'' + 4y' + 13y = e^{-t}$	[[_2nd_order, _with_linear_symmetries]]	✓
14577	$y'' + 4y' + 13y = -3e^{-2t}$	[[_2nd_order, _with_linear_symmetries]]	✓
14578	$y'' + 7y' + 10y = e^{-2t}$	[[_2nd_order, _with_linear_symmetries]]	✓
14579	$y'' - 5y' + 4y = e^{4t}$	[[_2nd_order, _with_linear_symmetries]]	✓
14580	$y'' + y' - 6y = 4e^{-3t}$	[[_2nd_order, _with_linear_symmetries]]	✓
14581	$y'' + 6y' + 8y = e^{-t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
14582	$y'' + 7y' + 12y = 3e^{-t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
14583	$y'' + 4y' + 13y = -3e^{-2t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
14584	$y'' + 7y' + 10y = e^{-2t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
14585	$y'' + 4y' + 3y = e^{-\frac{t}{2}}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
14586	$y'' + 4y' + 3y = e^{-2t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
14587	$y'' + 4y' + 3y = e^{-4t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
14588	$y'' + 4y' + 20y = e^{-\frac{t}{2}}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
14589	$y'' + 4y' + 20y = e^{-2t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
14590	$y'' + 4y' + 20y = e^{-4t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
14591	$y'' + 2y' + y = e^{-t}$	[[_2nd_order, _with_linear_symmetries]]	✓
14592	$y'' - 5y' + 4y = 5$ i.c.	[[_2nd_order, _missing_x]]	✓
14593	$y'' + 5y' + 6y = 2$ i.c.	[[_2nd_order, _missing_x]]	✓
14594	$y'' + 2y' + 10y = 10$ i.c.	[[_2nd_order, _missing_x]]	✓
14595	$y'' + 4y' + 6y = -8$ i.c.	[[_2nd_order, _missing_x]]	✓
14596	$y'' + 9y = e^{-t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
14597	$y'' + 4y = 2e^{-2t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
14598	$y'' + 2y = -3$ i.c.	[[_2nd_order, _missing_x]]	✓
14599	$y'' + 4y = e^t$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
14600	$y'' + 9y = 6$ i.c.	[[_2nd_order, _missing_x]]	✓
14601	$y'' + 2y = -e^t$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
14602	$y'' + 4y = -3t^2 + 2t + 3$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
14603	$y'' + 2y' = 3t + 2$ i.c.	[[_2nd_order, _missing_y]]	✓

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#	ODE	CAS classification	Solved?
14604	$y'' + 4y' = 3t + 2$ i.c.	[[_2nd_order, _missing_y]]	✓
14605	$y'' + 3y' + 2y = t^2$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
14606	$y'' + 4y = t - \frac{1}{20}t^2$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
14607	$y'' + 5y' + 6y = 4 + e^{-t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
14608	$y'' + 3y' + 2y = e^{-t} - 4$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
14609	$y'' + 6y' + 8y = 2t + e^{-t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
14610	$y'' + 6y' + 8y = 2t + e^t$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
14611	$y'' + 4y = t + e^{-t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
14612	$y'' + 4y = 6 + t^2 + e^t$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
14613	$y'' + 3y' + 2y = \cos(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
14614	$y'' + 3y' + 2y = 5 \cos(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
14615	$y'' + 3y' + 2y = \sin(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
14616	$y'' + 3y' + 2y = 2 \sin(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
14617	$y'' + 6y' + 8y = \cos(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
14618	$y'' + 6y' + 8y = -4 \cos(3t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
14619	$y'' + 4y' + 13y = 3 \cos(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
14620	$y'' + 4y' + 20y = -\cos(5t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
14621	$y'' + 4y' + 20y = -3 \sin(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
14622	$y'' + 2y' + y = \cos(3t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
14623	$y'' + 6y' + 8y = \cos(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
14624	$y'' + 6y' + 8y = 2 \cos(3t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
14625	$y'' + 6y' + 20y = -3 \sin(2t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
14626	$y'' + 2y' + y = 2 \cos(2t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
14627	$y'' + 3y' + y = \cos(3t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
14628	$y'' + 4y' + 20y = 3 + 2 \cos(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
14629	$y'' + 4y' + 20y = e^{-t} \cos(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
14630	$y'' + 9y = \cos(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
14631	$y'' + 9y = 5 \sin(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
14632	$y'' + 4y = -\cos\left(\frac{t}{2}\right)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
14633	$y'' + 4y = 3 \cos(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
14634	$y'' + 9y = 2 \cos(3t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
14660	$y'' = \frac{x+1}{x-1}$	[[_2nd_order, _quadrature]]	✓
14661	$x^2 y'' = 1$	[[_2nd_order, _quadrature]]	✓
14663	$y'' + 3y' + 8y = e^{-x^2}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
14664	$x^2 y'' + 3xy' = 0$	[[_2nd_order, _missing_y]]	✓
14674	$y'' = \sin(2x)$	[[_2nd_order, _quadrature]]	✓
14675	$y'' - 3 = x$	[[_2nd_order, _quadrature]]	✓
14683	$xy'' + 2 = \sqrt{x}$ i.c.	[[_2nd_order, _quadrature]]	✓
14885	$xy'' + 4y' = 18x^2$	[[_2nd_order, _missing_y]]	✓

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#	ODE	CAS classification	Solved?
14886	$xy'' = 2y'$	[[_2nd_order, _missing_y]]	✓
14887	$y'' = y'$	[[_2nd_order, _missing_x]]	✓
14888	$y'' + 2y' = 8e^{2x}$	[[_2nd_order, _missing_y]]	✓
14889	$xy'' = y' - 2x^2y'$	[[_2nd_order, _missing_y]]	✓
14890	$(x^2 + 1)y'' + 2xy' = 0$	[[_2nd_order, _missing_y]]	✓
14897	$y'' = 2y' - 6$	[[_2nd_order, _missing_x]]	✓
14899	$y'' + 4y' = 9e^{-3x}$	[[_2nd_order, _missing_y]]	✓
14907	$y'' = y'$	[[_2nd_order, _missing_x]]	✓
14913	$xy'' - y' = 6x^5$	[[_2nd_order, _missing_y]]	✓
14917	$y'' + 4y' = 9e^{-3x}$	[[_2nd_order, _missing_y]]	✓
14919	$xy'' + 4y' = 18x^2$	[[_2nd_order, _missing_y]]	✓
14920	$xy'' = 2y'$	[[_2nd_order, _missing_y]]	✓
14921	$y'' = y'$	[[_2nd_order, _missing_x]]	✓
14922	$y'' + 2y' = 8e^{2x}$	[[_2nd_order, _missing_y]]	✓
14925	$xy'' + 2y' = 6$	[[_2nd_order, _missing_y]]	✓
14945	$y'' = 2y' - 5y + 30e^{3x}$	[[_2nd_order, _with_linear_symmetries]]	✓
14972	$y'' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
14973	$y'' - 4y = 0$	[[_2nd_order, _missing_x]]	✓
14974	$y'' + y' - 6y = 0$	[[_2nd_order, _missing_x]]	✓
14975	$y'' - 4y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
14976	$x^2y'' - 4xy' + 6y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓

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#	ODE	CAS classification	Solved?
14977	$4x^2y'' + 4xy' - y = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]]	✓
14978	$x^2y'' - xy' + y = 0$ i.c.	[[_Emden, _Fowler]]	✓
14979	$xy'' - y' + 4x^3y = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]]	✓
14980	$(x + 1)^2 y'' - 2(x + 1) y' + 2y = 0$ i.c.	[[_2nd_order, _with_lin- ear_symmetries], [_2nd_or- der, _linear, '_with_sym- metry_[0,F(x)]']]]	✓
14981	$x^2y'' - 4xy' + 6y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]]	✓
14982	$xy'' - y' + 4x^3y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]]	✓
14985	$y'' - 4y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
14986	$y'' + 2y' - 3y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
14987	$y'' - 10y' + 9y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
14988	$y'' + 5y' = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
14991	$y'' - 7y' + 10y = 0$	[[_2nd_order, _missing_x]]	✓
14992	$y'' + 2y' - 24y = 0$	[[_2nd_order, _missing_x]]	✓
14993	$y'' - 25y = 0$	[[_2nd_order, _missing_x]]	✓
14994	$y'' + 3y' = 0$	[[_2nd_order, _missing_x]]	✓
14995	$4y'' - y = 0$	[[_2nd_order, _missing_x]]	✓
14996	$3y'' + 7y' - 6y = 0$	[[_2nd_order, _missing_x]]	✓
14997	$y'' - 8y' + 15y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓

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#	ODE	CAS classification	Solved?
14998	$y'' - 8y' + 15y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
14999	$y'' - 8y' + 15y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
15000	$y'' - 9y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
15001	$y'' - 9y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
15002	$y'' - 9y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
15003	$y'' - 10y' + 25y = 0$	[[_2nd_order, _missing_x]]	✓
15004	$y'' + 2y' + y = 0$	[[_2nd_order, _missing_x]]	✓
15005	$4y'' - 4y' + y = 0$	[[_2nd_order, _missing_x]]	✓
15006	$25y'' - 10y' + y = 0$	[[_2nd_order, _missing_x]]	✓
15007	$16y'' - 24y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓
15008	$9y'' + 12y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
15009	$y'' - 8y' + 16y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
15010	$y'' - 8y' + 16y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
15011	$y'' - 8y' + 16y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
15012	$4y'' + 4y' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
15013	$4y'' + 4y' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
15014	$4y'' + 4y' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
15015	$y'' + 25y = 0$	[[_2nd_order, _missing_x]]	✓
15016	$y'' + 2y' + 5y = 0$	[[_2nd_order, _missing_x]]	✓
15017	$y'' - 2y' + 5y = 0$	[[_2nd_order, _missing_x]]	✓
15018	$y'' - 4y' + 29y = 0$	[[_2nd_order, _missing_x]]	✓
15019	$9y'' + 18y' + 10y = 0$	[[_2nd_order, _missing_x]]	✓
15020	$4y'' + y = 0$	[[_2nd_order, _missing_x]]	✓
15021	$y'' + 16y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓

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#	ODE	CAS classification	Solved?
15022	$y'' + 16y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
15023	$y'' + 16y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
15024	$y'' - 4y' + 13y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
15025	$y'' - 4y' + 13y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
15026	$y'' - 4y' + 13y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
15027	$y'' - y' + \left(\frac{1}{4} + 4\pi^2\right)y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
15028	$y'' - y' + \left(\frac{1}{4} + 4\pi^2\right)y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
15055	$x^2y'' - 5xy' + 8y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]]	✓
15056	$x^2y'' - 2y = 0$	[[_2nd_order, _exact, _lin- ear, _homogeneous]]	✓
15057	$x^2y'' - 2xy' = 0$	[[_2nd_order, _missing_y]]	✓
15058	$2x^2y'' - xy' + y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]]	✓
15059	$x^2y'' - 5xy' + 9y = 0$	[[_Emden, _Fowler]]	✓
15060	$x^2y'' + 5xy' + 4y = 0$	[[_Emden, _Fowler]]	✓
15061	$4x^2y'' + y = 0$	[[_Emden, _Fowler]]	✓
15062	$x^2y'' - 19xy' + 100y = 0$	[[_Emden, _Fowler]]	✓
15063	$x^2y'' - 5xy' + 29y = 0$	[[_Emden, _Fowler]]	✓
15064	$x^2y'' - xy' + 10y = 0$	[[_Emden, _Fowler]]	✓
15065	$x^2y'' + 5xy' + 29y = 0$	[[_Emden, _Fowler]]	✓
15066	$x^2y'' + xy' + y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]]	✓

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#	ODE	CAS classification	Solved?
15067	$2x^2y'' + 5xy' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
15068	$4x^2y'' + 37y = 0$	[[_Emden, _Fowler]]	✓
15069	$x^2y'' + xy' = 0$	[[_2nd_order, _missing_y]]	✓
15070	$x^2y'' + xy' - 25y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
15071	$4x^2y'' + 8xy' + 5y = 0$	[[_Emden, _Fowler]]	✓
15072	$3x^2y'' - 7xy' + 3y = 0$	[[_Emden, _Fowler]]	✓
15073	<i>i.c.</i> $x^2y'' - 2xy' - 10y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
15074	<i>i.c.</i> $4x^2y'' + 4xy' - y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
15075	<i>i.c.</i> $x^2y'' - 11xy' + 36y = 0$	[[_Emden, _Fowler]]	✓
15076	<i>i.c.</i> $x^2y'' - xy' + y = 0$	[[_Emden, _Fowler]]	✓
15077	<i>i.c.</i> $x^2y'' - xy' + 2y = 0$	[[_Emden, _Fowler]]	✓
15078	<i>i.c.</i> $x^2y'' - 3xy' + 13y = 0$	[[_Emden, _Fowler]]	✓
15087	<i>i.c.</i> $y'' + 4y = 24e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓
15088	<i>i.c.</i> $y'' + 4y = 24e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓
15089	<i>i.c.</i> $y'' + 2y' - 8y = 8x^2 - 3$	[[_2nd_order, _with_linear_symmetries]]	✓
15090	<i>i.c.</i> $y'' + 2y' - 8y = 8x^2 - 3$	[[_2nd_order, _with_linear_symmetries]]	✓
15091	<i>i.c.</i> $y'' - 9y = 36$	[[_2nd_order, _missing_x]]	✓
15092	<i>i.c.</i> $y'' - 3y' - 10y = -6e^{4x}$	[[_2nd_order, _with_linear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
15093	$y'' - 3y' - 10y = 7e^{5x}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
15094	$y'' + 6y' + 9y = 169 \sin(2x)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15095	$x^2y'' - 4xy' + 6y = 10x + 12$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
15097	$y'' - 3y' - 10y = e^{4x}$	[[_2nd_order, _with_linear_symmetries]]	✓
15098	$y'' - 3y' - 10y = e^{5x}$	[[_2nd_order, _with_linear_symmetries]]	✓
15099	$y'' - 3y' - 10y = -18e^{4x} + 14e^{5x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15100	$y'' - 3y' - 10y = 35e^{5x} + 12e^{4x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15101	$x^2y'' - 4xy' + 6y = 1$	[[_2nd_order, _with_linear_symmetries]]	✓
15102	$x^2y'' - 4xy' + 6y = x$	[[_2nd_order, _with_linear_symmetries]]	✓
15103	$x^2y'' - 4xy' + 6y = 22x + 24$	[[_2nd_order, _with_linear_symmetries]]	✓
15104	$x^2y'' - 7xy' + 15y = x^2$	[[_2nd_order, _with_linear_symmetries]]	✓
15105	$x^2y'' - 7xy' + 15y = x$	[[_2nd_order, _with_linear_symmetries]]	✓
15106	$x^2y'' - 7xy' + 15y = 1$	[[_2nd_order, _with_linear_symmetries]]	✓
15107	$x^2y'' - 7xy' + 15y = 4x^2 + 2x + 3$	[[_2nd_order, _with_linear_symmetries]]	✓
15108	$y'' + 9y = 52e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓
15109	$y'' - 6y' + 9y = 27e^{6x}$	[[_2nd_order, _with_linear_symmetries]]	✓
15110	$y'' + 4y' - 5y = 30e^{-4x}$	[[_2nd_order, _with_linear_symmetries]]	✓
15111	$y'' + 3y' = e^{\frac{x}{2}}$	[[_2nd_order, _missing_y]]	✓
15112	$y'' - 3y' - 10y = -5e^{3x}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
15113	$y'' + 9y = 10 \cos(2x) + 15 \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
15114	$y'' - 6y' + 9y = 25 \sin(6x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15115	$y'' + 3y' = 26 \cos\left(\frac{x}{3}\right) - 12 \sin\left(\frac{x}{3}\right)$	[[_2nd_order, _missing_y]]	✓
15116	$y'' + 4y' - 5y = \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15117	$y'' - 3y' - 10y = -4 \cos(x) + 7 \sin(x)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15118	$y'' - 3y' - 10y = -200$	[[_2nd_order, _missing_x]]	✓
15119	$y'' + 4y' - 5y = x^3$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15120	$y'' - 6y' + 9y = 18x^2 + 3x + 4$	[[_2nd_order, _with_linear_symmetries]]	✓
15121	$y'' + 9y = 9x^4 - 9$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15122	$y'' + 9y = x^3$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15123	$y'' + 9y = 25x \cos(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15124	$y'' - 6y' + 9y = e^{2x} \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15125	$y'' + 9y = 54x^2 e^{3x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15126	$y'' = 6x e^x \sin(x)$	[[_2nd_order, _quadrature]]	✓
15127	$y'' - 2y' + y = (-6x - 8) \cos(2x) + (8x - 11) \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15128	$y'' - 2y' + y = (12x - 4) e^{-5x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15129	$y'' + 9y = 39x e^{2x}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15130	$y'' - 3y' - 10y = -3 e^{-2x}$	[[_2nd_order, _with_linear_symmetries]]	✓
15131	$y'' + 4y' = 20$	[[_2nd_order, _missing_x]]	✓
15132	$y'' + 4y' = x^2$	[[_2nd_order, _missing_y]]	✓
15133	$y'' + 9y = 3 \sin(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
15134	$y'' - 6y' + 9y = 10e^{3x}$	[[_2nd_order, _with_linear_symmetries]]	✓
15135	$y'' - 3y' - 10y = (72x^2 - 1)e^{2x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15136	$y'' - 3y' - 10y = 4xe^{6x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15137	$y'' - 10y' + 25y = 6e^{5x}$	[[_2nd_order, _with_linear_symmetries]]	✓
15138	$y'' - 10y' + 25y = 6e^{-5x}$	[[_2nd_order, _with_linear_symmetries]]	✓
15139	$y'' + 4y' + 5y = 24\sin(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15140	$y'' + 4y' + 5y = 8e^{-3x}$	[[_2nd_order, _with_linear_symmetries]]	✓
15141	$y'' - 4y' + 5y = e^{2x}\sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15142	$y'' - 4y' + 5y = e^{-x}\sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15143	$y'' - 4y' + 5y = 100$	[[_2nd_order, _missing_x]]	✓
15144	$y'' - 4y' + 5y = e^{-x}$	[[_2nd_order, _with_linear_symmetries]]	✓
15145	$y'' - 4y' + 5y = 10x^2 + 4x + 8$	[[_2nd_order, _with_linear_symmetries]]	✓
15146	$y'' + 9y = e^{2x}\sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15147	$y'' + y = 6\cos(x) - 3\sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15148	$y'' + y = 6\cos(2x) - 3\sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15149	$y'' - 4y' + 5y = x^3e^{-x}\sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15150	$y'' - 4y' + 5y = x^3e^{2x}\sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15151	$y'' - 5y' + 6y = x^2e^{-7x} + 2e^{-7x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15152	$y'' - 5y' + 6y = x^2$	[[_2nd_order, _with_linear_symmetries]]	✓
15153	$y'' - 5y' + 6y = 4e^{-8x}$	[[_2nd_order, _with_linear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
15154	$y'' - 5y' + 6y = 4e^{3x}$	[[_2nd_order, _with_linear_symmetries]]	✓
15155	$y'' - 5y' + 6y = x^2e^{3x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15156	$y'' - 5y' + 6y = x^2 \cos(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15157	$y'' - 5y' + 6y = x^2e^{3x} \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15158	$y'' - 4y' + 20y = e^{4x} \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15159	$y'' - 4y' + 20y = e^{2x} \sin(4x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15160	$y'' - 4y' + 20y = x^3 \sin(4x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15161	$y'' - 10y' + 25y = 3x^2e^{5x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15162	$y'' - 10y' + 25y = 3x^4$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15177	$y'' - 6y' + 9y = 27e^{6x} + 25 \sin(6x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15178	$y'' + 9y = 25x \cos(2x) + 3 \sin(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15179	$y'' - 4y' + 5y = 5 \sin(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15180	$y'' - 4y' + 5y = 20 \sinh(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15181	$x^2y'' - 5xy' + 8y = \frac{5}{x^3}$	[[_2nd_order, _with_linear_symmetries]]	✓
15182	$2x^2y'' - xy' + y = \frac{50}{x^3}$	[[_2nd_order, _with_linear_symmetries]]	✓
15183	$2x^2y'' + 5xy' + y = 85 \cos(2 \ln(x))$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
15184	$x^2y'' - 2y = 15 \cos(3 \ln(x)) - 10 \sin(3 \ln(x))$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
15185	$3x^2y'' - 7xy' + 3y = 4x^3$	[[_2nd_order, _with_linear_symmetries]]	✓
15186	$2x^2y'' + 5xy' + y = \frac{10}{x}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
15187	$x^2y'' - 5xy' + 9y = 6x^3$	[[_2nd_order, _with_linear_symmetries]]	✓
15188	$x^2y'' + 5xy' + 4y = 64x^2 \ln(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15189	$x^2y'' - 2xy' + 2y = 3\sqrt{x}$	[[_2nd_order, _with_linear_symmetries]]	✓
15190	$y'' + y = \cot(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15191	$y'' + 4y = \csc(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15192	$y'' - 7y' + 10y = 6e^{3x}$	[[_2nd_order, _with_linear_symmetries]]	✓
15193	$y'' - 4y' + 4y = (24x^2 + 2)e^{2x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15194	$y'' + 4y' + 4y = \frac{e^{-2x}}{x^2 + 1}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15195	$x^2y'' + xy' - y = \sqrt{x}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
15196	$x^2y'' + xy' - 9y = 12x^3$	[[_2nd_order, _with_linear_symmetries]]	✓
15197	$x^2y'' - 3xy' + 4y = x^2$	[[_2nd_order, _with_linear_symmetries]]	✓
15198	$x^2y'' + 5xy' + 4y = \ln(x)$	[[_2nd_order, _with_linear_symmetries]]	✓
15199	$x^2y'' - 2y = \frac{1}{-2 + x}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
15200	$xy'' - y' - 4x^3y = x^3e^{x^2}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15201	$xy'' + (2x + 2)y' + 2y = 8e^{2x}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
15202	$(x + 1)y'' + xy' - y = (x + 1)^2$	[[_2nd_order, _with_linear_symmetries]]	✓
15203	$x^2y'' - 2xy' - 4y = \frac{10}{x}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
15204	$y'' - y' - 6y = 12e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓
15211	$y'' + 36y = 0$	[[_2nd_order, _missing_x]]	✓

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#	ODE	CAS classification	Solved?
15212	$y'' - 12y' + 36y = 0$	[[_2nd_order, _missing_x]]	✓
15213	$x^2y'' + xy' - 9y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, ' _with_symme- try_[0,F(x)]']]	✓
15214	$y'' - 36y = 0$	[[_2nd_order, _missing_x]]	✓
15215	$y'' - 9y' + 14y = 0$	[[_2nd_order, _missing_x]]	✓
15216	$x^2y'' - 7xy' + 16y = 0$	[[_Emden, _Fowler]]	✓
15217	$2xy'' + y' = \sqrt{x}$	[[_2nd_order, _missing_y]]	✓
15219	$y'' + 6y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓
15220	$y'' + 3y = 0$	[[_2nd_order, _missing_x]]	✓
15221	$x^2y'' + 7xy' + 9y = 0$	[[_Emden, _Fowler]]	✓
15222	$x^2y'' + \frac{5y}{2} = 0$	[[_Emden, _Fowler]]	✓
15224	$x^2y'' - 6y = 0$	[[_Emden, _Fowler]]	✓
15225	$y'' - 6y' + 25y = 0$	[[_2nd_order, _missing_x]]	✓
15227	$x^2y'' + xy' + 9y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, ' _with_symme- try_[0,F(x)]']]	✓
15228	$y'' - 8y' + 25y = 0$	[[_2nd_order, _missing_x]]	✓
15229	$x^2y'' + 2xy' - 30y = 0$	[[_Emden, _Fowler]]	✓
15230	$y'' + y' - 30y = 0$	[[_2nd_order, _missing_x]]	✓
15231	$16y'' - 8y' + y = 0$	[[_2nd_order, _missing_x]]	✓
15232	$4x^2y'' + 8xy' + y = 0$	[[_Emden, _Fowler]]	✓
15234	$2x^2y'' - 3xy' + 2y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, ' _with_symme- try_[0,F(x)]']]	✓
15235	$9x^2y'' + 3xy' + y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, ' _with_symme- try_[0,F(x)]']]	✓
15237	$2y'' - 7y' + 3 = 0$	[[_2nd_order, _missing_x]]	✓
15238	$y'' + 20y' + 100y = 0$	[[_2nd_order, _missing_x]]	✓

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#	ODE	CAS classification	Solved?
15239	$xy'' = 3y'$	[[_2nd_order, _missing_y]]	✓
15240	$y'' - 5y' = 0$	[[_2nd_order, _missing_x]]	✓
15241	$y'' - 9y' + 14y = 98x^2$	[[_2nd_order, _with_linear_symmetries]]	✓
15242	$y'' - 12y' + 36y = 25 \sin(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15243	$y'' - 9y' + 14y = 576x^2e^{-x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15244	$y'' - 12y' + 36y = 81e^{3x}$	[[_2nd_order, _with_linear_symmetries]]	✓
15245	$x^2y'' + xy' - 9y = 3\sqrt{x}$	[[_2nd_order, _with_linear_symmetries]]	✓
15246	$y'' - 12y' + 36y = 3xe^{6x} - 2e^{6x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15247	$y'' + 36y = 6 \sec(6x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15248	$x^2y'' + 2xy' - 6y = 18 \ln(x)$	[[_2nd_order, _with_linear_symmetries]]	✓
15249	$y'' + 6y' + 9y = 10e^{-3x}$	[[_2nd_order, _with_linear_symmetries]]	✓
15250	$2x^2y'' - xy' - 2y = 10x^2$	[[_2nd_order, _with_linear_symmetries]]	✓
15251	$y'' + 6y' + 9y = 2 \cos(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15253	$x^2y'' + 3xy' + 2y = 6$	[[_2nd_order, _with_linear_symmetries]]	✓
15254	$x^2y'' + xy' - y = \frac{1}{x^2 + 1}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
15255	$4y'' - 12y' + 9y = xe^{\frac{3x}{2}}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15256	$3y'' + 8y' - 3y = 123x \sin(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15259	$x^2y'' + 3xy' + y = \frac{1}{(x+1)^2}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
15260	$x^2y'' + 3xy' + y = \frac{1}{x}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
15457	$y'' + y' - 2y = x^3$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
15461	$t^2y'' + ty' + 2y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, _with_symme- try_[0,F(x)]]]	✓
15469	$y'' - y' - 12y = 0$	[[_2nd_order, _missing_x]]	✓
15470	$y'' + 9y' = 0$	[[_2nd_order, _missing_x]]	✓
15471	$x'' + 2x' - 10x = 0$	[[_2nd_order, _missing_x]]	✓
15472	$x'' + x = t \cos(t) - \cos(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15473	$y'' - 12y' + 40y = 0$	[[_2nd_order, _missing_x]]	✓
15476	$x^2y'' - 12xy' + 42y = 0$	[[_Emden, _Fowler]]	✓
15477	$t^2y'' + 3ty' + 5y = 0$	[[_Emden, _Fowler]]	✓
15498	$y'' - y' - 12y = 0$	[[_2nd_order, _missing_x]]	✓
15499	$y'' + 9y' = 0$	[[_2nd_order, _missing_x]]	✓
15502	$t^2y'' - 12ty' + 42y = 0$	[[_Emden, _Fowler]]	✓
15503	$x^2y'' + 3xy' + 5y = 0$	[[_Emden, _Fowler]]	✓
15511	$16y'' + 24y' + 153y = 0$	[[_2nd_order, _missing_x]]	✓
15520	$y'' + 4y' - 5y = 0$	[[_2nd_order, _missing_x]]	✓
15521	$y'' - 6y' + 45y = 0$	[[_2nd_order, _missing_x]]	✓
15522	$x^2y'' - xy' - 16y = 0$	[[_Emden, _Fowler]]	✓
15523	$x^2y'' + 3xy' + 2y = 0$	[[_Emden, _Fowler]]	✓
15524	$y'' + 2y' + 2y = x$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
15525	$y'' - 7y' + 12y = 2$	[[_2nd_order, _missing_x]]	✓
15533	$y'' + 4y = t$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
15534	$x^2y'' + 5xy' + 4y = 0$	[[_Emden, _Fowler]]	✓
15677	$y'' - \frac{y'}{t} + \frac{y}{t^2} = \frac{1}{t}$	[[_2nd_order, _exact, _lin- ear, _nonhomogeneous]]	✓
15853	$y'' - y = 0$	[[_2nd_order, _missing_x]]	✓

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#	ODE	CAS classification	Solved?
15854	$y'' + 2y' + y = 0$	[[_2nd_order, _missing_x]]	✓
15855	$2t^2y'' - 3ty' - 3y = 0$	[[_Emden, _Fowler]]	✓
15856	$y'' + 9y = 0$	[[_2nd_order, _missing_x]]	✓
15857	$y'' - y' - 2y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
15858	$y'' + 9y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
15859	$3t^2y'' - 5ty' - 3y = 0$ i.c.	[[_Emden, _Fowler]]	✓
15860	$t^2y'' + 7ty' - 7y = 0$ i.c.	[[_Emden, _Fowler]]	✓
15861	$y'' + y = 2 \cos(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15862	$y'' + 10y' + 24y = 0$	[[_2nd_order, _missing_x]]	✓
15863	$y'' + 16y = 0$	[[_2nd_order, _missing_x]]	✓
15864	$y'' + 6y' + 18y = 0$	[[_2nd_order, _missing_x]]	✓
15865	$t^2y'' + ty' - y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
15876	$ay'' + by' + cy = 0$	[[_2nd_order, _missing_x]]	✓
15877	$t^2y'' + aty' + by = 0$	[[_Emden, _Fowler]]	✓
15882	$y'' = 0$	[[_2nd_order, _quadrature]]	✓
15883	$y'' - 4y' - 12y = 0$	[[_2nd_order, _missing_x]]	✓
15884	$y'' + y' = 0$	[[_2nd_order, _missing_x]]	✓
15885	$y'' + 3y' - 4y = 0$	[[_2nd_order, _missing_x]]	✓
15886	$y'' + 8y' + 12y = 0$	[[_2nd_order, _missing_x]]	✓
15887	$y'' + 5y' + y = 0$	[[_2nd_order, _missing_x]]	✓
15888	$8y'' + 6y' + y = 0$	[[_2nd_order, _missing_x]]	✓
15889	$4y'' + 9y = 0$	[[_2nd_order, _missing_x]]	✓
15890	$y'' + 16y = 0$	[[_2nd_order, _missing_x]]	✓
15891	$y'' + 8y = 0$	[[_2nd_order, _missing_x]]	✓
15892	$y'' + 7y = 0$	[[_2nd_order, _missing_x]]	✓
15893	$4y'' + 21y' + 5y = 0$	[[_2nd_order, _missing_x]]	✓

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#	ODE	CAS classification	Solved?
15894	$7y'' + 4y' - 3y = 0$	[[_2nd_order, _missing_x]]	✓
15895	$4y'' + 4y' + y = 0$	[[_2nd_order, _missing_x]]	✓
15896	$y'' - 6y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓
15897	$y'' - y' = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
15898	$3y'' - y' = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
15899	$y'' + y' - 12y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
15900	$y'' - 7y' + 12y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
15901	$2y'' - 7y' - 4y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
15902	$y'' - 7y' + 10y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
15903	$y'' + 36y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
15904	$y'' + 100y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
15905	$y'' - 2y' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
15906	$y'' + 4y' + 4y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
15907	$y'' + 2y' + 5y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
15908	$y'' + 4y' + 20y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
15909	$y'' + y' - y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
15910	$y'' + y' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
15911	$y'' - y' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
15912	$y'' - y' - y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
15913	$6y'' + 5y' + y = 0$	[[_2nd_order, _missing_x]]	✓
15914	$9y'' + 6y' + y = 0$	[[_2nd_order, _missing_x]]	✓
15915	$y'' + 4y' + 20y = 0$	[[_2nd_order, _missing_x]]	✓

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#	ODE	CAS classification	Solved?
15916	$3t^2y'' - 2ty' + 2y = 0$	[[_Emden, _Fowler]]	✓
15917	$t^2y'' - ty' + y = 0$	[[_Emden, _Fowler]]	✓
15918	$ay'' + 2by' + cy = 0$	[[_2nd_order, _missing_x]]	✓
15919	$y'' + 6y' + 2y = 0$	[[_2nd_order, _missing_x]]	✓
15920	$y'' - 5y' + 6y = 0$	[[_2nd_order, _missing_x]]	✓
15921	$y'' - 6y' - 16y = 0$	[[_2nd_order, _missing_x]]	✓
15922	$y'' - 16y = 0$	[[_2nd_order, _missing_x]]	✓
15923	$y'' + 2y' + 5y = 0$	[[_2nd_order, _missing_x]]	✓
15926	$y'' + 4y' + 3y = 0$	[[_2nd_order, _missing_x]]	✓
15927	$y'' + y = 8e^{2t}$	[[_2nd_order, _with_linear_symmetries]]	✓
15928	$y'' - 4y' + 3y = -e^{-9t}$	[[_2nd_order, _with_linear_symmetries]]	✓
15929	$y'' - 4y' + 3y = 2e^{3t}$	[[_2nd_order, _with_linear_symmetries]]	✓
15930	$y'' - y = 2t - 4$	[[_2nd_order, _with_linear_symmetries]]	✓
15931	$y'' - 2y' + y = t^2$	[[_2nd_order, _with_linear_symmetries]]	✓
15932	$y'' + 2y' = 3 - 4t$	[[_2nd_order, _missing_y]]	✓
15933	$y'' + y = \cos(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15934	$y'' + 4y = 4\cos(t) - \sin(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15935	$y'' + 4y = \cos(2t) + t$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15936	$y'' + 4y = 3te^{-t}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15937	$y'' = 3t^4 - 2t$	[[_2nd_order, _quadrature]]	✓
15938	$y'' - 4y' + 13y = 2te^{-2t}\sin(3t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15939	$y'' + y' - 2y = -1$	[[_2nd_order, _missing_x]]	✓
15940	$5y'' + y' - 4y = -3$	[[_2nd_order, _missing_x]]	✓

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#	ODE	CAS classification	Solved?
15941	$y'' - 2y' - 8y = 32t$	[[_2nd_order, _with_linear_symmetries]]	✓
15942	$16y'' - 8y' - 15y = 75t$	[[_2nd_order, _with_linear_symmetries]]	✓
15943	$y'' + 2y' + 26y = -338t$	[[_2nd_order, _with_linear_symmetries]]	✓
15944	$y'' + 3y' - 4y = -32t^2$	[[_2nd_order, _with_linear_symmetries]]	✓
15945	$8y'' + 6y' + y = 5t^2$	[[_2nd_order, _with_linear_symmetries]]	✓
15946	$y'' - 6y' + 8y = -256t^3$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15947	$y'' - 2y' = 52 \sin(3t)$	[[_2nd_order, _missing_y]]	✓
15948	$y'' - 6y' + 13y = 25 \sin(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15949	$y'' - 9y = 54t \sin(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15950	$y'' - 5y' + 6y = -78 \cos(3t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15951	$y'' + 4y' + 4y = -32t^2 \cos(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15952	$y'' - y' - 20y = -2e^t$	[[_2nd_order, _with_linear_symmetries]]	✓
15953	$y'' - 4y' - 5y = -648t^2e^{5t}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15954	$y'' - 7y' + 12y = -2t^3e^{4t}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15955	$y'' + 4y' = 8e^{4t} - 4e^{-4t}$	[[_2nd_order, _missing_y]]	✓
15956	$y'' - 3y' = t^2 - e^{3t}$	[[_2nd_order, _missing_y]]	✓
15957	$y'' + 4y' = -24t - 6 - 4te^{-4t} + e^{-4t}$	[[_2nd_order, _missing_y]]	✓
15958	$y'' - 3y' = t^2 - e^{3t}$	[[_2nd_order, _missing_y]]	✓
15959	$y'' = t^2 + e^t + \sin(t)$	[[_2nd_order, _quadrature]]	✓
15960	$y'' + 3y' = 18$ i.c.	[[_2nd_order, _missing_x]]	✓
15961	$y'' - y = 4$ i.c.	[[_2nd_order, _missing_x]]	✓

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#	ODE	CAS classification	Solved?
15962	$y'' - 4y = 32t$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
15963	$y'' + 2y' - 3y = -2$ i.c.	[[_2nd_order, _missing_x]]	✓
15964	$y'' + y' - 6y = 3t$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
15965	$y'' + 8y' + 16y = 4$ i.c.	[[_2nd_order, _missing_x]]	✓
15966	$y'' + 7y' + 10y = te^{-t}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15967	$y'' + 6y' + 25y = -1$ i.c.	[[_2nd_order, _missing_x]]	✓
15968	$y'' - 3y' = -e^{3t} - 2t$ i.c.	[[_2nd_order, _missing_y]]	✓
15969	$y'' - y' = -3t - 4t^2e^{2t}$ i.c.	[[_2nd_order, _missing_y]]	✓
15970	$y'' - 2y' = 2t^2$ i.c.	[[_2nd_order, _missing_y]]	✓
15971	$y'' + 4y' = -24t - 6 - 4te^{-4t} + e^{-4t}$ i.c.	[[_2nd_order, _missing_y]]	✓
15972	$y'' - 3y' = e^{-3t} - e^{3t}$ i.c.	[[_2nd_order, _missing_y]]	✓
15973	$y'' + 9y = \begin{cases} 2t & 0 \leq t < \pi \\ 0 & \pi \leq t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15975	$y'' + 4y = \begin{cases} 0 & 0 \leq t < \pi \\ 10 & \pi \leq t < 2\pi \\ 0 & 2\pi \leq t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15981	$y'' + y' - 2y = f(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15982	$x'' + 9x = \sin(3t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15983	$4y'' + 4y' + 37y = \cos(3t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15984	$y'' + 4y = 1$	[[_2nd_order, _missing_x]]	✓
15985	$y'' + 16y' = t$	[[_2nd_order, _missing_y]]	✓
15986	$y'' - 7y' + 10y = e^{3t}$	[[_2nd_order, _with_linear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
15987	$y'' + 16y = 2 \cos(4t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15988	$y'' + 4y' + 20y = 2t e^{-2t}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15989	$y'' + \frac{y}{4} = \sec\left(\frac{t}{2}\right) + \csc\left(\frac{t}{2}\right)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15990	$y'' + 16y = \csc(4t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15991	$y'' + 16y = \cot(4t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15992	$y'' + 2y' + 50y = e^{-t} \csc(7t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15993	$y'' + 6y' + 25y = e^{-3t}(\sec(4t) + \csc(4t))$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15994	$y'' - 2y' + 26y = e^t(\sec(5t) + \csc(5t))$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15995	$y'' + 12y' + 37y = e^{-6t} \csc(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15996	$y'' - 6y' + 34y = e^{3t} \tan(5t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15997	$y'' - 10y' + 34y = e^{5t} \cot(3t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15998	$y'' - 12y' + 37y = e^{6t} \sec(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15999	$y'' - 8y' + 17y = e^{4t} \sec(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16000	$y'' - 9y = \frac{1}{1 + e^{3t}}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16001	$y'' - 25y = \frac{1}{1 - e^{5t}}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16002	$y'' - y = 2 \sinh(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16003	$y'' - 2y' + y = \frac{e^t}{t}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16004	$y'' - 4y' + 4y = \frac{e^{2t}}{t^2}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
16005	$y'' + 8y' + 16y = \frac{e^{-4t}}{t^4}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16006	$y'' + 6y' + 9y = \frac{e^{-3t}}{t}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16007	$y'' + 6y' + 9y = e^{-3t} \ln(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16008	$y'' + 3y' + 2y = \cos(e^t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16009	$y'' + 4y' + 4y = e^{-2t} \sqrt{-t^2 + 1}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16010	$y'' - 2y' + y = e^t \sqrt{-t^2 + 1}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16011	$y'' - 10y' + 25y = e^{5t} \ln(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16012	$y'' - 4y' + 4y = e^{2t} \arctan(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16013	$y'' + 8y' + 16y = \frac{e^{-4t}}{t^2 + 1}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16014	$y'' + y = \sec\left(\frac{t}{2}\right) + \csc\left(\frac{t}{2}\right)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16015	$y'' + 9y = \tan(3t)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16016	$y'' + 9y = \sec(3t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16017	$y'' + 9y = \tan(3t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16018	$y'' + 4y = \tan(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16019	$y'' + 16y = \tan(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16020	$y'' + 4y = \tan(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16021	$y'' + 9y = \sec(3t) \tan(3t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16022	$y'' + 4y = \sec(2t) \tan(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
16023	$y'' + 9y = \frac{\csc(3t)}{2}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16024	$y'' + 4y = \sec(2t)^2$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16025	$y'' - 16y = 16t e^{-4t}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16026	$y'' + y = \tan(t)^2$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16027	$y'' + 4y = \sec(2t) + \tan(2t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16028	$y'' + 9y = \csc(3t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16029	$y'' + 4y' + 3y = 65 \cos(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16030	$t^2 y'' + 3ty' + y = \ln(t)$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
16031	$t^2 y'' + ty' + 4y = t$	[[_2nd_order, _with_linear_symmetries]]	✓
16032	$t^2 y'' - 4ty' - 6y = 2 \ln(t)$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
16033	$4y'' + 4y' + y = e^{-\frac{t}{2}}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
16034	$y'' + 4y = f(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16036	$t^2 y'' - 4ty' + (t^2 + 6)y = t^3 + 2t$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
16038	$ty'' + 2y' + ty = -t$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
16040	$4t^2 y'' + 4ty' + (16t^2 - 1)y = 16t^{3/2}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16116	$4x^2 y'' - 8xy' + 5y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, _with_symmetry_[0,F(x)]]]	✓
16117	$3x^2 y'' - 4xy' + 2y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, _with_symmetry_[0,F(x)]]]	✓
16118	$2x^2 y'' - 8xy' + 8y = 0$	[[_Emden, _Fowler]]	✓

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#	ODE	CAS classification	Solved?
16119	$2x^2y'' - 7xy' + 7y = 0$	[[_Emden, _Fowler]]	✓
16120	$4x^2y'' + 17y = 0$	[[_Emden, _Fowler]]	✓
16121	$9x^2y'' - 9xy' + 10y = 0$	[[_Emden, _Fowler]]	✓
16122	$2x^2y'' - 2xy' + 20y = 0$	[[_Emden, _Fowler]]	✓
16123	$x^2y'' - 5xy' + 10y = 0$	[[_Emden, _Fowler]]	✓
16124	$4x^2y'' + 8xy' + y = 0$	[[_Emden, _Fowler]]	✓
16125	$4x^2y'' + y = 0$	[[_Emden, _Fowler]]	✓
16126	$x^2y'' - 5xy' + 9y = 0$	[[_Emden, _Fowler]]	✓
16127	$x^2y'' + 7xy' + 9y = 0$	[[_Emden, _Fowler]]	✓
16136	$x^2y'' + 5xy' + 4y = \frac{1}{x^5}$	[[_2nd_order, _with_linear_symmetries]]	✓
16137	$x^2y'' - 5xy' + 9y = x^3$	[[_2nd_order, _with_linear_symmetries]]	✓
16138	$x^2y'' + xy' + y = \frac{1}{x^2}$	[[_2nd_order, _with_linear_symmetries]]	✓
16139	$x^2y'' + xy' + 4y = \frac{1}{x^2}$	[[_2nd_order, _with_linear_symmetries]]	✓
16140	$x^2y'' + 2xy' - 6y = 2x$	[[_2nd_order, _with_linear_symmetries]]	✓
16141	$x^2y'' + xy' - 16y = \ln(x)$	[[_2nd_order, _with_linear_symmetries]]	✓
16142	$x^2y'' + xy' + 4y = 8$	[[_2nd_order, _with_linear_symmetries]]	✓
16143	$x^2y'' + xy' + 36y = x^2$	[[_2nd_order, _with_linear_symmetries]]	✓
16146	$3x^2y'' - 4xy' + 2y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
16147	$2x^2y'' - 7xy' + 7y = 0$	[[_Emden, _Fowler]]	✓
16148	$x^2y'' + xy' + 4y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓

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#	ODE	CAS classification	Solved?
16149	$x^2y'' + xy' + 2y = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
16154	$2x^2y'' + 3xy' - y = \frac{1}{x^2}$ i.c.	[[_2nd_order, _exact, _lin- ear, _nonhomogeneous]]	✓
16155	$x^2y'' + 4xy' + 2y = \ln(x)$ i.c.	[[_2nd_order, _exact, _lin- ear, _nonhomogeneous]]	✓
16156	$4x^2y'' + y = x^3$ i.c.	[[_2nd_order, _with_lin- ear_symmetries]]	✓
16157	$9x^2y'' + 27xy' + 10y = \frac{1}{x}$ i.c.	[[_2nd_order, _with_lin- ear_symmetries]]	✓
16158	$x^2y'' - xy' + 2y = 0$	[[_Emden, _Fowler]]	✓
16159	$x^2y'' + 4xy' + 2y = 0$	[[_2nd_order, _exact, _lin- ear, _homogeneous]]	✓
16160	$x^2y'' + xy' + y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
16165	$(x^2 + 1)^2 y'' + 2x(x^2 + 1) y' + 4y = 0$	[[_2nd_order, _with_lin- ear_symmetries], [_2nd_or- der, _linear, '_with_sym- metry_[0,F(x)]']]	✓
16166	$(x^2 + 1)^2 y'' + 2x(x^2 + 1) y' + 4y = \arctan(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16167	$(x^2 + 1)^2 y'' + 2x(x^2 + 1) y' + 4y = 0$ i.c.	[[_2nd_order, _with_lin- ear_symmetries], [_2nd_or- der, _linear, '_with_sym- metry_[0,F(x)]']]	✓
16168	$(x^2 + 1)^2 y'' + 2x(x^2 + 1) y' + 4y = \arctan(x)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16169	$(x^4 - 1) y'' + (x^3 - x) y' + (x^2 - 1) y = 0$	[[_2nd_order, _with_lin- ear_symmetries], [_2nd_or- der, _linear, '_with_sym- metry_[0,F(x)]']]	✓
16170	$(x^4 - 1) y'' + (x^3 - x) y' + (4x^2 - 4) y = 0$	[[_2nd_order, _with_lin- ear_symmetries], [_2nd_or- der, _linear, '_with_sym- metry_[0,F(x)]']]	✓

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#	ODE	CAS classification	Solved?
16171	$(x^4 - 1)y'' + (x^3 - x)y' + (x^2 - 1)y = 0$ i.c.	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
16172	$x^2y'' + 4xy' + 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
16173	$x^2y'' + xy' + y = x^2$	[[_2nd_order, _with_linear_symmetries]]	✓
16174	$x^2y'' + xy' + 4y = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
16175	$x^2y'' - xy' + y = 0$ i.c.	[[_Emden, _Fowler]]	✓
16182	$6x^2y'' + 5xy' - y = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
16234	$y'' - 7y' + 10y = 0$	[[_2nd_order, _missing_x]]	✓
16235	$y'' - y' - 2y = 0$	[[_2nd_order, _missing_x]]	✓
16236	$y'' - 2y' + 2y = 0$	[[_2nd_order, _missing_x]]	✓
16239	$y'' + 7y' + 10y = 0$	[[_2nd_order, _missing_x]]	✓
16240	$6y'' + 5y' - 4y = 0$	[[_2nd_order, _missing_x]]	✓
16241	$y'' + 2y' + y = 0$	[[_2nd_order, _missing_x]]	✓
16242	$y'' + 3y' + 2y = 0$	[[_2nd_order, _missing_x]]	✓
16243	$y'' - 10y' + 34y = 0$	[[_2nd_order, _missing_x]]	✓
16244	$2y'' - 5y' + 2y = 0$	[[_2nd_order, _missing_x]]	✓
16245	$15y'' - 11y' + 2y = 0$	[[_2nd_order, _missing_x]]	✓
16246	$20y'' + y' - y = 0$	[[_2nd_order, _missing_x]]	✓
16247	$12y'' + 8y' + y = 0$	[[_2nd_order, _missing_x]]	✓
16251	$y'' - 2y' - 8y = -t$	[[_2nd_order, _with_linear_symmetries]]	✓
16252	$y'' + 5y' = 5t^2$	[[_2nd_order, _missing_y]]	✓
16253	$y'' - 4y' = -3 \sin(t)$	[[_2nd_order, _missing_y]]	✓
16254	$y'' + 2y' + 5y = 3 \sin(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
16255	$y'' - 9y = \frac{1}{1 + e^{3t}}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16256	$y'' - 2y' = \frac{1}{1 + e^{2t}}$	[[_2nd_order, _missing_y]]	✓
16257	$y'' - 3y' + 2y = -4e^{-2t}$	[[_2nd_order, _with_linear_symmetries]]	✓
16258	$y'' - 6y' + 13y = 3e^{-2t}$	[[_2nd_order, _with_linear_symmetries]]	✓
16259	$y'' + 9y' + 20y = -2te^t$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16260	$y'' + 7y' + 12y = 3t^2e^{-4t}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16265	$y'' + 5y' + 6y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
16266	$y'' + 10y' + 16y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
16267	$y'' + 16y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
16268	$y'' + 25y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
16269	$y'' - 4y = t$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
16270	$y'' + 3y' - 4y = e^t$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
16271	$y'' + 9y = \sin(3t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16272	$y'' + y = \cos(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16273	$y'' + 4y = \tan(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16274	$y'' + y = \csc(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16275	$y'' - 8y' + 16y = \frac{e^{4t}}{t^3}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16276	$y'' - 8y' + 16y = \frac{e^{4t}}{t^3}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16277	$y'' - 2y' + y = e^t \ln(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
16278	$y'' - 2y' + y = e^t \ln(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16279	$y'' - 2ty' + t^2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
16280	$y'' + 3y' - 4y = 0$	[[_2nd_order, _missing_x]]	✓
16281	$y'' + 4y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
16282	$t^2y'' - 5ty' + 5y = 0$	[[_Emden, _Fowler]]	✓
16283	$x^2y'' + 7xy' + 8y = 0$	[[_Emden, _Fowler]]	✓
16284	$x^2y'' - 4xy' + 6y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, _with_symmetry_[0,F(x)]]]	✓
16285	$x^2y'' + xy' + y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, _with_symmetry_[0,F(x)]]]	✓
16286	$2x^2y'' + 5xy' + y = 0$ i.c.	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
16287	$5x^2y'' - xy' + 2y = 0$	[[_Emden, _Fowler]]	✓
16288	$x^2y'' - 7xy' + 25y = 0$	[[_Emden, _Fowler]]	✓
16289	$x^2y'' - 7xy' + 15y = 8x$	[[_2nd_order, _with_linear_symmetries]]	✓
16299	$4x'' + 9x = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
16300	$9x'' + 4x = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
16301	$x'' + 64x = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
16302	$x'' + 100x = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
16303	$x'' + x = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
16304	$x'' + 4x = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
16305	$x'' + 16x = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
16306	$x'' + 256x = 0$ i.c.	[[_2nd_order, _missing_x]]	✓

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#	ODE	CAS classification	Solved?
16307	$x'' + 9x = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
16308	$10x'' + \frac{x}{10} = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
16309	$x'' + 4x' + 3x = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
16310	$\frac{x''}{32} + 2x' + x = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
16311	$\frac{x''}{4} + 2x' + x = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
16312	$4x'' + 2x' + 8x = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
16313	$x'' + 4x' + 13x = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
16314	$x'' + 4x' + 20x = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
16315	$x'' + x = \begin{cases} 1 & 0 \leq t < \pi \\ 0 & \pi \leq t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16317	$x'' + x = \begin{cases} t & 0 \leq t < 1 \\ 2-t & 1 \leq t < 2 \\ 0 & 2 \leq t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16318	$x'' + 4x' + 13x = \begin{cases} 1 & 0 \leq t < \pi \\ -t+1 & \pi \leq t < 2\pi \\ 0 & 2\pi \leq t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16319	$x'' + x = \cos(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16320	$x'' + x = \cos(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16321	$x'' + x = \cos\left(\frac{9t}{10}\right)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16322	$x'' + x = \cos\left(\frac{7t}{10}\right)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16323	$x'' + \frac{x'}{10} + x = 3 \cos(2t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
16336	$x'' - 3x' + 4x = 0$	[[_2nd_order, _missing_x]]	✓
16337	$x'' + 6x' + 9x = 0$	[[_2nd_order, _missing_x]]	✓
16338	$x'' + 16x = t \sin(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16339	$x'' + x = e^t$	[[_2nd_order, _with_linear_symmetries]]	✓
16582	$y'' + y = 2 \cos(x) + 2 \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16585	$(x - 1)y'' = 1$	[[_2nd_order, _quadrature]]	✓
16587	$y'' + y = 0$	[[_2nd_order, _missing_x]]	✓
16588	$y'' - 3y' + 2y = 2$	[[_2nd_order, _missing_x]]	✓
16593 i.c.	$y''(x + 2)^5 = 1$	[[_2nd_order, _quadrature]]	✓
16594 i.c.	$y'' = x e^x$	[[_2nd_order, _quadrature]]	✓
16595	$y'' = 2x \ln(x)$	[[_2nd_order, _quadrature]]	✓
16596	$xy'' = y'$	[[_2nd_order, _missing_y]]	✓
16597	$xy'' + y' = 0$	[[_2nd_order, _missing_y]]	✓
16598	$xy'' = (2x^2 + 1)y'$	[[_2nd_order, _missing_y]]	✓
16599	$xy'' = y' + x^2$	[[_2nd_order, _missing_y]]	✓
16611 i.c.	$y'' + y' + 2 = 0$	[[_2nd_order, _missing_x]]	✓
16628	$y'' - y = 0$	[[_2nd_order, _missing_x]]	✓
16629	$3y'' - 2y' - 8y = 0$	[[_2nd_order, _missing_x]]	✓
16631	$y'' + 2y' + y = 0$	[[_2nd_order, _missing_x]]	✓
16632 i.c.	$y'' - 4y' + 3y = 0$	[[_2nd_order, _missing_x]]	✓
16634	$y'' - 2y' - 2y = 0$	[[_2nd_order, _missing_x]]	✓
16636	$4y'' - 8y' + 5y = 0$	[[_2nd_order, _missing_x]]	✓
16639 i.c.	$y'' - 2y' + 2y = 0$	[[_2nd_order, _missing_x]]	✓
16640 i.c.	$y'' - 2y' + 3y = 0$	[[_2nd_order, _missing_x]]	✓

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#	ODE	CAS classification	Solved?
16650	$y'' + 3y' = 3$	[[_2nd_order, _missing_x]]	✓
16651	$y'' - 7y' = (x - 1)^2$	[[_2nd_order, _missing_y]]	✓
16652	$y'' + 3y' = e^x$	[[_2nd_order, _missing_y]]	✓
16653	$y'' + 7y' = e^{-7x}$	[[_2nd_order, _missing_y]]	✓
16654	$y'' - 8y' + 16y = (1 - x)e^{4x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16655	$y'' - 10y' + 25y = e^{5x}$	[[_2nd_order, _with_linear_symmetries]]	✓
16656	$4y'' - 3y' = xe^{\frac{3x}{4}}$	[[_2nd_order, _missing_y]]	✓
16657	$y'' - 4y' = xe^{4x}$	[[_2nd_order, _missing_y]]	✓
16658	$y'' + 25y = \cos(5x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16659	$y'' + y = \sin(x) - \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16660	$y'' + 16y = \sin(4x + \alpha)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16661	$y'' + 4y' + 8y = e^{2x}(\sin(2x) + \cos(2x))$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16662	$y'' - 4y' + 8y = e^{2x}(\sin(2x) - \cos(2x))$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16663	$y'' + 6y' + 13y = e^{-3x}\cos(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16664	$y'' + k^2y = k\sin(kx + \alpha)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16665	$y'' + k^2y = k$	[[_2nd_order, _missing_x]]	✓
16686	$y'' + 2y' + y = -2$	[[_2nd_order, _missing_x]]	✓
16687	$y'' + 2y' = -2$	[[_2nd_order, _missing_x]]	✓
16688	$y'' + 9y = 9$	[[_2nd_order, _missing_x]]	✓
16694	$y'' - 4y' + 4y = x^2$	[[_2nd_order, _with_linear_symmetries]]	✓
16695	$y'' + 8y' = 8x$	[[_2nd_order, _missing_y]]	✓
16696	$y'' - 2ky' + k^2y = e^x$	[[_2nd_order, _with_linear_symmetries]]	✓
16697	$y'' + 4y' + 4y = 8e^{-2x}$	[[_2nd_order, _with_linear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
16698	$y'' + 4y' + 3y = 9e^{-3x}$	[[_2nd_order, _with_linear_symmetries]]	✓
16699	$7y'' - y' = 14x$	[[_2nd_order, _missing_y]]	✓
16700	$y'' + 3y' = 3xe^{-3x}$	[[_2nd_order, _missing_y]]	✓
16701	$y'' + 5y' + 6y = 10(1-x)e^{-2x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16702	$y'' + 2y' + 2y = x + 1$	[[_2nd_order, _with_linear_symmetries]]	✓
16703	$y'' + y' + y = (x^2 + x)e^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16704	$y'' + 4y' - 2y = 8\sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16705	$y'' + y = 4x\cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16706	$y'' - 2my' + m^2y = \sin(nx)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16707	$y'' + 2y' + 5y = e^{-x}\sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16708	$y'' + a^2y = 2\cos(mx) + 3\sin(mx)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16709	$y'' - y' = e^x\sin(x)$	[[_2nd_order, _missing_y]]	✓
16710	$y'' + 2y' = 4e^x(\cos(x) + \sin(x))$	[[_2nd_order, _missing_y]]	✓
16711	$y'' + 4y' + 5y = 10e^{-2x}\cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16712	$4y'' + 8y' = x\sin(x)$	[[_2nd_order, _missing_y]]	✓
16713	$y'' - 3y' + 2y = xe^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16714	$y'' + y' - 2y = x^2e^{4x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16715	$y'' - 3y' + 2y = (x^2 + x)e^{3x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16718	$y'' - 2y' + y = x^3$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16720	$y'' + y = x^2\sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16721	$y'' + 2y' + y = x^2e^{-x}\cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
16725	$y'' - 4y' + 5y = e^{2x}(\sin(x) + 2\cos(x))$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16726	$y'' - y' - 2y = e^x + e^{-2x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16727	$y'' + 4y' = x + e^{-4x}$	[[_2nd_order, _missing_y]]	✓
16728	$y'' - y = x + \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16729	$y'' - 2y' + 2y = (\sin(x) + 1)e^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16732	$y'' + 4y = \sin(x)\sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16733	$y'' - 4y' = 2\cos(4x)^2$	[[_2nd_order, _missing_y]]	✓
16734	$y'' - y' - 2y = 4x - 2e^x$	[[_2nd_order, _with_linear_symmetries]]	✓
16735	$y'' - 3y' = 18x - 10\cos(x)$	[[_2nd_order, _missing_y]]	✓
16736	$y'' - 2y' + y = 2 + e^x\sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16737	$y'' + 2y' + 2y = (5x + 4)e^x + e^{-x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16738	$y'' + 2y' + 5y = 4e^{-x} + 17\sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16739	$2y'' - 3y' - 2y = 5e^x\cosh(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16740	$y'' + 4y = x\sin(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16742	$y'' + y' = \cos(x)^2 + e^x + x^2$	[[_2nd_order, _missing_y]]	✓
16744	$y'' - 2y' + 5y = 10\sin(x) + 17\sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16745	$y'' + y' = x^2 - e^{-x} + e^x$	[[_2nd_order, _missing_y]]	✓
16746	$y'' - 2y' - 3y = 2x + e^{-x} - 2e^{3x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16747	$y'' + 4y = e^x + 4\sin(2x) + 2\cos(x)^2 - 1$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16748	$y'' + 3y' + 2y = 6xe^{-x}(1 - e^{-x})$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16749	$y'' + y = \cos(2x)^2 + \sin\left(\frac{x}{2}\right)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
16750	$y'' - 4y' + 5y = 1 + 8 \cos(x) + e^{2x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16751	$y'' - 2y' + 2y = e^x \sin\left(\frac{x}{2}\right)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16752	$y'' - 3y' = 1 + e^x + \cos(x) + \sin(x)$	[[_2nd_order, _missing_y]]	✓
16753	$y'' - 2y' + 5y = e^x(1 - 2 \sin(x)^2) + 10x + 1$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16754	$y'' - 4y' + 4y = 4x + \sin(x) + \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16755	$y'' + 2y' + y = 1 + 2 \cos(x) + \cos(2x) - \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16756	$y'' + y' + y + 1 = \sin(x) + x + x^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16757	$y'' + 6y' + 9y = 18e^{-3x} + 8 \sin(x) + 6 \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16758	$y'' + 2y' + 1 = 3 \sin(2x) + \cos(x)$	[[_2nd_order, _missing_y]]	✓
16760	$y'' + y = 2 \sin(x) \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16765	$y'' + y = 2 - 2x$	[[_2nd_order, _with_linear_symmetries]]	✓
16766	$y'' - 6y' + 9y = 9x^2 - 12x + 2$	[[_2nd_order, _with_linear_symmetries]]	✓
16767	$y'' + 9y = 36e^{3x}$	[[_2nd_order, _with_linear_symmetries]]	✓
16768	$y'' - 4y' + 4y = 2e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓
16769	$y'' - 5y' + 6y = (12x - 7)e^{-x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16770	$y'' + y' = e^{-x}$	[[_2nd_order, _missing_y]]	✓
16771	$y'' + 6y' + 9y = 10 \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16772	$y'' + y = 2 \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16773	$y'' + 4y = \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16774	$y'' + y = 4x \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
16775	$y'' - 4y' + 5y = 2e^x x^2$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16776	$y'' - 6y' + 9y = 16e^{-x} + 9x - 6$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
16777	$y'' - y' = -5e^{-x}(\cos(x) + \sin(x))$ i.c.	[[_2nd_order, _missing_y]]	✓
16778	$y'' - 2y' + 2y = 4e^x \cos(x)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16783	$y'' - 4y' + 5y = \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16784	$y'' + 2y' + 5y = 4\cos(2x) + \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16785	$y'' - y = 1$	[[_2nd_order, _missing_x]]	✓
16786	$y'' - y = -2\cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16793	$x^2 y'' + xy' - y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
16794	$x^2 y'' + 3xy' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
16795	$x^2 y'' + 2xy' + 6y = 0$	[[_Emden, _Fowler]]	✓
16796	$xy'' + y' = 0$	[[_2nd_order, _missing_y]]	✓
16797	$(x+2)^2 y'' + 3(x+2)y' - 3y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
16798	$(2x+1)^2 y'' - 2(2x+1)y' + 4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
16803	$x^2 y'' + xy' + y = x(6 - \ln(x))$	[[_2nd_order, _with_linear_symmetries]]	✓
16804	$x^2 y'' - 2y = \sin(\ln(x))$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
16805	$x^2 y'' - xy' - 3y = -\frac{16 \ln(x)}{x}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
16806	$x^2 y'' - 2xy' - 2y = x^2 - 2x + 2$	[[_2nd_order, _with_linear_symmetries]]	✓
16807	$x^2 y'' + xy' - y = x^m$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
16808	$x^2 y'' + 4xy' + 2y = 2 \ln(x)^2 + 12x$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
16809	$(x+1)^3 y'' + 3(x+1)^2 y' + (x+1)y = 6 \ln(x+1)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16810	$(-2+x)^2 y'' - 3(-2+x)y' + 4y = x$	[[_2nd_order, _with_linear_symmetries]]	✓
16811	$(2x+1)y'' + (4x-2)y' - 8y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
16812	$(x^2-x)y'' + (2x-3)y' - 2y = 0$	[_Jacobi]	✓
16813	$(2x^2+3x)y'' - 6(x+1)y' + 6y = 6$	[[_2nd_order, _with_linear_symmetries]]	✓
16824	$y'' + y = \frac{1}{\sin(x)}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16825	$y'' + y' = \frac{1}{1+e^x}$	[[_2nd_order, _missing_y]]	✓
16826	$y'' + y = \frac{1}{\cos(x)^3}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16827	$y'' + y = \frac{1}{\sqrt{\sin(x)^5 \cos(x)}}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16828	$y'' - 2y' + y = \frac{e^x}{x^2+1}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16829	$y'' + 2y' + 2y = \frac{e^{-x}}{\sin(x)}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16830	$y'' + y = \frac{2}{\sin(x)^3}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16831	$y'' + y' = e^{2x} \cos(e^x)$	[[_2nd_order, _missing_y]]	✓
16833	$xy'' - (2x^2+1)y' = 4x^3 e^{x^2}$	[[_2nd_order, _missing_y]]	✓
16834	$y'' - 2 \tan(x)y' = 1$	[[_2nd_order, _missing_y]]	✓
16836	$xy'' + (2x-1)y' = -4x^2$	[[_2nd_order, _missing_y]]	✓
16840	$(x^2+1)y'' + 2xy' = \frac{1}{x^2+1}$ i.c.	[[_2nd_order, _missing_y]]	✓
16846	$x'' + x' + x = 0$	[[_2nd_order, _missing_x]]	✓
16847	$x'' + 2x' + 6x = 0$	[[_2nd_order, _missing_x]]	✓
16848	$x'' + 2x' + x = 0$	[[_2nd_order, _missing_x]]	✓
16856	$y'' + \lambda y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓

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#	ODE	CAS classification	Solved?
16857	$y'' + \lambda y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
16858	$y'' - y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
16861	$y'' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
16862	$y'' - y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
16863	$y'' - 2y' + 2y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
16864	$y'' + \alpha y' = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
16865	$y'' + \alpha^2 y = 1$ i.c.	[[_2nd_order, _missing_x]]	✓
16866	$y'' + y = 1$ i.c.	[[_2nd_order, _missing_x]]	✓
16867	$y'' + \lambda^2 y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
16868	$y'' + \lambda^2 y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
16871	$xy'' + y' = 0$	[[_2nd_order, _missing_y]]	✓
16893	$x^2 y'' + xy' + \left(x^2 - \frac{1}{4}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
16897	$xy'' + \frac{y'}{2} + \frac{y}{4} = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, _with_symmetry_[0,F(x)]]]	✓
16900	$y'' + 4y = \cos(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16901	$y'' - 4y' + 4y = \pi^2 - x^2$	[[_2nd_order, _with_linear_symmetries]]	✓
16902	$y'' - 4y = \cos(\pi x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16903	$y'' - 4y' + 4y = \arcsin(\sin(x))$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16904	$y'' + 9y = \sin(x)^3$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17227	$a x^2 y'' + b x y' + c y = d$	[[_2nd_order, _with_linear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
17228	$y'' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
17229	$y'' + 9y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
17230	$y'' + y' + 16y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
17231	$y'' + 3y' + 4y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
17232	$y'' - y' + 4y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
17239	$(-x^2 + 1)y'' - 2xy' + \frac{\alpha(1 + \alpha)\mu^2 y}{-x^2 + 1} = 0$ i.c.	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
17241	$t^2 y'' - 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
17243	$y'' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
17244	$y'' - 2y' + y = 0$	[[_2nd_order, _missing_x]]	✓
17245	$x^2 y'' - x(x + 2)y' + (x + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
17247	$y'' - y' - 2y = 0$	[[_2nd_order, _missing_x]]	✓
17259	$y'' + 2y' - 3y = 0$	[[_2nd_order, _missing_x]]	✓
17260	$y'' + 3y' + 2y = 0$	[[_2nd_order, _missing_x]]	✓
17261	$y'' - 4y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
17262	$9y'' + 6y' + y = 0$	[[_2nd_order, _missing_x]]	✓
17263	$y'' - 2y' + 2y = 0$	[[_2nd_order, _missing_x]]	✓
17264	$y'' - 2y' + 6y = 0$	[[_2nd_order, _missing_x]]	✓
17265	$4y'' - 4y' + y = 0$	[[_2nd_order, _missing_x]]	✓
17266	$2y'' - 3y' + y = 0$	[[_2nd_order, _missing_x]]	✓
17267	$6y'' - y' - y = 0$	[[_2nd_order, _missing_x]]	✓
17268	$9y'' + 12y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
17269	$y'' + 2y' - 8y = 0$	[[_2nd_order, _missing_x]]	✓
17270	$y'' + 2y' + 2y = 0$	[[_2nd_order, _missing_x]]	✓
17271	$y'' + 5y' = 0$	[[_2nd_order, _missing_x]]	✓

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#	ODE	CAS classification	Solved?
17272	$4y'' - 9y = 0$	[[_2nd_order, _missing_x]]	✓
17273	$25y'' - 20y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
17274	$y'' - 4y' + 16y = 0$	[[_2nd_order, _missing_x]]	✓
17275	$y'' + 6y' + 13y = 0$	[[_2nd_order, _missing_x]]	✓
17276	$y'' + 2y' + \frac{5y}{4} = 0$	[[_2nd_order, _missing_x]]	✓
17277	$y'' - 9y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓
17278	$y'' - 2y' - 2y = 0$	[[_2nd_order, _missing_x]]	✓
17279	$y'' + 4y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
17280	$9y'' - 24y' + 16y = 0$	[[_2nd_order, _missing_x]]	✓
17281	$4y'' + 9y = 0$	[[_2nd_order, _missing_x]]	✓
17282	$4y'' + 9y' - 9y = 0$	[[_2nd_order, _missing_x]]	✓
17283	$y'' + y' + \frac{5y}{4} = 0$	[[_2nd_order, _missing_x]]	✓
17284	$y'' + 4y' + \frac{25y}{4} = 0$	[[_2nd_order, _missing_x]]	✓
17285	$y'' + y' - 2y = 0$	[[_2nd_order, _missing_x]]	✓
17286	$y'' + 16y = 0$	[[_2nd_order, _missing_x]]	✓
17287	$9y'' - 12y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
17288	$y'' + 3y' + 2y = 0$	[[_2nd_order, _missing_x]]	✓
17289	$y'' + 4y' + 5y = 0$	[[_2nd_order, _missing_x]]	✓
17290	$6y'' - 5y' + y = 0$	[[_2nd_order, _missing_x]]	✓
17291	$y'' + 6y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓
17292	$y'' - 2y' + 5y = 0$	[[_2nd_order, _missing_x]]	✓
17293	$y'' + 3y' = 0$	[[_2nd_order, _missing_x]]	✓
17294	$y'' + y = 0$	[[_2nd_order, _missing_x]]	✓

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#	ODE	CAS classification	Solved?
17295	$y'' + 4y' + 4y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
17296	$y'' + 6y' + 3y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
17297	$y'' + y' + \frac{5y}{4} = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
17298	$2y'' + y' - 4y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
17299	$y'' + 8y' - 9y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
17300	$y'' + 2y' + 2y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
17301	$4y'' - y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
17302	$ax^2y'' + bxy' + cy = 0$	[[_Emden, _Fowler]]	✓
17303	$x^2y'' + xy' + 4y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, 'with_symme- try_[0,F(x)']]]	✓
17304	$x^2y'' + 4xy' + 2y = 0$	[[_2nd_order, _exact, _lin- ear, _homogeneous]]	✓
17305	$x^2y'' + 3xy' + \frac{5y}{4} = 0$	[[_Emden, _Fowler]]	✓
17306	$x^2y'' - 4xy' - 6y = 0$	[[_2nd_order, _exact, _lin- ear, _homogeneous]]	✓
17307	$x^2y'' - 2y = 0$	[[_2nd_order, _exact, _lin- ear, _homogeneous]]	✓
17308	$x^2y'' - 5xy' + 9y = 0$	[[_Emden, _Fowler]]	✓
17309	$x^2y'' + 2xy' + 4y = 0$	[[_Emden, _Fowler]]	✓
17310	$2x^2y'' - 4xy' + 6y = 0$	[[_Emden, _Fowler]]	✓
17311	$2x^2y'' + xy' - 3y = 0$ i.c.	[[_2nd_order, _exact, _lin- ear, _homogeneous]]	✓
17312	$4x^2y'' + 8xy' + 17y = 0$ i.c.	[[_Emden, _Fowler]]	✓
17313	$x^2y'' - 5xy' + 9y = 0$ i.c.	[[_Emden, _Fowler]]	✓
17314	$x^2y'' + 3xy' + 5y = 0$ i.c.	[[_Emden, _Fowler]]	✓

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#	ODE	CAS classification	Solved?
17315	$y'' + 2y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
17316	$y'' + \frac{y'}{4} + 2y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
17317	$my'' + ky = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
17318	$y'' - 2y' - 3y = 3e^{2t}$	[[_2nd_order, _with_linear_symmetries]]	✓
17319	$y'' + 2y' + 5y = 3 \sin(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17320	$y'' - 2y' - 3y = -3te^{-t}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17321	$y'' + 2y' = 3 + 4 \sin(2t)$	[[_2nd_order, _missing_y]]	✓
17322	$y'' + 9y = t^2e^{3t} + 6$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17323	$y'' + 2y' + y = 2e^{-t}$	[[_2nd_order, _with_linear_symmetries]]	✓
17324	$y'' - 5y' + 4y = 2e^t$	[[_2nd_order, _with_linear_symmetries]]	✓
17325	$y'' - y' - 2y = 2e^{-t}$	[[_2nd_order, _with_linear_symmetries]]	✓
17326	$y'' + 2y' + y = 3e^{-t}$	[[_2nd_order, _with_linear_symmetries]]	✓
17327	$4y'' - 4y' + y = 16e^{\frac{t}{2}}$	[[_2nd_order, _with_linear_symmetries]]	✓
17328	$2y'' + 3y' + y = t^2 + 3 \sin(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17329	$y'' + y = 3 \sin(2t) + t \cos(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17330	$u'' + w_0^2u = \cos(wt)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17331	$y'' + y' + 4y = 2 \sinh(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17332	$y'' - y' - 2y = \cosh(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17333	$y'' + y' - 2y = 2t$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
17334	$y'' + 4y = t^2 + 3e^t$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17335	$y'' - 2y' + y = te^t + 4$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17336	$y'' - 2y' - 3y = 3te^{2t}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17337	$y'' + 4y = 3\sin(2t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17338	$y'' + 2y' + 5y = 4e^{-t}\cos(2t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17339	$y'' + 3y' = 2t^4 + t^2e^{-3t} + \sin(3t)$	[[_2nd_order, _missing_y]]	✓
17340	$y'' + y = t(1 + \sin(t))$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17341	$y'' - 5y' + 6y = e^t\cos(2t) + e^{2t}(3t + 4)\sin(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17342	$y'' + 2y' + 2y = 3e^{-t} + 2e^{-t}\cos(t) + 4e^{-t}t^2\sin(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17343	$y'' - 4y' + 4y = 2t^2 + 4te^{2t} + t\sin(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17344	$y'' + 4y = t^2\sin(2t) + (6t + 7)\cos(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17345	$y'' + 3y' + 2y = e^t(t^2 + 1)\sin(2t) + 3e^{-t}\cos(t) + 4e^t$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17346	$y'' + 2y' + 5y = 3te^{-t}\cos(2t) - 2te^{-2t}\cos(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17347	$y'' - 3y' - 4y = 2e^{-t}$	[[_2nd_order, _with_linear_symmetries]]	✓
17348	$x^2y'' - 3xy' + 4y = \ln(x)$	[[_2nd_order, _with_linear_symmetries]]	✓
17349	$x^2y'' + 7xy' + 5y = x$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
17350	$x^2y'' - 2xy' + 2y = 3x^2 + 2\ln(x)$	[[_2nd_order, _with_linear_symmetries]]	✓
17351	$x^2y'' + xy' + 4y = \sin(\ln(x))$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17352	$y'' + y = \begin{cases} t & 0 \leq t \leq \pi \\ \pi e^{-t+\pi} & \pi < t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
17353	$y'' + 2y' + 5y = \begin{cases} 1 & 0 \leq t \leq \frac{\pi}{2} \\ 0 & \frac{\pi}{2} < t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17354	$y'' + y = \begin{cases} At & 0 \leq t \leq \pi \\ A(2\pi - t) & \pi < t \leq 2\pi \\ 0 & 2\pi < t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17355	$y'' + \frac{y'}{4} + 2y = 2 \cos(wt)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17356	$y'' + y = 2 \cos(wt)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17357	$y'' + y = 3 \cos(wt)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17358	$y'' + \frac{y'}{8} + 4y = 3 \cos\left(\frac{t}{4}\right)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17359	$y'' + \frac{y'}{8} + 4y = 3 \cos(2t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17360	$y'' + \frac{y'}{8} + 4y = 3 \cos(6t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17363	$y'' - 5y' + 6y = 2e^t$	[[_2nd_order, _with_linear_symmetries]]	✓
17364	$y'' - y' - 2y = 2e^{-t}$	[[_2nd_order, _with_linear_symmetries]]	✓
17365	$y'' + 2y' + y = 3e^{-t}$	[[_2nd_order, _with_linear_symmetries]]	✓
17366	$4y'' - 4y' + y = 16e^{\frac{t}{2}}$	[[_2nd_order, _with_linear_symmetries]]	✓
17367	$y'' + y = \tan(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17368	$y'' + 4y = 3 \sec(2t)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17369	$y'' + 4y' + 4y = \frac{e^{2t}}{t^2}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17370	$y'' + 4y = 2 \csc\left(\frac{t}{2}\right)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17371	$4y'' + y = 2 \sec(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
17372	$y'' - 2y' + y = \frac{e^t}{t^2 + 1}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17373	$y'' - 5y' + 6y = g(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17374	$y'' + 4y = g(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17375	$t^2y'' - t(t+2)y' + (t+2)y = 2t^3$	[[_2nd_order, _with_linear_symmetries]]	✓
17376	$ty'' - (t+1)y' + y = t^2e^{2t}$	[[_2nd_order, _with_linear_symmetries]]	✓
17377	$(-t+1)y'' + ty' - y = 2(t-1)^2e^{-t}$	[[_2nd_order, _with_linear_symmetries]]	✓
17378	$x^2y'' + xy' + \left(x^2 - \frac{1}{4}\right)y = 3x^{3/2}\sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17379	$(1-x)y'' + xy' - y = g(x)$	[[_2nd_order, _with_linear_symmetries]]	✓
17380	$x^2y'' + xy' + \left(x^2 - \frac{1}{4}\right)y = g(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17381	$t^2y'' - 2y = 3t^2 - 1$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
17382	$x^2y'' - 3xy' + 4y = x^2\ln(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17383	$t^2y'' - 2ty' + 2y = 4t^2$	[[_2nd_order, _with_linear_symmetries]]	✓
17384	$t^2y'' + 7ty' + 5y = t$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
17385	$y'' + y = g(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17569	$y'' = \sin(x)$	[[_2nd_order, _quadrature]]	✓
17672	$y'' + \frac{2y'}{x} + y = 0$	[_Lienard]	✓
17677	$x^2y'' - 2xy' + 2y = 2x^3$	[[_2nd_order, _with_linear_symmetries]]	✓
17678	$y'' + \frac{xy'}{1-x} - \frac{y}{1-x} = x-1$	[[_2nd_order, _with_linear_symmetries]]	✓
17681	$y'' + y = 0$	[[_2nd_order, _missing_x]]	✓

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#	ODE	CAS classification	Solved?
17683	$y'' + p_1y' + p_2y = 0$	[[_2nd_order, _missing_x]]	✓
17684	$(2x + 1)y'' + (4x - 2)y' - 8y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
17690	$2y'' + y' - y = 0$	[[_2nd_order, _missing_x]]	✓
17692	$y'' - 4y' + 4y = x^2$	[[_2nd_order, _with_linear_symmetries]]	✓
17693	$y'' - 6y' + 8y = e^x + e^{2x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17696	$y'' + 4y = x \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17697	$y'' + y' + y = e^{-\frac{x}{2}} \sin\left(\frac{\sqrt{3}x}{2}\right)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17698	$y'' - y = \frac{e^x - e^{-x}}{e^x + e^{-x}}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17699	$y'' - 2y = 4x^2e^{x^2}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17700	$y'' + y = \sin(x) \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17701	$y'' + 9y = \ln\left(2 \sin\left(\frac{x}{2}\right)\right)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17702	$y'' + \frac{2y'}{x} - \frac{n(n+1)y}{x^2} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
17703	$x^2y'' - 4xy' + 6y = x$	[[_2nd_order, _with_linear_symmetries]]	✓
17704	$x^2y'' - xy' + 2y = x \ln(x)$	[[_2nd_order, _with_linear_symmetries]]	✓
17705	$x^2y'' - 2y = x^2 + \frac{1}{x}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
17707	$(x + 1)^2 y'' + (x + 1)y' + y = 4 \cos(\ln(x + 1))$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17709	$y'' + \frac{2y'}{x} + y = 0$	[_Lienard]	✓
17711	$xy'' - y' - x^3y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, _with_symmetry_[0,F(x)]]]	✓

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#	ODE	CAS classification	Solved?
17712	$y'' - 4xy' + (4x^2 - 1)y = -3e^{x^2} \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17713	$y'' - \frac{y'}{\sqrt{x}} + \frac{y(-8 + \sqrt{x} + x)}{4x^2} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
17736	$y'' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
17737	$y'' - 4y = 0$	[[_2nd_order, _missing_x]]	✓
17777	$y'' - 5y' + 6y = 0$	[[_2nd_order, _missing_x]]	✓
17869	$xy'' + y' = 4x$	[[_2nd_order, _missing_y]]	✓
17890	$x^2y'' + xy' = 1$	[[_2nd_order, _missing_y]]	✓
17897	$(x^2 + 1)y'' + xy' = 0$	[[_2nd_order, _missing_y]]	✓
17925	$xy'' - y' = 3x^2$	[[_2nd_order, _missing_y]]	✓
17926	$xy'' + y' = 0$	[[_2nd_order, _missing_y]]	✓
17927	$y'' - y' - 2y = 4x$	[[_2nd_order, _with_linear_symmetries]]	✓
17928	$x^3y'' + x^2y' + xy = 1$	[[_2nd_order, _with_linear_symmetries]]	✓
17929	$y'' - 2y' = 6$	[[_2nd_order, _missing_x]]	✓
17930	$y'' - 2y = \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17931	$y'' = e^x$	[[_2nd_order, _quadrature]]	✓
17932	$y'' - 2y' = 4$	[[_2nd_order, _missing_x]]	✓
17933	$y'' - y = \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17934	$(x - 1)y'' - xy' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
17935	$y'' + 2y' = 6e^x$	[[_2nd_order, _missing_y]]	✓
17936	$x^2y'' - 3xy' - 5y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
17937	$x^2y'' - 4xy' + (x^2 + 6)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
17938	$y'' - y = 0$	[[_2nd_order, _missing_x]]	✓

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#	ODE	CAS classification	Solved?
17939	$x^2y'' - 2xy' + 2y = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _lin- ear, _with_symme- try_[0,F(x)]]]	✓
17940	$y'' - 3y' + 2y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
17941	$y'' - 4y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
17942	$x^2y'' - 2y = 0$ i.c.	[[_2nd_order, _exact, _lin- ear, _homogeneous]]	✓
17943	$y'' + y' - 2y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
17944	$y'' + 5y' + 6y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
17945	$y'' + y' = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
17947	$y'' + 2xy' + (x^2 + 1)y = 0$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
17960	$xy'' - (x + 1)y' + y = 0$	[_Laguerre]	✓
17961	$xy'' - (x + 2)y' + 2y = 0$	[_Laguerre]	✓
17962	$xy'' - (x + 3)y' + 3y = 0$	[_Laguerre]	✓
17964	$y'' + y' - 6y = 0$	[[_2nd_order, _missing_x]]	✓
17965	$y'' + 2y' + y = 0$	[[_2nd_order, _missing_x]]	✓
17966	$y'' + 8y = 0$	[[_2nd_order, _missing_x]]	✓
17967	$2y'' - 4y' + 8y = 0$	[[_2nd_order, _missing_x]]	✓
17968	$y'' - 4y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
17969	$y'' - 9y' + 20y = 0$	[[_2nd_order, _missing_x]]	✓
17970	$2y'' + 2y' + 3y = 0$	[[_2nd_order, _missing_x]]	✓
17971	$4y'' - 12y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓
17972	$y'' + y' = 0$	[[_2nd_order, _missing_x]]	✓
17973	$y'' - 6y' + 25y = 0$	[[_2nd_order, _missing_x]]	✓
17974	$4y'' + 20y' + 25y = 0$	[[_2nd_order, _missing_x]]	✓
17975	$y'' + 2y' + 3y = 0$	[[_2nd_order, _missing_x]]	✓
17976	$y'' = 4y$	[[_2nd_order, _missing_x]]	✓
17977	$4y'' - 8y' + 7y = 0$	[[_2nd_order, _missing_x]]	✓

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#	ODE	CAS classification	Solved?
17978	$2y'' + y' - y = 0$	[[_2nd_order, _missing_x]]	✓
17979	$16y'' - 8y' + y = 0$	[[_2nd_order, _missing_x]]	✓
17980	$y'' + 4y' + 5y = 0$	[[_2nd_order, _missing_x]]	✓
17981	$y'' + 4y' - 5y = 0$	[[_2nd_order, _missing_x]]	✓
17982	$y'' - 5y' + 6y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
17983	$y'' - 6y' + 5y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
17984	$y'' - 6y' + 9y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
17985	$y'' + 4y' + 5y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
17986	$y'' + 4y' + 2y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
17987	$y'' + 8y' - 9y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
17988	$x^2y'' + 3xy' + 10y = 0$	[[_Emden, _Fowler]]	✓
17989	$2x^2y'' + 10xy' + 8y = 0$	[[_Emden, _Fowler]]	✓
17990	$x^2y'' + 2xy' - 12y = 0$	[[_Emden, _Fowler]]	✓
17991	$4x^2y'' - 3y = 0$	[[_Emden, _Fowler]]	✓
17992	$x^2y'' - 3xy' + 4y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]]	✓
17993	$x^2y'' + 2xy' - 6y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]]	✓
17994	$x^2y'' + 2xy' + 3y = 0$	[[_Emden, _Fowler]]	✓
17995	$x^2y'' + xy' - 2y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]]	✓
17996	$x^2y'' + xy' - 16y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]]	✓

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#	ODE	CAS classification	Solved?
17997	$xy'' + (x^2 - 1)y' + x^3y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
17999	$y'' + 3y' - 10y = 6e^{4x}$	[[_2nd_order, _with_linear_symmetries]]	✓
18000	$y'' + 4y = 3\sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18001	$y'' + 10y' + 25y = 14e^{-5x}$	[[_2nd_order, _with_linear_symmetries]]	✓
18002	$y'' - 2y' + 5y = 25x^2 + 12$	[[_2nd_order, _with_linear_symmetries]]	✓
18003	$y'' - y' - 6y = 20e^{-2x}$	[[_2nd_order, _with_linear_symmetries]]	✓
18004	$y'' - 3y' + 2y = 14\sin(2x) - 18\cos(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18005	$y'' + y = 2\cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18006	$y'' - 2y' = 12x - 10$	[[_2nd_order, _missing_y]]	✓
18007	$y'' - 2y' + y = 6e^x$	[[_2nd_order, _with_linear_symmetries]]	✓
18008	$y'' - 2y' + 2y = e^x \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18009	$y'' + y' = 10x^4 + 2$	[[_2nd_order, _missing_y]]	✓
18010	$y'' + k^2y = \sin(bx)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18011	$y'' + 4y = 4\cos(2x) + 6\cos(x) + 8x^2 - 4x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18012	$y'' + 9y = 2\sin(3x) + 4\sin(x) - 26e^{-2x} + 27x^3$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18013	$y'' - 2y' + y = 2x$	[[_2nd_order, _with_linear_symmetries]]	✓
18014	$y'' - y' - 6y = e^{-x}$	[[_2nd_order, _with_linear_symmetries]]	✓
18015	$y'' + 4y = \tan(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18016	$y'' + 2y' + y = e^{-x} \ln(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18017	$y'' - 2y' - 3y = 64xe^{-x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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Table 2.49 second order kovacic  
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#	ODE	CAS classification	Solved?
18018	$y'' + 2y' + 5y = e^{-x} \sec(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18019	$2y'' + 3y' + y = e^{-3x}$	[[_2nd_order, _with_linear_symmetries]]	✓
18020	$y'' - 3y' + 2y = \frac{1}{1 + e^{-x}}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18021	$y'' + y = \sec(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18022	$y'' + y = \cot(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18023	$y'' + y = \cot(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18024	$y'' + y = x \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18025	$y'' + y = \tan(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18026	$y'' + y = \tan(x) \sec(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18027	$y'' + y = \sec(x) \csc(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18028	$(x^2 - 1)y'' - 2xy' + 2y = (x^2 - 1)^2$	[[_2nd_order, _with_linear_symmetries]]	✓
18029	$(x^2 + x)y'' + (-x^2 + 2)y' - (x + 2)y = x(x + 1)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18030	$(1 - x)y'' + xy' - y = (1 - x)^2$	[[_2nd_order, _with_linear_symmetries]]	✓
18031	$xy'' - (x + 1)y' + y = x^2 e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓
18032	$x^2 y'' - 2xy' + 2y = x e^{-x}$	[[_2nd_order, _with_linear_symmetries]]	✓
18056	$y'' - 4y = e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓
18057	$y'' - y = x^2 e^{2x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18058	$y'' + 4y' + 4y = 10x^3 e^{-2x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18059	$y'' - 2y' + y = e^x$	[[_2nd_order, _with_linear_symmetries]]	✓

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Table 2.49 second order kovacic  
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#	ODE	CAS classification	Solved?
18060	$y'' - y = e^{-x}$	[[_2nd_order, _with_linear_symmetries]]	✓
18061	$y'' - 2y' - 3y = 6e^{5x}$	[[_2nd_order, _with_linear_symmetries]]	✓
18062	$y'' - y' + y = x^3 - 3x^2 + 1$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18064	$4y'' + y = x^4$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18067	$y'' + y' - y = -x^4 + 3x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18068	$y'' + y = x^4$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18071	$y'' - 4y' + 3y = x^3 e^{2x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18072	$y'' - 7y' + 12y = e^{2x}(x^3 - 5x^2)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18073	$y'' + 2y' + y = 2x^2 e^{-2x} + 3e^{2x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18082	$y'' - 4y' + 4y = e^{2x} \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18090	$y'' + xy' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
18189	$t^2 x'' - 6tx' + 12x = 0$	[[_Emden, _Fowler]]	✓
18192	$t^2 x'' - 2tx' + 2x = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, _with_symmetry_[0,F(x)]]]	✓
18193	$x'' - 5x' + 6x = 0$	[[_2nd_order, _missing_x]]	✓
18194	$x'' - 4x' + 4x = 0$	[[_2nd_order, _missing_x]]	✓
18195	$x'' - 4x' + 5x = 0$	[[_2nd_order, _missing_x]]	✓
18196	$x'' + 3x' = 0$	[[_2nd_order, _missing_x]]	✓
18197	$x'' - 3x' + 2x = 0$	[[_2nd_order, _missing_x]]	✓
18198	$x'' + x = 0$	[[_2nd_order, _missing_x]]	✓
18199	$x'' + 2x' + x = 0$	[[_2nd_order, _missing_x]]	✓

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Table 2.49 second order kovacic  
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#	ODE	CAS classification	Solved?
18200	$x'' - 2x' + 2x = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
18201	$x'' - x = t^2$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
18202	$x'' - x = e^t$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
18203	$x'' + 2x' + 4x = e^t \cos(2t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18204	$x'' - x' + x = \sin(2t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18205	$x'' + 4x' + 3x = t \sin(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18206	$x'' + x = \cos(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18241	$\theta'' = -p^2\theta$	[[_2nd_order, _missing_x]]	✓
18256	$\theta'' - p^2\theta = 0$	[[_2nd_order, _missing_x]]	✓
18257	$y'' + y = 0$	[[_2nd_order, _missing_x]]	✓
18258	$y'' + 12y = 7y'$	[[_2nd_order, _missing_x]]	✓
18259	$r'' - a^2r = 0$	[[_2nd_order, _missing_x]]	✓
18261	$v'' - 6v' + 13v = e^{-2u}$	[[_2nd_order, _with_linear_symmetries]]	✓
18262	$y'' + 4y' - y = \sin(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18263	$y'' + 3y = \sin(x) + \frac{\sin(3x)}{3}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18271	$x^2y'' + 3xy' + y = \frac{1}{x}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
18275	$y'' = -m^2y$	[[_2nd_order, _missing_x]]	✓
18278	$xy'' + 2y' = xy$	[[_2nd_order, _with_linear_symmetries]]	✓
18282	$x^2y'' - 5xy' + 5y = \frac{1}{x}$	[[_2nd_order, _with_linear_symmetries]]	✓
18283	$y'' + 4y' + 3y = 2e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓
18284	$v'' + \frac{2v'}{r} = 0$	[[_2nd_order, _missing_y]]	✓

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Table 2.49 second order kovacic  
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#	ODE	CAS classification	Solved?
18291	$x^2 y'' + xy' + y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
18292	$(-x^2 + 1) y'' - xy' = 0$	[[_2nd_order, _missing_y]]	✓
18294	$v'' + \frac{2xv'}{x^2 + 1} + \frac{v}{(x^2 + 1)^2} = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
18331	$y'' + 3y' + 2y = 0$	[[_2nd_order, _missing_x]]	✓
18332	$y'' + 2y' - 2y = 0$	[[_2nd_order, _missing_x]]	✓
18340	$y'' + 4y' + 3y = 2e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓
18342	$y'' - 4y' + 2y = x$	[[_2nd_order, _with_linear_symmetries]]	✓
18343	$y'' + 3y' - y = e^x$	[[_2nd_order, _with_linear_symmetries]]	✓
18346	$y'' - 2y' + y = e^x$	[[_2nd_order, _with_linear_symmetries]]	✓
18347	$y'' - 2y' + y = x$	[[_2nd_order, _with_linear_symmetries]]	✓
18348	$y'' + y = \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18350	$y'' + y = \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18354	$ey'' = \frac{P(\frac{L}{2} - x)}{2}$	[[_2nd_order, _quadrature]]	✓
18355	$ey'' = \frac{w(\frac{L^2}{4} - x^2)}{2}$	[[_2nd_order, _quadrature]]	✓
18356	$ey'' = -\frac{(wL + P)x}{2} - \frac{wx^2}{2}$	[[_2nd_order, _quadrature]]	✓
18357	$ey'' = -P(L - x)$	[[_2nd_order, _quadrature]]	✓
18358	$ey'' = -PL + (wL + P)x - \frac{w(L^2 + x^2)}{2}$	[[_2nd_order, _quadrature]]	✓
18359	$ey'' = P(-y + a)$	[[_2nd_order, _missing_x]]	✓

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Table 2.49 second order kovacic  
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#	ODE	CAS classification	Solved?
18361	$x^2y'' + 3xy' - 8y = x$	[[_2nd_order, __with_linear_symmetries]]	✓
18365	$xy'' + 2y' = 2x$	[[_2nd_order, __missing_y]]	✓
18366	$x^2y'' - xy' + y = \ln(x)$	[[_2nd_order, __with_linear_symmetries]]	✓
18367	$(x^2 - 1)y'' + 4xy' + 2y = 2x$	[[_2nd_order, __exact, __linear, __nonhomogeneous]]	✓
18368	$(x^2 + 1)y'' + 4xy' + 2y = x$	[[_2nd_order, __exact, __linear, __nonhomogeneous]]	✓
18370	$(x^2 - x)y'' + (3x - 2)y' + y = 0$	[[_2nd_order, __exact, __linear, __homogeneous]]	✓
18371	$(3x^2 + x)y'' + 2(1 + 6x)y' + 6y = \sin(x)$	[[_2nd_order, __exact, __linear, __nonhomogeneous]]	✓
18374	$y'' = \cos(x)$	[[_2nd_order, __quadrature]]	✓
18375	$x^2y'' = \ln(x)$	[[_2nd_order, __quadrature]]	✓
18376	$y'' = -a^2y$	[[_2nd_order, __missing_x]]	✓
18381	$xy'' + 3y' = 3x$	[[_2nd_order, __missing_y]]	✓
18382	$x = y'' + y'$	[[_2nd_order, __missing_y]]	✓
18385	$V'' + \frac{2V'}{r} = 0$	[[_2nd_order, __missing_y]]	✓
18386	$V'' + \frac{V'}{r} = 0$	[[_2nd_order, __missing_y]]	✓
18400	$y'' - \frac{2y'}{x} + \frac{2y}{x^2} = 0$	[[_2nd_order, __exact, __linear, __homogeneous]]	✓
18401	$v'' + \frac{2v'}{r} = 0$	[[_2nd_order, __missing_y]]	✓
18402	$y'' - k^2y = 0$	[[_2nd_order, __missing_x]]	✓
18543	$y'' + 3y' - 54y = 0$	[[_2nd_order, __missing_x]]	✓
18544	$y'' - m^2y = 0$	[[_2nd_order, __missing_x]]	✓
18545	$2y'' + 5y' - 12y = 0$	[[_2nd_order, __missing_x]]	✓
18546	$9y'' + 18y' - 16y = 0$	[[_2nd_order, __missing_x]]	✓
18549	$y'' + 8y' + 25y = 0$	[[_2nd_order, __missing_x]]	✓
18552	$y'' - 5y' + 6y = e^{4x}$	[[_2nd_order, __with_linear_symmetries]]	✓

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Table 2.49 second order kovacic  
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#	ODE	CAS classification	Solved?
18553	$y'' - y = 5x + 2$	[[_2nd_order, _with_linear_symmetries]]	✓
18554	$y'' + 2y' + y = 2e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓
18558	$y'' - 2y' + y = 3e^{\frac{5x}{2}}$	[[_2nd_order, _with_linear_symmetries]]	✓
18562	$y'' + a^2y = \cos(ax)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18563	$y'' - 4y = 2\sin\left(\frac{x}{2}\right)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18566	$y'' + 3y' + 2y = e^{2x}\sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18567	$y'' + 2y = x^2e^{3x} + e^x\cos(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18568	$y'' + 4y = x\sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18569	$y'' - y = x^2\cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18573	$y'' + 4y = \sin(3x) + e^x + x^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18574	$y'' - 5y' + 6y = x + e^{mx}$	[[_2nd_order, _with_linear_symmetries]]	✓
18575	$y'' - a^2y = e^{ax} + e^{nx}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18581	$y'' + a^2y = \sec(ax)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18582	$y'' - 2y' + y = x^2e^{3x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18583	$y'' + n^2y = e^xx^4$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18587	$y'' + y' + y = \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18589	$y'' - 2y' + 4y = e^x\cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18593	$y'' - y = x\sin(x) + (x^2 + 1)e^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18594	$y'' - 4y' + 3y = e^x\cos(2x) + \cos(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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Table 2.49 second order kovacic

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#	ODE	CAS classification	Solved?
18596	$y'' - 9y' + 20y = 20x$	[[_2nd_order, _with_linear_symmetries]]	✓
18599	$x^2y'' - xy' + y = 2 \ln(x)$	[[_2nd_order, _with_linear_symmetries]]	✓
18600	$x^2y'' + y = 3x^2$	[[_2nd_order, _with_linear_symmetries]]	✓
18603	$x^2y'' - 2xy' - 4y = x^4$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
18604	$x^2y'' + 5xy' + 4y = x^4$	[[_2nd_order, _with_linear_symmetries]]	✓
18605	$x^2y'' + 2xy' - 20y = (x + 1)^2$	[[_2nd_order, _with_linear_symmetries]]	✓
18606	$x^2y'' + 7xy' + 5y = x^5$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
18608	$(2x - 1)^3 y'' + (2x - 1) y' - 2y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, ' _with_symmetry_[0,F(x)]']]	✓
18610	$x^2y'' + 4xy' + 2y = e^x$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
18612	$(x + a)^2 y'' - 4(x + a) y' + 6y = x$	[[_2nd_order, _with_linear_symmetries]]	✓
18616	$x^2y'' + xy' - y = x^m$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
18617	$x^2y'' - 3xy' + 4y = x^m$	[[_2nd_order, _with_linear_symmetries]]	✓
18620	$x^2y'' + 3xy' + y = \frac{1}{(1-x)^2}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
18621	$x^2y'' - (2m - 1)xy' + (m^2 + n^2)y = n^2x^m \ln(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18622	$x^2y'' - 3xy' + y = \frac{\ln(x) \sin(\ln(x)) + 1}{x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18624	$x^5y'' + 3x^3y' + (3 - 6x)x^2y = x^4 + 2x - 5$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18625	$xy'' + 2xy' + 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓

## 2.4.22 second order adjoint

Table 2.50: second order adjoint

#	ODE	CAS classification	Solved?
11	$x'' = 50$ i.c.	[[_2nd_order, _quadrature]]	✓
12	$x'' = -20$ i.c.	[[_2nd_order, _quadrature]]	✓
13	$x'' = 3t$ i.c.	[[_2nd_order, _quadrature]]	✓
14	$x'' = 2t + 1$ i.c.	[[_2nd_order, _quadrature]]	✓
15	$x'' = 4(3 + t)^2$ i.c.	[[_2nd_order, _quadrature]]	✓
16	$x'' = \frac{1}{\sqrt{t+4}}$ i.c.	[[_2nd_order, _quadrature]]	✓
17	$x'' = \frac{1}{(t+1)^3}$ i.c.	[[_2nd_order, _quadrature]]	✓
18	$x'' = 50 \sin(5t)$ i.c.	[[_2nd_order, _quadrature]]	✓
147	$xy'' = y'$	[[_2nd_order, _missing_y]]	✓
149	$y'' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
150	$xy'' + y' = 4x$	[[_2nd_order, _missing_y]]	✓
152	$x^2y'' + 3xy' = 2$	[[_2nd_order, _missing_y]]	✓
215	$y'' - y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
216	$y'' - 9y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
217	$y'' + 4y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
218	$y'' + 25y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
219	$y'' - 3y' + 2y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
220	$y'' + y' - 6y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
221	$y'' + y' = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
222	$y'' - 3y' = 0$ i.c.	[[_2nd_order, _missing_x]]	✓

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Table 2.50 second order adjoint  
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#	ODE	CAS classification	Solved?
223	$y'' + 2y' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
224	$y'' - 10y' + 25y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
226	$y'' + 6y' + 13y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
227	$x^2y'' - 2xy' + 2y = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]]	✓
228	$x^2y'' + 2xy' - 6y = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]]	✓
229	$x^2y'' - xy' + y = 0$ i.c.	[[_Emden, _Fowler]]	✓
230	$x^2y'' + xy' + y = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]]	✓
234	$y'' - 3y' + 2y = 0$	[[_2nd_order, _missing_x]]	✓
235	$y'' + 2y' - 15y = 0$	[[_2nd_order, _missing_x]]	✓
236	$y'' + 5y' = 0$	[[_2nd_order, _missing_x]]	✓
237	$2y'' + 3y' = 0$	[[_2nd_order, _missing_x]]	✓
238	$2y'' - y' - y = 0$	[[_2nd_order, _missing_x]]	✓
239	$4y'' + 8y' + 3y = 0$	[[_2nd_order, _missing_x]]	✓
240	$4y'' + 4y' + y = 0$	[[_2nd_order, _missing_x]]	✓
241	$9y'' - 12y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
242	$6y'' - 7y' - 20y = 0$	[[_2nd_order, _missing_x]]	✓
243	$35y'' - y' - 12y = 0$	[[_2nd_order, _missing_x]]	✓
244	$x^2y'' + xy' - y = 0$	[[_2nd_order, _exact, _lin- ear, _homogeneous]]	✓
245	$x^2y'' + 2xy' - 12y = 0$	[[_Emden, _Fowler]]	✓
246	$4x^2y'' + 8xy' - 3y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]]	✓

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Table 2.50 second order adjoint  
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#	ODE	CAS classification	Solved?
247	$x^2y'' + xy' = 0$	[[_2nd_order, _missing_y]]	✓
248	$x^2y'' - 3xy' + 4y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
257	$y'' + y = 3x$	[[_2nd_order, _with_linear_symmetries]]	✓
258	$y'' - 4y = 12$	[[_2nd_order, _missing_x]]	✓
259	$y'' - 2y' - 3y = 6$	[[_2nd_order, _missing_x]]	✓
261	$y'' + 2y = 4 + 6x$	[[_2nd_order, _with_linear_symmetries]]	✓
262	$x^2y'' - 2xy' + 2y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
263	$y'' - 2y' - 5y = 0$	[[_2nd_order, _missing_x]]	✓
271	$y'' - 4y = 0$	[[_2nd_order, _missing_x]]	✓
272	$2y'' - 3y' = 0$	[[_2nd_order, _missing_x]]	✓
273	$y'' + y' - 10y = 0$	[[_2nd_order, _missing_x]]	✓
274	$2y'' - 7y' + 3y = 0$	[[_2nd_order, _missing_x]]	✓
275	$y'' + 6y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓
276	$y'' + 5y' + 5y = 0$	[[_2nd_order, _missing_x]]	✓
277	$4y'' - 12y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓
278	$y'' - 6y' + 13y = 0$	[[_2nd_order, _missing_x]]	✓
279	$y'' + 8y' + 25y = 0$	[[_2nd_order, _missing_x]]	✓
291	$y'' - 4y' + 3y = 0$	[[_2nd_order, _missing_x]]	✓
292	$9y'' + 6y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
293	$y'' - 6y' + 25y = 0$	[[_2nd_order, _missing_x]]	✓
309	$y'' + 2iy' + 3y = 0$	[[_2nd_order, _missing_x]]	✓
310	$y'' - iy' + 6y = 0$	[[_2nd_order, _missing_x]]	✓

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Table 2.50 second order adjoint  
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#	ODE	CAS classification	Solved?
311	$y'' = (-2 + 2i\sqrt{3})y$	[[_2nd_order, _missing_x]]	✓
315	$x^2y'' + xy' + 9y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
316	$x^2y'' + 7xy' + 25y = 0$	[[_Emden, _Fowler]]	✓
322	$y'' + 16y = e^{3x}$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
323	$y'' - y' + 2y = 3x + 4$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
324	$y'' - y' - 6y = 2\sin(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
325	$4y'' + 4y' + y = 3xe^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
326	$y'' + y' + y = \sin(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
327	$2y'' + 4y' + 7y = x^2$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
328	$y'' - 4y = \sinh(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
329	$y'' - 4y = \cosh(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
330	$y'' + 2y' - 3y = 1 + xe^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
331	$2y'' + 9y = 2\cos(3x) + 3\sin(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
334	$y'' + 2y' + 5y = e^x \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
337	$y'' + 9y = 2x^2e^{3x} + 5$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
338	$y'' + y = \sin(x) + x\cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
342	$y'' - 2y' + 2y = e^x \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
344	$y'' + 4y = 3x\cos(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
346	$y'' + 3y' + 2y = x(e^{-x} - e^{-2x})$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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Table 2.50 second order adjoint  
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#	ODE	CAS classification	Solved?
347	$y'' - 6y' + 13y = x e^{3x} \sin(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
351	$y'' + 4y = 2x$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
352	$y'' + 3y' + 2y = e^x$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
353	$y'' + 9y = \sin(2x)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
354	$y'' + y = \cos(x)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
363	$y'' + y' + y = \sin(x) \sin(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
364	$y'' + 9y = \sin(x)^4$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
365	$y'' + y = x \cos(x)^3$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
366	$y'' + 3y' + 2y = 4e^x$	[[_2nd_order, _with_linear_symmetries]]	✓
367	$y'' - 2y' - 8y = 3e^{-2x}$	[[_2nd_order, _with_linear_symmetries]]	✓
368	$y'' - 4y' + 4y = 2e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓
369	$y'' - 4y = \sinh(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
370	$y'' + 4y = \cos(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
371	$y'' + 9y = \sin(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
372	$y'' + 9y = 2 \sec(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
373	$y'' + y = \csc(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
374	$y'' + 4y = \sin(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
375	$y'' - 4y = x e^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
376	$x^2 y'' + x y' - y = 72x^5$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓

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Table 2.50 second order adjoint  
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#	ODE	CAS classification	Solved?
377	$x^2y'' - 4xy' + 6y = x^3$	[[_2nd_order, __with_linear_symmetries]]	✓
378	$x^2y'' - 3xy' + 4y = x^4$	[[_2nd_order, __with_linear_symmetries]]	✓
379	$4x^2y'' - 4xy' + 3y = 8x^{4/3}$	[[_2nd_order, __with_linear_symmetries]]	✓
380	$x^2y'' + xy' + y = \ln(x)$	[[_2nd_order, __with_linear_symmetries]]	✓
381	$(x^2 - 1)y'' - 2xy' + 2y = x^2 - 1$	[[_2nd_order, __with_linear_symmetries]]	✓
382	$y'' + y = 2 \sin(x)$	[[_2nd_order, __linear, __nonhomogeneous]]	✓
383	$x'' + 9x = 10 \cos(2t)$ i.c.	[[_2nd_order, __linear, __nonhomogeneous]]	✓
384	$x'' + 4x = 5 \sin(3t)$ i.c.	[[_2nd_order, __linear, __nonhomogeneous]]	✓
385	$x'' + 100x = 225 \cos(5t) + 300 \sin(5t)$ i.c.	[[_2nd_order, __linear, __nonhomogeneous]]	✓
386	$x'' + 25x = 90 \cos(4t)$ i.c.	[[_2nd_order, __linear, __nonhomogeneous]]	✓
388	$x'' + 4x' + 4x = 10 \cos(3t)$	[[_2nd_order, __linear, __nonhomogeneous]]	✓
389	$x'' + 3x' + 5x = -4 \cos(5t)$	[[_2nd_order, __linear, __nonhomogeneous]]	✓
390	$2x'' + 2x' + x = 3 \sin(10t)$	[[_2nd_order, __linear, __nonhomogeneous]]	✓
396	$x'' + 2x' + 2x = 2 \cos(\omega t)$	[[_2nd_order, __linear, __nonhomogeneous]]	✓
397	$x'' + 4x' + 5x = 10 \cos(\omega t)$	[[_2nd_order, __linear, __nonhomogeneous]]	✓
398	$x'' + 6x' + 45x = 50 \cos(\omega t)$	[[_2nd_order, __linear, __nonhomogeneous]]	✓
399	$x'' + 10x' + 650x = 100 \cos(\omega t)$	[[_2nd_order, __linear, __nonhomogeneous]]	✓
514	$x^2y'' - xy' + (x^2 + 1)y = 0$	[[_2nd_order, __with_linear_symmetries]]	✓
515	$xy'' + 3y' + xy = 0$	[_Lienard]	✓

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Table 2.50 second order adjoint  
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#	ODE	CAS classification	Solved?
516	$xy'' - y' + 36x^3y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, ' _with_symme- try_[0,F(x)]']]	✓
517	$x^2y'' - 5xy' + (8 + x)y = 0$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
518	$36x^2y'' + 60xy' + (9x^3 - 5)y = 0$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
519	$16x^2y'' + 24xy' + (144x^3 + 1)y = 0$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
520	$x^2y'' + 3xy' + (x^2 + 1)y = 0$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
521	$4x^2y'' - 12xy' + (15 + 16x)y = 0$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
522	$16x^2y'' - (-144x^3 + 5)y = 0$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
523	$2x^2y'' - 3xy' - 2(-x^5 + 14)y = 0$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
524	$y'' + x^4y = 0$	[[_Emden, _Fowler]]	✓
525	$xy'' + 4x^3y = 0$	[[_Emden, _Fowler]]	✓
526	$xy'' + 2y' + xy = 0$	[_Lienard]	✓
807	$y'' - y = 0$	[[_2nd_order, _missing_x]]	✓
808	$y'' - 9y = 0$	[[_2nd_order, _missing_x]]	✓
809	$y'' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
810	$y'' + 25y = 0$	[[_2nd_order, _missing_x]]	✓
811	$y'' - 3y' + 2y = 0$	[[_2nd_order, _missing_x]]	✓
812	$y'' + y' - 6y = 0$	[[_2nd_order, _missing_x]]	✓
813	$y'' + y' = 0$	[[_2nd_order, _missing_x]]	✓
814	$y'' - 3y' = 0$	[[_2nd_order, _missing_x]]	✓

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#	ODE	CAS classification	Solved?
815	$y'' + 2y' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
816	$y'' - 10y' + 25y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
818	$y'' + 6y' + 13y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
819	$x^2y'' - 2xy' + 2y = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]]	✓
820	$x^2y'' + 2xy' - 6y = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]]	✓
821	$x^2y'' - xy' + y = 0$ i.c.	[[_Emden, _Fowler]]	✓
822	$x^2y'' + xy' + y = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]]	✓
823	$y'' - 3y' + 2y = 0$	[[_2nd_order, _missing_x]]	✓
824	$y'' + 2y' - 15y = 0$	[[_2nd_order, _missing_x]]	✓
825	$y'' + 5y' = 0$	[[_2nd_order, _missing_x]]	✓
826	$2y'' + 3y' = 0$	[[_2nd_order, _missing_x]]	✓
827	$2y'' - y' - y = 0$	[[_2nd_order, _missing_x]]	✓
828	$4y'' + 8y' + 3y = 0$	[[_2nd_order, _missing_x]]	✓
829	$4y'' + 4y' + y = 0$	[[_2nd_order, _missing_x]]	✓
830	$9y'' - 12y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
831	$6y'' - 7y' - 20y = 0$	[[_2nd_order, _missing_x]]	✓
832	$35y'' - y' - 12y = 0$	[[_2nd_order, _missing_x]]	✓
833	$x^2y'' + xy' - y = 0$	[[_2nd_order, _exact, _lin- ear, _homogeneous]]	✓
834	$x^2y'' + 2xy' - 12y = 0$	[[_Emden, _Fowler]]	✓
835	$4x^2y'' + 8xy' - 3y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]]	✓

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Table 2.50 second order adjoint  
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#	ODE	CAS classification	Solved?
836	$x^2y'' + xy' = 0$	[[_2nd_order, _missing_y]]	✓
837	$x^2y'' - 3xy' + 4y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]]	✓
838	$y'' + y = 3x$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
839	$y'' - 4y = 12$	[[_2nd_order, _missing_x]]	✓
840	$y'' - 2y' - 3y = 6$	[[_2nd_order, _missing_x]]	✓
842	$y'' + 2y = 4$	[[_2nd_order, _missing_x]]	✓
843	$y'' + 2y = 6x$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
844	$y'' + 2y = 4 + 6x$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
845	$y'' - 4y = 0$	[[_2nd_order, _missing_x]]	✓
846	$2y'' - 3y' = 0$	[[_2nd_order, _missing_x]]	✓
847	$y'' + 3y' - 10y = 0$	[[_2nd_order, _missing_x]]	✓
848	$2y'' - 7y' + 3y = 0$	[[_2nd_order, _missing_x]]	✓
849	$y'' + 6y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓
850	$y'' + 5y' + 5y = 0$	[[_2nd_order, _missing_x]]	✓
851	$4y'' - 12y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓
852	$y'' - 6y' + 13y = 0$	[[_2nd_order, _missing_x]]	✓
853	$y'' + 8y' + 25y = 0$	[[_2nd_order, _missing_x]]	✓
854	$y'' - 4y' + 3y = 0$	[[_2nd_order, _missing_x]]	✓
855	$9y'' + 6y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
856	$y'' - 6y' + 25y = 0$	[[_2nd_order, _missing_x]]	✓
857	$y'' - 2iy' + 3y = 0$	[[_2nd_order, _missing_x]]	✓
858	$y'' - iy' + 6y = 0$	[[_2nd_order, _missing_x]]	✓
859	$y'' = (-2 + 2i\sqrt{3})y$	[[_2nd_order, _missing_x]]	✓

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#	ODE	CAS classification	Solved?
860	$x^2y'' + xy' + 9y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, _with_symme- try_[0,F(x)]]]	✓
861	$x^2y'' + 7xy' + 25y = 0$	[[_Emden, _Fowler]]	✓
862	$\frac{x''}{2} + 3x' + 4x = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
863	$3x'' + 30x' + 63x = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
864	$x'' + 8x' + 16x = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
866	$4x'' + 20x' + 169x = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
867	$2x'' + 16x' + 40x = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
868	$x'' + 10x' + 125x = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
869	$y'' + 16y = e^{3x}$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
870	$y'' - y' - 2y = 3x + 4$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
871	$y'' - y' - 6y = 2 \sin(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
872	$4y'' + 4y' + y = 3x e^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
873	$y'' + y' + y = \sin(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
874	$2y'' + 4y' + 7y = x^2$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
875	$y'' - 4y = \sinh(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
876	$y'' - 4y = \cosh(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
877	$y'' + 2y' - 3y = 1 + x e^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
878	$y'' + 9y = 2 \cos(3x) + 3 \sin(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
879	$y'' + 9y = 2x^2 e^{3x} + 5$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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Table 2.50 second order adjoint  
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#	ODE	CAS classification	Solved?
880	$y'' - 2y' + 2y = e^x \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
881	$y'' + 4y = 3x \cos(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
882	$y'' + 3y' + 2y = x(e^{-x} - e^{-2x})$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
883	$y'' - 6y' + 13y = x e^{3x} \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
884	$y'' + 4y = 2x$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
885	$y'' + 3y' + 2y = e^x$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
886	$y'' + 9y = \sin(2x)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
887	$y'' + y = \cos(x)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
889	$y'' + y' + y = \sin(x) \sin(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
890	$y'' + 9y = \sin(x)^4$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
891	$y'' + y = x \cos(x)^3$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
892	$y'' + 3y' + 2y = 4e^x$	[[_2nd_order, _with_linear_symmetries]]	✓
893	$y'' - 2y' - 8y = 3e^{-2x}$	[[_2nd_order, _with_linear_symmetries]]	✓
894	$y'' - 4y' + 4y = 2e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓
895	$y'' - 4y = \sinh(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
896	$y'' + 4y = \cos(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
897	$y'' + 9y = \sin(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
898	$y'' + 9y = 2 \sec(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
899	$y'' + y = \csc(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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Table 2.50 second order adjoint  
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#	ODE	CAS classification	Solved?
900	$y'' + 4y = \sin(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
901	$y'' - 4y = x e^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
902	$x^2 y'' + xy' - y = 72x^5$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
903	$x^2 y'' - 4xy' + 6y = x^3$	[[_2nd_order, _with_linear_symmetries]]	✓
904	$x^2 y'' - 3xy' + 4y = x^4$	[[_2nd_order, _with_linear_symmetries]]	✓
905	$4x^2 y'' - 4xy' + 3y = 8x^{4/3}$	[[_2nd_order, _with_linear_symmetries]]	✓
906	$x^2 y'' + xy' + y = \ln(x)$	[[_2nd_order, _with_linear_symmetries]]	✓
907	$(x^2 - 1) y'' - 2xy' + 2y = x^2 - 1$	[[_2nd_order, _with_linear_symmetries]]	✓
908	$x'' + 9x = 10 \cos(2t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
909	$x'' + 4x = 5 \sin(3t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
910	$x'' + 100x = 225 \cos(5t) + 300 \sin(5t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
911	$x'' + 25x = 90 \cos(4t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
912	$m x'' + kx = F_0 \cos(\omega t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
913	$x'' + 4x' + 4x = 10 \cos(3t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
914	$x'' + 3x' + 5x = -4 \cos(5t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
915	$2x'' + 2x' + x = 3 \sin(10t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1249	$y'' + 2y' - 3y = 0$	[[_2nd_order, _missing_x]]	✓
1250	$y'' + 3y' + 2y = 0$	[[_2nd_order, _missing_x]]	✓
1251	$6y'' - y' - y = 0$	[[_2nd_order, _missing_x]]	✓
1252	$2y'' - 3y' + y = 0$	[[_2nd_order, _missing_x]]	✓
1253	$y'' + 5y' = 0$	[[_2nd_order, _missing_x]]	✓

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#	ODE	CAS classification	Solved?
1254	$4y'' - 9y = 0$	[[_2nd_order, _missing_x]]	✓
1255	$y'' - 9y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓
1256	$y'' - 2y' - 2y = 0$	[[_2nd_order, _missing_x]]	✓
1257	$y'' + y' - 2y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
1258	$y'' + 4y' + 3y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
1259	$6y'' - 5y' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
1260	$y'' + 3y' = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
1261	$y'' + 5y' + 3y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
1262	$2y'' + y' - 4y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
1263	$y'' + 8y' - 9y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
1264	$4y'' - y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
1265	$y'' - y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
1266	$2y'' - 3y' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
1267	$y'' - y' - 2y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
1268	$4y'' - y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
1269	$y'' - (2\alpha - 1)y' + \alpha(\alpha - 1)y = 0$	[[_2nd_order, _missing_x]]	✓
1270	$y'' + (3 - \alpha)y' - 2(\alpha - 1)y = 0$	[[_2nd_order, _missing_x]]	✓
1271	$2y'' + 3y' - 2y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
1272	$y'' + 5y' + 6y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
1273	$y'' - 2y' + 2y = 0$	[[_2nd_order, _missing_x]]	✓
1274	$y'' - 2y' + 6y = 0$	[[_2nd_order, _missing_x]]	✓
1275	$y'' + 2y' - 8y = 0$	[[_2nd_order, _missing_x]]	✓

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#	ODE	CAS classification	Solved?
1276	$y'' + 2y' + 2y = 0$	[[_2nd_order, _missing_x]]	✓
1277	$y'' + 6y' + 13y = 0$	[[_2nd_order, _missing_x]]	✓
1278	$4y'' + 9y = 0$	[[_2nd_order, _missing_x]]	✓
1279	$y'' + 2y' + \frac{5y}{4} = 0$	[[_2nd_order, _missing_x]]	✓
1280	$9y'' + 9y' - 4y = 0$	[[_2nd_order, _missing_x]]	✓
1281	$y'' + y' + \frac{5y}{4} = 0$	[[_2nd_order, _missing_x]]	✓
1282	$y'' + 4y' + \frac{25y}{4} = 0$	[[_2nd_order, _missing_x]]	✓
1283	$y'' + 4y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
1284	$y'' + 4y' + 5y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
1286	$y'' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
1287	$y'' + y' + \frac{5y}{4} = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
1288	$y'' + 2y' + 2y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
1289	$u'' - u' + 2u = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
1290	$5u'' + 2u' + 7u = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
1291	$y'' + 2y' + 6y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
1292	$y'' + 2ay' + (a^2 + 1)y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
1293	$t^2y'' + ty' + y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
1294	$t^2y'' + 4ty' + 2y = 0$	[[_2nd_order, _exact, _lin- ear, _homogeneous]]	✓
1295	$t^2y'' + 3ty' + \frac{5y}{4} = 0$	[[_Emden, _Fowler]]	✓
1296	$t^2y'' - 4ty' - 6y = 0$	[[_2nd_order, _exact, _lin- ear, _homogeneous]]	✓

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#	ODE	CAS classification	Solved?
1297	$t^2y'' - 4ty' + 6y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
1298	$t^2y'' - ty' + 5y = 0$	[[_Emden, _Fowler]]	✓
1299	$t^2y'' + 3ty' - 3y = 0$	[[_Emden, _Fowler]]	✓
1300	$t^2y'' + 7ty' + 10y = 0$	[[_Emden, _Fowler]]	✓
1302	$ty'' + (t^2 - 1)y' + t^3y = 0$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
1303	$y'' - 2y' + y = 0$	[[_2nd_order, _missing_x]]	✓
1304	$9y'' + 6y' + y = 0$	[[_2nd_order, _missing_x]]	✓
1305	$4y'' - 4y' - 3y = 0$	[[_2nd_order, _missing_x]]	✓
1306	$4y'' + 12y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓
1307	$y'' - 2y' + 10y = 0$	[[_2nd_order, _missing_x]]	✓
1308	$y'' - 6y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓
1309	$4y'' + 17y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
1310	$16y'' + 24y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓
1311	$25y'' - 20y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
1312	$2y'' + 2y' + y = 0$	[[_2nd_order, _missing_x]]	✓
1313	$9y'' - 12y' + 4y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
1314	$y'' - 6y' + 9y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
1315	$9y'' + 6y' + 82y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
1316	$y'' + 4y' + 4y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
1317	$4y'' + 12y' + 9y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
1318	$y'' - y' + \frac{y}{4} = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
1327	$t^2y'' - 3ty' + 4y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓

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#	ODE	CAS classification	Solved?
1328	$t^2 y'' + 2ty' + \frac{y}{4} = 0$	[[_Emden, _Fowler]]	✓
1329	$2t^2 y'' - 5ty' + 5y = 0$	[[_Emden, _Fowler]]	✓
1330	$t^2 y'' + 3ty' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
1331	$4t^2 y'' - 8ty' + 9y = 0$	[[_Emden, _Fowler]]	✓
1332	$t^2 y'' + 5ty' + 13y = 0$	[[_Emden, _Fowler]]	✓
1333	$y'' - 5y' + 6y = 2e^t$	[[_2nd_order, _with_linear_symmetries]]	✓
1334	$y'' - y' - 2y = 2e^{-t}$	[[_2nd_order, _with_linear_symmetries]]	✓
1335	$y'' + 2y' + y = 3e^{-t}$	[[_2nd_order, _with_linear_symmetries]]	✓
1336	$4y'' - 4y' + y = 16e^{\frac{t}{2}}$	[[_2nd_order, _with_linear_symmetries]]	✓
1337	$y'' + y = \tan(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1338	$y'' + 9y = 9 \sec(3t)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1339	$y'' + 4y' + 4y = \frac{e^{-2t}}{t^2}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1340	$y'' + 4y = 3 \csc(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1341	$y'' + y = 2 \sec\left(\frac{t}{2}\right)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1342	$y'' - 2y' + y = \frac{e^t}{t^2 + 1}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1345	$t^2 y'' - 2y = 3t^2 - 1$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
1346	$t^2 y'' - t(t+2)y' + (t+2)y = 2t^3$	[[_2nd_order, _with_linear_symmetries]]	✓
1347	$ty'' - (t+1)y' + y = t^2 e^{2t}$	[[_2nd_order, _with_linear_symmetries]]	✓
1348	$(-t+1)y'' + ty' - y = 2(t-1)^2 e^{-t}$	[[_2nd_order, _with_linear_symmetries]]	✓
1349	$x^2 y'' - 3xy' + 4y = x^2 \ln(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
1351	$t^2y'' - 2ty' + 2y = 4t^2$	[[_2nd_order, __with_linear_symmetries]]	✓
1352	$t^2y'' + 7ty' + 5y = t$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
1353	$ty'' - (t + 1)y' + y = t^2e^{2t}$	[[_2nd_order, __with_linear_symmetries]]	✓
1354	$(-t + 1)y'' + ty' - y = 2(t - 1)e^{-t}$	[[_2nd_order, __with_linear_symmetries]]	✓
1355	$u'' + 2u = 0$	[[_2nd_order, _missing_x]]	✓
1356	$u'' + \frac{u'}{4} + 2u = 0$	[[_2nd_order, _missing_x]]	✓
1737	$y'' - 7y' + 10y = 0$	[[_2nd_order, _missing_x]]	✓
1738	$y'' - 2y' + 2y = 0$	[[_2nd_order, _missing_x]]	✓
1739	$y'' - 2y' + 2y = 0$	[[_2nd_order, _missing_x]]	✓
1740	$y'' - 2y' + y = 0$	[[_2nd_order, _missing_x]]	✓
1741	$y'' - 2y' + y = 0$	[[_2nd_order, _missing_x]]	✓
1742	$(x^2 - 1)y'' + 4xy' + 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
1743	$y'' - 2y' - 3y = 0$	[[_2nd_order, _missing_x]]	✓
1744	$y'' - 6y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓
1745	$y'' - 2ay' + a^2y = 0$	[[_2nd_order, _missing_x]]	✓
1746	$x^2y'' + xy' - y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
1747	$x^2y'' - xy' + y = 0$	[[_Emden, _Fowler]]	✓
1748	$x^2y'' - (2a - 1)xy' + a^2y = 0$	[[_Emden, _Fowler]]	✓
1749	$4x^2y'' - 4xy' + (-16x^2 + 3)y = 0$	[[_2nd_order, __with_linear_symmetries]]	✓
1750	$(x - 1)y'' - xy' + y = 0$	[[_2nd_order, __with_linear_symmetries]]	✓
1751	$x^2y'' - 2xy' + (x^2 + 2)y = 0$	[[_2nd_order, __with_linear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
1754	$(x^2 - 4)y'' + 4xy' + 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
1756	$(x^2 - 2x)y'' + (-x^2 + 2)y' + (2x - 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
1805	$y'' + 9y = \tan(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1806	$y'' + 4y = \sin(2x)\sec(2x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1807	$y'' - 3y' + 2y = \frac{4}{1 + e^{-x}}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1808	$y'' - 2y' + 2y = 3e^x \sec(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1809	$y'' - 2y' + y = 14x^{3/2}e^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1810	$y'' - y = \frac{4e^{-x}}{1 - e^{-2x}}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1811	$x^2y'' + xy' - y = 2x^2 + 2$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
1812	$xy'' + (2 - 2x)y' + (-2 + x)y = e^{2x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1813	$4x^2y'' + (-8x^2 + 4x)y' + (4x^2 - 4x - 1)y = 4\sqrt{x}e^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1814	$y'' + 4xy' + (4x^2 + 2)y = 4e^{-x(x+2)}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1815	$x^2y'' - 4xy' + 6y = x^{5/2}$	[[_2nd_order, _with_linear_symmetries]]	✓
1816	$x^2y'' - 3xy' + 3y = 2x^4 \sin(x)$	[[_2nd_order, _with_linear_symmetries]]	✓
1817	$(2x + 1)y'' - 2y' - (2x + 3)y = (2x + 1)^2 e^{-x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1819	$xy'' - (2x + 2)y' + (x + 2)y = 6x^3 e^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1820	$x^2y'' - (2a - 1)xy' + a^2y = x^{a+1}$	[[_2nd_order, _with_linear_symmetries]]	✓
1821	$x^2y'' - 2xy' + (x^2 + 2)y = x^3 \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1822	$xy'' - y' - 4x^3y = 8x^5$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
1824	$4x^2y'' - 4xy' + (-16x^2 + 3)y = 8x^{5/2}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1825	$4x^2y'' - 4xy' + (4x^2 + 3)y = x^{7/2}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1826	$x^2y'' - 2xy' - (x^2 - 2)y = 3x^4$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1827	$x^2y'' - 2x(x+1)y' + (x^2 + 2x + 2)y = x^3e^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1828	$x^2y'' - xy' - 3y = x^{3/2}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
1829	$x^2y'' - x(4+x)y' + 2(x+3)y = e^xx^4$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1830	$x^2y'' - 2x(x+2)y' + (x^2 + 4x + 6)y = 2xe^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1831	$x^2y'' - 4xy' + (x^2 + 6)y = x^4$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1832	$(x-1)y'' - xy' + y = 2(x-1)^2e^x$	[[_2nd_order, _with_linear_symmetries]]	✓
1833	$4x^2y'' - 4x(x+1)y' + (2x+3)y = x^{5/2}e^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1834	$(3x-1)y'' - (2+3x)y' - (6x-8)y = (3x-1)^2e^{2x}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1835	$(x-1)^2y'' - 2(x-1)y' + 2y = (x-1)^2$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
1836	$(x-1)^2y'' - (x^2-1)y' + (x+1)y = (x-1)^3e^x$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
1838	$x^2y'' + 2xy' - 2y = -2x^2$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
1839	$(x+1)(2x+3)y'' + 2(x+2)y' - 2y = (2x+3)^2$ i.c.	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
2362	$2t^2y'' + 3ty' - y = 0$ i.c.	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
2363	$y'' + ty' + y = 0$ i.c.	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
2364	$y'' - y = 0$	[[_2nd_order, _missing_x]]	✓
2365	$6y'' - 7y' + y = 0$	[[_2nd_order, _missing_x]]	✓
2366	$y'' - 3y' + y = 0$	[[_2nd_order, _missing_x]]	✓

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#	ODE	CAS classification	Solved?
2367	$3y'' + 6y' + 3y = 0$	[[_2nd_order, _missing_x]]	✓
2368	$y'' - 3y' - 4y = 0$	[[_2nd_order, _missing_x]]	✓
	<i>i.c.</i>		
2369	$2y'' + y' - 10y = 0$	[[_2nd_order, _missing_x]]	✓
	<i>i.c.</i>		
2370	$5y'' + 5y' - y = 0$	[[_2nd_order, _missing_x]]	✓
	<i>i.c.</i>		
2371	$y'' - 6y' + y = 0$	[[_2nd_order, _missing_x]]	✓
	<i>i.c.</i>		
2372	$y'' + 5y' + 6y = 0$	[[_2nd_order, _missing_x]]	✓
	<i>i.c.</i>		
2373	$t^2y'' + \alpha ty' + \beta y = 0$	[[_Emden, _Fowler]]	✓
2374	$t^2y'' + 5ty' - 5y = 0$	[[_Emden, _Fowler]]	✓
2375	$t^2y'' - ty' - 2y = 0$	[[_Emden, _Fowler]]	✓
	<i>i.c.</i>		
2376	$y'' + 2y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
	<i>i.c.</i>		
2377	$y'' + y' + y = 0$	[[_2nd_order, _missing_x]]	✓
2378	$2y'' + 3y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
2379	$y'' + 2y' + 3y = 0$	[[_2nd_order, _missing_x]]	✓
2380	$4y'' - y' + y = 0$	[[_2nd_order, _missing_x]]	✓
2381	$y'' + y' + 2y = 0$	[[_2nd_order, _missing_x]]	✓
	<i>i.c.</i>		
2383	$2y'' - y' + 3y = 0$	[[_2nd_order, _missing_x]]	✓
	<i>i.c.</i>		
2384	$3y'' - 2y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
	<i>i.c.</i>		
2385	$t^2y'' + ty' + y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, ' _with_symme- try_[0,F(x)]']]	✓
2386	$t^2y'' + 2ty' + 2y = 0$	[[_Emden, _Fowler]]	✓
2387	$y'' - 6y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓
2388	$4y'' - 12y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓
2389	$9y'' + 6y' + y = 0$	[[_2nd_order, _missing_x]]	✓
	<i>i.c.</i>		

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#	ODE	CAS classification	Solved?
2390	$4y'' - 4y' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
2391	$y'' + 2y' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
2392	$9y'' - 12y' + 4y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
2393	$y'' - \frac{2(t+1)y'}{t^2+2t-1} + \frac{2y}{t^2+2t-1} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
2394	$y'' - 4ty' + (4t^2 - 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
2395	$(-t^2 + 1)y'' - 2ty' + 2y = 0$	[_Gegenbauer]	✓
2396	$(t^2 + 1)y'' - 2ty' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
2397	$(-t^2 + 1)y'' - 2ty' + 6y = 0$	[_Gegenbauer]	✓
2398	$(2t + 1)y'' - 4(t + 1)y' + 4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
2399	$t^2y'' + ty' + \left(t^2 - \frac{1}{4}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
2400	$t^2y'' + 3ty' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
2401	$t^2y'' - ty' + y = 0$	[[_Emden, _Fowler]]	✓
2402	$y'' + y = \sec(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2403	$y'' - 4y' + 4y = te^{2t}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2404	$2y'' - 3y' + y = (t^2 + 1)e^t$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2405	$y'' - 3y' + 2y = te^{3t} + 1$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2406	$3y'' + 4y' + y = \sin(t)e^{-t}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2407	$y'' + 4y' + 4y = t^{5/2}e^{-2t}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2411	$y'' - \frac{2ty'}{t^2+1} + \frac{2y}{t^2+1} = t^2 + 1$	[[_2nd_order, _with_linear_symmetries]]	✓
2412	$my'' + cy' + ky = F_0 \cos(\omega t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
2431	$t^2 y'' - 5ty' + 9y = 0$	[[_Emden, _Fowler]]	✓
2432	$t^2 y'' + 5ty' - 5y = 0$	[[_Emden, _Fowler]]	✓
2433	$2t^2 y'' + 3ty' - y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
2434	$(t - 1)^2 y'' - 2(t - 1)y' + 2y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
2435	$t^2 y'' + 3ty' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
2436	$t^2 y'' - ty' + y = 0$	[[_Emden, _Fowler]]	✓
2437	$(t - 2)^2 y'' + 5(t - 2)y' + 4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
2438	$t^2 y'' + ty' + y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
2440	<i>i.c.</i> $t^2 y'' - 3ty' + 4y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
2543	<i>i.c.</i> $2t^2 y'' + 3ty' - y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
2544	<i>i.c.</i> $y'' + ty' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
2545	$y'' - y = 0$	[[_2nd_order, _missing_x]]	✓
2546	$6y'' - 7y' + y = 0$	[[_2nd_order, _missing_x]]	✓
2547	$y'' - 3y' + y = 0$	[[_2nd_order, _missing_x]]	✓
2548	$3y'' + 6y' + 2y = 0$	[[_2nd_order, _missing_x]]	✓
2549	<i>i.c.</i> $y'' - 3y' - 4y = 0$	[[_2nd_order, _missing_x]]	✓
2550	<i>i.c.</i> $2y'' + y' - 10y = 0$	[[_2nd_order, _missing_x]]	✓
2551	<i>i.c.</i> $5y'' + 5y' - y = 0$	[[_2nd_order, _missing_x]]	✓
2552	<i>i.c.</i> $y'' - 6y' + y = 0$	[[_2nd_order, _missing_x]]	✓

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#	ODE	CAS classification	Solved?
2553	$y'' + 5y' + 6y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
2554	$t^2y'' + \alpha ty' + \beta y = 0$	[[_Emden, _Fowler]]	✓
2555	$t^2y'' + 5ty' - 2y = 0$ i.c.	[[_Emden, _Fowler]]	✓
2556	$y'' + y' + y = 0$	[[_2nd_order, _missing_x]]	✓
2557	$2y'' + 3y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
2558	$y'' + 2y' + 3y = 0$	[[_2nd_order, _missing_x]]	✓
2559	$4y'' - y' + y = 0$	[[_2nd_order, _missing_x]]	✓
2560	$y'' + y' + 2y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
2562	$2y'' - y' + 3y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
2563	$3y'' - 2y' + 4y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
2564	$y'' + w^2y = 0$	[[_2nd_order, _missing_x]]	✓
2565	$t^2y'' + ty' + y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]]	✓
2566	$t^2y'' + 2ty' + 2y = 0$	[[_Emden, _Fowler]]	✓
2567	$y'' - 6y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓
2568	$4y'' - 12y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓
2569	$9y'' + 6y' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
2570	$4y'' - 4y' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
2571	$6y'' + 2y' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
2572	$9y'' - 12y' + 4y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
2581	$t^2y'' + 3ty' + y = 0$	[[_2nd_order, _exact, _lin- ear, _homogeneous]]	✓
2582	$t^2y'' - ty' + y = 0$	[[_Emden, _Fowler]]	✓
2583	$y'' + y = \sec(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
2584	$y'' - 4y' + 4y = t e^{2t}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2585	$2y'' - 3y' + y = (t^2 + 1) e^t$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2586	$y'' - 3y' + 2y = t e^{3t} + 1$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2587	$3y'' + 4y' + y = \sin(t) e^{-t}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2588	$y'' + 4y' + 4y = t^{5/2} e^{-2t}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2591	$t^2 y'' - 2y = t^2$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
2593	$y'' - \frac{2ty'}{t^2 + 1} + \frac{2y}{t^2 + 1} = t^2 + 1$	[[_2nd_order, _with_linear_symmetries]]	✓
2594	$y'' + 3y = t^3 - 1$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2595	$y'' + 4y' + 4y = t e^{\alpha t}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2596	$y'' - y = t^2 e^t$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2597	$y'' + y' + y = t^2 + t + 1$	[[_2nd_order, _with_linear_symmetries]]	✓
2598	$y'' + 2y' + y = e^{-t}$	[[_2nd_order, _with_linear_symmetries]]	✓
2599	$y'' + 5y' + 4y = t^2 e^{7t}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2600	$y'' + 4y = t \sin(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2601	$y'' - 6y' + 9y = (3t^7 - 5t^4) e^{3t}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2602	$y'' - 2y' + 5y = 2 \cos(t)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2603	$y'' - 2y' + 5y = 2 \cos(t)^2 e^t$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2604	$y'' + y' - 6y = \sin(t) + t e^{2t}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2605	$y'' + y' + 4y = t^2 + (2t + 3)(1 + \cos(t))$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
2606	$y'' - 3y' + 2y = e^t + e^{2t}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2607	$y'' + 2y' = 1 + t^2 + e^{-2t}$	[[_2nd_order, _missing_y]]	✓
2608	$y'' + y = \cos(t) \cos(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2609	$y'' + y = \cos(t) \cos(2t) \cos(3t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2610	$y'' - 6y' + 9y = t^{3/2}e^{3t}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2628	$t^2y'' + 5ty' - 5y = 0$	[[_Emden, _Fowler]]	✓
2629	$2t^2y'' + 3ty' - y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
2630	$(t-1)^2y'' - 2(t-1)y' + 2y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)']]]	✓
2631	$t^2y'' + 3ty' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
2632	$t^2y'' - ty' + y = 0$	[[_Emden, _Fowler]]	✓
2633	$(t-2)^2y'' + 5(t-2)y' + 4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
2634	$t^2y'' + ty' + y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)']]]	✓
2635	$t^2y'' + 3ty' + 2y = 0$	[[_Emden, _Fowler]]	✓
2636	$t^2y'' - ty' - 2y = 0$	[[_Emden, _Fowler]]	✓
2637	$t^2y'' - 3ty' + 4y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)']]]	✓
2835	$y'' + \lambda y = 0$	[[_2nd_order, _missing_x]]	✓
2836	$y'' + \lambda y = 0$	[[_2nd_order, _missing_x]]	✓
2837	$y'' - \lambda y = 0$	[[_2nd_order, _missing_x]]	✓

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#	ODE	CAS classification	Solved?
2838	$y'' + \lambda y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
2839	$y'' - 2y' + (1 + \lambda)y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
2840	$y'' + \lambda y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
3059	$y'' - 4y = 0$	[[_2nd_order, _missing_x]]	✓
3060	$y'' + 7y' + 12y = 0$	[[_2nd_order, _missing_x]]	✓
3061	$y'' - 3y' + 2y = 0$	[[_2nd_order, _missing_x]]	✓
3062	$y'' - 7y' + 6y = 0$	[[_2nd_order, _missing_x]]	✓
3063	$2y'' + 3y' - 2y = 0$	[[_2nd_order, _missing_x]]	✓
3064	$y'' - 2y' - y = 0$	[[_2nd_order, _missing_x]]	✓
3065	$y'' - 2y' - 2y = 0$	[[_2nd_order, _missing_x]]	✓
3066	$y'' - 3y' + y = 0$	[[_2nd_order, _missing_x]]	✓
3067	$2y'' + 2y' - y = 0$	[[_2nd_order, _missing_x]]	✓
3088	$y'' - 2y' + y = 0$	[[_2nd_order, _missing_x]]	✓
3089	$y'' = 0$	[[_2nd_order, _quadrature]]	✓
3100	$y'' - 2y' + 3y = 0$	[[_2nd_order, _missing_x]]	✓
3111	$y'' - 4y = 3 \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3112	$y'' + y = \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3113	$y'' + y' - 2y = e^x$	[[_2nd_order, _with_linear_symmetries]]	✓
3114	$y'' + 3y' + 2y = e^{-2x}$	[[_2nd_order, _with_linear_symmetries]]	✓
3115	$y'' + y' + y = \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3116	$y'' + y' + y = x^2$	[[_2nd_order, _with_linear_symmetries]]	✓
3117	$y'' + 3y' + 2y = x e^{-x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3119	$y'' - 4y = x + e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
3120	$y'' - 9y = e^{3x} + \sin(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3121	$y'' - y' - 6y = x^3$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3122	$-2y'' + 3y = x e^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3123	$y'' + 4y = x \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3125	$y'' + y' + y = e^x \sin(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3128	$y'' + 4y' + 4y = x^3 e^{2x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3131	$y'' + 2ny' + n^2y = 5 \cos(6x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3132	$y'' + 9y = (1 + \sin(3x)) \cos(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3133	$y'' + 4y' + 5y = 2x - e^{-4x} + \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3135	$y'' + 4y = 8 \sin(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3137	$y'' - 5y' - 6y = e^{3x}$	[[_2nd_order, _with_linear_symmetries]]	✓
3139	$y'' - 3y' + 2y = x e^{-x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3140	$y'' + y = e^x \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3141	$2y'' + y' = 8 \sin(2x) + e^{-x}$	[[_2nd_order, _missing_y]]	✓
3142	$y'' + y = 3x \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3144	$8y'' - y = x e^{-\frac{x}{2}}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3145	$y'' + y = \sec(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3146	$y'' + 4y' + 4y = e^x$	[[_2nd_order, _with_linear_symmetries]]	✓
3147	$y'' + 4y = x^2$	[[_2nd_order, _with_linear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
3148	$y'' - 2y' + y = e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓
3149	$y'' + y = 4 \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3150	$y'' + 4y = 2x - 2 \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3151	$y'' - y = 3x + 5e^x$	[[_2nd_order, _with_linear_symmetries]]	✓
3152	$y'' + 9y = e^x + \sin(4x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3155	$y'' + y = \tan(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3160	$y'' - 2y' + y = \frac{e^x}{(1-x)^2}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3161	$y'' - 3y' + 2y = \sin(e^{-x})$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3162	$y'' + 4y = \sec(x) \tan(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3163	$y'' - 2y = e^{-x} \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3164	$y'' + 9y = \sec(x) \csc(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3165	$y'' + 9y = \csc(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3166	$y'' + y = \tan\left(\frac{x}{3}\right)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3168	$4y'' - 4y' + y = e^{\frac{x}{2}} \ln(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3170	$y'' - 6y' + 9y = e^{3x}$	[[_2nd_order, _with_linear_symmetries]]	✓
3172	$y'' - 5y' + 6y = x^2$	[[_2nd_order, _with_linear_symmetries]]	✓
3173	$y'' + 4y = 2e^x$	[[_2nd_order, _with_linear_symmetries]]	✓
3174	$y'' + 3y = 3e^{-4x}$	[[_2nd_order, _with_linear_symmetries]]	✓
3175	$y'' + 4y' + 4y = \frac{e^x}{2} + \frac{e^{-x}}{2}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
3176	$y'' + y' - 2y = e^{-2x}$	[[_2nd_order, _with_linear_symmetries]]	✓
3177	$y'' + 2y = \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3178	$y'' + 4y' + 4y = \frac{e^{3x}}{2} - \frac{e^{-3x}}{2}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3179	$y'' + 3y' - 2y = \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3180	$y'' + 3y' + 2y = e^x \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3184	$y'' + y = e^{3x}(1 + \sin(2x))$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3185	$y'' + 2n^2y' + n^4y = \sin(kx)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3186	$y'' + 4y' + 5y = \frac{e^x}{2} + \frac{e^{-x}}{2}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3187	$y'' + y' - 2y = xe^{-x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3188	$y'' + 4y = xe^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3189	$y'' + 2y = x^2e^{-x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3190	$y'' - y' - 2y = x^2 - 8$	[[_2nd_order, _with_linear_symmetries]]	✓
3205	$y'' + 4y = x \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3206	$y'' + y = x^2 \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3207	$y'' - y = x^2 \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3210	$2y'' + 3y' - 2y = e^x x^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3214	$y'' + 3y' + 2y = x^2 \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3215	$y'' - 4y' + 3y = x^2 \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3216	$y'' - y = x \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
3217	$y'' + 2y' = x^3 \sin(2x)$	[[_2nd_order, _missing_y]]	✓
3218	$y'' - y' = x e^{2x} \sin(x)$	[[_2nd_order, _missing_y]]	✓
3219	$y'' - 4y = x e^{2x} \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3220	$y'' + 2y' = x^2 e^{-x} \sin(x)$	[[_2nd_order, _missing_y]]	✓
3221	$x^2 y'' - 4xy' + y = 0$	[[_Emden, _Fowler]]	✓
3222	$x^2 y'' + xy' + 16y = 0$	[[_Emden, _Fowler, _2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
3223	$4x^2 y'' - 16xy' + 25y = 0$	[[_Emden, _Fowler]]	✓
3224	$x^2 y'' + 5xy' + 10y = 0$	[[_Emden, _Fowler]]	✓
3225	$2x^2 y'' - 3xy' - 18y = \ln(x)$	[[_2nd_order, _with_linear_symmetries]]	✓
3226	$2x^2 y'' - 3xy' + 2y = \ln(x^2)$	[[_2nd_order, _with_linear_symmetries]]	✓
3227	$x^2 y'' - 3xy' + 4y = x^3$	[[_2nd_order, _with_linear_symmetries]]	✓
3228	$x^2 y'' + 3xy' + y = 1 - x$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
3230	$x^2 y'' - 2xy' + 2y = 4x + \sin(\ln(x))$	[[_2nd_order, _with_linear_symmetries]]	✓
3231	$x^2 y'' - xy' + 2y = x^2 \ln(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3244	$y'' = \cos(t)$	[[_2nd_order, _quadrature]]	✓
3245	$y'' = k^2 y$	[[_2nd_order, _missing_x]]	✓
3246	$x'' + k^2 x = 0$	[[_2nd_order, _missing_x]]	✓
3249	$xy'' = x^2 + 1$	[[_2nd_order, _quadrature]]	✓
3250	$(1 - x)y'' = y'$	[[_2nd_order, _missing_y]]	✓
3251	$(x^2 + 1)y'' + 2x(y' + 1) = 0$	[[_2nd_order, _missing_y]]	✓
3253	$xy'' + x = y'$	[[_2nd_order, _missing_y]]	✓
3254	$x'' + tx' = t^3$	[[_2nd_order, _missing_y]]	✓
3255	$x^2 y'' = xy' + 1$	[[_2nd_order, _missing_y]]	✓

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#	ODE	CAS classification	Solved?
3266	$y'' = y$	[[_2nd_order, _missing_x]]	✓
3284	$(1 - e^x)y'' = e^xy'$ i.c.	[[_2nd_order, _missing_y]]	✓
3485	$f'' + 2f' + 5f = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
3487	$f'' + 6f' + 9f = e^{-t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
3490	$y'' + 2y' + y = 4e^{-x}$	[[_2nd_order, _with_linear_symmetries]]	✓
3493	$x^2y'' - xy' + y = x$	[[_2nd_order, _with_linear_symmetries]]	✓
3494	$(x + 1)^2y'' + 3(x + 1)y' + y = x^2$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
3495	$(-2 + x)y'' + 3y' + \frac{4y}{x^2} = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
3496	$y'' - y = x^n$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3497	$y'' - 2y' + y = 2xe^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3500	$y'' + 4xy' + (4x^2 + 6)y = e^{-x^2} \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3558	$y'' - 25y = 0$	[[_2nd_order, _missing_x]]	✓
3559	$y'' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
3560	$y'' + y' - 2y = 0$	[[_2nd_order, _missing_x]]	✓
3563	$y'' + 2y' + 5y = 0$	[[_2nd_order, _missing_x]]	✓
3564	$y'' - 9y = 0$	[[_2nd_order, _missing_x]]	✓
3565	$x^2y'' + 5xy' + 3y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
3566	$x^2y'' - 3xy' + 4y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
3567	$x^2y'' - 3xy' + 13y = 0$	[[_Emden, _Fowler]]	✓
3568	$2x^2y'' - xy' + y = 9x^2$	[[_2nd_order, _with_linear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
3569	$x^2y'' - 4xy' + 6y = x^4 \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3570	$y'' - (a + b)y' + aby = 0$	[[_2nd_order, _missing_x]]	✓
3571	$y'' - 2ay' + a^2y = 0$	[[_2nd_order, _missing_x]]	✓
3572	$y'' - 2ay' + (a^2 + b^2)y = 0$	[[_2nd_order, _missing_x]]	✓
3573	$y'' - y' - 6y = 0$	[[_2nd_order, _missing_x]]	✓
3574	$y'' + 6y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓
3575	$x^2y'' + xy' - y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
3576	$x^2y'' + 5xy' + 4y = 0$	[[_Emden, _Fowler]]	✓
3584	$y'' = x e^x$	[[_2nd_order, _quadrature]]	✓
3585	$y'' = x^n$	[[_2nd_order, _quadrature]]	✓
3587	$y'' = \cos(x)$ i.c.	[[_2nd_order, _quadrature]]	✓
3589	$y'' = x e^x$ i.c.	[[_2nd_order, _quadrature]]	✓
3590	$y'' + y' - 6y = 0$	[[_2nd_order, _missing_x]]	✓
3591	$x^2y'' - xy' - 8y = 0$	[[_Emden, _Fowler]]	✓
3592	$x^2y'' - 3xy' + 4y = x^2 \ln(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3631	$y'' + \frac{y'}{x} = 9x$	[[_2nd_order, _missing_y]]	✓
3696	$y'' - 2y' - 3y = 0$	[[_2nd_order, _missing_x]]	✓
3697	$y'' + 7y' + 10y = 0$	[[_2nd_order, _missing_x]]	✓
3698	$y'' - 36y = 0$	[[_2nd_order, _missing_x]]	✓
3699	$y'' + 4y' = 0$	[[_2nd_order, _missing_x]]	✓
3707	$x^2y'' + 3xy' - 8y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, _with_symmetry_[0,F(x)]]]	✓
3708	$2x^2y'' + 5xy' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
3711	$y'' + y' - 6y = 18e^{5x}$	[[_2nd_order, _with_linear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
3712	$y'' + y' - 2y = 4x^2 + 5$	[[_2nd_order, _with_linear_symmetries]]	✓
3716	$y'' + y = 6e^x$	[[_2nd_order, _with_linear_symmetries]]	✓
3717	$y'' + 4y' + 4y = 5xe^{-2x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3718	$y'' + 4y = 8\sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3719	$y'' - y' - 2y = 5e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓
3720	$y'' + 2y' + 5y = 3\sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3729	$y'' - 4y' + 6y = 7e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓
3732	$y'' + 2y' - 3y = \sin(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3733	$y'' + 6y = \sin(x)^2 \cos(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3734	$y'' - 16y = 20\cos(4x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3735	$y'' + 2y' + y = 50\sin(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3736	$y'' - y = 10e^{2x} \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3737	$y'' + 4y' + 4y = 169\sin(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3738	$y'' - y' - 2y = 40\sin(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3739	$y'' + y = 3e^x \cos(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3740	$y'' + 2y' + 2y = 2e^{-x} \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3741	$y'' - 4y = 100xe^x \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3742	$y'' + 2y' + 5y = 4e^{-x} \cos(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3743	$y'' - 2y' + 10y = 24e^x \cos(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
3744	$y'' + 16y = 34e^x + 16\cos(4x) - 8\sin(4x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3745	$y'' - 6y' + 9y = 4e^{3x}\ln(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3746	$y'' + 4y' + 4y = \frac{e^{-2x}}{x^2}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3747	$y'' + 9y = 18\sec(3x)^3$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3748	$y'' + 6y' + 9y = \frac{2e^{-3x}}{x^2 + 1}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3749	$y'' - 4y = \frac{8}{e^{2x} + 1}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3751	$y'' + 9y = \frac{36}{4 - \cos(3x)^2}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3752	$y'' - 10y' + 25y = \frac{2e^{5x}}{x^2 + 4}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3753	$y'' - 6y' + 13y = 4e^{3x}\sec(2x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3754	$y'' + y = \sec(x) + 4e^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3755	$y'' + y = \csc(x) + 2x^2 + 5x + 1$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3756	$y'' - y = 2\tanh(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3757	$y'' - 2my' + m^2y = \frac{e^{mx}}{x^2 + 1}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3758	$y'' - 2y' + y = \frac{4e^x\ln(x)}{x^3}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3759	$y'' + 2y' + y = \frac{e^{-x}}{\sqrt{-x^2 + 4}}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3760	$y'' + 2y' + 17y = \frac{64e^{-x}}{3 + \sin(4x)^2}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3761	$y'' + 4y' + 4y = \frac{4e^{-2x}}{x^2 + 1} + 2x^2 - 1$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3762	$y'' + 4y' + 4y = 15e^{-2x}\ln(x) + 25\cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
3771	$y'' - 4y' + 4y = 5x e^{2x}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3773	$x^2 y'' + 4xy' + 2y = 4 \ln(x)$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
3774	$x^2 y'' + 4xy' + 2y = \cos(x)$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
3775	$x^2 y'' + xy' + 9y = 9 \ln(x)$	[[_2nd_order, _with_linear_symmetries]]	✓
3776	$x^2 y'' - xy' + 5y = 8x \ln(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3777	$x^2 y'' - 4xy' + 6y = x^4 \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3778	$x^2 y'' + 6xy' + 6y = 4e^{2x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3779	$x^2 y'' - 3xy' + 4y = \frac{x^2}{\ln(x)}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3780	$x^2 y'' - (2m - 1)xy' + m^2 y = x^m \ln(x)^k$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3781	$x^2 y'' - xy' + 5y = 0$ i.c.	[[_Emden, _Fowler]]	✓
3782	$t^2 y'' + ty' + 25y = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _linear, _with_symmetry_[0,F(x)]]]	✓
3797	$y'' + 6y' + 9y = 4e^{-3x}$	[[_2nd_order, _with_linear_symmetries]]	✓
3798	$y'' + 6y' + 9y = 4e^{-2x}$	[[_2nd_order, _with_linear_symmetries]]	✓
3802	$y'' - 4y = 5e^x$	[[_2nd_order, _with_linear_symmetries]]	✓
3803	$y'' + 2y' + y = 2x e^{-x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3804	$y'' - y = 4e^x$	[[_2nd_order, _with_linear_symmetries]]	✓
3806	$y'' + 4y = \ln(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3807	$y'' + 2y' - 3y = 5e^x$	[[_2nd_order, _with_linear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
3808	$y'' + y = \tan(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3809	$y'' + y = 4 \cos(2x) + 3e^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4118	$y'' + 8y' + 15y = 0$	[[_2nd_order, _missing_x]]	✓
4119	$y'' + 2y' - 15y = 0$	[[_2nd_order, _missing_x]]	✓
4120	$y'' + 6y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓
4121	$y'' + 6y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓
4122	$y'' - 3y' + 2y = 0$	[[_2nd_order, _missing_x]]	✓
4123	$y'' - 4y' + 13y = 0$	[[_2nd_order, _missing_x]]	✓
4124	$2y'' + 3y' = 0$	[[_2nd_order, _missing_x]]	✓
4125	$y'' + 25y = 0$	[[_2nd_order, _missing_x]]	✓
4126	$4y'' + y' + y = 0$	[[_2nd_order, _missing_x]]	✓
4127	$y'' = 0$	[[_2nd_order, _quadrature]]	✓
4128	$y'' - 6y' + 5y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
4129	$y'' - 4y' + 3y = 1$	[[_2nd_order, _missing_x]]	✓
4130	$y'' + y' - 2y = -2x^2 + 2x + 2$	[[_2nd_order, _with_linear_symmetries]]	✓
4131	$y'' + y = x^3 + x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4132	$y'' - 6y' + 9y = e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓
4133	$y'' + 2y = x + e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓
4134	$y'' + 2y = e^x + 2$	[[_2nd_order, _with_linear_symmetries]]	✓
4135	$y'' - y = 2e^x$	[[_2nd_order, _with_linear_symmetries]]	✓
4136	$y'' + y = \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4137	$y'' - y = 4xe^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4138	$y'' - 2y' + 3y = x^3 + \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
4139	$(x^2 + 1)y'' + xy' - 4y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)']]]	✓
4140	$x^2y'' - 2xy' + 2y = x^2 + 2$	[[_2nd_order, _with_linear_symmetries]]	✓
4141 i.c.	$y'' + 2ny' + n^2y = A \cos(xp)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4152	$y'' - 3y' + 2y = \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4153	$y'' + 2y' - 2y = x^2 + 1$	[[_2nd_order, _with_linear_symmetries]]	✓
4155	$y'' + 3y' + 2y = e^x - 2e^{2x} + \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4156	$y'' - 4y' + 4y = x^3e^{2x} + xe^{2x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4157	$y'' + 3y' + 2y = x \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4158	$y'' - 6y' + 9y = e^x \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4161 i.c.	$y'' - 3y' + 2y = 0$	[[_2nd_order, _missing_x]]	✓
4162 i.c.	$y'' + 9y = 8 \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4163 i.c.	$25y'' - 30y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓
4164 i.c.	$9y'' - 6y' + y = (4x^2 + 24x + 18)e^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4426	$xy'' = y' + x$	[[_2nd_order, _missing_y]]	✓
4456	$y'' + 6y' + 10y = 3xe^{-3x} - 2e^{3x} \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4457	$y'' - 8y' + 17y = e^{4x}(x^2 - 3x \sin(x))$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4458	$y'' - 2y' + 2y = (x + e^x) \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4459	$y'' + 4y = \sinh(x) \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4460	$y'' + 2y' + 2y = \cosh(x) \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
4470	$y'' - y' - 2y = 36x e^{2x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4474	$y'' + 3y' + 5y = 5 e^{-x} \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4476	$y'' + 4y = 8 \sin(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4479	$y'' - 4y' + 4y = (x + 1) e^x + 2 e^{2x} + 3 e^{3x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4480	$y'' - 2y' + 5y = 4 e^x \cos(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4481	$y'' + 4y = 4 \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4482	$y'' - y = 12 e^x x^2 + 3 e^{2x} + 10 \cos(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4483	$y'' + y = 2 \sin(x) - 3 \cos(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4484	$y'' - y' = e^x (x^2 + 10)$	[[_2nd_order, _missing_y]]	✓
4485	$y'' - 4y = 96x^2 e^{2x} + 4 e^{-2x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4486	$y'' + 2y' + 2y = 5 \cos(x) + 10 \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4487	$y'' - 2y' + 2y = 4x - 2 + 2 e^x \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4488	$y'' - 4y' + 4y = 4x e^{2x} \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4497	$y'' - y = \frac{1}{x} - \frac{2}{x^3}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4498	$y'' - y = \frac{1}{\sinh(x)}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4499	$y'' - 2y' + y = \frac{e^x}{x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4500	$y'' + 3y' + 2y = \sin(e^x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4501	$y'' - 3y' + 2y = \sin(e^{-x})$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4502	$y'' + y = \sec(x)^3$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
4503	$y'' - y = \frac{1}{\sqrt{1 - e^{2x}}}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4504	$y'' - y = e^{-2x} \sin(e^{-x})$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4505	$y'' + 2y' + y = 15e^{-x}\sqrt{x+1}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4506	$y'' + 4y = 2 \tan(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4507	$y'' - 2y' + y = \frac{e^{2x}}{(1 + e^x)^2}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4508	$y'' + y' = \frac{1}{1 + e^x}$	[[_2nd_order, _missing_y]]	✓
4509	$x^2y'' - xy' + y = \ln(x)$	[[_2nd_order, _with_linear_symmetries]]	✓
4510	$x^2y'' + 3xy' + 5y = \frac{5 \ln(x)}{x^2}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4512	$(-2 + x)^2 y'' - 3(-2 + x)y' + 4y = x$	[[_2nd_order, _with_linear_symmetries]]	✓
5916	$y'' + 2y' = 0$	[[_2nd_order, _missing_x]]	✓
5917	$y'' - 3y' + 2y = 0$	[[_2nd_order, _missing_x]]	✓
5918	$y'' - y = 0$	[[_2nd_order, _missing_x]]	✓
5919	$6y'' - 11y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
5920	$y'' + 2y' - y = 0$	[[_2nd_order, _missing_x]]	✓
5925	$y'' - 2ky' - 2y = 0$	[[_2nd_order, _missing_x]]	✓
5926	$y'' + 4ky' - 12k^2y = 0$	[[_2nd_order, _missing_x]]	✓
5928	$y'' + 4y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
5931	$y'' - 2ay' + a^2y = 0$	[[_2nd_order, _missing_x]]	✓
5937	$y'' - 2y' + 5y = 0$	[[_2nd_order, _missing_x]]	✓
5938	$y'' - y' + y = 0$	[[_2nd_order, _missing_x]]	✓
5940	$y'' - 4y' + 20y = 0$	[[_2nd_order, _missing_x]]	✓
5945	$y'' = 0$	[[_2nd_order, _quadrature]]	✓
5946	$y'' + 4y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓

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#	ODE	CAS classification	Solved?
5947	$y'' - 2y' + 5y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
5948	$y'' - 4y' + 20y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
5950	$y'' + 3y' + 2y = 4$	[[_2nd_order, _missing_x]]	✓
5951	$y'' + 3y' + 2y = 12e^x$	[[_2nd_order, _with_linear_symmetries]]	✓
5952	$y'' + 3y' + 2y = e^{ix}$	[[_2nd_order, _with_linear_symmetries]]	✓
5953	$y'' + 3y' + 2y = \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
5954	$y'' + 3y' + 2y = \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
5955	$y'' + 3y' + 2y = 8 + 6e^x + 2\sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
5956	$y'' + y' + y = x^2$	[[_2nd_order, _with_linear_symmetries]]	✓
5957	$y'' - 2y' - 8y = 9xe^x + 10e^{-x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
5958	$y'' - 3y' = 2e^{2x}\sin(x)$	[[_2nd_order, _missing_y]]	✓
5959	$y'' + y' = x^2 + 2x$	[[_2nd_order, _missing_y]]	✓
5960	$y'' + y' = x + \sin(2x)$	[[_2nd_order, _missing_y]]	✓
5961	$y'' + y = 4x\sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
5962	$y'' + 4y = x\sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
5963	$y'' + 2y' + y = x^2e^{-x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
5964	$y'' + 3y' + 2y = e^{-2x} + x^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
5965	$y'' - 3y' + 2y = xe^{-x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
5966	$y'' + y' - 6y = x + e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓
5967	$y'' + y = \sin(x) + e^{-x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
5968	$y'' + y = \sin(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
5969	$y'' + y = \sin(2x) \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
5970	$y'' - 5y' - 6y = e^{3x}$	[[_2nd_order, _with_linear_symmetries]]	✓
5972	$y'' + 9y = 8 \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
5973	$y'' - 5y' + 6y = e^x(2x - 3)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
5974	$y'' - 3y' + 2y = e^{-x}$	[[_2nd_order, _with_linear_symmetries]]	✓
5975	$y'' + y = \sec(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
5976	$y'' + y = \cot(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
5977	$y'' + y = \sec(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
5978	$y'' - y = \sin(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
5979	$y'' + y = \sin(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
5980	$y'' + 3y' + 2y = 12e^x$	[[_2nd_order, _with_linear_symmetries]]	✓
5981	$y'' + 2y' + y = x^2e^{-x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
5982	$y'' + y = 4x \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
5983	$y'' + 2y' + y = e^{-x} \ln(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
5984	$y'' + y = \csc(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
5985	$y'' + y = \tan(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
5986	$y'' + 2y' + y = \frac{e^{-x}}{x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
5987	$y'' + y = \sec(x) \csc(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
5988	$y'' - 2y' + y = e^x \ln(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
5989	$y'' - 3y' + 2y = \cos(e^{-x})$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
5990	$x^2y'' - xy' + y = x$	[[_2nd_order, _with_linear_symmetries]]	✓
5991	$y'' - \frac{2y'}{x} + \frac{2y}{x^2} = x \ln(x)$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
5992	$x^2y'' + xy' - 4y = x^3$	[[_2nd_order, _with_linear_symmetries]]	✓
5993	$x^2y'' + xy' - y = x^2e^{-x}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
5994	$2x^2y'' + 3xy' - y = \frac{1}{x}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
5998	$x^2y'' + xy' = 1$	[[_2nd_order, _missing_y]]	✓
5999	$xy'' - y' = x^2$	[[_2nd_order, _missing_y]]	✓
6009	$(x^2 + 1)y'' + 2x(y' + 1) = 0$	[[_2nd_order, _missing_y]]	✓
6014	$x^2y'' + xy' = 1$ i.c.	[[_2nd_order, _missing_y]]	✓
6015	$xy'' - y' = x^2$ i.c.	[[_2nd_order, _missing_y]]	✓
6026	$x^2y'' - 2xy' + 2y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, _with_symmetry_[0,F(x)]]]	✓
6076	$u'' - \frac{a^2u}{x^{2/3}} = 0$	[[_Emden, _Fowler]]	✓
6077	$u'' - \frac{2u'}{x} - a^2u = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
6078	$u'' + \frac{2u'}{x} - a^2u = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
6079	$u'' + \frac{2u'}{x} + a^2u = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
6080	$u'' + \frac{4u'}{x} - a^2u = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
6081	$u'' + \frac{4u'}{x} + a^2u = 0$	[[_2nd_order, _with_linear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
6082	$y'' - a^2y = \frac{6y}{x^2}$	[[_2nd_order, _with_linear_symmetries]]	✓
6083	$y'' + n^2y = \frac{6y}{x^2}$	[[_2nd_order, _with_linear_symmetries]]	✓
6084	$x^2y'' + xy' - \left(x^2 + \frac{1}{4}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
6085	$x^2y'' + xy' + \frac{(-9a^2 + 4x^2)y}{4a^2} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
6086	$x^2y'' + xy' + \left(x^2 - \frac{25}{4}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
6087	$y'' + qy' = \frac{2y}{x^2}$	[[_2nd_order, _with_linear_symmetries]]	✓
6088	$y'' + e^{2x}y = n^2y$	[[_2nd_order, _with_linear_symmetries]]	✓
6089	$y'' + \frac{y}{4x} = 0$	[[_Emden, _Fowler]]	✓
6090	$xy'' + y' + y = 0$	[[_Emden, _Fowler]]	✓
6091	$xy'' + 3y' + 4x^3y = 0$	[[_Emden, _Fowler]]	✓
6135	$y'' + y' - 2y = 0$	[[_2nd_order, _missing_x]]	✓
6136	$y'' - 4y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
6137	$y'' + 9y' = 0$	[[_2nd_order, _missing_x]]	✓
6138	$y'' + 2y' + 2y = 0$	[[_2nd_order, _missing_x]]	✓
6139	$y'' - 2y' + 6y = 0$	[[_2nd_order, _missing_x]]	✓
6140	$y'' + 16y = 0$	[[_2nd_order, _missing_x]]	✓
6141	$y'' - 5y' + 6y = 0$	[[_2nd_order, _missing_x]]	✓
6142	$y'' + 5y' = 0$	[[_2nd_order, _missing_x]]	✓
6143	$y'' - 4y' + 13y = 0$	[[_2nd_order, _missing_x]]	✓
6144	$2y'' + y' - y = 0$	[[_2nd_order, _missing_x]]	✓
6145	$y'' + (1 + 2i)y' + (-1 + i)y = 0$	[[_2nd_order, _missing_x]]	✓
6146	$y'' + (1 + 2i)y' + (-1 + i)y = 0$	[[_2nd_order, _missing_x]]	✓
6151	$y'' - 4y' = 10$	[[_2nd_order, _missing_x]]	✓
6152	$y'' - 4y' + 4y = 16$	[[_2nd_order, _missing_x]]	✓

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#	ODE	CAS classification	Solved?
6153	$y'' + y' - 2y = e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓
6154	$y'' - 2y' - 3y = 24e^{-3x}$	[[_2nd_order, _with_linear_symmetries]]	✓
6155	$y'' + y = 2e^x$	[[_2nd_order, _with_linear_symmetries]]	✓
6156	$y'' + 6y' + 9y = 12e^{-x}$	[[_2nd_order, _with_linear_symmetries]]	✓
6157	$y'' - y' - 2y = 3e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓
6158	$y'' - 16y = 40e^{4x}$	[[_2nd_order, _with_linear_symmetries]]	✓
6159	$y'' + 2y' + y = 2e^{-x}$	[[_2nd_order, _with_linear_symmetries]]	✓
6160	$y'' - 6y' + 9y = 6e^{3x}$	[[_2nd_order, _with_linear_symmetries]]	✓
6161	$y'' + 2y' + 10y = 100 \cos(4x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6162	$y'' + 4y' + 12y = 80 \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6163	$y'' - 2y' + y = 2 \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6164	$y'' + 8y' + 25y = 120 \sin(5x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6166	$y'' + 9y = 30 \sin(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6167	$y'' + 16y = 16 \cos(4x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6168	$y'' + 2y' + 17y = 60e^{-4x} \sin(5x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6169	$4y'' + 4y' + 5y = 40e^{-\frac{3x}{2}} \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6170	$y'' + 4y' + 8y = 30e^{-\frac{x}{2}} \cos\left(\frac{5x}{2}\right)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6172	$2y'' + y' = 2x$	[[_2nd_order, _missing_y]]	✓
6173	$y'' + y = 2xe^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6174	$y'' - 6y' + 9y = 12xe^{3x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
6175	$y'' - 2y' - 3y = 16x^2e^{-x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6176	$y'' + y = 8x \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6177	$y'' + y = x^3 - 1 + 2 \cos(x) + (2 - 4x)e^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6178	$y'' - 5y' + 6y = 2e^x + 6x - 5$	[[_2nd_order, _with_linear_symmetries]]	✓
6179	$y'' - y = \sinh(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6180	$y'' + y = 2 \sin(x) + 4x \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6181	$y'' + 2y' + y = 4e^x + (1 - x)(-1 + e^{2x})$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6182	$y'' - 2y' = 9xe^{-x} - 6x^2 + 4e^{2x}$	[[_2nd_order, _missing_y]]	✓
6187	$y'' + 2xy' = 0$	[[_2nd_order, _missing_y]]	✓
6192	$x^2y'' + 3xy' - 3y = 0$	[[_Emden, _Fowler]]	✓
6193	$x^2y'' + xy' - 4y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]]]	✓
6194	$x^2y'' + 7xy' + 9y = 0$	[[_Emden, _Fowler]]	✓
6195	$x^2y'' - xy' + 6y = 0$	[[_Emden, _Fowler]]	✓
6196	$x^2y'' + xy' - 16y = 8x^4$	[[_2nd_order, _with_linear_symmetries]]	✓
6197	$x^2y'' + xy' - y = x - \frac{1}{x}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
6198	$x^2y'' - 5xy' + 9y = 2x^3$	[[_2nd_order, _with_linear_symmetries]]	✓
6199	$x^2y'' - 3xy' + 4y = 6x^2 \ln(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6200	$x^2y'' + y = 3x^2$	[[_2nd_order, _with_linear_symmetries]]	✓
6201	$x^2y'' + xy' + y = 2x$	[[_2nd_order, _with_linear_symmetries]]	✓
6211	$r'' - 6r' + 9r = 0$	[[_2nd_order, _missing_x]]	✓

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#	ODE	CAS classification	Solved?
6213	$y'' + 2y' + 2y = 10e^x + 6e^{-x} \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6215	$x^2y'' - xy' + y = x$	[[_2nd_order, _with_linear_symmetries]]	✓
6219	$xy'' + y' = 4x$	[[_2nd_order, _missing_y]]	✓
6220	$y'' + 4y' + 5y = 26e^{3x}$	[[_2nd_order, _with_linear_symmetries]]	✓
6221	$y'' + 4y' + 5y = 2e^{-2x} \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6222	$y'' - 4y' + 4y = 6e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓
6223	$y'' - 5y' + 6y = e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓
6227	$y'' - 2y' + 5y = 5x + 4e^x(1 + \sin(2x))$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6234	$y'' + y' - 6y = 6$ i.c.	[[_2nd_order, _missing_x]]	✓
6243	$y'' = -4y$	[[_2nd_order, _missing_x]]	✓
6245	$y'' = y$	[[_2nd_order, _missing_x]]	✓
6247	$y'' - 2y' + y = 0$	[[_2nd_order, _missing_x]]	✓
6249	$x^2y'' - 3xy' + 3y = 0$	[[_Emden, _Fowler]]	✓
6251	$(x^2 + 2x)y'' - 2(x + 1)y' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
6253	$(x^2 + 1)y'' - 2xy' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
6255	$y'' - 4xy' + (4x^2 - 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
6389	$x'' - \omega^2x = 0$	[[_2nd_order, _missing_x]]	✓
6391	$x'' + 42x' + x = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
6394	$x'' + 2\gamma x' + \omega_0x = F \cos(\omega t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6395	$y'' - y' - 2y = e^{2x}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
6396	$y'' - 2y' + y = 2 \cos(x)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
6397	$y'' + 16y = 16 \cos(4x)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6398	$y'' - y = \cosh(x)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6408	$x(x+1)^2 y'' + (-x^2+1)y' + (x-1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
6409	$x(1-x)y'' + 2(-2x+1)y' - 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
6410	$x^2 y'' + xy' - 9y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
6411	$xy'' + \frac{y'}{2} + 2y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
6412	$x^2 y'' - xy' + y = 0$	[[_Emden, _Fowler]]	✓
6413	$2xy'' - y' + 2y = 0$	[[_Emden, _Fowler]]	✓
6414	$xy'' + xy' - 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
6415	$x(x-1)^2 y'' - 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
6480	$y'' - y' - 2y = 8$	[[_2nd_order, _missing_x]]	✓
6481	$y'' - 4y = 10e^{3x}$	[[_2nd_order, _with_linear_symmetries]]	✓
6482	$y'' + 2y' + y = e^{-2x}$	[[_2nd_order, _with_linear_symmetries]]	✓
6483	$y'' + 25y = 5x^2 + x$	[[_2nd_order, _with_linear_symmetries]]	✓
6484	$y'' - 2y' + y = 4 \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6485	$y'' + 4y' + 5y = 2e^{-2x}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
6486	$3y'' - 2y' - y = 2x - 3$	[[_2nd_order, _with_linear_symmetries]]	✓
6487	$y'' - 6y' + 8y = 8e^{4x}$	[[_2nd_order, _with_linear_symmetries]]	✓
6488	$2y'' - 7y' - 4y = e^{3x}$	[[_2nd_order, _with_linear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
6489	$y'' - 6y' + 9y = 54x + 18$	[[_2nd_order, _with_linear_symmetries]]	✓
6490	$y'' - 5y' + 6y = 100 \sin(4x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6491	$y'' + 2y' + y = 4 \sinh(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6492	$y'' + y' - 2y = 2 \cosh(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6493	$y'' - y' + 10y = 20 - e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓
6494	$y'' + 4y' + 4y = 2 \cos(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6495	$y'' - 4y' + 3y = x + e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓
6496	$y'' - 2y' + 3y = x^2 - 1$	[[_2nd_order, _with_linear_symmetries]]	✓
6497	$y'' - 9y = e^{3x} + \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6498	$x'' + 4x' + 3x = e^{-3t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
6499	$y'' + 4y' + 5y = 6 \sin(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6500	$x'' - 3x' + 2x = \sin(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6501	$y'' + 3y' + 2y = 3 \sin(x)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6502	$y'' + 6y' + 10y = 50x$	[[_2nd_order, _with_linear_symmetries]]	✓
6504	$y'' = 3 \sin(x) - 4y$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6505	$\frac{x''}{2} = -48x$ i.c.	[[_2nd_order, _missing_x]]	✓
6506	$x'' + 5x' + 6x = \cos(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6507	$y'' - y' - 2y = 4x^2$	[[_2nd_order, _with_linear_symmetries]]	✓
6508	$y'' - y' - 2y = e^{3x}$	[[_2nd_order, _with_linear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
6509	$y'' - y' - 2y = \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6510	$y'' - 6y' + 25y = 2 \sin\left(\frac{t}{2}\right) - \cos\left(\frac{t}{2}\right)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6511	$y'' - 6y' + 25y = 64e^{-t}$	[[_2nd_order, _with_linear_symmetries]]	✓
6512	$y'' - 6y' + 25y = 50t^3 - 36t^2 - 63t + 18$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6514	$y'' = 9x^2 + 2x - 1$	[[_2nd_order, _quadrature]]	✓
6515	$y'' - 5y = 2e^{5x}$	[[_2nd_order, _with_linear_symmetries]]	✓
6519	$y'' - 2y' + y = x^2 - 1$	[[_2nd_order, _with_linear_symmetries]]	✓
6520	$y'' - 2y' + y = 4e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓
6521	$y'' - 2y' + y = 4 \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6522	$y'' - 2y' + y = 3e^x$	[[_2nd_order, _with_linear_symmetries]]	✓
6523	$y'' - 2y' + y = xe^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6530	$y'' - 2y' + y = \frac{e^x}{x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6531	$y'' - y' - 2y = e^{3x}$	[[_2nd_order, _with_linear_symmetries]]	✓
6532	$x'' + 4x = \sin(2t)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6533	$t^2N'' - 2tN' + 2N = t \ln(t)$	[[_2nd_order, _with_linear_symmetries]]	✓
6536	$y'' - 2y' + y = \frac{e^x}{x^5}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6537	$y'' + y = \sec(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6538	$y'' - y' - 2y = e^{3x}$	[[_2nd_order, _with_linear_symmetries]]	✓
6539	$y'' - 60y' - 900y = 5e^{10x}$	[[_2nd_order, _with_linear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
6540	$y'' - 7y' = -3$	[[_2nd_order, _missing_x]]	✓
6541	$y'' + \frac{y'}{x} - \frac{y}{x^2} = \ln(x)$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
6542	$x^2y'' - xy' = x^3e^x$	[[_2nd_order, _missing_y]]	✓
6574	$y'' - 2y' + y = 0$	[[_2nd_order, _missing_x]]	✓
6575	$(x - 1)y'' - xy' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
6576	$y'' - y = 0$	[[_2nd_order, _missing_x]]	✓
6577	$y'' - y = 4 - x$	[[_2nd_order, _with_linear_symmetries]]	✓
6578	$y'' - 3y' + 2y = 0$	[[_2nd_order, _missing_x]]	✓
6579	$y'' - 3y' + 2y = 2e^x(1 - x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6692	$y'' + y' - 6y = 0$	[[_2nd_order, _missing_x]]	✓
6694	$y'' - 3y' + 2y = e^{5x}$	[[_2nd_order, _with_linear_symmetries]]	✓
6695	$y'' + 9y = x \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6696	$x^2y'' - 3xy' + 4y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]]']]	✓
6698	$xy'' - y' + 4x^3y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]]']]	✓
6702	$y'' + 2y' - 15y = 0$	[[_2nd_order, _missing_x]]	✓
6704	$y'' + 6y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓
6706	$y'' - 4y' + 13y = 0$	[[_2nd_order, _missing_x]]	✓
6707	$y'' + 25y = 0$	[[_2nd_order, _missing_x]]	✓
6712	$y'' - 4y' + 3y = 1$	[[_2nd_order, _missing_x]]	✓
6713	$y'' - 4y' = 5$	[[_2nd_order, _missing_x]]	✓
6717	$y'' - 6y' + 9y = e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓
6718	$y'' + y' - 2y = -2x^2 + 2x + 2$	[[_2nd_order, _with_linear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
6719	$y'' - y = 4x e^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6720	$y'' - y = \sin(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6721	$y'' - y = \frac{1}{(1 + e^{-x})^2}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6722	$y'' + y = \csc(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6723	$y'' - 3y' + 2y = \sin(e^{-x})$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6724	$y'' + y = \csc(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6725	$y'' + 4y = 4 \sec(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6726	$y'' - 4y' + 3y = \frac{1}{1 + e^{-x}}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6727	$y'' - y = e^{-x} \sin(e^{-x}) + \cos(e^{-x})$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6728	$y'' - y = \frac{1}{(1 + e^{-x})^2}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6729	$y'' + 2y = e^x + 2$	[[_2nd_order, _with_linear_symmetries]]	✓
6730	$y'' - y = e^x \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6731	$y'' + 2y' + 2y = x^2 + \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6732	$y'' - 9y = x + e^{2x} - \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6734	$y'' + y = -2 \sin(x) + 4x \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6736	$y'' + y' + y = e^{3x} + 6e^x - 3e^{-2x} + 5$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6737	$y'' - y = e^x$	[[_2nd_order, _with_linear_symmetries]]	✓
6738	$y'' - 4y' + 4y = e^x + x e^{2x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6741	$y'' + 4y = \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
6742	$y'' + 5y = \cos(\sqrt{5}x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6744	$y'' - y = x^2$	[[_2nd_order, _with_linear_symmetries]]	✓
6745	$y'' + 2y = x^3 + x^2 + e^{-2x} + \cos(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6746	$y'' - 2y' - y = e^x \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6747	$y'' - 4y' + 4y = \frac{e^{2x}}{x^2}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6748	$y'' - y = x e^{3x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6749	$y'' + 5y' + 6y = e^{-2x} \sec(x)^2 (2 \tan(x) + 1)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6750	$x^2 y'' - 3xy' + 4y = x + x^2 \ln(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6751	$x^2 y'' - 2xy' + 2y = \ln(x)^2 - \ln(x^2)$	[[_2nd_order, _with_linear_symmetries]]	✓
6754	$(x+1)^2 y'' + (x+1)y' - y = \ln(x+1)^2 + x - 1$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
6755	$(2x+1)^2 y'' - 2(2x+1)y' - 12y = 6x$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
6756	$xy'' - (x+2)y' + 2y = 0$	[_Laguerre]	✓
6757	$(x^2+1)y'' - 2xy' + 2y = 2$	[[_2nd_order, _with_linear_symmetries]]	✓
6758	$(x^2+4)y'' - 2xy' + 2y = 8$	[[_2nd_order, _with_linear_symmetries]]	✓
6759	$(x+1)y'' - (2x+3)y' + (x+2)y = (x^2+2x+1)e^{2x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6760	$y'' - 2 \tan(x)y' - 10y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
6761	$x^2 y'' - x(2x+3)y' + (x^2+3x+3)y = (-x^2+6)e^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6762	$4x^2 y'' + 4x^3 y' + (x^2+1)^2 y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
6763	$x^2 y'' + (-4x^2+x)y' + (4x^2-2x+1)y = (x^2-x+1)e^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
6764	$xy'' - y' + 4x^3y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]]	✓
6766	$x^8y'' + 4x^7y' + y = \frac{1}{x^3}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6768	$xy'' - 3y' + \frac{3y}{x} = x + 2$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
6769	$(x + 1)y'' - (3x + 4)y' + 3y = (2 + 3x)e^{3x}$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
6770	$x^2y'' - 4xy' + (9x^2 + 6)y = 0$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
6771	$xy'' + 2y' + 4xy = 4$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6772	$(x^2 + 1)y'' - 2xy' + 2y = \frac{-x^2 + 1}{x}$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
6774	$(x^2 + 1)y'' + 2xy' = \frac{2}{x^3}$	[[_2nd_order, _missing_y]]	✓
6775	$xy'' - y' = -\frac{2}{x} - \ln(x)$	[[_2nd_order, _missing_y]]	✓
7154	$y'' + 2y' - y = 0$	[[_2nd_order, _missing_x]]	✓
7155	$y'' + \frac{y'}{x} - \frac{y}{x^2} = 0$	[[_2nd_order, _exact, _lin- ear, _homogeneous]]	✓
7156	$(x^2 + 1)y'' + xy' + y = 0$	[[_2nd_order, _with_lin- ear_symmetries], [_2nd_or- der, _linear, '_with_sym- metry_[0,F(x)]']]]	✓
7158	$y'' + \frac{y'}{x} + x^2y = 0$	[[_Emden, _Fowler]]	✓
7159	$x^2(-x^2 + 1)y'' + 2x(-x^2 + 1)y' - 2y = 0$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
7160	$(-x^2 + 1)y'' - xy' + y = 0$	[[_2nd_order, _exact, _lin- ear, _homogeneous]]	✓
7163	$x^2y'' + 2xy' + 4y = 0$	[[_Emden, _Fowler]]	✓
7165	$(x^2 + 1)y'' + xy' + y = 0$	[[_2nd_order, _with_lin- ear_symmetries], [_2nd_or- der, _linear, '_with_sym- metry_[0,F(x)]']]]	✓

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#	ODE	CAS classification	Solved?
7166	$y'' + xy' + y = 2xe^x - 1$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
7168	$x^2y'' + xy' - y = x^2 + 2x$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
7169	$x^3y'' + xy' - y = \cos\left(\frac{1}{x}\right)$	[[_2nd_order, _with_linear_symmetries]]	✓
7170	$x(x+1)y'' + (x+2)y' - y = x + \frac{1}{x}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
7171	$2xy'' + (-2+x)y' - y = x^2 - 1$	[[_2nd_order, _with_linear_symmetries]]	✓
7174	$xy'' + 2y' + xy = \sec(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7175	$(-x^2 + 1)y'' - xy' + \frac{y}{4} = -\frac{x^2}{2} + \frac{1}{2}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7193	$y'' - 2y' - 3y = 0$	[[_2nd_order, _missing_x]]	✓
7194	$s'' + 2s' + s = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
7195	$y'' - 2y' + 5y = 0$	[[_2nd_order, _missing_x]]	✓
7196	$y'' - 2y' - 3y = 3x + 1$	[[_2nd_order, _with_linear_symmetries]]	✓
7197	$y'' - 3y' + 2y = xe^{2x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7198	$y'' + y = 4\sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7199	$y'' + 2x^2y' + (x^4 + 2x - 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
7201	$\sin(x)u'' + 2\cos(x)u' + \sin(x)u = 0$	[_Lienard]	✓
7203	$y'' - \frac{xy'}{-x^2 + 1} + \frac{y}{-x^2 + 1} = 0$	[_Gegenbauer, [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
7211	$u'' - (2x+1)u' + (x^2 + x - 1)u = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
7212	$y'' + 6y' + 9y = 50e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓
7213	$y'' - 4y' + 4y = 50e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
7214	$y'' + 3y' + 2y = \cos(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7216	$y'' + 4y = x^2$	[[_2nd_order, _with_linear_symmetries]]	✓
7217	$y'' - 4y' + 3y = x^3$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7218	$y'' + 2y' + \left(1 + \frac{2}{(3x+1)^2}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
7221	$x^2y'' - 2xy' + (x^2 + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
7222	$y'' + \frac{2y'}{x} - \frac{2y}{(x+1)^2} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
7227	$u'' - \cot(\theta)u' = 0$	[[_2nd_order, _missing_y]]	✓
7233	$y'' - \frac{y'}{\sqrt{x}} + \frac{(-8 + \sqrt{x} + x)y}{4x^2} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
7257	$y'' = x + 2$	[[_2nd_order, _quadrature]]	✓
7261	$y'' - y = 0$	[[_2nd_order, _missing_x]]	✓
7262	$y'' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
7263	$y'' + k^2y = 0$	[[_2nd_order, _missing_x]]	✓
7265	$y'' = 3x + 1$	[[_2nd_order, _quadrature]]	✓
7288	$y'' - 4y = 0$	[[_2nd_order, _missing_x]]	✓
7289	$3y'' + 2y = 0$	[[_2nd_order, _missing_x]]	✓
7290	$y'' + 16y = 0$	[[_2nd_order, _missing_x]]	✓
7291	$y'' = 0$	[[_2nd_order, _quadrature]]	✓
7292	$y'' + 2iy' + y = 0$	[[_2nd_order, _missing_x]]	✓
7293	$y'' - 4y' + 5y = 0$	[[_2nd_order, _missing_x]]	✓
7294	$y'' + (-1 + 3i)y' - 3iy = 0$	[[_2nd_order, _missing_x]]	✓
7295	$y'' + y' - 6y = 0$	[[_2nd_order, _missing_x]]	✓
	<i>i.c.</i>		
7296	$y'' + y' - 6y = 0$	[[_2nd_order, _missing_x]]	✓
	<i>i.c.</i>		

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#	ODE	CAS classification	Solved?
7297	$y'' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
7298	$y'' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
7299	$y'' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
7300	$y'' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
7301	$y'' - 2y' - 3y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
7302	$y'' + (1 + 4i)y' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
7303	$y'' + (-1 + 3i)y' - 3iy = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
7304	$y'' + 10y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
7305	$y'' + 4y = \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7306	$y'' + 9y = \sin(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7307	$y'' + y = \tan(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7308	$y'' + 2iy' + y = x$	[[_2nd_order, _with_linear_symmetries]]	✓
7309	$y'' - 4y' + 5y = 3e^{-x} + 2x^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7310	$y'' - 7y' + 6y = \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7311	$y'' + y = 2\sin(2x)\sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7312	$y'' + y = \sec(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7313	$4y'' - y = e^x$	[[_2nd_order, _with_linear_symmetries]]	✓
7314	$6y'' + 5y' - 6y = x$	[[_2nd_order, _with_linear_symmetries]]	✓
7326	$y'' + y = 0$	[[_2nd_order, _missing_x]]	✓
7327	$y'' - y = 0$	[[_2nd_order, _missing_x]]	✓

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#	ODE	CAS classification	Solved?
7333	$y'' - 2iy' - y = 0$	[[_2nd_order, _missing_x]]	✓
7340	$y'' - 2iy' - y = e^{ix} - 2e^{-ix}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7341	$y'' + 4y = \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7342	$y'' + 4y = \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7343	$y'' - 4y = 3e^{2x} + 4e^{-x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7344	$y'' - y' - 2y = x^2 + \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7345	$y'' + 9y = x^2e^{3x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7346	$y'' + y = xe^x \cos(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7347	$y'' + iy' + 2y = 2 \cosh(2x) + e^{-2x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7350	$y'' + \frac{y'}{x} - \frac{y}{x^2} = 0$ i.c.	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
7351	$y'' + \frac{y'}{x} - \frac{y}{x^2} = 0$ i.c.	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
7352	$(3x - 1)^2 y'' + (9x - 3)y' - 9y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
7362	$x^2 y'' + 4xy' + (x^2 + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
7373	$(-x^2 + 1)y'' - xy' + \alpha^2 y = 0$	[_Gegenbauer, [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
7375	$x^2 y'' + 2xy' - 6y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
7376	$2x^2 y'' + xy' - y = 0$	[[_Emden, _Fowler]]	✓
7377	$x^2 y'' + xy' - 4y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓

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#	ODE	CAS classification	Solved?
7378	$x^2y'' - 5xy' + 9y = x^2$	[[_2nd_order, _with_linear_symmetries]]	✓
7380	$x^2y'' + xy' + 4y = 1$	[[_2nd_order, _with_linear_symmetries]]	✓
7381	$x^2y'' - 3xy' + 5y = 0$	[[_Emden, _Fowler]]	✓
7382	$x^2y'' + (-2 - i)xy' + 3iy = 0$	[[_Emden, _Fowler]]	✓
7383	$x^2y'' + xy' - 4\pi y = x$	[[_2nd_order, _with_linear_symmetries]]	✓
7435	$y'' + y' = 1$	[[_2nd_order, _missing_x]]	✓
7436	$y'' + e^x y' = e^x$	[[_2nd_order, _missing_y]]	✓
7438	$y'' + k^2 y = 0$	[[_2nd_order, _missing_x]]	✓
7440	$xy'' - 2y' = x^3$	[[_2nd_order, _missing_y]]	✓
7453	$y'' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
7454	$y'' - 4y = 0$	[[_2nd_order, _missing_x]]	✓
7480	$y'' - 5y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
7583	$y'' - k^2 y = 0$	[[_2nd_order, _missing_x]]	✓
7587	$xy'' + y' = 4x$	[[_2nd_order, _missing_y]]	✓
7612	$xy'' - 3y' = 5x$	[[_2nd_order, _missing_y]]	✓
7613	$y'' + y' - 6y = 0$	[[_2nd_order, _missing_x]]	✓
7614	$y'' + 2y' + y = 0$	[[_2nd_order, _missing_x]]	✓
7615	$y'' + 8y = 0$	[[_2nd_order, _missing_x]]	✓
7616	$2y'' - 4y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
7617	$y'' - 4y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
7618	$y'' - 9y' + 20y = 0$	[[_2nd_order, _missing_x]]	✓
7619	$2y'' + 2y' + 3y = 0$	[[_2nd_order, _missing_x]]	✓
7620	$4y'' - 12y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓
7621	$y'' + y = 0$	[[_2nd_order, _missing_x]]	✓
7622	$y'' - 6y' + 25y = 0$	[[_2nd_order, _missing_x]]	✓
7623	$4y'' + 20y' + 25y = 0$	[[_2nd_order, _missing_x]]	✓
7624	$y'' + 2y' + 3y = 0$	[[_2nd_order, _missing_x]]	✓
7625	$y'' = 4y$	[[_2nd_order, _missing_x]]	✓

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#	ODE	CAS classification	Solved?
7626	$4y'' - 8y' + 7y = 0$	[[_2nd_order, _missing_x]]	✓
7627	$2y'' + y' - y = 0$	[[_2nd_order, _missing_x]]	✓
7628	$y'' + 4y' + 5y = 0$	[[_2nd_order, _missing_x]]	✓
7629	$y'' + 4y' + 5y = 0$	[[_2nd_order, _missing_x]]	✓
7630	$y'' + 4y' - 5y = 0$	[[_2nd_order, _missing_x]]	✓
7631	$y'' - 5y' + 6y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
7632	$y'' - 6y' + 5y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
7633	$y'' - 6y' + 9y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
7634	$y'' + 4y' + 5y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
7635	$y'' + 4y' + 2y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
7636	$y'' + 8y' - 9y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
7637	$x^2y'' + 3xy' + 10y = 0$	[[_Emden, _Fowler]]	✓
7638	$2x^2y'' + 10xy' + 8y = 0$	[[_Emden, _Fowler]]	✓
7639	$x^2y'' + 2xy' - 12y = 0$	[[_Emden, _Fowler]]	✓
7640	$4x^2y'' - 3y = 0$	[[_Emden, _Fowler]]	✓
7641	$x^2y'' - 3xy' + 4y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']	✓
7642	$x^2y'' + 2xy' - 6y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']	✓
7643	$x^2y'' + 2xy' + 3y = 0$	[[_Emden, _Fowler]]	✓
7644	$x^2y'' + xy' - 2y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']	✓
7645	$x^2y'' + xy' - 16y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']	✓

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Table 2.50 second order adjoint

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#	ODE	CAS classification	Solved?
7646	$y'' + 3y' - 10y = 6e^{4x}$	[[_2nd_order, _with_linear_symmetries]]	✓
7647	$y'' + 4y = 3\sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7648	$y'' + 10y' + 25y = 14e^{-5x}$	[[_2nd_order, _with_linear_symmetries]]	✓
7649	$y'' - 2y' + 5y = 25x^2 + 12$	[[_2nd_order, _with_linear_symmetries]]	✓
7650	$y'' - y' - 6y = 20e^{-2x}$	[[_2nd_order, _with_linear_symmetries]]	✓
7651	$y'' - 3y' + 2y = 14\sin(2x) - 18\cos(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7652	$y'' + y = 2\cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7653	$y'' - 2y' = 12x - 10$	[[_2nd_order, _missing_y]]	✓
7654	$y'' - 2y' + y = 6e^x$	[[_2nd_order, _with_linear_symmetries]]	✓
7655	$y'' - 2y' + 2y = e^x \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7656	$y'' + y' = 10x^4 + 2$	[[_2nd_order, _missing_y]]	✓
7657	$y'' + 4y = 4\cos(2x) + 6\cos(x) + 8x^2 - 4x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7658	$y'' + 9y = 2\sin(3x) + 4\sin(x) - 26e^{-2x} + 27x^3$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7659	$y'' - 3y = e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓
7661	$y'' + 4y = \tan(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7662	$y'' + 2y' + y = e^{-x} \ln(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7663	$y'' - 2y' - 3y = 64xe^{-x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7664	$y'' + 2y' + 5y = e^{-x} \sec(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7665	$2y'' + 3y' + y = e^{-3x}$	[[_2nd_order, _with_linear_symmetries]]	✓
7666	$y'' - 3y' + 2y = \frac{1}{1 + e^{-x}}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
7667	$y'' + y = \sec(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7668	$y'' + y = \cot(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7669	$y'' + y = \cot(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7670	$y'' + y = x \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7671	$y'' + y = \tan(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7672	$y'' + y = \sec(x) \tan(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7673	$y'' + y = \sec(x) \csc(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7674	$y'' - 2y' + y = 2x$	[[_2nd_order, _with_linear_symmetries]]	✓
7675	$y'' - y' - 6y = e^{-x}$	[[_2nd_order, _with_linear_symmetries]]	✓
7676	$(x^2 - 1)y'' - 2xy' + 2y = (x^2 - 1)^2$	[[_2nd_order, _with_linear_symmetries]]	✓
7677	$(x^2 + x)y'' + (-x^2 + 2)y' - (x + 2)y = x(x + 1)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7678	$(1 - x)y'' + xy' - y = (1 - x)^2$	[[_2nd_order, _with_linear_symmetries]]	✓
7679	$xy'' - (x + 1)y' + y = x^2e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓
7680	$x^2y'' - 2xy' + 2y = xe^{-x}$	[[_2nd_order, _with_linear_symmetries]]	✓
7715	$y'' - 3y' + y = 0$	[[_2nd_order, _missing_x]]	✓
7716	$y'' + y' + y = 0$	[[_2nd_order, _missing_x]]	✓
7717	$y'' + 6y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓
7718	$y'' - y' + 6y = 0$	[[_2nd_order, _missing_x]]	✓
7719	$y'' - 2y' - 5y = x$	[[_2nd_order, _with_linear_symmetries]]	✓
7720	$y'' + y = e^x$	[[_2nd_order, _with_linear_symmetries]]	✓
7721	$y'' + y' + y = \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
7722	$y'' - y = e^{3x}$	[[_2nd_order, _with_linear_symmetries]]	✓
7723	$y'' + 9y = 0$	[[_2nd_order, _missing_x]]	✓
7727	$y'' + y = e^{-x}$	[[_2nd_order, _with_linear_symmetries]]	✓
7729	$y'' = \tan(x)$	[[_2nd_order, _quadrature]]	✓
7730	$y'' - 2y' = \ln(x)$	[[_2nd_order, _missing_y]]	✓
7731	$y'' + 3y' + 2y = 2x - 1$	[[_2nd_order, _with_linear_symmetries]]	✓
7732	$y'' - 3y' + 2y = e^{-x}$	[[_2nd_order, _with_linear_symmetries]]	✓
7733	$y'' - y' - 2y = \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7734	$y'' + 2y' - y = x e^x \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7735	$y'' + 9y = \sec(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7736	$y'' + 4y' + 4y = x \ln(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7737	$x^2 y'' + 3xy' + y = \frac{2}{x}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
7738	$y'' + 4y = \tan(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7743	$x^2 y'' - 2xy' + 2y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, _with_symmetry_[0,F(x)]]]	✓
7744	$y'' + 9y = -3 \cos(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7746	$y'' = -3y$	[[_2nd_order, _missing_x]]	✓
7895	$y'' + y = 0$	[[_2nd_order, _missing_x]]	✓
7897	$y'' - y = 0$	[[_2nd_order, _missing_x]]	✓
7899	$y'' - y' = 0$	[[_2nd_order, _missing_x]]	✓
7901	$y'' + 2y' = 0$	[[_2nd_order, _missing_x]]	✓

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#	ODE	CAS classification	Solved?
7963	$x^2y'' + xy' + \left(x^2 - \frac{1}{9}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
7964	$x^2y'' + xy' + (x^2 - 1)y = 0$	[_Bessel]	✓
7965	$4x^2y'' + 4xy' + (4x^2 - 25)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
7966	$16x^2y'' + 16xy' + (16x^2 - 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
7967	$xy'' + y' + xy = 0$	[_Lienard]	✓
7968	$xy'' + y' + \left(x - \frac{4}{x}\right)y = 0$	[_Bessel]	✓
7969	$x^2y'' + xy' + (9x^2 - 4)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
7970	$x^2y'' + xy' + \left(36x^2 - \frac{1}{4}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
7971	$x^2y'' + xy' + \left(25x^2 - \frac{4}{9}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
7972	$x^2y'' + xy' + (2x^2 - 64)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
7973	$xy'' + 2y' + 4y = 0$	[[_Emden, _Fowler]]	✓
7974	$xy'' + 3y' + xy = 0$	[_Lienard]	✓
7975	$xy'' - y' + xy = 0$	[_Lienard]	✓
7976	$xy'' - 5y' + xy = 0$	[_Lienard]	✓
7977	$x^2y'' + (x^2 - 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
7978	$4x^2y'' + (16x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
7979	$xy'' + 3y' + x^3y = 0$	[[_Emden, _Fowler]]	✓
7980	$9x^2y'' + 9xy' + (x^6 - 36)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
7981	$y'' - x^2y = 0$	[[_Emden, _Fowler]]	✓
7982	$xy'' + y' - 7x^3y = 0$	[[_Emden, _Fowler]]	✓
7983	$y'' + y = 0$	[[_2nd_order, _missing_x]]	✓
7984	$x^2y'' + 4xy' + (x^2 + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
7985	$16x^2y'' + 32xy' + (x^4 - 12)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
7986	$4x^2y'' - 4xy' + (16x^2 + 3)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8038	$ty'' - y' = 2t^2$ i.c.	[[_2nd_order, _missing_y]]	✓
8172	$xy'' = y' + x^5$ i.c.	[[_2nd_order, _missing_y]]	✓
8173	$xy'' + y' + x = 0$ i.c.	[[_2nd_order, _missing_y]]	✓
8176	$y'' + \beta^2y = 0$	[[_2nd_order, _missing_x]]	✓
8178	$y'' \cos(x) = y'$	[[_2nd_order, _missing_y]]	✓
8185	$x^3y'' - x^2y' = -x^2 + 3$	[[_2nd_order, _missing_y]]	✓
8205	$y'' + y = -\cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8206	$y'' - 6y' + 9y = e^x$	[[_2nd_order, _with_linear_symmetries]]	✓
8207	$y'' + 3y' + 2y = 12x^2$	[[_2nd_order, _with_linear_symmetries]]	✓
8208	$y'' + 3y' + 2y = x^2 + 2x + 1$	[[_2nd_order, _with_linear_symmetries]]	✓
8282	$2x^2y'' + xy' - y = 0$	[[_Emden, _Fowler]]	✓
8283	$2x^2y'' - 3xy' + 2y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
8284	$9x^2y'' + 2y = 0$	[[_Emden, _Fowler]]	✓
8285	$2x^2y'' + 5xy' - 2y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
8286	$x^2y'' + 2xy' - 12y = 0$	[[_Emden, _Fowler]]	✓
8287	$x^2y'' + xy' - 9y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓

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#	ODE	CAS classification	Solved?
8288	$x^2 y'' - 3xy' + 4y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
8289	$x^2 y'' - 5xy' + 9y = 0$	[[_Emden, _Fowler]]	✓
8290	$x^2 y'' + 5xy' + 5y = 0$	[[_Emden, _Fowler]]	✓
8302	$xy'' + y' - xy = 0$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
8333	$x^2 y'' + xy' + (x^2 - 1)y = 0$	[_Bessel]	✓
8381	$y'' - y' - 2y = 5e^{2x}$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
8382	$y'' + 16y = 4 \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8384	$y'' + y = \tan(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8428	$y'' + 2y' + y = 0$	[[_2nd_order, _missing_x]]	✓
8429	$5y'' + 2y' + 4y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
8430	$y'' + y' + 4y = 1$	[[_2nd_order, _missing_x]]	✓
8431	$y'' + y' + 4y = \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8435	$ty'' + 4y' = t^2$	[[_2nd_order, _missing_y]]	✓
8436	$(t^2 + 9)y'' + 2ty' = 0$ i.c.	[[_2nd_order, _missing_y]]	✓
8437	$t^2 y'' - 3ty' + 5y = 0$	[[_Emden, _Fowler]]	✓
8438	$ty'' + y' = 0$	[[_2nd_order, _missing_y]]	✓
8439	$t^2 y'' - 2y' = 0$	[[_2nd_order, _missing_y]]	✓
8441	$ty'' - y' + 4t^3 y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
8442	$y'' = 0$	[[_2nd_order, _quadra- ture]]	✓
8443	$y'' = 1$	[[_2nd_order, _quadra- ture]]	✓
8445	$y'' = k$	[[_2nd_order, _quadra- ture]]	✓

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#	ODE	CAS classification	Solved?
8448	$y'' = 4 \sin(x) - 4$	[[_2nd_order, _quadrature]]	✓
8471	$z'' + 3z' + 2z = 24e^{-3t} - 24e^{-4t}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8476	$y'' + y' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
8477	$y'' + y' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
8478	$y'' + y' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
8481	$y'' - xy' - xy - x = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8482	$y'' - xy' - xy - 2x = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8483	$y'' - xy' - xy - 3x = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8488	$y'' - xy' - xy - x = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8494	$y'' - y' - xy - x = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8509	$y'' - xy - x^3 + 2 = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8511	$y'' - xy - x = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8512	$y'' - xy - x^2 = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8524	$y'' - xy' - xy - x = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8529	$y'' - \frac{y'}{x} - x^2y - x^3 - \frac{1}{x} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8535	$y'' + cy' + ky = 0$	[[_2nd_order, _missing_x]]	✓
8537	$y'' + y = \sin(x)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8538	$y'' + y = \sin(x)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8539	$y'' + y = \sin(x)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8540	$y'' + y = \sin(x)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
8541	$y'' + y = \sin(x)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8542	$y'' + y = \sin(x)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8543	$y'' + y = \sin(x)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8544	$y'' + y = \sin(x)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8549	$x^4 y'' + x^3 y' - 4x^2 y = 1$	[[_2nd_order, _with_linear_symmetries]]	✓
8550	$x^4 y'' + x^3 y' - 4x^2 y = x$	[[_2nd_order, _with_linear_symmetries]]	✓
8551	$x^2 y'' + xy' - 4y = x$	[[_2nd_order, _with_linear_symmetries]]	✓
8564	$4x^2 y'' + y = 8\sqrt{x}(\ln(x) + 1)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8630	$\frac{xy''}{1-x} + xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8633	$y'' = (x^2 + 3)y$	[[_2nd_order, _with_linear_symmetries]]	✓
8639	$y'' + 2xy' + (x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8640	$y'' + 2 \cot(x)y' - y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8641	$x^2 y'' + xy' + \left(x^2 - \frac{1}{4}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8642	$4x^2 y'' + (-8x^2 + 4x)y' + (4x^2 - 4x - 1)y = 4\sqrt{x}e^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8643	$xy'' - (2x + 2)y' + (x + 2)y = 6x^3 e^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8653	$y'' + 2y' - 24y = 16 - (x + 2)e^{4x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8657	$xy'' - (2x + 1)y' + (x + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8748	$y'' = 0$	[[_2nd_order, _quadrature]]	✓
8751	$ay'' = 0$	[[_2nd_order, _quadrature]]	✓

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#	ODE	CAS classification	Solved?
8754	$y'' = 1$	[[_2nd_order, _quadrature]]	✓
8756	$y'' = x$	[[_2nd_order, _quadrature]]	✓
8759	$y'' + y' = 0$	[[_2nd_order, _missing_x]]	✓
8762	$y'' + y' = 1$	[[_2nd_order, _missing_x]]	✓
8765	$y'' + y' = x$	[[_2nd_order, _missing_y]]	✓
8768	$y'' + y' + y = 0$	[[_2nd_order, _missing_x]]	✓
8771	$y'' + y' + y = 1$	[[_2nd_order, _missing_x]]	✓
8772	$y'' + y' + y = x$	[[_2nd_order, _with_linear_symmetries]]	✓
8773	$y'' + y' + y = x + 1$	[[_2nd_order, _with_linear_symmetries]]	✓
8774	$y'' + y' + y = x^2 + x + 1$	[[_2nd_order, _with_linear_symmetries]]	✓
8775	$y'' + y' + y = x^3 + x^2 + x + 1$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8776	$y'' + y' + y = \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8777	$y'' + y' + y = \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8778	$y'' + y' = 1$	[[_2nd_order, _missing_x]]	✓
8779	$y'' + y' = x$	[[_2nd_order, _missing_y]]	✓
8780	$y'' + y' = x + 1$	[[_2nd_order, _missing_y]]	✓
8781	$y'' + y' = x^2 + x + 1$	[[_2nd_order, _missing_y]]	✓
8782	$y'' + y' = x^3 + x^2 + x + 1$	[[_2nd_order, _missing_y]]	✓
8783	$y'' + y' = \sin(x)$	[[_2nd_order, _missing_y]]	✓
8784	$y'' + y' = \cos(x)$	[[_2nd_order, _missing_y]]	✓
8785	$y'' + y = 1$	[[_2nd_order, _missing_x]]	✓
8786	$y'' + y = x$	[[_2nd_order, _with_linear_symmetries]]	✓
8787	$y'' + y = x + 1$	[[_2nd_order, _with_linear_symmetries]]	✓
8788	$y'' + y = x^2 + x + 1$	[[_2nd_order, _with_linear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
8789	$y'' + y = x^3 + x^2 + x + 1$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8790	$y'' + y = \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8791	$y'' + y = \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8813	$y'' - \frac{2y}{x^2} = x e^{-\sqrt{x}}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8814	$y'' - \frac{y'}{\sqrt{x}} + \frac{(-8 + \sqrt{x} + x)y}{4x^2} = x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8815	$y'' + \frac{2y'}{x} + \frac{a^2y}{x^4} = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, 'with_symmetry_[0,F(x)]]]	✓
8816	$(-x^2 + 1)y'' - xy' - c^2y = 0$	[_Gegenbauer, [_2nd_order, _linear, 'with_symmetry_[0,F(x)]]]	✓
8817	$x^6y'' + 3x^5y' + a^2y = \frac{1}{x^2}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8818	$x^2y'' - 3xy' + 3y = 2x^3 - x^2$	[[_2nd_order, _with_linear_symmetries]]	✓
8822	$xy'' - y' + 4x^3y = 8x^3 \sin(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8823	$xy'' - y' + 4x^3y = x^5$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8827	$y'' - \frac{y'}{\sqrt{x}} + \frac{(-8 + \sqrt{x} + x)y}{4x^2} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8828	$\cos(x)^2 y'' - 2 \cos(x) \sin(x) y' + y \cos(x)^2 = 0$	[_Lienard]	✓
8829	$y'' - 4xy' + (4x^2 - 1)y = -3e^{x^2} \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8830	$y'' - 2bxy' + b^2x^2y = x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8831	$y'' - 4xy' + (4x^2 - 3)y = e^{x^2}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8832	$y'' - 2 \tan(x) y' + 5y = e^{x^2} \sec(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8833	$x^2y'' - 2xy' + 2(x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
8834	$4x^2y'' + 4x^5y' + (x^8 + 6x^4 + 4)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8836	$xy'' + 2y' - xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
8837	$xy'' + 2y' + xy = 0$	[_Lienard]	✓
8844	$x^2y'' + xy' + (x^2 - 5)y = 0$	[_Bessel]	✓
8845	$x^2y'' - 4xy' + 6y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, ' _with_symmetry_[0,F(x)]']]	✓
10687	$y'' = 0$	[[_2nd_order, _quadrature]]	✓
10688	$y'' + y = 0$	[[_2nd_order, _missing_x]]	✓
10689	$y'' + y - \sin(nx) = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
10690	$y'' + y - \cos(bx) = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
10691	$y'' + y - \sin(ax)\sin(bx) = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
10692	$y'' - y = 0$	[[_2nd_order, _missing_x]]	✓
10693	$y'' - 2y - 4x^2e^{x^2} = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
10695	$y'' + ly = 0$	[[_2nd_order, _missing_x]]	✓
10696	$y'' + (ax + b)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10697	$y'' - (x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10699	$y'' - (a^2x^2 + a)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10700	$y'' - cx^ay = 0$	[[_Emden, _Fowler]]	✓
10703	$y'' + (e^{2x} - v^2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10704	$y'' + ae^{bx}y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10718	$y'' + y' + ae^{-2x}y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, ' _with_symmetry_[0,F(x)]']]	✓

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#	ODE	CAS classification	Solved?
10719	$y'' - y' + e^{2x}y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
10720	$y'' + ay' + by = 0$	[[_2nd_order, _missing_x]]	✓
10724	$y'' + xy' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
10725	$y'' + xy' - y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10728	$y'' - xy' + 2y = 0$	[_Hermite]	✓
10730	$y'' - xy' + (x - 1)y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
10732	$y'' + 4xy' + (4x^2 + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10734	$y'' - 4xy' + (4x^2 - 1)y - e^x = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
10735	$y'' - 4xy' + (4x^2 - 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10736	$y'' - 4xy' + (4x^2 - 3)y - e^{x^2} = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
10738	$y'' + 2axy' + a^2x^2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10741	$y'' - x^2y' + xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10742	$y'' - x^2y' - (x + 1)^2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10743	$y'' - x^2(x + 1)y' + x(x^4 - 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10744	$y'' + x^4y' - x^3y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10746	$y'' + y'\sqrt{x} + \left(\frac{1}{4\sqrt{x}} + \frac{x}{4} - 9\right)y - xe^{-\frac{x^{3/2}}{3}} = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
10747	$y'' - \frac{y'}{\sqrt{x}} + \frac{(-8 + \sqrt{x} + x)y}{4x^2} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10748	$y'' - (2e^x + 1)y' + e^{2x}y - e^{3x} = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
10756	$y'' + 2ay' \cot(ax) + (-a^2 + b^2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10762	$y'' + f(x)y' + \left(\frac{f(x)^2}{4} + \frac{f'(x)}{2} + a\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10768	$4y'' + 9xy = 0$	[[_Emden, _Fowler]]	✓
10772	$a^2y'' + a(a^2 - 2be^{-ax})y' + b^2e^{-2ax}y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10773	$x(y'' + y) - \cos(x) = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
10775	$xy'' + y' = 0$	[[_2nd_order, _missing_y]]	✓
10776	$xy'' + y' + ay = 0$	[[_Emden, _Fowler]]	✓
10777	$xy'' + y' + lxy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10779	$xy'' - y' + ay = 0$	[[_Emden, _Fowler]]	✓
10780	$xy'' - y' - yax^3 = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
10782	$xy'' + 2y' - xy - e^x = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
10783	$xy'' + 2y' + axy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10784	$xy'' + 2y' + ax^2y = 0$	[[_Emden, _Fowler]]	✓
10785	$xy'' - 2y' + ay = 0$	[[_Emden, _Fowler]]	✓
10786	$xy'' + vy' + ay = 0$	[[_Emden, _Fowler]]	✓
10787	$xy'' + ay' + bxy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10788	$xy'' + ay' + bx^{a_1}y = 0$	[[_Emden, _Fowler]]	✓
10793	$xy'' - (x+1)y' + y = 0$	[_Laguerre]	✓
10794	$xy'' - (x+1)y' - 2(x-1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10801	$xy'' - 2(ax+b)y' + (a^2x+2ab)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
10803	$xy'' - (x^2 - x)y' + (x - 1)y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
10804	$xy'' - (x^2 - x - 2)y' - x(x + 3)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10805	$xy'' - (2x^2a + 1)y' + bx^3y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10807	$xy'' + (4x^2 - 1)y' - 4x^3y - 4x^5 = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
10808	$xy'' + (2ax^3 - 1)y' + (a^2x^3 + a)x^2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10809	$xy'' + (2ax \ln(x) + 1)y' + (a^2x \ln(x)^2 + a \ln(x) + a)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10811	$(x - 3)y'' - (4x - 9)y' + (3x - 6)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10812	$2xy'' + y' + ay = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
10815	$(2x - 1)y'' - (-4 + 3x)y' + (x - 3)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10817	$4xy'' + 2y' - y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
10818	$4xy'' + 4y' - (x + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10822	$axy'' + by' + cy = 0$	[[_Emden, _Fowler]]	✓
10823	$axy'' + (bx + 3a)y' + 3by = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10828	$x^2y'' - 6y = 0$	[[_Emden, _Fowler]]	✓
10829	$x^2y'' - 12y = 0$	[[_Emden, _Fowler]]	✓
10830	$x^2y'' + ay = 0$	[[_Emden, _Fowler]]	✓
10831	$x^2y'' + (ax + b)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10832	$x^2y'' + (x^2 - 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
10833	$x^2 y'' - (x^2 a + 2) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10834	$x^2 y'' + (a^2 x^2 - 6) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10835	$x^2 y'' + (x^2 a - v(v - 1)) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10837	$x^2 y'' + (a x^k - b(b - 1)) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10840	$x^2 y'' + a y' - (b^2 x^2 + ab) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10841	$x^2 y'' + x y' - y - x^2 a = 0$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
10842	$x^2 y'' + x y' + a y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, ' _with_symmetry_[0,F(x)]']]	✓
10843	$x^2 y'' + x y' - (x + a) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10844	$x^2 y'' + x y' + (-v^2 + x^2) y = 0$	[_Bessel]	✓
10846	$x^2 y'' + x y' + (l x^2 - v^2) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10847	$x^2 y'' + (x + a) y' - y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
10848	$x^2 y'' - x y' + y - 3x^3 = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10849	$x^2 y'' - x y' + (a x^m + b) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10850	$x^2 y'' + 2x y' = 0$	[[_2nd_order, _missing_y]]	✓
10851	$x^2 y'' + 2x y' + (ax - b^2) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10852	$x^2 y'' + 2x y' + (x^2 a + b) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10856	$x^2 y'' - 2x y' + 2y - x^5 \ln(x) = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10857	$x^2 y'' - 2x y' - 4y - x \sin(x) - (x^2 a + 12a + 4) \cos(x) = 0$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
10858	$x^2 y'' - 2x y' + (x^2 + 2) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
10860	$x^2 y'' - 2xy' + (x^2 + 2)y - \frac{x^3}{\cos(x)} = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
10861	$x^2 y'' - 2xy' + (a^2 x^2 + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10863	$x^2 y'' + (3x - 1)y' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
10864	$x^2 y'' - 3xy' + 4y - 5x = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10865	$x^2 y'' - 3xy' - 5y - x^2 \ln(x) = 0$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
10866	$x^2 y'' - 4xy' + 6y - x^4 + x^2 = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
10867	$x^2 y'' + 5xy' - (2x^3 - 4)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10868	$x^2 y'' - 5xy' + 8y - \sin(x)x^3 = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
10869	$x^2 y'' + axy' + by = 0$	[[_Emden, _Fowler]]	✓
10871	$x^2 y'' + axy' + (bx^m + c)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10873	$x^2 y'' + x^2 y' - 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10874	$x^2 y'' + (x^2 - 1)y' - y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10875	$x^2 y'' + x(x + 1)y' + (x - 9)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10876	$x^2 y'' + x(x + 1)y' + (3x - 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10878	$x^2 y'' - x(x - 1)y' + (x - 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10880	$x^2 y'' - (x^2 - 2x)y' - (2 + 3x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10881	$x^2 y'' - x(4 + x)y' + 4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10883	$x^2 y'' + x(2x + 1)y' - 4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10884	$x^2 y'' - 2x(x + 1)y' + 2(x + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
10885	$x^2y'' + ax^2y' - 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10886	$x^2y'' + (a + 2b)x^2y' + ((a + b)bx^2 - 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10890	$x^2y'' + x^3y' + (x^2 - 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10891	$x^2y'' + (x^2 + 2)xy' + (x^2 - 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10893	$x^2y'' + 4x^3y' + (4x^4 + 2x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10904	$(x^2 + 1)y'' + xy' + 2y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
10905	$(x^2 + 1)y'' + xy' - 9y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
10906	$(x^2 + 1)y'' + xy' + ay = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
10907	$(x^2 + 1)y'' - xy' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10909	$(x^2 + 1)y'' - 2xy' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10910	$(x^2 + 1)y'' + 3xy' + ay = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10911	$(x^2 + 1)y'' + 4xy' + 2y - 2\cos(x) + 2x = 0$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
10915	$(x^2 - 1)y'' + xy' + 2 = 0$	[[_2nd_order, _missing_y]]	✓
10916	$(x^2 - 1)y'' + xy' + ay = 0$	[_Gegenbauer, [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
10918	$(x^2 - 1)y'' + 2xy' = 0$	[[_2nd_order, _missing_y]]	✓
10919	$(x^2 - 1)y'' + 2xy' - a = 0$	[[_2nd_order, _missing_y]]	✓
10923	$(x^2 - 1)y'' - (3x + 1)y' - (x^2 - x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
10924	$(x^2 - 1)y'' + 4xy' + (x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10931	$(-a^2 + x^2)y'' + 8xy' + 12y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10932	$x(x + 1)y'' - (x - 1)y' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10934	$x(x + 1)y'' + (2 + 3x)y' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
10935	$(x^2 + x - 2)y'' + (x^2 - x)y' - (6x^2 + 7x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10938	$x(x - 1)y'' + ((a + 1)x + b)y' = 0$	[[_2nd_order, _missing_y]]	✓
10943	$(x + 1)^2 y'' + (x^2 + x - 1)y' - (x + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10945	$(x^2 + 3x + 4)y'' + (x^2 + x + 1)y' - (2x + 3)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10947	$(-2 + x)^2 y'' - (-2 + x)y' - 3y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
10948	$2x^2 y'' - (2x^2 + l - 5x)y' - (4x - 1)y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
10951	$(2x^2 + 6x + 4)y'' + (10x^2 + 21x + 8)y' + (12x^2 + 17x + 8)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10952	$4x^2 y'' + y = 0$	[[_Emden, _Fowler]]	✓
10953	$4x^2 y'' + (4a^2 x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10955	$4x^2 y'' + 4xy' + (-v^2 + x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10957	$4x^2 y'' + 4xy' - (4x^2 + 1)y - 4\sqrt{x^3}e^x = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
10958	$4x^2 y'' + 4xy' - (x^2 a + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10961	$4x^2 y'' + 8xy' - (4x^2 + 12x + 3)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10962	$4x^2 y'' - 4x(2x - 1)y' + (4x^2 - 4x - 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10963	$4x^2 y'' + 4x^3 y' + (x^2 + 6)(x^2 - 4)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
10964	$4x^2y'' + 4x^2 \ln(x) y' + (x^2 \ln(x)^2 + 2x - 8)y - 4x^2 \sqrt{e^x x^{-x}} = 0$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
10965	$(2x + 1)^2 y'' - 2(2x + 1) y' - 12y - 3x - 1 = 0$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
10967	$(3x - 1)^2 y'' + 3(3x - 1) y' - 9y - \ln(3x - 1)^2 = 0$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
10968	$9x(x - 1) y'' + 3(2x - 1) y' - 20y = 0$	[_Jacobi]	✓
10969	$16x^2 y'' + (4x + 3) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10970	$16x^2 y'' + 32xy' - (4x + 5) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10971	$(27x^2 + 4) y'' + 27xy' - 3y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
10973	$50x(x - 1) y'' + 25(2x - 1) y' - 2y = 0$	[_Jacobi, [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
10978	$(x^2 a + 1) y'' + axy' + by = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
10979	$(a^2 x^2 - 1) y'' + 2a^2 xy' = 0$	[[_2nd_order, _missing_y]]	✓
10980	$(a^2 x^2 - 1) y'' + 2a^2 xy' - 2a^2 y = 0$	[_Gegenbauer]	✓
10981	$(x^2 a + bx) y'' + 2by' - 2ay = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
10984	$x^3 y'' + xy' - (2x + 3) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10987	$x^3 y'' + x(x + 1) y' - 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10988	$x^3 y'' - x^2 y' + xy - \ln(x)^3 = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10990	$x^3 y'' + 3x^2 y' + xy - 1 = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
10992	$x(x^2 + 1) y'' + 2(x^2 - 1) y' - 2xy = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓

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#	ODE	CAS classification	Solved?
10995	$x(x^2 - 1)y'' + y' + ya x^3 = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
10999	$x(x^2 + 2)y'' - y' - 6xy = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
11000	$x(x^2 - 2)y'' - (x^3 + 3x^2 - 2x - 2)y' + (x^2 + 4x + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
11001	$x^2(x + 1)y'' - x(2x + 1)y' + (2x + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
11002	$x^2(x + 1)y'' + 2x(2 + 3x)y' = 0$	[[_2nd_order, _missing_y]]	✓
11003	$y'' = -\frac{2(-2 + x)y'}{x(x - 1)} + \frac{2(x + 1)y}{x^2(x - 1)}$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
11004	$y'' = \frac{(5x - 4)y'}{x(x - 1)} - \frac{(9x - 6)y}{x^2(x - 1)}$	[[_2nd_order, _with_linear_symmetries]]	✓
11006	$y'' = -\frac{y'}{x + 1} - \frac{y}{x(x + 1)^2}$	[[_2nd_order, _with_linear_symmetries]]	✓
11008	$y'' = \frac{2y}{x(x - 1)^2}$	[[_2nd_order, _with_linear_symmetries]]	✓
11011	$y'' = \frac{(x - 4)y'}{2x(-2 + x)} - \frac{(x - 3)y}{2x^2(-2 + x)}$	[[_2nd_order, _with_linear_symmetries]]	✓
11012	$y'' = \frac{y'}{x + 1} - \frac{(3x + 1)y}{4x^2(x + 1)}$	[[_2nd_order, _with_linear_symmetries]]	✓
11016	$y'' = -\frac{(-3x + 1)y}{(x - 1)(2x - 1)^2}$	[[_2nd_order, _with_linear_symmetries]]	✓
11017	$y'' = -\frac{(3x + a + 2b)y'}{2(x + a)(x + b)} - \frac{(-b + a)y}{4(x + a)^2(x + b)}$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
11018	$y'' = \frac{(6x - 1)y'}{3x(-2 + x)} + \frac{y}{3x^2(-2 + x)}$	[[_2nd_order, _with_linear_symmetries]]	✓
11020	$y'' = \frac{2(ax + 2b)y'}{x(ax + b)} - \frac{(2ax + 6b)y}{(ax + b)x^2}$	[[_2nd_order, _with_linear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
11022	$y'' = -\frac{ay}{x^4}$	[[_Emden, _Fowler]]	✓
11025	$y'' = -\frac{y'}{x^3} + \frac{2y}{x^4}$	[[_2nd_order, _with_linear_symmetries]]	✓
11026	$y'' = \frac{(a+b)y'}{x^2} - \frac{(x(a+b)+ab)y}{x^4}$	[[_2nd_order, _with_linear_symmetries]]	✓
11027	$y'' = -\frac{y'}{x} - \frac{y}{x^4}$	[[_Emden, _Fowler]]	✓
11030	$y'' = -\frac{2y'}{x} - \frac{a^2y}{x^4}$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
11031	$y'' = -\frac{(2x^2+1)y'}{x^3} + \frac{y}{x^4}$	[[_2nd_order, _with_linear_symmetries]]	✓
11032	$y'' = -\frac{2(x+a)y'}{x^2} - \frac{by}{x^4}$	[[_2nd_order, _with_linear_symmetries]]	✓
11033	$y'' = \frac{(2x^2-1)y'}{x^3} - \frac{y}{x^4}$	[[_2nd_order, _with_linear_symmetries]]	✓
11034	$y'' = \frac{(2x^2-1)y'}{x^3} - \frac{2y}{x^4}$	[[_2nd_order, _with_linear_symmetries]]	✓
11035	$y'' = -\frac{(x^3-1)y'}{x(x^3+1)} + \frac{xy}{x^3+1}$	[[_2nd_order, _with_linear_symmetries]]	✓
11038	$y'' = \frac{(x^2-2)y'}{x(x^2-1)} - \frac{(x^2-2)y}{x^2(x^2-1)}$	[[_2nd_order, _with_linear_symmetries]]	✓
11041	$y'' = \frac{2xy'}{x^2-1} - \frac{(a(a+1)-ax^2(a+3))y}{x^2(x^2-1)}$	[[_2nd_order, _with_linear_symmetries]]	✓
11045	$y'' = -\frac{ay}{(x^2+1)^2}$	[_Halm]	✓
11046	$y'' = -\frac{2xy'}{x^2+1} - \frac{y}{(x^2+1)^2}$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
11049	$y'' = -\frac{ay}{(x^2-1)^2}$	[[_2nd_order, _with_linear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
11050	$y'' = -\frac{2xy'}{x^2 - 1} + \frac{a^2 y}{(x^2 - 1)^2}$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, ' _with_symmetry_[0,F(x)]']]	✓
11056	$y'' = -\frac{(2x^2 + a)y'}{x(x^2 + a)} - \frac{by}{x^2(x^2 + a)}$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, ' _with_symmetry_[0,F(x)]']]	✓
11057	$y'' = -\frac{b^2 y}{(a^2 + x^2)^2}$	[[_Emden, _Fowler]]	✓
11058	$y'' = -\frac{2(x^2 - 1)y'}{x(x - 1)^2} - \frac{(-2x^2 + 2x + 2)y}{x^2(x - 1)^2}$	[[_2nd_order, _with_linear_symmetries]]	✓
11059	$y'' = \frac{12y}{(x + 1)^2(x^2 + 2x + 3)}$	[[_2nd_order, _with_linear_symmetries]]	✓
11060	$y'' = -\frac{by}{x^2(x - a)^2}$	[[_2nd_order, _with_linear_symmetries]]	✓
11062	$y'' = \frac{cy}{(x - a)^2(x - b)^2}$	[[_2nd_order, _with_linear_symmetries]]	✓
11065	$y'' = -\frac{(x^2 a + a - 3)y}{4(x^2 + 1)^2}$	[_Halm]	✓
11066	$y'' = \frac{18y}{(2x + 1)^2(x^2 + x + 1)}$	[[_2nd_order, _with_linear_symmetries]]	✓
11067	$y'' = \frac{3y}{4(x^2 + x + 1)^2}$	[[_Emden, _Fowler]]	✓
11070	$y'' = -\frac{3y}{16x^2(x - 1)^2}$	[[_2nd_order, _with_linear_symmetries]]	✓
11074	$y'' = -\frac{2y'}{x} - \frac{cy}{x^2(ax + b)^2}$	[[_2nd_order, _with_linear_symmetries]]	✓
11075	$y'' = -\frac{y}{(ax + b)^4}$	[[_Emden, _Fowler]]	✓
11076	$y'' = -\frac{Ay}{(x^2 a + bx + c)^2}$	[[_Emden, _Fowler]]	✓
11077	$y'' = -\frac{y'}{x^4} + \frac{y}{x^5}$	[[_2nd_order, _with_linear_symmetries]]	✓
11079	$y'' = \frac{(3x + 1)y'}{(x - 1)(x + 1)} - \frac{36(x + 1)^2 y}{(x - 1)^2(3x + 5)^2}$	[[_2nd_order, _with_linear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
11080	$y'' = \frac{y'}{x} - \frac{ay}{x^6}$	[[_Emden, _Fowler]]	✓
11084	$y'' = -\frac{(2x^2 + 1)y'}{x^3} - \frac{(-2x^2 + 1)y}{4x^6}$	[[_2nd_order, _with_linear_symmetries]]	✓
11085	$y'' = \frac{(2x^2 + 1)y'}{x^3} - \frac{(ax^4 + 10x^2 + 1)y}{4x^6}$	[[_2nd_order, _with_linear_symmetries]]	✓
11086	$y'' = -\frac{27xy}{16(x^3 - 1)^2}$	[[_2nd_order, _with_linear_symmetries]]	✓
11101	$y'' = -\frac{a(n-1)\sin(2ax)y'}{\cos(ax)^2} - \frac{na^2((n-1)\sin(ax)^2 + \cos(ax)^2)y}{\cos(ax)^2}$	[[_2nd_order, _with_linear_symmetries]]	✓
11109	$y'' = -\frac{\cos(x)y'}{\sin(x)} + \frac{y}{\sin(x)^2}$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
11112	$y'' = -\frac{\cos(x)y'}{\sin(x)} - \frac{(-17\sin(x)^2 - 1)y}{4\sin(x)^2}$	[[_2nd_order, _with_linear_symmetries]]	✓
11125	$y'' = -\frac{y'}{x} - \frac{(x-1)y}{x^4}$	[[_2nd_order, _with_linear_symmetries]]	✓
11126	$y'' = -\frac{y'}{x} - \frac{(-x-1)y}{x^4}$	[[_2nd_order, _with_linear_symmetries]]	✓
11127	$y'' = -\frac{b^2y}{(-a^2 + x^2)^2}$	[[_2nd_order, _with_linear_symmetries]]	✓
12177	$y'' + ay = 0$	[[_2nd_order, _missing_x]]	✓
12178	$y'' - (ax + b)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12179	$y'' - (a^2x^2 + a)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12181	$y'' + a^3x(-ax + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12183	$y'' - ax^n y = 0$	[[_Emden, _Fowler]]	✓
12187	$y'' + ay' + by = 0$	[[_2nd_order, _missing_x]]	✓
12188	$y'' + ay' + (bx + c)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
12190	$y'' + ay' + b(-bx^2 + ax + 1)y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)']]]	✓
12191	$y'' + ay' + bx(-bx^3 + ax + 2)y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)']]]	✓
12200	$y'' + (ax + b)y' - ay = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12201	$y'' + (ax + b)y' + ay = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
12202	$y'' + (ax + b)y' + c(ax + b - c)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12203	$y'' + (ax + 2b)y' + (abx + b^2 - a)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12206	$y'' + 2(ax + b)y' + (a^2x^2 + 2abx + c)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12209	$y'' + a(-b^2 + x^2)y' - a(ax + b)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12210	$y'' + (x^2a + b)y' + c(x^2a + b - c)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12211	$y'' + (x^2a + 2b)y' + (abx^2 - ax + b^2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12212	$y'' + (2x^2 + a)y' + (x^4 + x^2a + b + 2x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12214	$y'' + (abx^2 + bx + 2a)y' + a^2(bx^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12215	$y'' + (x^2a + bx + c)y' + x(abx^2 + bc + 2a)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12216	$y'' + (x^2a + bx + c)y' + (abx^3 + acx^2 + b)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12217	$y'' + (ax^3 + 2b)y' + (abx^3 - x^2a + b^2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12218	$y'' + (ax^3 + bx)y' + 2(2x^2a + b)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12219	$y'' + (abx^3 + bx^2 + 2a)y' + a^2(bx^3 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12220	$y'' + ax^n y' = 0$	[[_2nd_order, _missing_y]]	✓

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#	ODE	CAS classification	Solved?
12222	$y'' + 2ax^n y' + a(ax^{2n} + nx^{n-1})y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12232	$y'' + (ax^n + bx^m)y' + (anx^{n-1} + bmx^{m-1})y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
12233	$y'' + (ax^n + bx^m)y' + (a(n+1)x^{n-1} + b(m+1)x^{m-1})y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12237	$xy'' + \frac{y'}{2} + ay = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
12238	$xy'' + ay' + by = 0$	[[_Emden, _Fowler]]	✓
12239	$xy'' + ay' + bxy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12243	$xy'' + ay' + bx^n y = 0$	[[_Emden, _Fowler]]	✓
12245	$xy'' + axy' + ay = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
12248	$xy'' + (2ax + b)y' + a(ax + b)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12251	$xy'' - (ax + 1)y' - bx^2(bx + a)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12252	$xy'' - (2ax + 1)y' + (bx^3 + a^2x + a)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12256	$xy'' + (x^2a + bx)y' - (acx^2 + (bc + c^2 + a)x + b + 2c)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12257	$xy'' + (x^2a + bx + 2)y' + by = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12258	$xy'' + (x^2a + bx + c)y' + (2ax + b)y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
12263	$xy'' + x(x^2a + b)y' + (3x^2a + b)y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
12264	$xy'' + (ax^3 + bx^2 + 2)y' + bxy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12265	$xy'' + (abx^3 + bx^2 + ax - 1)y' + a^2bx^3y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
12270	$xy'' + (ax^n + b)y' + anx^{n-1}y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)']]]	✓
12272	$xy'' + (ax^n + b)y' + a(n + b - 1)x^{n-1}y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12286	$x^2y'' + ay = 0$	[[_Emden, _Fowler]]	✓
12287	$x^2y'' + (ax + b)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12288	$x^2y'' + (a^2x^2 - n(n + 1))y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12289	$x^2y'' - (a^2x^2 + n(n + 1))y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12292	$x^2y'' - \left(ax^3 + \frac{5}{16}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12294	$x^2y'' + (ax^n + b)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12299	$x^2y'' + axy' + by = 0$	[[_Emden, _Fowler]]	✓
12300	$x^2y'' + xy' + \left(x^2 - \left(n + \frac{1}{2}\right)^2\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12301	$x^2y'' + xy' - \left(x^2 + \left(n + \frac{1}{2}\right)^2\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12302	$x^2y'' + xy' + (-\nu^2 + x^2)y = 0$	[_Bessel]	✓
12303	$x^2y'' + xy' - (\nu^2 + x^2)y = 0$	[[_Bessel, _modified]]	✓
12304	$x^2y'' + 2xy' - (a^2x^2 + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12305	$x^2y'' - 2axy' + (b^2x^2 + a(a + 1))y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12306	$x^2y'' - 2axy' + (-b^2x^2 + a(a + 1))y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12308	$x^2y'' + axy' + (bx^n + c)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12313	$x^2y'' + (x^2a + bx)y' - by = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12316	$x^2y'' + (x^2a + (ab - 1)x + b)y' + a^2bxy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
12327	$(x^2 - 1)y'' + xy' + ay = 0$	[[_Gegenbauer, [_2nd_order, _linear, ' _with_symmetry_[0,F(x)]']]	✓
12328	$(-x^2 + 1)y'' - xy' + n^2y = 0$	[[_Gegenbauer, [_2nd_order, _linear, ' _with_symmetry_[0,F(x)]']]	✓
12331	$(-x^2 + 1)y'' - 3xy' + n(2 + n)y = 0$	[[_Gegenbauer]]	✓
12338	$(x^2a + b)y'' + axy' + cy = 0$	[[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, ' _with_symmetry_[0,F(x)]']]	✓
12341	$(a^2 + x^2)y'' + 2bxy' + b(b - 1)y = 0$	[[[_2nd_order, _with_linear_symmetries]]]	✓
12350	$(2ax + x^2 + b)y'' + (x + a)y' - m^2y = 0$	[[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, ' _with_symmetry_[0,F(x)]']]	✓
12353	$(x^2a + 2bx + c)y'' + (ax + b)y' + dy = 0$	[[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, ' _with_symmetry_[0,F(x)]']]	✓
12354	$(x^2a + 2bx + c)y'' + 3(ax + b)y' + dy = 0$	[[[_2nd_order, _with_linear_symmetries]]]	✓
12358	$x^3y'' + (ax + b)y = 0$	[[[_2nd_order, _with_linear_symmetries]]]	✓
12365	$x(x^2a + b)y'' + 2(x^2a + b)y' - 2axy = 0$	[[[_2nd_order, _exact, _linear, _homogeneous]]]	✓
12368	$x^2(ax + b)y'' - 2x(ax + 2b)y' + 2(ax + 3b)y = 0$	[[[_2nd_order, _with_linear_symmetries]]]	✓
12369	$x^2(ax + b)y'' + (a(2 - n - m)x^2 - b(m + n)x)y' + (am(n - 1)x + bn(m + 1))y = 0$	[[[_2nd_order, _with_linear_symmetries]]]	✓
12387	$x^4y'' + ay = 0$	[[[_Emden, _Fowler]]]	✓
12389	$x^4y'' - (a + b)x^2y' + (x(a + b) + ab)y = 0$	[[[_2nd_order, _with_linear_symmetries]]]	✓
12390	$x^4y'' + 2x^2(x + a)y' + by = 0$	[[[_2nd_order, _with_linear_symmetries]]]	✓
12392	$x^2(x - a)^2y'' + by = 0$	[[[_2nd_order, _with_linear_symmetries]]]	✓

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#	ODE	CAS classification	Solved?
12396	$(x^2 + 1)^2 y'' + ay = 0$	[_Halm]	✓
12397	$(x^2 - 1)^2 y'' + ay = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12398	$(a^2 + x^2)^2 y'' + b^2 y = 0$	[[_Emden, _Fowler]]	✓
12399	$(-a^2 + x^2)^2 y'' + b^2 y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12400	$4(x^2 + 1)^2 y'' + (x^2 a + a - 3)y = 0$	[_Halm]	✓
12401	$(x^2 a + b)^2 y'' + 2ax(x^2 a + b)y' + cy = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]]	✓
12405	$(x^2 a + b)^2 y'' + (2ax + c)(x^2 a + b)y' + ky = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12406	$(x^2 a + b)^2 y'' + (x^2 a + b)(cx^2 + d)y' + 2(-ad + bc)xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12409	$(x - a)^2 (x - b)^2 y'' - cy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12410	$(x - a)^2 (x - b)^2 y'' + (x - a)(x - b)(2x + \lambda)y' + \mu y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12411	$(x^2 a + bx + c)^2 y'' + Ay = 0$	[[_Emden, _Fowler]]	✓
12414	$(x^2 a + bx + c)^2 y'' + (2ax + k)(x^2 a + bx + c)y' + my = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12415	$x^6 y'' - x^5 y' + ay = 0$	[[_Emden, _Fowler]]	✓
12440	$(ax^n + b)^{m+1} y'' + (ax^n + b)y' - anm x^{n-1} y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]]	✓
12441	$y'' + a e^{\lambda x} y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12442	$y'' + (a e^x - b)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12448	$y'' + ay' + b e^{2ax} y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
12449	$y'' - ay' + be^{2ax}y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
12450	$y'' + ay' + (be^{\lambda x} + c)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12453	$y'' + 2ae^{\lambda x}y' + ae^{\lambda x}(ae^{\lambda x} + \lambda)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12457	$y'' - (a + 2be^{ax})y' + b^2e^{2ax}y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12464	$y'' + (2ae^{\lambda x} + b)y' + (a^2e^{2\lambda x} + a(b + \lambda)e^{\lambda x} + c)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12472	$y'' + (ae^{\lambda x} + be^{\mu x} + c)y' + (a\lambda e^{\lambda x} + b\mu e^{\mu x})y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
12595	$y'' - 3y' + 2y = 0$	[[_2nd_order, _missing_x]]	✓
12596	$y'' - 6y' + 25y = 0$	[[_2nd_order, _missing_x]]	✓
12606	$y'' + 3y' + 2y = e^{e^x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12608	$y'' - 2y' + y = \frac{e^x}{(1-x)^2}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12609	$y'' - 3y' + 2y = e^x$	[[_2nd_order, _with_linear_symmetries]]	✓
12611	$y'' + y = \sec(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12613	$y'' + y = \sec(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12614	$y'' + y = \tan(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12615	$y'' + 4y = x^2 + \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12616	$y'' - 2y' + y = 2xe^{2x} - \sin(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12617	$y'' + y = 2e^x + x^3 - x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12618	$y'' + 2y' + y = 3e^{2x} - \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12622	$y'' - 2y' = e^{2x} + 1$	[[_2nd_order, _missing_y]]	✓

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#	ODE	CAS classification	Solved?
12626	$x^2 y'' + 3xy' + y = \frac{1}{(1-x)^2}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
12627	$(x+1)^2 y'' - (x+1)y' + 6y = x$	[[_2nd_order, _with_linear_symmetries]]	✓
12628	$y'' - 5y' + 6y = \cos(x) - e^{2x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12630	$y'' + 2y' + y = 2x^3 - x e^{3x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12635	$y'' + 4y = \sin(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12636	$y'' + 4y = \sec(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12638	$y'' + y = x \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12642	$xy'' - (2x+1)y' + (x+1)y = x^2 - x - 1$	[[_2nd_order, _with_linear_symmetries]]	✓
12643	$(x^2+1)y'' + 2xy' - 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12644	$(1-x)y'' + xy' - y = (1-x)^2$	[[_2nd_order, _with_linear_symmetries]]	✓
12645	$\sin(x)y'' + 2\cos(x)y' + 3\sin(x)y = e^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12646	$y'' - 2\tan(x)y' - (a^2+1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12648	$xy'' + 2y' - xy = 2e^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12649	$y'' + (2e^x - 1)y' + e^{2x}y = e^{4x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12650	$(-x^2+1)y'' - xy' + 4y = 0$	[_Gegenbauer, [_2nd_order, _linear, ' _with_symmetry_[0,F(x)]']]	✓
12652	$x^6 y'' + 3x^5 y' + y = \frac{1}{x^2}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12653	$xy'' - (2x^2+1)y' - 8x^3y = 4x^3 e^{-x^2}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12654	$xy'' - (x+3)y' + 3y = 0$	[_Laguerre]	✓
12655	$(x-3)y'' - (4x-9)y' + (3x-6)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
12656	$x^2y'' + 4xy' + (-x^2 + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12657	$(x^2 + 1)y'' - 2xy' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12658	$xy'' - (2x - 1)y' + (x - 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12659	$x^2y'' - 4xy' + (x^2 + 6)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12660	$(2x^3 - 1)y'' - 6x^2y' + 6xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12661	$x^2y'' - 2x(x + 1)y' + 2(x + 1)y = x^3$	[[_2nd_order, _with_linear_symmetries]]	✓
12666	$y'' + xy' = x$	[[_2nd_order, _missing_y]]	✓
12667	$y'' = xe^x$	[[_2nd_order, _quadrature]]	✓
12676	$x^2y'' + 3xy' + y = x$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
12677	$(x - 1)^2y'' + 4(x - 1)y' + 2y = \cos(x)$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
12680	$x^5y'' + (2x^4 - x)y' - (2x^3 - 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12689	$(-x^2 + 1)y'' - xy' = 2$	[[_2nd_order, _missing_y]]	✓
12692	$(x^2 - x)y'' + (4x + 2)y' + 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
12694	$y'' + \frac{y'}{x} = 0$	[[_2nd_order, _missing_y]]	✓
12697	$(-x^2 + 1)y'' - \frac{y'}{x} + x^2 = 0$	[[_2nd_order, _missing_y]]	✓
12704	$x'' + 2x' + 2x = 0$	[[_2nd_order, _missing_x]]	✓
12708	$t^2x'' - 6x = 0$	[[_Emden, _Fowler]]	✓
12709	$2x'' - 5x' - 3x = 0$	[[_2nd_order, _missing_x]]	✓
12714	$x'' = -3\sqrt{t}$	[[_2nd_order, _quadrature]]	✓
12719	$x' + tx'' = 1$	[[_2nd_order, _missing_y]]	✓
12748	$\frac{x' + tx''}{t} = -2$	[[_2nd_order, _missing_y]]	✓

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#	ODE	CAS classification	Solved?
12772	$x'' + x' = 3t$	[[_2nd_order, _missing_y]]	✓
12788	$x'' - 4x' + 4x = 0$	[[_2nd_order, _missing_x]]	✓
12789	$x'' - 2x' = 0$	[[_2nd_order, _missing_x]]	✓
12790	$\frac{x''}{2} + x' + \frac{x}{2} = 0$	[[_2nd_order, _missing_x]]	✓
12791	$x'' + 4x' + 3x = 0$	[[_2nd_order, _missing_x]]	✓
12792	$x'' - 4x' + 4x = 0$	[[_2nd_order, _missing_x]]	✓
12793	$x'' - 2x' = 0$	[[_2nd_order, _missing_x]]	✓
12794	$\frac{x''}{2} + x' + \frac{x}{2} = 0$	[[_2nd_order, _missing_x]]	✓
12795	$x'' + 4x' + 3x = 0$	[[_2nd_order, _missing_x]]	✓
12796	$x'' + x' + 4x = 0$	[[_2nd_order, _missing_x]]	✓
12797	$x'' - 4x' + 6x = 0$	[[_2nd_order, _missing_x]]	✓
12798	$x'' + 9x = 0$	[[_2nd_order, _missing_x]]	✓
12799	$x'' - 12x = 0$	[[_2nd_order, _missing_x]]	✓
12800	$2x'' + 3x' + 3x = 0$	[[_2nd_order, _missing_x]]	✓
12801	$\frac{x''}{2} + \frac{5x'}{6} + \frac{2x}{9} = 0$	[[_2nd_order, _missing_x]]	✓
12802	$x'' + x' + x = 0$	[[_2nd_order, _missing_x]]	✓
12803	$x'' + \frac{x'}{8} + x = 0$	[[_2nd_order, _missing_x]]	✓
12804	$x'' + x' + x = 3t^3 - 1$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12805	$x'' + x' + x = 3 \cos(t) - 2 \sin(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
12806	$x'' + x' + x = 12$	[[_2nd_order, _missing_x]]	✓
12807	$x'' + x' + x = t^2 e^{3t}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12808	$x'' + x' + x = 5 \sin(7t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12809	$x'' + x' + x = e^{2t} \cos(t) + t^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12810	$x'' + x' + x = t e^{-t} \sin(\pi t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12811	$x'' + x' + x = (t + 2) \sin(\pi t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12812	$x'' + x' + x = 4t + 5 e^{-t}$	[[_2nd_order, _with_linear_symmetries]]	✓
12813	$x'' + x' + x = 5 \sin(2t) + t e^t$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12814	$x'' + x' + x = t^3 + 1 - 4t \cos(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12815	$x'' + x' + x = -6 + 2 e^{2t} \sin(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12816	$x'' + 7x = t e^{3t}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12817	$x'' - x' = 6 + e^{2t}$	[[_2nd_order, _missing_y]]	✓
12818	$x'' + x = t^2$	[[_2nd_order, _with_linear_symmetries]]	✓
12819	$x'' - 3x' - 4x = 2t^2$	[[_2nd_order, _with_linear_symmetries]]	✓
12820	$x'' + x = 9 e^{-t}$	[[_2nd_order, _with_linear_symmetries]]	✓
12821	$x'' - 4x = \cos(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12822	$x'' + x' + 2x = t \sin(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12823	$x'' - bx' + x = \sin(2t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12824	$x'' - 3x' - 40x = 2 e^{-t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
12829	$x'' + 3025x = \cos(45t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
12830	$x'' = -\frac{x}{t^2}$	[[_Emden, _Fowler]]	✓
12831	$x'' = \frac{4x}{t^2}$	[[_Emden, _Fowler]]	✓
12832	$t^2x'' + 3tx' + x = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
12833	$tx'' + 4x' + \frac{2x}{t} = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]]']]	✓
12834	$t^2x'' - 7tx' + 16x = 0$	[[_Emden, _Fowler]]	✓
12835	<i>i.c.</i> $t^2x'' + 3tx' - 8x = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]]']]	✓
12836	<i>i.c.</i> $t^2x'' + tx' = 0$	[[_2nd_order, _missing_y]]	✓
12839	$x'' + x = \tan(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12840	$x'' - x = te^t$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12841	$x'' - x = \frac{1}{t}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12842	$t^2x'' - 2x = t^3$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
12843	$x'' + x = \frac{1}{t+1}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12844	$x'' - 2x' + x = \frac{e^t}{2t}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12845	$x'' + \frac{x'}{t} = a$	[[_2nd_order, _missing_y]]	✓
12846	$t^2x'' - 3tx' + 3x = 4t^7$	[[_2nd_order, _with_linear_symmetries]]	✓
12847	$x'' - x = \frac{e^t}{1+e^t}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12923	$y'' - 7y' + 12y = 0$	[[_2nd_order, _missing_x]]	✓
12924	$y'' - 3y' + 2y = 4x^2$	[[_2nd_order, _with_linear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
12925	$(x^2 + 1)y'' + 4xy' + 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
12930	$y'' - 2y' - 8y = 0$	[[_2nd_order, _missing_x]]	✓
12935	$y'' - 4y' + 4y = -8 \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12937	$y'' + y' - 6y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
12940	$y'' - y' - 12y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
12943	$y'' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
13065	$y'' + 5y' + 6y = e^x$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
13068	$y'' - 4y' + 3y = 0$	[[_2nd_order, _missing_x]]	✓
13069	$y'' - 2y' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
13070	$x^2y'' - 2xy' + 2y = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]]']]	✓
13071	$x^2y'' + xy' - 4y = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]]']]	✓
13072	$y'' - 5y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
13081	$y'' - 3y' + 2y = 4x^2$	[[_2nd_order, _with_linear_symmetries]]	✓
13082	$y'' - 5y' + 6y = 2 - 12x + 6e^x$	[[_2nd_order, _with_linear_symmetries]]	✓
13083	$y'' - 5y' + 6y = 0$	[[_2nd_order, _missing_x]]	✓
13084	$y'' - 2y' - 3y = 0$	[[_2nd_order, _missing_x]]	✓
13085	$4y'' - 12y' + 5y = 0$	[[_2nd_order, _missing_x]]	✓
13086	$3y'' - 14y' - 5y = 0$	[[_2nd_order, _missing_x]]	✓
13089	$y'' - 8y' + 16y = 0$	[[_2nd_order, _missing_x]]	✓
13090	$4y'' + 4y' + y = 0$	[[_2nd_order, _missing_x]]	✓
13091	$y'' - 4y' + 13y = 0$	[[_2nd_order, _missing_x]]	✓
13092	$y'' + 6y' + 25y = 0$	[[_2nd_order, _missing_x]]	✓

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#	ODE	CAS classification	Solved?
13093	$y'' + 9y = 0$	[[_2nd_order, _missing_x]]	✓
13094	$4y'' + y = 0$	[[_2nd_order, _missing_x]]	✓
13107	$y'' - y' - 12y = 0$	[[_2nd_order, _missing_x]]	✓
13108	$y'' + 7y' + 10y = 0$	[[_2nd_order, _missing_x]]	✓
13109	$y'' - 6y' + 8y = 0$	[[_2nd_order, _missing_x]]	✓
13110	$3y'' + 4y' - 4y = 0$	[[_2nd_order, _missing_x]]	✓
13111	$y'' + 6y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓
13112	$4y'' - 12y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓
13113	$y'' + 4y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
13114	$9y'' - 6y' + y = 0$	[[_2nd_order, _missing_x]]	✓
13116	$y'' + 6y' + 58y = 0$	[[_2nd_order, _missing_x]]	✓
13117	$y'' + 6y' + 13y = 0$	[[_2nd_order, _missing_x]]	✓
13118	$y'' + 2y' + 5y = 0$	[[_2nd_order, _missing_x]]	✓
13119	$9y'' + 6y' + 5y = 0$	[[_2nd_order, _missing_x]]	✓
13120	$4y'' + 4y' + 37y = 0$	[[_2nd_order, _missing_x]]	✓
13127	$y'' - 3y' + 8y = 4x^2$	[[_2nd_order, _with_linear_symmetries]]	✓
13128	$y'' - 2y' - 8y = 4e^{2x} - 21e^{-3x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13129	$y'' + 2y' + 5y = 6 \sin(2x) + 7 \cos(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13130	$y'' + 2y' + 2y = 10 \sin(4x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13131	$y'' + 2y' + 4y = \cos(4x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
13132	$y'' - 3y' - 4y = 16x - 12e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓
13133	$y'' + 6y' + 5y = 2e^x + 10e^{5x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13134	$y'' + 2y' + 10y = 5xe^{-2x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13139	$y'' + y' - 6y = 10e^{2x} - 18e^{3x} - 6x - 11$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13140	$y'' + y' - 2y = 6e^{-2x} + 3e^x - 4x^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13147	$y'' + y = x \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13148	$y'' + 4y = 12x^2 - 16x \cos(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13152	$y'' + 5y' + 4y = 16x + 20e^x$	[[_2nd_order, _with_linear_symmetries]]	✓
i.c. 13155	$y'' + 8y' + 16y = 8e^{-2x}$	[[_2nd_order, _with_linear_symmetries]]	✓
i.c. 13156	$y'' + 6y' + 9y = 27e^{-6x}$	[[_2nd_order, _with_linear_symmetries]]	✓
i.c. 13157	$y'' + 4y' + 13y = 18e^{-2x}$	[[_2nd_order, _with_linear_symmetries]]	✓
i.c. 13160	$y'' - y' - 6y = 8e^{2x} - 5e^{3x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
i.c. 13162	$y'' - y = 3e^x x^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
i.c. 13163	$y'' + y = 3x^2 - 4 \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
i.c. 13164	$y'' + 4y = 8 \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13167	$y'' - 6y' + 8y = x^3 + x + e^{-2x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13168	$y'' + 9y = e^{3x} + e^{-3x} + e^{3x} \sin(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13169	$y'' + 4y' + 5y = e^{-2x}(\cos(x) + 1)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13170	$y'' - 6y' + 9y = x^4 e^x + x^3 e^{2x} + x^2 e^{3x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
13171	$y'' + 6y' + 13y = x e^{-3x} \sin(2x) + x^2 e^{-2x} \sin(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13181	$y'' + y = \cot(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13182	$y'' + y = \tan(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13183	$y'' + y = \sec(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13184	$y'' + y = \sec(x)^3$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13185	$y'' + 4y = \sec(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13186	$y'' + y = \tan(x) \sec(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13187	$y'' + 4y' + 5y = e^{-2x} \sec(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13188	$y'' - 2y' + 5y = e^x \tan(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13189	$y'' + 6y' + 9y = \frac{e^{-3x}}{x^3}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13190	$y'' - 2y' + y = x e^x \ln(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13191	$y'' + y = \sec(x) \csc(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13192	$y'' + y = \tan(x)^3$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13193	$y'' + 3y' + 2y = \frac{1}{1 + e^x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13194	$y'' + 3y' + 2y = \frac{1}{e^{2x} + 1}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13195	$y'' + y = \frac{1}{\sin(x) + 1}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13196	$y'' - 2y' + y = e^x \arcsin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13197	$y'' + 3y' + 2y = \frac{e^{-x}}{x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13198	$y'' - 2y' + y = x \ln(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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Table 2.50 second order adjoint  
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#	ODE	CAS classification	Solved?
13199	$x^2y'' - 6xy' + 10y = 3x^4 + 6x^3$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13200	$(x+1)^2y'' - 2(x+1)y' + 2y = 1$	[[_2nd_order, _with_linear_symmetries]]	✓
13201	$(x^2+2x)y'' - 2(x+1)y' + 2y = (x+2)^2$	[[_2nd_order, _with_linear_symmetries]]	✓
13202	$x^2y'' - x(x+2)y' + (x+2)y = x^3$	[[_2nd_order, _with_linear_symmetries]]	✓
13203	$x(-2+x)y'' - (x^2-2)y' + 2(x-1)y = 3x^2(-2+x)^2e^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13204	$(2x+1)(x+1)y'' + 2xy' - 2y = (2x+1)^2$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
13205	$\sin(x)^2y'' - 2\cos(x)\sin(x)y' + (\cos(x)^2+1)y = \sin(x)^3$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13207	$x^2y'' - 3xy' + 3y = 0$	[[_Emden, _Fowler]]	✓
13208	$x^2y'' + xy' - 4y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
13209	$4x^2y'' - 4xy' + 3y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
13210	$x^2y'' - 3xy' + 4y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
13211	$x^2y'' + xy' + 4y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
13212	$x^2y'' - 3xy' + 13y = 0$	[[_Emden, _Fowler]]	✓
13213	$3x^2y'' - 4xy' + 2y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
13214	$x^2y'' + xy' + 9y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓

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#	ODE	CAS classification	Solved?
13215	$9x^2y'' + 3xy' + y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
13216	$x^2y'' - 5xy' + 10y = 0$	[[_Emden, _Fowler]]	✓
13220	$x^2y'' - 4xy' + 6y = 4x - 6$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
13221	$x^2y'' - 5xy' + 8y = 2x^3$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
13222	$x^2y'' + 4xy' + 2y = 4 \ln(x)$	[[_2nd_order, _exact, _lin- ear, _nonhomogeneous]]	✓
13223	$x^2y'' + xy' + 4y = 2x \ln(x)$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
13224	$x^2y'' + xy' + 4y = 4 \sin(\ln(x))$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13226 i.c.	$x^2y'' - 2xy' - 10y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
13227 i.c.	$x^2y'' - 4xy' + 6y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
13228 i.c.	$x^2y'' + 5xy' + 3y = 0$	[[_2nd_order, _exact, _lin- ear, _homogeneous]]	✓
13229 i.c.	$x^2y'' - 2y = 4x - 8$	[[_2nd_order, _exact, _lin- ear, _nonhomogeneous]]	✓
13230 i.c.	$x^2y'' - 4xy' + 4y = -6x^3 + 4x^2$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
13231 i.c.	$x^2y'' + 2xy' - 6y = 10x^2$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
13232 i.c.	$x^2y'' - 5xy' + 8y = 2x^3$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
13234	$(x + 2)^2 y'' - (x + 2) y' - 3y = 0$	[[_2nd_order, _exact, _lin- ear, _homogeneous]]	✓
13235	$(2x - 3)^2 y'' - 6(2x - 3) y' + 12y = 0$	[[_2nd_order, _with_lin- ear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
13338	$tx'' - 2x' + 9t^5x = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
13340	$(t^3 - 2t^2)x'' - (t^3 + 2t^2 - 6t)x' + (3t^2 - 6)x = 0$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
13342	$t^2x'' + 3tx' + 3x = 0$	[[_Emden, _Fowler]]	✓
13344	$t^2x'' + (2t^3 + 7t)x' + (8t^2 + 8)x = 0$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
13345	$t^3x'' - (t^3 + 2t^2 - t)x' + (t^2 + t - 1)x = 0$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
13346	$t^3x'' + 3t^2x' + x = 0$	[[_Emden, _Fowler]]	✓
13348	$\frac{(t+1)x''}{t} - \frac{x'}{t^2} + \frac{x}{t^3} = 0$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
13349	$t^2x'' + tx' + x = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
13353	$x'' + (t+1)x = 0$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
13354	$y'' + \lambda y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
13355	$y'' + \lambda y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
13356	$y'' + \lambda y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
13357	$y'' + \lambda y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
13358	$y' + xy'' + \frac{\lambda y}{x} = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
13359	$y' + xy'' + \frac{\lambda y}{x} = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
13360	$2xy' + (x^2 + 1)y'' + \frac{\lambda y}{x^2 + 1} = 0$ i.c.	[[_2nd_order, _with_lin- ear_symmetries], [_2nd_or- der, _linear, '_with_sym- metry_[0,F(x)]']]	✓

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#	ODE	CAS classification	Solved?
13361	$-\frac{6y'x}{(3x^2+1)^2} + \frac{y''}{3x^2+1} + \lambda(3x^2+1)y = 0$ i.c.	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, ' _with_symmetry_[0,F(x)]']]	✓
13426	$x'' - 3x' + 2x = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
13427	$y'' - 4y' + 4y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
13428	$z'' - 4z' + 13z = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
13429	$y'' + y' - 6y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
13430	$y'' - 4y' = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
13431	$\theta'' + 4\theta = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
13432	$y'' + 2y' + 10y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
13433	$2z'' + 7z' - 4z = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
13434	$y'' + 2y' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
13435	$x'' + 6x' + 10x = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
13436	$4x'' - 20x' + 21x = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
13437	$y'' + y' - 2y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
13438	$y'' - 4y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
13439	$y'' + 4y' + 4y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
13440	$y'' + \omega^2 y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
13441	$x'' - 4x = t^2$	[[_2nd_order, _with_linear_symmetries]]	✓
13442	$x'' - 4x' = t^2$	[[_2nd_order, _missing_y]]	✓
13443	$x'' + x' - 2x = 3e^{-t}$	[[_2nd_order, _with_linear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
13444	$x'' + x' - 2x = e^t$	[[_2nd_order, _with_linear_symmetries]]	✓
13445	$x'' + 2x' + x = e^{-t}$	[[_2nd_order, _with_linear_symmetries]]	✓
13446	$x'' + \omega^2 x = \sin(\alpha t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13447	$x'' + \omega^2 x = \sin(\omega t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13448	$x'' + 2x' + 10x = e^{-t}$	[[_2nd_order, _with_linear_symmetries]]	✓
13449	$x'' + 2x' + 10x = e^{-t} \cos(3t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13450	$x'' + 6x' + 10x = e^{-2t} \cos(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13451	$x'' + 4x' + 4x = e^{2t}$	[[_2nd_order, _with_linear_symmetries]]	✓
13452	$x'' + x' - 2x = 12e^{-t} - 6e^t$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13453	$x'' + 4x = 289t e^t \sin(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13466	$y'' - y' - 6y = e^x$	[[_2nd_order, _with_linear_symmetries]]	✓
13467	$x'' - x = \frac{1}{t}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13468	$y'' + 4y = \cot(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13469	$t^2 x'' - 2x = t^3$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
13472	$x^2 y'' - 4xy' + 6y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, _with_symmetry_[0,F(x)]]]	✓
13473	$4x^2 y'' + y = 0$	[[_Emden, _Fowler]]	✓
13474	$t^2 x'' - 5tx' + 10x = 0$	[[_Emden, _Fowler]]	✓
13475	$t^2 x'' + tx' - x = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
13476	$x^2 z'' + 3xz' + 4z = 0$	[[_Emden, _Fowler]]	✓

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#	ODE	CAS classification	Solved?
13477	$x^2 y'' - xy' - 3y = 0$ i.c.	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
13478	$4t^2 x'' + 8tx' + 5x = 0$ i.c.	[[_Emden, _Fowler]]	✓
13479	$x^2 y'' - 5xy' + 5y = 0$ i.c.	[[_Emden, _Fowler]]	✓
13480	$3x^2 z'' + 5xz' - z = 0$ i.c.	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
13481	$t^2 x'' + 3tx' + 13x = 0$ i.c.	[[_Emden, _Fowler]]	✓
13482	$ay'' + (b - a)y' + cy = 0$	[[_2nd_order, _missing_x]]	✓
13577	$x'' + x = \sin(t) - \cos(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13579	$y'' + y = \frac{1}{\sin(x)^3}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13580	$x^2 y'' - 4xy' + 6y = 2$	[[_2nd_order, _with_linear_symmetries]]	✓
13581	$y'' + y = \cosh(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13583	$x'' - 4x' + 4x = e^t + e^{2t} + 1$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13591	$x^2 y'' + xy' + \left(9x^2 - \frac{1}{25}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
13594	$y'' + y = 1 - \frac{1}{\sin(x)}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13595	$u'' + \frac{2u'}{r} = 0$	[[_2nd_order, _missing_y]]	✓
13598	$x'' + 9x = t \sin(3t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13599	$y'' + 2y' + y = \sinh(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13601	$y'' - 2y' + 2y = x e^x \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13602	$(x^2 - 1)y'' - 6y = 1$	[[_2nd_order, _with_linear_symmetries]]	✓
13607	$(x + 1)^2 y'' + (x + 1)y' + y = 2 \cos(\ln(x + 1))$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
13611	$x'' + 10x' + 25x = 2^t + t e^{-5t}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13617	$y'' + y = \sin(3x) \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13634	$y'' + x^2 y = 0$	[[_Emden, _Fowler]]	✓
13649	$y'' = y + x^2$	[[_2nd_order, _with_linear_symmetries]]	✓
13656	$y'' + 4y' + y = 0$	[[_2nd_order, _missing_x]]	✓
13658	$2y'' - 3y' - 2y = 0$	[[_2nd_order, _missing_x]]	✓
13666	$(x - 1)y'' - xy' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
13669	$y'' + 2xy' + 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
13670	$xy'' + \sin(x)y' + \cos(x)y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
13672	$(-x^2 + 1)y'' + (1 - x)y' + y = -2x + 1$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
13673	$y'' + 4xy' + (4x^2 + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
13677	$xy'' + x^2y' + 2xy = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
13679	$y'' + \cot(x)y' - \csc(x)^2 y = \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13680	$x \ln(x)y'' + 2y' - \frac{y}{x} = 1$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
13687	$y'' + \frac{2xy'}{2x - 1} - \frac{4xy}{(2x - 1)^2} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
13688	$(x^2 + 2x)y'' + (x^2 + x + 10)y' = (25 - 6x)y$	[[_2nd_order, _with_linear_symmetries]]	✓
13689	$y'' + \frac{y'}{x + 1} - \frac{(x + 2)y}{x^2(x + 1)} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
13690	$(x^2 - x)y'' + (2x^2 + 4x - 3)y' + 8xy = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
13691	$\frac{(x^2 - x)y''}{x} + \frac{(3x + 1)y'}{x} + \frac{y}{x} = 3x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13694	$y'' + (2x + 5)y' + (4x + 8)y = e^{-2x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
13763	$t^2y'' + 3ty' + y = t^7$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
13768	$y'' + 2y' + y = 1$	[[_2nd_order, _missing_x]]	✓
13769	$y'' - 2y' + 5y = e^t$	[[_2nd_order, __with_linear_symmetries]]	✓
13770	$y'' - 3y' - 7y = 4$	[[_2nd_order, _missing_x]]	✓
13772	$3y'' + 5y' - 2y = 3t^2$	[[_2nd_order, __with_linear_symmetries]]	✓
13808	$y'' - 2y' + y = x^{3/2}e^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13809	$y'' + 4y = 2 \sec(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13810	$y'' + \frac{y'}{x} + \left(1 - \frac{1}{4x^2}\right)y = x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13812	$x^2y'' + x\left(-\frac{1}{2} + x\right)y' + \frac{y}{2} = 0$	[[_2nd_order, __with_linear_symmetries]]	✓
13813	$x^2y'' + x(x+1)y' - y = 0$	[[_2nd_order, __with_linear_symmetries]]	✓
13822	$y'' - x^2y = 0$	[[_Emden, _Fowler]]	✓
13823	$xy'' + y' + y = 0$	[[_Emden, _Fowler]]	✓
13824	$xy'' + x^2y = 0$	[[_Emden, _Fowler]]	✓
13825	$y'' + \alpha^2y = 0$	[[_2nd_order, _missing_x]]	✓
13826	$y'' - \alpha^2y = 0$	[[_2nd_order, _missing_x]]	✓
13827	$y'' + \beta y' + \gamma y = 0$	[[_2nd_order, _missing_x]]	✓
13835	$y'' - 2ky' + k^2y = e^x$	[[_2nd_order, __with_linear_symmetries]]	✓
13836	$(-x^2 + 1)y'' - xy' - a^2y = 0$	[_Gegenbauer, [_2nd_order, _linear, '_with_symmetry_[0,F(x)']]]	✓
13837	$y'' + \frac{2y'}{x} = 0$	[[_2nd_order, _missing_y]]	✓
13904	$y'' = a^2y$	[[_2nd_order, _missing_x]]	✓
13906	$xy'' - y' = e^x x^2$	[[_2nd_order, _missing_y]]	✓
13908	$y'' + \tan(x)y' = \sin(2x)$	[[_2nd_order, _missing_y]]	✓

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#	ODE	CAS classification	Solved?
13913	$y'' = 9y$	[[_2nd_order, _missing_x]]	✓
13914	$y'' + y = 0$	[[_2nd_order, _missing_x]]	✓
13915	$y'' - y = 0$	[[_2nd_order, _missing_x]]	✓
13916	$y'' + 12y = 7y'$	[[_2nd_order, _missing_x]]	✓
13917	$y'' - 4y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
13918	$y'' + 2y' + 10y = 0$	[[_2nd_order, _missing_x]]	✓
13919	$y'' + 3y' - 2y = 0$	[[_2nd_order, _missing_x]]	✓
13920	$4y'' - 12y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓
13921	$y'' + y' + y = 0$	[[_2nd_order, _missing_x]]	✓
13930	$y'' - 7y' + 12y = x$	[[_2nd_order, _with_linear_symmetries]]	✓
13931	$s'' - a^2s = t + 1$	[[_2nd_order, _with_linear_symmetries]]	✓
13932	$y'' + y' - 2y = 8 \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13933	$y'' - y = 5x + 2$	[[_2nd_order, _with_linear_symmetries]]	✓
13934	$y'' - 2ay' + a^2y = e^x$	[[_2nd_order, _with_linear_symmetries]]	✓
13935	$y'' + 6y' + 5y = e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓
13936	$y'' + 9y = 6e^{3x}$	[[_2nd_order, _with_linear_symmetries]]	✓
13937	$y'' - 3y' = 2 - 6x$	[[_2nd_order, _missing_y]]	✓
13938	$y'' - 2y' + 3y = e^{-x} \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13939	$y'' + 4y = 2 \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13943	$y'' + 2hy' + n^2y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
13945	$y'' - 7y' + 6y = \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13946	$y'' + y = \sec(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13947	$y'' + y = \frac{1}{\cos(2x)^{3/2}}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
13954	$y'' + y = \sec(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13957	$y'' - 4y = e^{2x} \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13986	$x^2y'' + xy' - y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
13988	$2x^2y'' + 3xy' - y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
13989	$y'' - 3y' + 2y = 0$	[[_2nd_order, _missing_x]]	✓
13990	$x^2y'' - 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
13996	$2x^2y'' + xy' - y = 0$	[[_Emden, _Fowler]]	✓
13999	$y'' - 3y' - 10y = 0$	[[_2nd_order, _missing_x]]	✓
14000	$y'' + 2y' + y = 0$	[[_2nd_order, _missing_x]]	✓
14003	$x^2y'' - xy' = 0$	[[_2nd_order, _missing_y]]	✓
14004	$x^2y'' + 6xy' + 4y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
14005	$x^2y'' - 5xy' + 9y = 0$	[[_Emden, _Fowler]]	✓
14011	$y'' - y' - 6y = 0$	[[_2nd_order, _missing_x]]	✓
14013	$y'' - y = 0$	[[_2nd_order, _missing_x]]	✓
14016	$y'' - y' - 2y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
14017	$y'' - y' - 2y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
14018	$y'' - y' - 2y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
14019	$y'' - y' - 2y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
14021	$x^2y'' - 4xy' + 6y = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
14022	$x^2y'' - 4xy' + 6y = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓

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#	ODE	CAS classification	Solved?
14023	$x^2y'' - 4xy' + 6y = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
14024	$x^2y'' - 4xy' + 6y = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
14025	$x^2y'' - 4xy' + 6y = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
14159	$x(x-3)y'' + 3y' = x^2$ i.c.	[[_2nd_order, _missing_y]]	✓
14162	$y'' - y = 0$	[[_2nd_order, _missing_x]]	✓
14163	$y'' + y = 0$	[[_2nd_order, _missing_x]]	✓
14164	$x^2y'' + 2xy' - 2y = 0$	[[_Emden, _Fowler]]	✓
14166	$y'' - y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
14168	$x^2y'' - xy' + y = 0$ i.c.	[[_Emden, _Fowler]]	✓
14169	$y'' - 4y = 31$ i.c.	[[_2nd_order, _missing_x]]	✓
14170	$y'' + 9y = 27x + 18$ i.c.	[[_2nd_order, _with_lin- ear_symmetries]]	✓
14171	$x^2y'' + xy' - 4y = -3x - \frac{3}{x}$ i.c.	[[_2nd_order, _with_lin- ear_symmetries]]	✓
14172	$4y'' + 4y' - 3y = 0$	[[_2nd_order, _missing_x]]	✓
14182	$y'' + \alpha y = 0$	[[_2nd_order, _missing_x]]	✓
14538	$y'' - 6y' - 7y = 0$	[[_2nd_order, _missing_x]]	✓
14539	$y'' - y' - 12y = 0$	[[_2nd_order, _missing_x]]	✓
14569	$y'' + 5y' + 6y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
14570	$y'' + 2y' + 5y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
14571	$y'' + 2y' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓

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#	ODE	CAS classification	Solved?
14572	$y'' + 2y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
14573	$y'' - y' - 6y = e^{4t}$	[[_2nd_order, _with_linear_symmetries]]	✓
14574	$y'' + 6y' + 8y = 2e^{-3t}$	[[_2nd_order, _with_linear_symmetries]]	✓
14575	$y'' - y' - 2y = 5e^{3t}$	[[_2nd_order, _with_linear_symmetries]]	✓
14576	$y'' + 4y' + 13y = e^{-t}$	[[_2nd_order, _with_linear_symmetries]]	✓
14577	$y'' + 4y' + 13y = -3e^{-2t}$	[[_2nd_order, _with_linear_symmetries]]	✓
14578	$y'' + 7y' + 10y = e^{-2t}$	[[_2nd_order, _with_linear_symmetries]]	✓
14579	$y'' - 5y' + 4y = e^{4t}$	[[_2nd_order, _with_linear_symmetries]]	✓
14580	$y'' + y' - 6y = 4e^{-3t}$	[[_2nd_order, _with_linear_symmetries]]	✓
14581	$y'' + 6y' + 8y = e^{-t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
14582	$y'' + 7y' + 12y = 3e^{-t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
14583	$y'' + 4y' + 13y = -3e^{-2t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
14584	$y'' + 7y' + 10y = e^{-2t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
14585	$y'' + 4y' + 3y = e^{-\frac{t}{2}}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
14587	$y'' + 4y' + 3y = e^{-4t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
14589	$y'' + 4y' + 20y = e^{-2t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
14591	$y'' + 2y' + y = e^{-t}$	[[_2nd_order, _with_linear_symmetries]]	✓
14592	$y'' - 5y' + 4y = 5$ i.c.	[[_2nd_order, _missing_x]]	✓
14593	$y'' + 5y' + 6y = 2$ i.c.	[[_2nd_order, _missing_x]]	✓

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#	ODE	CAS classification	Solved?
14594	$y'' + 2y' + 10y = 10$ i.c.	[[_2nd_order, _missing_x]]	✓
14595	$y'' + 4y' + 6y = -8$ i.c.	[[_2nd_order, _missing_x]]	✓
14596	$y'' + 9y = e^{-t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
14597	$y'' + 4y = 2e^{-2t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
14598	$y'' + 2y = -3$ i.c.	[[_2nd_order, _missing_x]]	✓
14599	$y'' + 4y = e^t$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
14600	$y'' + 9y = 6$ i.c.	[[_2nd_order, _missing_x]]	✓
14601	$y'' + 2y = -e^t$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
14602	$y'' + 4y = -3t^2 + 2t + 3$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
14605	$y'' + 3y' + 2y = t^2$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
14606	$y'' + 4y = t - \frac{1}{20}t^2$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
14607	$y'' + 5y' + 6y = 4 + e^{-t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
14608	$y'' + 3y' + 2y = e^{-t} - 4$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
14609	$y'' + 6y' + 8y = 2t + e^{-t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
14610	$y'' + 6y' + 8y = 2t + e^t$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
14611	$y'' + 4y = t + e^{-t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
14612	$y'' + 4y = 6 + t^2 + e^t$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
14613	$y'' + 3y' + 2y = \cos(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
14614	$y'' + 3y' + 2y = 5 \cos(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
14615	$y'' + 3y' + 2y = \sin(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
14616	$y'' + 3y' + 2y = 2 \sin(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
14617	$y'' + 6y' + 8y = \cos(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
14618	$y'' + 6y' + 8y = -4 \cos(3t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
14619	$y'' + 4y' + 13y = 3 \cos(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
14620	$y'' + 4y' + 20y = -\cos(5t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
14621	$y'' + 4y' + 20y = -3 \sin(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
14622	$y'' + 2y' + y = \cos(3t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
14623	$y'' + 6y' + 8y = \cos(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
14624	$y'' + 6y' + 8y = 2 \cos(3t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
14626	$y'' + 2y' + y = 2 \cos(2t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
14627	$y'' + 3y' + y = \cos(3t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
14628	$y'' + 4y' + 20y = 3 + 2 \cos(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
14629	$y'' + 4y' + 20y = e^{-t} \cos(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
14630	$y'' + 9y = \cos(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
14631	$y'' + 9y = 5 \sin(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
14632	$y'' + 4y = -\cos\left(\frac{t}{2}\right)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
14633	$y'' + 4y = 3 \cos(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
14634	$y'' + 9y = 2 \cos(3t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
14660	$y'' = \frac{x+1}{x-1}$	[[_2nd_order, _quadrature]]	✓
14661	$x^2 y'' = 1$	[[_2nd_order, _quadrature]]	✓
14663	$y'' + 3y' + 8y = e^{-x^2}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
14664	$x^2 y'' + 3xy' = 0$	[[_2nd_order, _missing_y]]	✓
14674	$y'' = \sin(2x)$	[[_2nd_order, _quadrature]]	✓
14675	$y'' - 3 = x$	[[_2nd_order, _quadrature]]	✓
14683	$xy'' + 2 = \sqrt{x}$	[[_2nd_order, _quadrature]]	✓
14885	$xy'' + 4y' = 18x^2$	[[_2nd_order, _missing_y]]	✓
14886	$xy'' = 2y'$	[[_2nd_order, _missing_y]]	✓
14887	$y'' = y'$	[[_2nd_order, _missing_x]]	✓
14888	$y'' + 2y' = 8e^{2x}$	[[_2nd_order, _missing_y]]	✓
14889	$xy'' = y' - 2x^2 y'$	[[_2nd_order, _missing_y]]	✓
14890	$(x^2 + 1)y'' + 2xy' = 0$	[[_2nd_order, _missing_y]]	✓
14897	$y'' = 2y' - 6$	[[_2nd_order, _missing_x]]	✓
14899	$y'' + 4y' = 9e^{-3x}$	[[_2nd_order, _missing_y]]	✓
14907	$y'' = y'$	[[_2nd_order, _missing_x]]	✓
14913	$xy'' - y' = 6x^5$	[[_2nd_order, _missing_y]]	✓
14917	$y'' + 4y' = 9e^{-3x}$	[[_2nd_order, _missing_y]]	✓
14919	$xy'' + 4y' = 18x^2$	[[_2nd_order, _missing_y]]	✓
14920	$xy'' = 2y'$	[[_2nd_order, _missing_y]]	✓
14921	$y'' = y'$	[[_2nd_order, _missing_x]]	✓
14922	$y'' + 2y' = 8e^{2x}$	[[_2nd_order, _missing_y]]	✓
14925	$xy'' + 2y' = 6$	[[_2nd_order, _missing_y]]	✓

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#	ODE	CAS classification	Solved?
14945	$y'' = 2y' - 5y + 30e^{3x}$	[[_2nd_order, _with_linear_symmetries]]	✓
14972 i.c.	$y'' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
14973 i.c.	$y'' - 4y = 0$	[[_2nd_order, _missing_x]]	✓
14974 i.c.	$y'' + y' - 6y = 0$	[[_2nd_order, _missing_x]]	✓
14975 i.c.	$y'' - 4y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
14976 i.c.	$x^2y'' - 4xy' + 6y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]]']]	✓
14977 i.c.	$4x^2y'' + 4xy' - y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]]']]	✓
14978 i.c.	$x^2y'' - xy' + y = 0$	[[_Emden, _Fowler]]	✓
14979 i.c.	$xy'' - y' + 4x^3y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]]']]	✓
14980 i.c.	$(x+1)^2y'' - 2(x+1)y' + 2y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]]']]	✓
14981	$x^2y'' - 4xy' + 6y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]]']]	✓
14982	$xy'' - y' + 4x^3y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]]']]	✓
14985 i.c.	$y'' - 4y = 0$	[[_2nd_order, _missing_x]]	✓
14986 i.c.	$y'' + 2y' - 3y = 0$	[[_2nd_order, _missing_x]]	✓
14987 i.c.	$y'' - 10y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓

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#	ODE	CAS classification	Solved?
14988	$y'' + 5y' = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
14991	$y'' - 7y' + 10y = 0$	[[_2nd_order, _missing_x]]	✓
14992	$y'' + 2y' - 24y = 0$	[[_2nd_order, _missing_x]]	✓
14993	$y'' - 25y = 0$	[[_2nd_order, _missing_x]]	✓
14994	$y'' + 3y' = 0$	[[_2nd_order, _missing_x]]	✓
14995	$4y'' - y = 0$	[[_2nd_order, _missing_x]]	✓
14996	$3y'' + 7y' - 6y = 0$	[[_2nd_order, _missing_x]]	✓
14997	$y'' - 8y' + 15y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
14998	$y'' - 8y' + 15y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
14999	$y'' - 8y' + 15y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
15000	$y'' - 9y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
15001	$y'' - 9y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
15002	$y'' - 9y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
15003	$y'' - 10y' + 25y = 0$	[[_2nd_order, _missing_x]]	✓
15004	$y'' + 2y' + y = 0$	[[_2nd_order, _missing_x]]	✓
15005	$4y'' - 4y' + y = 0$	[[_2nd_order, _missing_x]]	✓
15006	$25y'' - 10y' + y = 0$	[[_2nd_order, _missing_x]]	✓
15007	$16y'' - 24y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓
15008	$9y'' + 12y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
15009	$y'' - 8y' + 16y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
15010	$y'' - 8y' + 16y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
15011	$y'' - 8y' + 16y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
15012	$4y'' + 4y' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
15013	$4y'' + 4y' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓

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#	ODE	CAS classification	Solved?
15014	$4y'' + 4y' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
15015	$y'' + 25y = 0$	[[_2nd_order, _missing_x]]	✓
15016	$y'' + 2y' + 5y = 0$	[[_2nd_order, _missing_x]]	✓
15017	$y'' - 2y' + 5y = 0$	[[_2nd_order, _missing_x]]	✓
15018	$y'' - 4y' + 29y = 0$	[[_2nd_order, _missing_x]]	✓
15019	$9y'' + 18y' + 10y = 0$	[[_2nd_order, _missing_x]]	✓
15020	$4y'' + y = 0$	[[_2nd_order, _missing_x]]	✓
15021	$y'' + 16y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
15022	$y'' + 16y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
15023	$y'' + 16y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
15024	$y'' - 4y' + 13y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
15026	$y'' - 4y' + 13y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
15027	$y'' - y' + \left(\frac{1}{4} + 4\pi^2\right)y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
15028	$y'' - y' + \left(\frac{1}{4} + 4\pi^2\right)y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
15055	$x^2y'' - 5xy' + 8y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
15056	$x^2y'' - 2y = 0$	[[_2nd_order, _exact, _lin- ear, _homogeneous]]	✓
15057	$x^2y'' - 2xy' = 0$	[[_2nd_order, _missing_y]]	✓
15058	$2x^2y'' - xy' + y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
15059	$x^2y'' - 5xy' + 9y = 0$	[[_Emden, _Fowler]]	✓
15060	$x^2y'' + 5xy' + 4y = 0$	[[_Emden, _Fowler]]	✓
15061	$4x^2y'' + y = 0$	[[_Emden, _Fowler]]	✓

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#	ODE	CAS classification	Solved?
15062	$x^2y'' - 19xy' + 100y = 0$	[[_Emden, _Fowler]]	✓
15063	$x^2y'' - 5xy' + 29y = 0$	[[_Emden, _Fowler]]	✓
15064	$x^2y'' - xy' + 10y = 0$	[[_Emden, _Fowler]]	✓
15065	$x^2y'' + 5xy' + 29y = 0$	[[_Emden, _Fowler]]	✓
15066	$x^2y'' + xy' + y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]]	✓
15067	$2x^2y'' + 5xy' + y = 0$	[[_2nd_order, _exact, _lin- ear, _homogeneous]]	✓
15068	$4x^2y'' + 37y = 0$	[[_Emden, _Fowler]]	✓
15069	$x^2y'' + xy' = 0$	[[_2nd_order, _missing_y]]	✓
15070	$x^2y'' + xy' - 25y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]]	✓
15071	$4x^2y'' + 8xy' + 5y = 0$	[[_Emden, _Fowler]]	✓
15072	$3x^2y'' - 7xy' + 3y = 0$	[[_Emden, _Fowler]]	✓
15073	<i>i.c.</i> $x^2y'' - 2xy' - 10y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]]	✓
15074	<i>i.c.</i> $4x^2y'' + 4xy' - y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]]	✓
15075	<i>i.c.</i> $x^2y'' - 11xy' + 36y = 0$	[[_Emden, _Fowler]]	✓
15076	<i>i.c.</i> $x^2y'' - xy' + y = 0$	[[_Emden, _Fowler]]	✓
15077	<i>i.c.</i> $x^2y'' - xy' + 2y = 0$	[[_Emden, _Fowler]]	✓
15078	<i>i.c.</i> $x^2y'' - 3xy' + 13y = 0$	[[_Emden, _Fowler]]	✓
15087	<i>i.c.</i> $y'' + 4y = 24e^{2x}$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
15088	<i>i.c.</i> $y'' + 4y = 24e^{2x}$	[[_2nd_order, _with_lin- ear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
15091	$y'' - 9y = 36$ i.c.	[[_2nd_order, _missing_x]]	✓
15092	$y'' - 3y' - 10y = -6e^{4x}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
15093	$y'' - 3y' - 10y = 7e^{5x}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
15094	$y'' + 6y' + 9y = 169 \sin(2x)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15095	$x^2y'' - 4xy' + 6y = 10x + 12$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
15097	$y'' - 3y' - 10y = e^{4x}$	[[_2nd_order, _with_linear_symmetries]]	✓
15098	$y'' - 3y' - 10y = e^{5x}$	[[_2nd_order, _with_linear_symmetries]]	✓
15099	$y'' - 3y' - 10y = -18e^{4x} + 14e^{5x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15100	$y'' - 3y' - 10y = 35e^{5x} + 12e^{4x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15101	$x^2y'' - 4xy' + 6y = 1$	[[_2nd_order, _with_linear_symmetries]]	✓
15102	$x^2y'' - 4xy' + 6y = x$	[[_2nd_order, _with_linear_symmetries]]	✓
15103	$x^2y'' - 4xy' + 6y = 22x + 24$	[[_2nd_order, _with_linear_symmetries]]	✓
15104	$x^2y'' - 7xy' + 15y = x^2$	[[_2nd_order, _with_linear_symmetries]]	✓
15105	$x^2y'' - 7xy' + 15y = x$	[[_2nd_order, _with_linear_symmetries]]	✓
15106	$x^2y'' - 7xy' + 15y = 1$	[[_2nd_order, _with_linear_symmetries]]	✓
15107	$x^2y'' - 7xy' + 15y = 4x^2 + 2x + 3$	[[_2nd_order, _with_linear_symmetries]]	✓
15108	$y'' + 9y = 52e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓
15109	$y'' - 6y' + 9y = 27e^{6x}$	[[_2nd_order, _with_linear_symmetries]]	✓
15110	$y'' + 4y' - 5y = 30e^{-4x}$	[[_2nd_order, _with_linear_symmetries]]	✓
15111	$y'' + 3y' = e^{\frac{x}{2}}$	[[_2nd_order, _missing_y]]	✓

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#	ODE	CAS classification	Solved?
15112	$y'' - 3y' - 10y = -5e^{3x}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
15113	$y'' + 9y = 10 \cos(2x) + 15 \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15114	$y'' - 6y' + 9y = 25 \sin(6x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15115	$y'' + 3y' = 26 \cos\left(\frac{x}{3}\right) - 12 \sin\left(\frac{x}{3}\right)$	[[_2nd_order, _missing_y]]	✓
15116	$y'' + 4y' - 5y = \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15118	$y'' - 3y' - 10y = -200$	[[_2nd_order, _missing_x]]	✓
15119	$y'' + 4y' - 5y = x^3$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15120	$y'' - 6y' + 9y = 18x^2 + 3x + 4$	[[_2nd_order, _with_linear_symmetries]]	✓
15121	$y'' + 9y = 9x^4 - 9$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15122	$y'' + 9y = x^3$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15123	$y'' + 9y = 25x \cos(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15124	$y'' - 6y' + 9y = e^{2x} \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15125	$y'' + 9y = 54x^2 e^{3x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15126	$y'' = 6x e^x \sin(x)$	[[_2nd_order, _quadrature]]	✓
15127	$y'' - 2y' + y = (-6x - 8) \cos(2x) + (8x - 11) \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15128	$y'' - 2y' + y = (12x - 4) e^{-5x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15129	$y'' + 9y = 39x e^{2x}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15130	$y'' - 3y' - 10y = -3e^{-2x}$	[[_2nd_order, _with_linear_symmetries]]	✓
15131	$y'' + 4y' = 20$	[[_2nd_order, _missing_x]]	✓
15132	$y'' + 4y' = x^2$	[[_2nd_order, _missing_y]]	✓

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#	ODE	CAS classification	Solved?
15133	$y'' + 9y = 3 \sin(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15134	$y'' - 6y' + 9y = 10 e^{3x}$	[[_2nd_order, _with_linear_symmetries]]	✓
15135	$y'' - 3y' - 10y = (72x^2 - 1) e^{2x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15136	$y'' - 3y' - 10y = 4x e^{6x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15137	$y'' - 10y' + 25y = 6 e^{5x}$	[[_2nd_order, _with_linear_symmetries]]	✓
15138	$y'' - 10y' + 25y = 6 e^{-5x}$	[[_2nd_order, _with_linear_symmetries]]	✓
15139	$y'' + 4y' + 5y = 24 \sin(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15140	$y'' + 4y' + 5y = 8 e^{-3x}$	[[_2nd_order, _with_linear_symmetries]]	✓
15141	$y'' - 4y' + 5y = e^{2x} \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15142	$y'' - 4y' + 5y = e^{-x} \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15143	$y'' - 4y' + 5y = 100$	[[_2nd_order, _missing_x]]	✓
15144	$y'' - 4y' + 5y = e^{-x}$	[[_2nd_order, _with_linear_symmetries]]	✓
15145	$y'' - 4y' + 5y = 10x^2 + 4x + 8$	[[_2nd_order, _with_linear_symmetries]]	✓
15146	$y'' + 9y = e^{2x} \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15147	$y'' + y = 6 \cos(x) - 3 \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15148	$y'' + y = 6 \cos(2x) - 3 \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15149	$y'' - 4y' + 5y = x^3 e^{-x} \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15150	$y'' - 4y' + 5y = x^3 e^{2x} \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15151	$y'' - 5y' + 6y = x^2 e^{-7x} + 2 e^{-7x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15152	$y'' - 5y' + 6y = x^2$	[[_2nd_order, _with_linear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
15153	$y'' - 5y' + 6y = 4e^{-8x}$	[[_2nd_order, _with_linear_symmetries]]	✓
15154	$y'' - 5y' + 6y = 4e^{3x}$	[[_2nd_order, _with_linear_symmetries]]	✓
15155	$y'' - 5y' + 6y = x^2e^{3x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15156	$y'' - 5y' + 6y = x^2 \cos(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15157	$y'' - 5y' + 6y = x^2e^{3x} \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15158	$y'' - 4y' + 20y = e^{4x} \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15159	$y'' - 4y' + 20y = e^{2x} \sin(4x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15160	$y'' - 4y' + 20y = x^3 \sin(4x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15161	$y'' - 10y' + 25y = 3x^2e^{5x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15162	$y'' - 10y' + 25y = 3x^4$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15177	$y'' - 6y' + 9y = 27e^{6x} + 25 \sin(6x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15178	$y'' + 9y = 25x \cos(2x) + 3 \sin(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15179	$y'' - 4y' + 5y = 5 \sin(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15180	$y'' - 4y' + 5y = 20 \sinh(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15181	$x^2y'' - 5xy' + 8y = \frac{5}{x^3}$	[[_2nd_order, _with_linear_symmetries]]	✓
15182	$2x^2y'' - xy' + y = \frac{50}{x^3}$	[[_2nd_order, _with_linear_symmetries]]	✓
15184	$x^2y'' - 2y = 15 \cos(3 \ln(x)) - 10 \sin(3 \ln(x))$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
15185	$3x^2y'' - 7xy' + 3y = 4x^3$	[[_2nd_order, _with_linear_symmetries]]	✓
15186	$2x^2y'' + 5xy' + y = \frac{10}{x}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
15187	$x^2y'' - 5xy' + 9y = 6x^3$	[[_2nd_order, _with_linear_symmetries]]	✓
15188	$x^2y'' + 5xy' + 4y = 64x^2 \ln(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15189	$x^2y'' - 2xy' + 2y = 3\sqrt{x}$	[[_2nd_order, _with_linear_symmetries]]	✓
15190	$y'' + y = \cot(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15191	$y'' + 4y = \csc(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15192	$y'' - 7y' + 10y = 6e^{3x}$	[[_2nd_order, _with_linear_symmetries]]	✓
15193	$y'' - 4y' + 4y = (24x^2 + 2)e^{2x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15194	$y'' + 4y' + 4y = \frac{e^{-2x}}{x^2 + 1}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15195	$x^2y'' + xy' - y = \sqrt{x}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
15196	$x^2y'' + xy' - 9y = 12x^3$	[[_2nd_order, _with_linear_symmetries]]	✓
15197	$x^2y'' - 3xy' + 4y = x^2$	[[_2nd_order, _with_linear_symmetries]]	✓
15198	$x^2y'' + 5xy' + 4y = \ln(x)$	[[_2nd_order, _with_linear_symmetries]]	✓
15199	$x^2y'' - 2y = \frac{1}{-2 + x}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
15200	$xy'' - y' - 4x^3y = x^3e^{x^2}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15201	$xy'' + (2x + 2)y' + 2y = 8e^{2x}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
15202	$(x + 1)y'' + xy' - y = (x + 1)^2$	[[_2nd_order, _with_linear_symmetries]]	✓
15203	$x^2y'' - 2xy' - 4y = \frac{10}{x}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
15204	$y'' - y' - 6y = 12e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓
15211	$y'' + 36y = 0$	[[_2nd_order, _missing_x]]	✓

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#	ODE	CAS classification	Solved?
15212	$y'' - 12y' + 36y = 0$	[[_2nd_order, _missing_x]]	✓
15213	$x^2y'' + xy' - 9y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, ' _with_symme- try_[0,F(x)]']]	✓
15214	$y'' - 36y = 0$	[[_2nd_order, _missing_x]]	✓
15215	$y'' - 9y' + 14y = 0$	[[_2nd_order, _missing_x]]	✓
15216	$x^2y'' - 7xy' + 16y = 0$	[[_Emden, _Fowler]]	✓
15217	$2xy'' + y' = \sqrt{x}$	[[_2nd_order, _missing_y]]	✓
15219	$y'' + 6y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓
15220	$y'' + 3y = 0$	[[_2nd_order, _missing_x]]	✓
15221	$x^2y'' + 7xy' + 9y = 0$	[[_Emden, _Fowler]]	✓
15222	$x^2y'' + \frac{5y}{2} = 0$	[[_Emden, _Fowler]]	✓
15224	$x^2y'' - 6y = 0$	[[_Emden, _Fowler]]	✓
15225	$y'' - 6y' + 25y = 0$	[[_2nd_order, _missing_x]]	✓
15227	$x^2y'' + xy' + 9y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, ' _with_symme- try_[0,F(x)]']]	✓
15228	$y'' - 8y' + 25y = 0$	[[_2nd_order, _missing_x]]	✓
15229	$x^2y'' + 2xy' - 30y = 0$	[[_Emden, _Fowler]]	✓
15230	$y'' + y' - 30y = 0$	[[_2nd_order, _missing_x]]	✓
15231	$16y'' - 8y' + y = 0$	[[_2nd_order, _missing_x]]	✓
15232	$4x^2y'' + 8xy' + y = 0$	[[_Emden, _Fowler]]	✓
15234	$2x^2y'' - 3xy' + 2y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, ' _with_symme- try_[0,F(x)]']]	✓
15235	$9x^2y'' + 3xy' + y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, ' _with_symme- try_[0,F(x)]']]	✓
15237	$2y'' - 7y' + 3 = 0$	[[_2nd_order, _missing_x]]	✓
15238	$y'' + 20y' + 100y = 0$	[[_2nd_order, _missing_x]]	✓

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#	ODE	CAS classification	Solved?
15239	$xy'' = 3y'$	[[_2nd_order, _missing_y]]	✓
15240	$y'' - 5y' = 0$	[[_2nd_order, _missing_x]]	✓
15241	$y'' - 9y' + 14y = 98x^2$	[[_2nd_order, _with_linear_symmetries]]	✓
15242	$y'' - 12y' + 36y = 25 \sin(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15243	$y'' - 9y' + 14y = 576x^2e^{-x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15244	$y'' - 12y' + 36y = 81e^{3x}$	[[_2nd_order, _with_linear_symmetries]]	✓
15245	$x^2y'' + xy' - 9y = 3\sqrt{x}$	[[_2nd_order, _with_linear_symmetries]]	✓
15246	$y'' - 12y' + 36y = 3xe^{6x} - 2e^{6x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15247	$y'' + 36y = 6 \sec(6x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15248	$x^2y'' + 2xy' - 6y = 18 \ln(x)$	[[_2nd_order, _with_linear_symmetries]]	✓
15249	$y'' + 6y' + 9y = 10e^{-3x}$	[[_2nd_order, _with_linear_symmetries]]	✓
15250	$2x^2y'' - xy' - 2y = 10x^2$	[[_2nd_order, _with_linear_symmetries]]	✓
15251	$y'' + 6y' + 9y = 2 \cos(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15253	$x^2y'' + 3xy' + 2y = 6$	[[_2nd_order, _with_linear_symmetries]]	✓
15254	$x^2y'' + xy' - y = \frac{1}{x^2 + 1}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
15255	$4y'' - 12y' + 9y = xe^{\frac{3x}{2}}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15256	$3y'' + 8y' - 3y = 123x \sin(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15259	$x^2y'' + 3xy' + y = \frac{1}{(x+1)^2}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
15260	$x^2y'' + 3xy' + y = \frac{1}{x}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
15457	$y'' + y' - 2y = x^3$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
15461	$t^2y'' + ty' + 2y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)']]	✓
15469	$y'' - y' - 12y = 0$	[[_2nd_order, _missing_x]]	✓
15470	$y'' + 9y' = 0$	[[_2nd_order, _missing_x]]	✓
15471	$x'' + 2x' - 10x = 0$	[[_2nd_order, _missing_x]]	✓
15472	$x'' + x = t \cos(t) - \cos(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15473	$y'' - 12y' + 40y = 0$	[[_2nd_order, _missing_x]]	✓
15476	$x^2y'' - 12xy' + 42y = 0$	[[_Emden, _Fowler]]	✓
15477	$t^2y'' + 3ty' + 5y = 0$	[[_Emden, _Fowler]]	✓
15498	$y'' - y' - 12y = 0$	[[_2nd_order, _missing_x]]	✓
15499	$y'' + 9y' = 0$	[[_2nd_order, _missing_x]]	✓
15502	$t^2y'' - 12ty' + 42y = 0$	[[_Emden, _Fowler]]	✓
15511	$16y'' + 24y' + 153y = 0$	[[_2nd_order, _missing_x]]	✓
15520	$y'' + 4y' - 5y = 0$	[[_2nd_order, _missing_x]]	✓
15521	$y'' - 6y' + 45y = 0$	[[_2nd_order, _missing_x]]	✓
15522	$x^2y'' - xy' - 16y = 0$	[[_Emden, _Fowler]]	✓
15523	$x^2y'' + 3xy' + 2y = 0$	[[_Emden, _Fowler]]	✓
15524	$y'' + 2y' + 2y = x$	[[_2nd_order, _with_linear_symmetries]]	✓
15525	$y'' - 7y' + 12y = 2$	[[_2nd_order, _missing_x]]	✓
15533	$y'' + 4y = t$	[[_2nd_order, _with_linear_symmetries]]	✓
15534	$x^2y'' + 5xy' + 4y = 0$	[[_Emden, _Fowler]]	✓
15677	$y'' - \frac{y'}{t} + \frac{y}{t^2} = \frac{1}{t}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
15853	$y'' - y = 0$	[[_2nd_order, _missing_x]]	✓
15854	$y'' + 2y' + y = 0$	[[_2nd_order, _missing_x]]	✓

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#	ODE	CAS classification	Solved?
15855	$2t^2y'' - 3ty' - 3y = 0$	[[_Emden, _Fowler]]	✓
15856	$y'' + 9y = 0$	[[_2nd_order, _missing_x]]	✓
15857	$y'' - y' - 2y = 0$	[[_2nd_order, _missing_x]]	✓
15858	$y'' + 9y = 0$	[[_2nd_order, _missing_x]]	✓
15859	$3t^2y'' - 5ty' - 3y = 0$	[[_Emden, _Fowler]]	✓
15860	$t^2y'' + 7ty' - 7y = 0$	[[_Emden, _Fowler]]	✓
15861	$y'' + y = 2 \cos(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15862	$y'' + 10y' + 24y = 0$	[[_2nd_order, _missing_x]]	✓
15863	$y'' + 16y = 0$	[[_2nd_order, _missing_x]]	✓
15864	$y'' + 6y' + 18y = 0$	[[_2nd_order, _missing_x]]	✓
15865	$t^2y'' + ty' - y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
15876	$ay'' + by' + cy = 0$	[[_2nd_order, _missing_x]]	✓
15877	$t^2y'' + aty' + by = 0$	[[_Emden, _Fowler]]	✓
15882	$y'' = 0$	[[_2nd_order, _quadrature]]	✓
15883	$y'' - 4y' - 12y = 0$	[[_2nd_order, _missing_x]]	✓
15884	$y'' + y' = 0$	[[_2nd_order, _missing_x]]	✓
15885	$y'' + 3y' - 4y = 0$	[[_2nd_order, _missing_x]]	✓
15886	$y'' + 8y' + 12y = 0$	[[_2nd_order, _missing_x]]	✓
15887	$y'' + 5y' + y = 0$	[[_2nd_order, _missing_x]]	✓
15888	$8y'' + 6y' + y = 0$	[[_2nd_order, _missing_x]]	✓
15889	$4y'' + 9y = 0$	[[_2nd_order, _missing_x]]	✓
15890	$y'' + 16y = 0$	[[_2nd_order, _missing_x]]	✓
15891	$y'' + 8y = 0$	[[_2nd_order, _missing_x]]	✓
15892	$y'' + 7y = 0$	[[_2nd_order, _missing_x]]	✓
15893	$4y'' + 21y' + 5y = 0$	[[_2nd_order, _missing_x]]	✓
15894	$7y'' + 4y' - 3y = 0$	[[_2nd_order, _missing_x]]	✓

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#	ODE	CAS classification	Solved?
15895	$4y'' + 4y' + y = 0$	[[_2nd_order, _missing_x]]	✓
15896	$y'' - 6y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓
15897	$y'' - y' = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
15898	$3y'' - y' = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
15899	$y'' + y' - 12y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
15900	$y'' - 7y' + 12y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
15901	$2y'' - 7y' - 4y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
15902	$y'' - 7y' + 10y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
15903	$y'' + 36y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
15904	$y'' + 100y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
15905	$y'' - 2y' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
15906	$y'' + 4y' + 4y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
15907	$y'' + 2y' + 5y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
15908	$y'' + 4y' + 20y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
15909	$y'' + y' - y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
15910	$y'' + y' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
15911	$y'' - y' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
15912	$y'' - y' - y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
15913	$6y'' + 5y' + y = 0$	[[_2nd_order, _missing_x]]	✓
15914	$9y'' + 6y' + y = 0$	[[_2nd_order, _missing_x]]	✓
15915	$y'' + 4y' + 20y = 0$	[[_2nd_order, _missing_x]]	✓

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#	ODE	CAS classification	Solved?
15916	$3t^2y'' - 2ty' + 2y = 0$	[[_Emden, _Fowler]]	✓
15917	$t^2y'' - ty' + y = 0$	[[_Emden, _Fowler]]	✓
15918	$ay'' + 2by' + cy = 0$	[[_2nd_order, _missing_x]]	✓
15919	$y'' + 6y' + 2y = 0$	[[_2nd_order, _missing_x]]	✓
15920	$y'' - 5y' + 6y = 0$	[[_2nd_order, _missing_x]]	✓
15921	$y'' - 6y' - 16y = 0$	[[_2nd_order, _missing_x]]	✓
15922	$y'' - 16y = 0$	[[_2nd_order, _missing_x]]	✓
15926	$y'' + 4y' + 3y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
15927	$y'' + y = 8e^{2t}$	[[_2nd_order, _with_linear_symmetries]]	✓
15928	$y'' - 4y' + 3y = -e^{-9t}$	[[_2nd_order, _with_linear_symmetries]]	✓
15929	$y'' - 4y' + 3y = 2e^{3t}$	[[_2nd_order, _with_linear_symmetries]]	✓
15930	$y'' - y = 2t - 4$	[[_2nd_order, _with_linear_symmetries]]	✓
15931	$y'' - 2y' + y = t^2$	[[_2nd_order, _with_linear_symmetries]]	✓
15932	$y'' + 2y' = 3 - 4t$	[[_2nd_order, _missing_y]]	✓
15933	$y'' + y = \cos(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15934	$y'' + 4y = 4\cos(t) - \sin(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15935	$y'' + 4y = \cos(2t) + t$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15936	$y'' + 4y = 3te^{-t}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15937	$y'' = 3t^4 - 2t$	[[_2nd_order, _quadrature]]	✓
15938	$y'' - 4y' + 13y = 2te^{-2t}\sin(3t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15939	$y'' + y' - 2y = -1$	[[_2nd_order, _missing_x]]	✓
15940	$5y'' + y' - 4y = -3$	[[_2nd_order, _missing_x]]	✓
15941	$y'' - 2y' - 8y = 32t$	[[_2nd_order, _with_linear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
15942	$16y'' - 8y' - 15y = 75t$	[[_2nd_order, _with_linear_symmetries]]	✓
15943	$y'' + 2y' + 26y = -338t$	[[_2nd_order, _with_linear_symmetries]]	✓
15944	$y'' + 3y' - 4y = -32t^2$	[[_2nd_order, _with_linear_symmetries]]	✓
15945	$8y'' + 6y' + y = 5t^2$	[[_2nd_order, _with_linear_symmetries]]	✓
15946	$y'' - 6y' + 8y = -256t^3$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15947	$y'' - 2y' = 52 \sin(3t)$	[[_2nd_order, _missing_y]]	✓
15948	$y'' - 6y' + 13y = 25 \sin(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15949	$y'' - 9y = 54t \sin(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15950	$y'' - 5y' + 6y = -78 \cos(3t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15951	$y'' + 4y' + 4y = -32t^2 \cos(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15952	$y'' - y' - 20y = -2e^t$	[[_2nd_order, _with_linear_symmetries]]	✓
15953	$y'' - 4y' - 5y = -648t^2e^{5t}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15954	$y'' - 7y' + 12y = -2t^3e^{4t}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15955	$y'' + 4y' = 8e^{4t} - 4e^{-4t}$	[[_2nd_order, _missing_y]]	✓
15956	$y'' - 3y' = t^2 - e^{3t}$	[[_2nd_order, _missing_y]]	✓
15957	$y'' + 4y' = -24t - 6 - 4te^{-4t} + e^{-4t}$	[[_2nd_order, _missing_y]]	✓
15958	$y'' - 3y' = t^2 - e^{3t}$	[[_2nd_order, _missing_y]]	✓
15959	$y'' = t^2 + e^t + \sin(t)$	[[_2nd_order, _quadrature]]	✓
15960	$y'' + 3y' = 18$	[[_2nd_order, _missing_x]]	✓
15961	$y'' - y = 4$	[[_2nd_order, _missing_x]]	✓
15963	$y'' + 2y' - 3y = -2$	[[_2nd_order, _missing_x]]	✓

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#	ODE	CAS classification	Solved?
15965	$y'' + 8y' + 16y = 4$ i.c.	[[_2nd_order, _missing_x]]	✓
15966	$y'' + 7y' + 10y = te^{-t}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15968	$y'' - 3y' = -e^{3t} - 2t$ i.c.	[[_2nd_order, _missing_y]]	✓
15969	$y'' - y' = -3t - 4t^2e^{2t}$ i.c.	[[_2nd_order, _missing_y]]	✓
15970	$y'' - 2y' = 2t^2$ i.c.	[[_2nd_order, _missing_y]]	✓
15971	$y'' + 4y' = -24t - 6 - 4te^{-4t} + e^{-4t}$ i.c.	[[_2nd_order, _missing_y]]	✓
15972	$y'' - 3y' = e^{-3t} - e^{3t}$ i.c.	[[_2nd_order, _missing_y]]	✓
15973	$y'' + 9y = \begin{cases} 2t & 0 \leq t < \pi \\ 0 & \pi \leq t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15975	$y'' + 4y = \begin{cases} 0 & 0 \leq t < \pi \\ 10 & \pi \leq t < 2\pi \\ 0 & 2\pi \leq t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15982	$x'' + 9x = \sin(3t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15984	$y'' + 4y = 1$	[[_2nd_order, _missing_x]]	✓
15985	$y'' + 16y' = t$	[[_2nd_order, _missing_y]]	✓
15986	$y'' - 7y' + 10y = e^{3t}$	[[_2nd_order, _with_linear_symmetries]]	✓
15987	$y'' + 16y = 2\cos(4t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15988	$y'' + 4y' + 20y = 2te^{-2t}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15989	$y'' + \frac{y}{4} = \sec\left(\frac{t}{2}\right) + \csc\left(\frac{t}{2}\right)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15990	$y'' + 16y = \csc(4t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15991	$y'' + 16y = \cot(4t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15992	$y'' + 2y' + 50y = e^{-t}\csc(7t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
15993	$y'' + 6y' + 25y = e^{-3t}(\sec(4t) + \csc(4t))$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15994	$y'' - 2y' + 26y = e^t(\sec(5t) + \csc(5t))$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15995	$y'' + 12y' + 37y = e^{-6t} \csc(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15996	$y'' - 6y' + 34y = e^{3t} \tan(5t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15997	$y'' - 10y' + 34y = e^{5t} \cot(3t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15998	$y'' - 12y' + 37y = e^{6t} \sec(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15999	$y'' - 8y' + 17y = e^{4t} \sec(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16000	$y'' - 9y = \frac{1}{1 + e^{3t}}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16001	$y'' - 25y = \frac{1}{1 - e^{5t}}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16002	$y'' - y = 2 \sinh(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16003	$y'' - 2y' + y = \frac{e^t}{t}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16004	$y'' - 4y' + 4y = \frac{e^{2t}}{t^2}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16005	$y'' + 8y' + 16y = \frac{e^{-4t}}{t^4}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16006	$y'' + 6y' + 9y = \frac{e^{-3t}}{t}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16007	$y'' + 6y' + 9y = e^{-3t} \ln(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16008	$y'' + 3y' + 2y = \cos(e^t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16009	$y'' + 4y' + 4y = e^{-2t} \sqrt{-t^2 + 1}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16010	$y'' - 2y' + y = e^t \sqrt{-t^2 + 1}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
16011	$y'' - 10y' + 25y = e^{5t} \ln(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16012	$y'' - 4y' + 4y = e^{2t} \arctan(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16013	$y'' + 8y' + 16y = \frac{e^{-4t}}{t^2 + 1}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16014	$y'' + y = \sec\left(\frac{t}{2}\right) + \csc\left(\frac{t}{2}\right)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16015	$y'' + 9y = \tan(3t)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16016	$y'' + 9y = \sec(3t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16017	$y'' + 9y = \tan(3t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16018	$y'' + 4y = \tan(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16019	$y'' + 16y = \tan(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16020	$y'' + 4y = \tan(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16021	$y'' + 9y = \sec(3t) \tan(3t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16022	$y'' + 4y = \sec(2t) \tan(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16026	$y'' + y = \tan(t)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
	<i>i.c.</i>		
16029	$y'' + 4y' + 3y = 65 \cos(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16030	$t^2 y'' + 3ty' + y = \ln(t)$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
16031	$t^2 y'' + ty' + 4y = t$	[[_2nd_order, _with_linear_symmetries]]	✓
16032	$t^2 y'' - 4ty' - 6y = 2 \ln(t)$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
16033	$4y'' + 4y' + y = e^{-\frac{t}{2}}$	[[_2nd_order, _with_linear_symmetries]]	✓
	<i>i.c.</i>		
16036	$t^2 y'' - 4ty' + (t^2 + 6)y = t^3 + 2t$	[[_2nd_order, _with_linear_symmetries]]	✓
	<i>i.c.</i>		

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#	ODE	CAS classification	Solved?
16040	$4t^2y'' + 4ty' + (16t^2 - 1)y = 16t^{3/2}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16116	$4x^2y'' - 8xy' + 5y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]]]	✓
16117	$3x^2y'' - 4xy' + 2y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]]]	✓
16118	$2x^2y'' - 8xy' + 8y = 0$	[[_Emden, _Fowler]]	✓
16119	$2x^2y'' - 7xy' + 7y = 0$	[[_Emden, _Fowler]]	✓
16120	$4x^2y'' + 17y = 0$	[[_Emden, _Fowler]]	✓
16121	$9x^2y'' - 9xy' + 10y = 0$	[[_Emden, _Fowler]]	✓
16122	$2x^2y'' - 2xy' + 20y = 0$	[[_Emden, _Fowler]]	✓
16123	$x^2y'' - 5xy' + 10y = 0$	[[_Emden, _Fowler]]	✓
16124	$4x^2y'' + 8xy' + y = 0$	[[_Emden, _Fowler]]	✓
16125	$4x^2y'' + y = 0$	[[_Emden, _Fowler]]	✓
16126	$x^2y'' - 5xy' + 9y = 0$	[[_Emden, _Fowler]]	✓
16127	$x^2y'' + 7xy' + 9y = 0$	[[_Emden, _Fowler]]	✓
16136	$x^2y'' + 5xy' + 4y = \frac{1}{x^5}$	[[_2nd_order, _with_linear_symmetries]]	✓
16137	$x^2y'' - 5xy' + 9y = x^3$	[[_2nd_order, _with_linear_symmetries]]	✓
16138	$x^2y'' + xy' + y = \frac{1}{x^2}$	[[_2nd_order, _with_linear_symmetries]]	✓
16139	$x^2y'' + xy' + 4y = \frac{1}{x^2}$	[[_2nd_order, _with_linear_symmetries]]	✓
16140	$x^2y'' + 2xy' - 6y = 2x$	[[_2nd_order, _with_linear_symmetries]]	✓
16141	$x^2y'' + xy' - 16y = \ln(x)$	[[_2nd_order, _with_linear_symmetries]]	✓
16142	$x^2y'' + xy' + 4y = 8$	[[_2nd_order, _with_linear_symmetries]]	✓
16143	$x^2y'' + xy' + 36y = x^2$	[[_2nd_order, _with_linear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
16146	$3x^2y'' - 4xy' + 2y = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
16147	$2x^2y'' - 7xy' + 7y = 0$ i.c.	[[_Emden, _Fowler]]	✓
16148	$x^2y'' + xy' + 4y = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
16149	$x^2y'' + xy' + 2y = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
16154	$2x^2y'' + 3xy' - y = \frac{1}{x^2}$ i.c.	[[_2nd_order, _exact, _lin- ear, _nonhomogeneous]]	✓
16155	$x^2y'' + 4xy' + 2y = \ln(x)$ i.c.	[[_2nd_order, _exact, _lin- ear, _nonhomogeneous]]	✓
16156	$4x^2y'' + y = x^3$ i.c.	[[_2nd_order, _with_lin- ear_symmetries]]	✓
16157	$9x^2y'' + 27xy' + 10y = \frac{1}{x}$ i.c.	[[_2nd_order, _with_lin- ear_symmetries]]	✓
16158	$x^2y'' - xy' + 2y = 0$	[[_Emden, _Fowler]]	✓
16159	$x^2y'' + 4xy' + 2y = 0$	[[_2nd_order, _exact, _lin- ear, _homogeneous]]	✓
16160	$x^2y'' + xy' + y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
16165	$(x^2 + 1)^2 y'' + 2x(x^2 + 1) y' + 4y = 0$	[[_2nd_order, _with_lin- ear_symmetries], [_2nd_or- der, _linear, '_with_sym- metry_[0,F(x)]']]	✓
16166	$(x^2 + 1)^2 y'' + 2x(x^2 + 1) y' + 4y = \arctan(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16167	$(x^2 + 1)^2 y'' + 2x(x^2 + 1) y' + 4y = 0$ i.c.	[[_2nd_order, _with_lin- ear_symmetries], [_2nd_or- der, _linear, '_with_sym- metry_[0,F(x)]']]	✓

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#	ODE	CAS classification	Solved?
16168	$(x^2 + 1)^2 y'' + 2x(x^2 + 1)y' + 4y = \arctan(x)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16169	$(x^4 - 1)y'' + (x^3 - x)y' + (x^2 - 1)y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
16170	$(x^4 - 1)y'' + (x^3 - x)y' + (4x^2 - 4)y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
16172	$x^2 y'' + 4xy' + 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
16173	$x^2 y'' + xy' + y = x^2$	[[_2nd_order, _with_linear_symmetries]]	✓
16174	$x^2 y'' + xy' + 4y = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
16175	$x^2 y'' - xy' + y = 0$ i.c.	[[_Emden, _Fowler]]	✓
16182	$6x^2 y'' + 5xy' - y = 0$ i.c.	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
16234	$y'' - 7y' + 10y = 0$	[[_2nd_order, _missing_x]]	✓
16235	$y'' - y' - 2y = 0$	[[_2nd_order, _missing_x]]	✓
16236	$y'' - 2y' + 2y = 0$	[[_2nd_order, _missing_x]]	✓
16239	$y'' + 7y' + 10y = 0$	[[_2nd_order, _missing_x]]	✓
16240	$6y'' + 5y' - 4y = 0$	[[_2nd_order, _missing_x]]	✓
16241	$y'' + 2y' + y = 0$	[[_2nd_order, _missing_x]]	✓
16242	$y'' + 3y' + 2y = 0$	[[_2nd_order, _missing_x]]	✓
16243	$y'' - 10y' + 34y = 0$	[[_2nd_order, _missing_x]]	✓
16244	$2y'' - 5y' + 2y = 0$	[[_2nd_order, _missing_x]]	✓
16245	$15y'' - 11y' + 2y = 0$	[[_2nd_order, _missing_x]]	✓
16246	$20y'' + y' - y = 0$	[[_2nd_order, _missing_x]]	✓
16247	$12y'' + 8y' + y = 0$	[[_2nd_order, _missing_x]]	✓

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Table 2.50 second order adjoint  
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#	ODE	CAS classification	Solved?
16251	$y'' - 2y' - 8y = -t$	[[_2nd_order, _with_linear_symmetries]]	✓
16252	$y'' + 5y' = 5t^2$	[[_2nd_order, _missing_y]]	✓
16253	$y'' - 4y' = -3 \sin(t)$	[[_2nd_order, _missing_y]]	✓
16254	$y'' + 2y' + 5y = 3 \sin(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16255	$y'' - 9y = \frac{1}{1 + e^{3t}}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16256	$y'' - 2y' = \frac{1}{1 + e^{2t}}$	[[_2nd_order, _missing_y]]	✓
16257	$y'' - 3y' + 2y = -4e^{-2t}$	[[_2nd_order, _with_linear_symmetries]]	✓
16258	$y'' - 6y' + 13y = 3e^{-2t}$	[[_2nd_order, _with_linear_symmetries]]	✓
16259	$y'' + 9y' + 20y = -2te^t$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16260	$y'' + 7y' + 12y = 3t^2e^{-4t}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16265	$y'' + 5y' + 6y = 0$	[[_2nd_order, _missing_x]]	✓
i.c.			
16266	$y'' + 10y' + 16y = 0$	[[_2nd_order, _missing_x]]	✓
i.c.			
16267	$y'' + 16y = 0$	[[_2nd_order, _missing_x]]	✓
i.c.			
16268	$y'' + 25y = 0$	[[_2nd_order, _missing_x]]	✓
i.c.			
16270	$y'' + 3y' - 4y = e^t$	[[_2nd_order, _with_linear_symmetries]]	✓
i.c.			
16271	$y'' + 9y = \sin(3t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
i.c.			
16272	$y'' + y = \cos(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
i.c.			
16273	$y'' + 4y = \tan(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16274	$y'' + y = \csc(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16275	$y'' - 8y' + 16y = \frac{e^{4t}}{t^3}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
16276	$y'' - 8y' + 16y = \frac{e^{4t}}{t^3}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16277	$y'' - 2y' + y = e^t \ln(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16278 i.c.	$y'' - 2y' + y = e^t \ln(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16279	$y'' - 2ty' + t^2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
16280	$y'' + 3y' - 4y = 0$	[[_2nd_order, _missing_x]]	✓
16281	$y'' + 4y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
16282	$t^2y'' - 5ty' + 5y = 0$	[[_Emden, _Fowler]]	✓
16283	$x^2y'' + 7xy' + 8y = 0$	[[_Emden, _Fowler]]	✓
16284	$x^2y'' - 4xy' + 6y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]]']]	✓
16285	$x^2y'' + xy' + y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]]']]	✓
16286 i.c.	$2x^2y'' + 5xy' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
16287	$5x^2y'' - xy' + 2y = 0$	[[_Emden, _Fowler]]	✓
16288	$x^2y'' - 7xy' + 25y = 0$	[[_Emden, _Fowler]]	✓
16289	$x^2y'' - 7xy' + 15y = 8x$	[[_2nd_order, _with_linear_symmetries]]	✓
16299 i.c.	$4x'' + 9x = 0$	[[_2nd_order, _missing_x]]	✓
16300 i.c.	$9x'' + 4x = 0$	[[_2nd_order, _missing_x]]	✓
16301 i.c.	$x'' + 64x = 0$	[[_2nd_order, _missing_x]]	✓
16302 i.c.	$x'' + 100x = 0$	[[_2nd_order, _missing_x]]	✓
16303 i.c.	$x'' + x = 0$	[[_2nd_order, _missing_x]]	✓
16304 i.c.	$x'' + 4x = 0$	[[_2nd_order, _missing_x]]	✓

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#	ODE	CAS classification	Solved?
16305	$x'' + 16x = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
16306	$x'' + 256x = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
16307	$x'' + 9x = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
16308	$10x'' + \frac{x}{10} = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
16309	$x'' + 4x' + 3x = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
16310	$\frac{x''}{32} + 2x' + x = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
16311	$\frac{x''}{4} + 2x' + x = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
16312	$4x'' + 2x' + 8x = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
16313	$x'' + 4x' + 13x = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
16314	$x'' + 4x' + 20x = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
16319	$x'' + x = \cos(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16320	$x'' + x = \cos(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16321	$x'' + x = \cos\left(\frac{9t}{10}\right)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16322	$x'' + x = \cos\left(\frac{7t}{10}\right)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16336	$x'' - 3x' + 4x = 0$	[[_2nd_order, _missing_x]]	✓
16337	$x'' + 6x' + 9x = 0$	[[_2nd_order, _missing_x]]	✓
16338	$x'' + 16x = t \sin(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16339	$x'' + x = e^t$	[[_2nd_order, _with_linear_symmetries]]	✓
16582	$y'' + y = 2 \cos(x) + 2 \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
16585	$(x - 1)y'' = 1$	[[_2nd_order, _quadrature]]	✓
16587	$y'' + y = 0$	[[_2nd_order, _missing_x]]	✓
16588	$y'' - 3y' + 2y = 2$	[[_2nd_order, _missing_x]]	✓
16593	$y''(x + 2)^5 = 1$	[[_2nd_order, _quadrature]]	✓
16594	$y'' = xe^x$	[[_2nd_order, _quadrature]]	✓
16595	$y'' = 2x \ln(x)$	[[_2nd_order, _quadrature]]	✓
16596	$xy'' = y'$	[[_2nd_order, _missing_y]]	✓
16597	$xy'' + y' = 0$	[[_2nd_order, _missing_y]]	✓
16598	$xy'' = (2x^2 + 1)y'$	[[_2nd_order, _missing_y]]	✓
16599	$xy'' = y' + x^2$	[[_2nd_order, _missing_y]]	✓
16600	$x \ln(x)y'' = y'$	[[_2nd_order, _missing_y]]	✓
16628	$y'' - y = 0$	[[_2nd_order, _missing_x]]	✓
16629	$3y'' - 2y' - 8y = 0$	[[_2nd_order, _missing_x]]	✓
16631	$y'' + 2y' + y = 0$	[[_2nd_order, _missing_x]]	✓
16632	$y'' - 4y' + 3y = 0$	[[_2nd_order, _missing_x]]	✓
16634	$y'' - 2y' - 2y = 0$	[[_2nd_order, _missing_x]]	✓
16636	$4y'' - 8y' + 5y = 0$	[[_2nd_order, _missing_x]]	✓
16640	$y'' - 2y' + 3y = 0$	[[_2nd_order, _missing_x]]	✓
16650	$y'' + 3y' = 3$	[[_2nd_order, _missing_x]]	✓
16651	$y'' - 7y' = (x - 1)^2$	[[_2nd_order, _missing_y]]	✓
16652	$y'' + 3y' = e^x$	[[_2nd_order, _missing_y]]	✓
16653	$y'' + 7y' = e^{-7x}$	[[_2nd_order, _missing_y]]	✓
16654	$y'' - 8y' + 16y = (1 - x)e^{4x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16655	$y'' - 10y' + 25y = e^{5x}$	[[_2nd_order, _with_linear_symmetries]]	✓
16656	$4y'' - 3y' = xe^{\frac{3x}{4}}$	[[_2nd_order, _missing_y]]	✓

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#	ODE	CAS classification	Solved?
16657	$y'' - 4y' = xe^{4x}$	[[_2nd_order, _missing_y]]	✓
16658	$y'' + 25y = \cos(5x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16659	$y'' + y = \sin(x) - \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16660	$y'' + 16y = \sin(4x + \alpha)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16661	$y'' + 4y' + 8y = e^{2x}(\sin(2x) + \cos(2x))$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16662	$y'' - 4y' + 8y = e^{2x}(\sin(2x) - \cos(2x))$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16663	$y'' + 6y' + 13y = e^{-3x} \cos(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16664	$y'' + k^2y = k \sin(kx + \alpha)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16665	$y'' + k^2y = k$	[[_2nd_order, _missing_x]]	✓
16686	$y'' + 2y' + y = -2$	[[_2nd_order, _missing_x]]	✓
16687	$y'' + 2y' = -2$	[[_2nd_order, _missing_x]]	✓
16688	$y'' + 9y = 9$	[[_2nd_order, _missing_x]]	✓
16694	$y'' - 4y' + 4y = x^2$	[[_2nd_order, _with_linear_symmetries]]	✓
16695	$y'' + 8y' = 8x$	[[_2nd_order, _missing_y]]	✓
16696	$y'' - 2ky' + k^2y = e^x$	[[_2nd_order, _with_linear_symmetries]]	✓
16697	$y'' + 4y' + 4y = 8e^{-2x}$	[[_2nd_order, _with_linear_symmetries]]	✓
16698	$y'' + 4y' + 3y = 9e^{-3x}$	[[_2nd_order, _with_linear_symmetries]]	✓
16699	$7y'' - y' = 14x$	[[_2nd_order, _missing_y]]	✓
16700	$y'' + 3y' = 3xe^{-3x}$	[[_2nd_order, _missing_y]]	✓
16701	$y'' + 5y' + 6y = 10(1-x)e^{-2x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16702	$y'' + 2y' + 2y = x + 1$	[[_2nd_order, _with_linear_symmetries]]	✓
16703	$y'' + y' + y = (x^2 + x)e^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
16704	$y'' + 4y' - 2y = 8 \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16705	$y'' + y = 4x \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16706	$y'' - 2my' + m^2y = \sin(nx)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16707	$y'' + 2y' + 5y = e^{-x} \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16708	$y'' + a^2y = 2 \cos(mx) + 3 \sin(mx)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16709	$y'' - y' = e^x \sin(x)$	[[_2nd_order, _missing_y]]	✓
16710	$y'' + 2y' = 4e^x(\cos(x) + \sin(x))$	[[_2nd_order, _missing_y]]	✓
16711	$y'' + 4y' + 5y = 10e^{-2x} \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16712	$4y'' + 8y' = x \sin(x)$	[[_2nd_order, _missing_y]]	✓
16713	$y'' - 3y' + 2y = xe^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16714	$y'' + y' - 2y = x^2e^{4x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16715	$y'' - 3y' + 2y = (x^2 + x)e^{3x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16718	$y'' - 2y' + y = x^3$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16720	$y'' + y = x^2 \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16721	$y'' + 2y' + y = x^2e^{-x} \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16725	$y'' - 4y' + 5y = e^{2x}(\sin(x) + 2 \cos(x))$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16726	$y'' - y' - 2y = e^x + e^{-2x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16727	$y'' + 4y' = x + e^{-4x}$	[[_2nd_order, _missing_y]]	✓
16728	$y'' - y = x + \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16729	$y'' - 2y' + 2y = (\sin(x) + 1)e^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16732	$y'' + 4y = \sin(x) \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
16733	$y'' - 4y' = 2 \cos(4x)^2$	[[_2nd_order, _missing_y]]	✓
16734	$y'' - y' - 2y = 4x - 2e^x$	[[_2nd_order, _with_linear_symmetries]]	✓
16735	$y'' - 3y' = 18x - 10 \cos(x)$	[[_2nd_order, _missing_y]]	✓
16736	$y'' - 2y' + y = 2 + e^x \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16737	$y'' + 2y' + 2y = (5x + 4)e^x + e^{-x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16738	$y'' + 2y' + 5y = 4e^{-x} + 17 \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16739	$2y'' - 3y' - 2y = 5e^x \cosh(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16740	$y'' + 4y = x \sin(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16742	$y'' + y' = \cos(x)^2 + e^x + x^2$	[[_2nd_order, _missing_y]]	✓
16744	$y'' - 2y' + 5y = 10 \sin(x) + 17 \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16745	$y'' + y' = x^2 - e^{-x} + e^x$	[[_2nd_order, _missing_y]]	✓
16746	$y'' - 2y' - 3y = 2x + e^{-x} - 2e^{3x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16747	$y'' + 4y = e^x + 4 \sin(2x) + 2 \cos(x)^2 - 1$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16748	$y'' + 3y' + 2y = 6xe^{-x}(1 - e^{-x})$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16749	$y'' + y = \cos(2x)^2 + \sin\left(\frac{x}{2}\right)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16750	$y'' - 4y' + 5y = 1 + 8 \cos(x) + e^{2x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16751	$y'' - 2y' + 2y = e^x \sin\left(\frac{x}{2}\right)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16752	$y'' - 3y' = 1 + e^x + \cos(x) + \sin(x)$	[[_2nd_order, _missing_y]]	✓
16753	$y'' - 2y' + 5y = e^x(1 - 2 \sin(x)^2) + 10x + 1$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16754	$y'' - 4y' + 4y = 4x + \sin(x) + \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16755	$y'' + 2y' + y = 1 + 2 \cos(x) + \cos(2x) - \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
16756	$y'' + y' + y + 1 = \sin(x) + x + x^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16757	$y'' + 6y' + 9y = 18e^{-3x} + 8\sin(x) + 6\cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16758	$y'' + 2y' + 1 = 3\sin(2x) + \cos(x)$	[[_2nd_order, _missing_y]]	✓
16760	$y'' + y = 2\sin(x)\sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16765 i.c.	$y'' + y = 2 - 2x$	[[_2nd_order, _with_linear_symmetries]]	✓
16766 i.c.	$y'' - 6y' + 9y = 9x^2 - 12x + 2$	[[_2nd_order, _with_linear_symmetries]]	✓
16767 i.c.	$y'' + 9y = 36e^{3x}$	[[_2nd_order, _with_linear_symmetries]]	✓
16768 i.c.	$y'' - 4y' + 4y = 2e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓
16769 i.c.	$y'' - 5y' + 6y = (12x - 7)e^{-x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16770 i.c.	$y'' + y' = e^{-x}$	[[_2nd_order, _missing_y]]	✓
16771 i.c.	$y'' + 6y' + 9y = 10\sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16772 i.c.	$y'' + y = 2\cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16773 i.c.	$y'' + 4y = \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16774 i.c.	$y'' + y = 4x\cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16777 i.c.	$y'' - y' = -5e^{-x}(\cos(x) + \sin(x))$	[[_2nd_order, _missing_y]]	✓
16783	$y'' - 4y' + 5y = \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16784	$y'' + 2y' + 5y = 4\cos(2x) + \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16785	$y'' - y = 1$	[[_2nd_order, _missing_x]]	✓
16786	$y'' - y = -2\cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16787 i.c.	$y'' - 2y' + y = 4e^{-x}$	[[_2nd_order, _with_linear_symmetries]]	✓

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Table 2.50 second order adjoint

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#	ODE	CAS classification	Solved?
16789	$y'' - y' - 5y = 1$ i.c.	[[_2nd_order, _missing_x]]	✓
16792	$y'' - 4y' + 4y = e^{-x}(9x^2 + 5x - 12)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16793	$x^2y'' + xy' - y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
16794	$x^2y'' + 3xy' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
16795	$x^2y'' + 2xy' + 6y = 0$	[[_Emden, _Fowler]]	✓
16796	$xy'' + y' = 0$	[[_2nd_order, _missing_y]]	✓
16797	$(x + 2)^2 y'' + 3(x + 2) y' - 3y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
16798	$(2x + 1)^2 y'' - 2(2x + 1) y' + 4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
16803	$x^2y'' + xy' + y = x(6 - \ln(x))$	[[_2nd_order, _with_linear_symmetries]]	✓
16804	$x^2y'' - 2y = \sin(\ln(x))$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
16805	$x^2y'' - xy' - 3y = -\frac{16 \ln(x)}{x}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
16806	$x^2y'' - 2xy' - 2y = x^2 - 2x + 2$	[[_2nd_order, _with_linear_symmetries]]	✓
16807	$x^2y'' + xy' - y = x^m$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
16808	$x^2y'' + 4xy' + 2y = 2 \ln(x)^2 + 12x$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
16809	$(x + 1)^3 y'' + 3(x + 1)^2 y' + (x + 1) y = 6 \ln(x + 1)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16810	$(-2 + x)^2 y'' - 3(-2 + x) y' + 4y = x$	[[_2nd_order, _with_linear_symmetries]]	✓
16811	$(2x + 1) y'' + (4x - 2) y' - 8y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
16812	$(x^2 - x) y'' + (2x - 3) y' - 2y = 0$	[_Jacobi]	✓
16813	$(2x^2 + 3x) y'' - 6(x + 1) y' + 6y = 6$	[[_2nd_order, _with_linear_symmetries]]	✓
16824	$y'' + y = \frac{1}{\sin(x)}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
16825	$y'' + y' = \frac{1}{1 + e^x}$	[[_2nd_order, _missing_y]]	✓
16826	$y'' + y = \frac{1}{\cos(x)^3}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16827	$y'' + y = \frac{1}{\sqrt{\sin(x)^5 \cos(x)}}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16828	$y'' - 2y' + y = \frac{e^x}{x^2 + 1}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16829	$y'' + 2y' + 2y = \frac{e^{-x}}{\sin(x)}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16830	$y'' + y = \frac{2}{\sin(x)^3}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16831	$y'' + y' = e^{2x} \cos(e^x)$	[[_2nd_order, _missing_y]]	✓
16833	$xy'' - (2x^2 + 1)y' = 4x^3 e^{x^2}$	[[_2nd_order, _missing_y]]	✓
16834	$y'' - 2 \tan(x) y' = 1$	[[_2nd_order, _missing_y]]	✓
16835	$x \ln(x) y'' - y' = \ln(x)^2$	[[_2nd_order, _missing_y]]	✓
16836	$xy'' + (2x - 1)y' = -4x^2$	[[_2nd_order, _missing_y]]	✓
16837	$y'' + \tan(x) y' = \cos(x) \cot(x)$	[[_2nd_order, _missing_y]]	✓
16838	$4xy'' + 2y' + y = 1$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
16846	$x'' + x' + x = 0$	[[_2nd_order, _missing_x]]	✓
16847	$x'' + 2x' + 6x = 0$	[[_2nd_order, _missing_x]]	✓
16848	$x'' + 2x' + x = 0$	[[_2nd_order, _missing_x]]	✓
16856	$y'' + \lambda y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
16857	$y'' + \lambda y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
16858	$y'' - y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
16861	$y'' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
16862	$y'' - y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓

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#	ODE	CAS classification	Solved?
16864	$y'' + \alpha y' = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
16865	$y'' + \alpha^2 y = 1$ i.c.	[[_2nd_order, _missing_x]]	✓
16866	$y'' + y = 1$ i.c.	[[_2nd_order, _missing_x]]	✓
16867	$y'' + \lambda^2 y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
16868	$y'' + \lambda^2 y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
16871	$xy'' + y' = 0$	[[_2nd_order, _missing_y]]	✓
16892	$x^2 y'' + xy' + \left(4x^2 - \frac{1}{9}\right) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
16893	$x^2 y'' + xy' + \left(x^2 - \frac{1}{4}\right) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
16894	$y'' + \frac{y'}{x} + \frac{y}{9} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
16895	$y'' + \frac{y'}{x} + 4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
16896	$x^2 y'' - 2xy' + 4(x^4 - 1) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
16897	$xy'' + \frac{y'}{2} + \frac{y}{4} = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
16898	$y'' + \frac{5y'}{x} + y = 0$	[_Lienard]	✓
16899	$y'' + \frac{3y'}{x} + 4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
16900	$y'' + 4y = \cos(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16901	$y'' - 4y' + 4y = \pi^2 - x^2$	[[_2nd_order, _with_linear_symmetries]]	✓
16902	$y'' - 4y = \cos(\pi x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16904	$y'' + 9y = \sin(x)^3$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
17221	$y'' + ty = 0$	[[_Emden, _Fowler]]	✓
17224	$x^2 y'' + xy' + (-\nu^2 + x^2)y = 0$	[_Bessel]	✓
17227	$ax^2 y'' + bxy' + cy = d$	[[_2nd_order, _with_linear_symmetries]]	✓
17228	$y'' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
17229	$y'' + 9y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
17230	$y'' + y' + 16y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
17231	$y'' + 3y' + 4y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
17232	$y'' - y' + 4y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
17233	$ty'' + 3y = t$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
17241	$t^2 y'' - 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
17243	$y'' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
17244	$y'' - 2y' + y = 0$	[[_2nd_order, _missing_x]]	✓
17245	$x^2 y'' - x(x+2)y' + (x+2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
17247	$y'' - y' - 2y = 0$	[[_2nd_order, _missing_x]]	✓
17259	$y'' + 2y' - 3y = 0$	[[_2nd_order, _missing_x]]	✓
17260	$y'' + 3y' + 2y = 0$	[[_2nd_order, _missing_x]]	✓
17261	$y'' - 4y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
17262	$9y'' + 6y' + y = 0$	[[_2nd_order, _missing_x]]	✓
17263	$y'' - 2y' + 2y = 0$	[[_2nd_order, _missing_x]]	✓
17264	$y'' - 2y' + 6y = 0$	[[_2nd_order, _missing_x]]	✓
17265	$4y'' - 4y' + y = 0$	[[_2nd_order, _missing_x]]	✓
17266	$2y'' - 3y' + y = 0$	[[_2nd_order, _missing_x]]	✓
17267	$6y'' - y' - y = 0$	[[_2nd_order, _missing_x]]	✓
17268	$9y'' + 12y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
17269	$y'' + 2y' - 8y = 0$	[[_2nd_order, _missing_x]]	✓

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#	ODE	CAS classification	Solved?
17270	$y'' + 2y' + 2y = 0$	[[_2nd_order, _missing_x]]	✓
17271	$y'' + 5y' = 0$	[[_2nd_order, _missing_x]]	✓
17272	$4y'' - 9y = 0$	[[_2nd_order, _missing_x]]	✓
17273	$25y'' - 20y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
17274	$y'' - 4y' + 16y = 0$	[[_2nd_order, _missing_x]]	✓
17275	$y'' + 6y' + 13y = 0$	[[_2nd_order, _missing_x]]	✓
17276	$y'' + 2y' + \frac{5y}{4} = 0$	[[_2nd_order, _missing_x]]	✓
17277	$y'' - 9y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓
17278	$y'' - 2y' - 2y = 0$	[[_2nd_order, _missing_x]]	✓
17279	$y'' + 4y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
17280	$9y'' - 24y' + 16y = 0$	[[_2nd_order, _missing_x]]	✓
17281	$4y'' + 9y = 0$	[[_2nd_order, _missing_x]]	✓
17282	$4y'' + 9y' - 9y = 0$	[[_2nd_order, _missing_x]]	✓
17283	$y'' + y' + \frac{5y}{4} = 0$	[[_2nd_order, _missing_x]]	✓
17284	$y'' + 4y' + \frac{25y}{4} = 0$	[[_2nd_order, _missing_x]]	✓
17285	$y'' + y' - 2y = 0$	[[_2nd_order, _missing_x]]	✓
17286	$y'' + 16y = 0$	[[_2nd_order, _missing_x]]	✓
17287	$9y'' - 12y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
17288	$y'' + 3y' + 2y = 0$	[[_2nd_order, _missing_x]]	✓
17289	$y'' + 4y' + 5y = 0$	[[_2nd_order, _missing_x]]	✓
17290	$6y'' - 5y' + y = 0$	[[_2nd_order, _missing_x]]	✓
17291	$y'' + 6y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓
17293	$y'' + 3y' = 0$	[[_2nd_order, _missing_x]]	✓
17294	$y'' + y = 0$	[[_2nd_order, _missing_x]]	✓

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#	ODE	CAS classification	Solved?
17295	$y'' + 4y' + 4y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
17296	$y'' + 6y' + 3y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
17297	$y'' + y' + \frac{5y}{4} = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
17298	$2y'' + y' - 4y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
17299	$y'' + 8y' - 9y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
17300	$y'' + 2y' + 2y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
17301	$4y'' - y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
17302	$ax^2y'' + bxy' + cy = 0$	[[_Emden, _Fowler]]	✓
17303	$x^2y'' + xy' + 4y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, 'with_symme- try_[0,F(x)']]	✓
17304	$x^2y'' + 4xy' + 2y = 0$	[[_2nd_order, _exact, _lin- ear, _homogeneous]]	✓
17305	$x^2y'' + 3xy' + \frac{5y}{4} = 0$	[[_Emden, _Fowler]]	✓
17306	$x^2y'' - 4xy' - 6y = 0$	[[_2nd_order, _exact, _lin- ear, _homogeneous]]	✓
17307	$x^2y'' - 2y = 0$	[[_2nd_order, _exact, _lin- ear, _homogeneous]]	✓
17308	$x^2y'' - 5xy' + 9y = 0$	[[_Emden, _Fowler]]	✓
17309	$x^2y'' + 2xy' + 4y = 0$	[[_Emden, _Fowler]]	✓
17310	$2x^2y'' - 4xy' + 6y = 0$	[[_Emden, _Fowler]]	✓
17311	$2x^2y'' + xy' - 3y = 0$ i.c.	[[_2nd_order, _exact, _lin- ear, _homogeneous]]	✓
17312	$4x^2y'' + 8xy' + 17y = 0$ i.c.	[[_Emden, _Fowler]]	✓
17313	$x^2y'' - 5xy' + 9y = 0$ i.c.	[[_Emden, _Fowler]]	✓
17314	$x^2y'' + 3xy' + 5y = 0$ i.c.	[[_Emden, _Fowler]]	✓

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#	ODE	CAS classification	Solved?
17315	$y'' + 2y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
17316	$y'' + \frac{y'}{4} + 2y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
17317	$my'' + ky = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
17318	$y'' - 2y' - 3y = 3e^{2t}$	[[_2nd_order, _with_linear_symmetries]]	✓
17319	$y'' + 2y' + 5y = 3 \sin(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17320	$y'' - 2y' - 3y = -3te^{-t}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17321	$y'' + 2y' = 3 + 4 \sin(2t)$	[[_2nd_order, _missing_y]]	✓
17322	$y'' + 9y = t^2e^{3t} + 6$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17323	$y'' + 2y' + y = 2e^{-t}$	[[_2nd_order, _with_linear_symmetries]]	✓
17324	$y'' - 5y' + 4y = 2e^t$	[[_2nd_order, _with_linear_symmetries]]	✓
17325	$y'' - y' - 2y = 2e^{-t}$	[[_2nd_order, _with_linear_symmetries]]	✓
17326	$y'' + 2y' + y = 3e^{-t}$	[[_2nd_order, _with_linear_symmetries]]	✓
17327	$4y'' - 4y' + y = 16e^{\frac{t}{2}}$	[[_2nd_order, _with_linear_symmetries]]	✓
17328	$2y'' + 3y' + y = t^2 + 3 \sin(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17329	$y'' + y = 3 \sin(2t) + t \cos(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17330	$u'' + w_0^2u = \cos(wt)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17331	$y'' + y' + 4y = 2 \sinh(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17332	$y'' - y' - 2y = \cosh(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17334	$y'' + 4y = t^2 + 3e^t$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
17335	$y'' - 2y' + y = te^t + 4$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17337	$y'' + 4y = 3 \sin(2t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17339	$y'' + 3y' = 2t^4 + t^2e^{-3t} + \sin(3t)$	[[_2nd_order, _missing_y]]	✓
17340	$y'' + y = t(1 + \sin(t))$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17341	$y'' - 5y' + 6y = e^t \cos(2t) + e^{2t}(3t + 4) \sin(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17342	$y'' + 2y' + 2y = 3e^{-t} + 2e^{-t} \cos(t) + 4e^{-t}t^2 \sin(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17343	$y'' - 4y' + 4y = 2t^2 + 4te^{2t} + t \sin(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17344	$y'' + 4y = t^2 \sin(2t) + (6t + 7) \cos(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17345	$y'' + 3y' + 2y = e^t(t^2 + 1) \sin(2t) + 3e^{-t} \cos(t) + 4e^t$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17346	$y'' + 2y' + 5y = 3te^{-t} \cos(2t) - 2te^{-2t} \cos(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17347	$y'' - 3y' - 4y = 2e^{-t}$	[[_2nd_order, _with_linear_symmetries]]	✓
17348	$x^2y'' - 3xy' + 4y = \ln(x)$	[[_2nd_order, _with_linear_symmetries]]	✓
17349	$x^2y'' + 7xy' + 5y = x$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
17350	$x^2y'' - 2xy' + 2y = 3x^2 + 2 \ln(x)$	[[_2nd_order, _with_linear_symmetries]]	✓
17351	$x^2y'' + xy' + 4y = \sin(\ln(x))$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17352	$y'' + y = \begin{cases} t & 0 \leq t \leq \pi \\ \pi e^{-t+\pi} & \pi < t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17354	$y'' + y = \begin{cases} At & 0 \leq t \leq \pi \\ A(2\pi - t) & \pi < t \leq 2\pi \\ 0 & 2\pi < t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17363	$y'' - 5y' + 6y = 2e^t$	[[_2nd_order, _with_linear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
17364	$y'' - y' - 2y = 2e^{-t}$	[[_2nd_order, __with_linear_symmetries]]	✓
17365	$y'' + 2y' + y = 3e^{-t}$	[[_2nd_order, __with_linear_symmetries]]	✓
17366	$4y'' - 4y' + y = 16e^{\frac{t}{2}}$	[[_2nd_order, __with_linear_symmetries]]	✓
17367	$y'' + y = \tan(t)$	[[_2nd_order, __linear, __nonhomogeneous]]	✓
17368	$y'' + 4y = 3\sec(2t)^2$	[[_2nd_order, __linear, __nonhomogeneous]]	✓
17369	$y'' + 4y' + 4y = \frac{e^{2t}}{t^2}$	[[_2nd_order, __linear, __nonhomogeneous]]	✓
17370	$y'' + 4y = 2\csc\left(\frac{t}{2}\right)$	[[_2nd_order, __linear, __nonhomogeneous]]	✓
17371	$4y'' + y = 2\sec(2t)$	[[_2nd_order, __linear, __nonhomogeneous]]	✓
17372	$y'' - 2y' + y = \frac{e^t}{t^2 + 1}$	[[_2nd_order, __linear, __nonhomogeneous]]	✓
17375	$t^2y'' - t(t+2)y' + (t+2)y = 2t^3$	[[_2nd_order, __with_linear_symmetries]]	✓
17376	$ty'' - (t+1)y' + y = t^2e^{2t}$	[[_2nd_order, __with_linear_symmetries]]	✓
17377	$(-t+1)y'' + ty' - y = 2(t-1)^2e^{-t}$	[[_2nd_order, __with_linear_symmetries]]	✓
17378	$x^2y'' + xy' + \left(x^2 - \frac{1}{4}\right)y = 3x^{3/2}\sin(x)$	[[_2nd_order, __linear, __nonhomogeneous]]	✓
17381	$t^2y'' - 2y = 3t^2 - 1$	[[_2nd_order, __exact, __linear, __nonhomogeneous]]	✓
17382	$x^2y'' - 3xy' + 4y = x^2\ln(x)$	[[_2nd_order, __linear, __nonhomogeneous]]	✓
17383	$t^2y'' - 2ty' + 2y = 4t^2$	[[_2nd_order, __with_linear_symmetries]]	✓
17384	$t^2y'' + 7ty' + 5y = t$	[[_2nd_order, __exact, __linear, __nonhomogeneous]]	✓
17569	$y'' = \sin(x)$	[[_2nd_order, __quadrature]]	✓
17672	$y'' + \frac{2y'}{x} + y = 0$	[_Lienard]	✓

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#	ODE	CAS classification	Solved?
17677	$x^2y'' - 2xy' + 2y = 2x^3$	[[_2nd_order, _with_linear_symmetries]]	✓
17678	$y'' + \frac{xy'}{1-x} - \frac{y}{1-x} = x - 1$	[[_2nd_order, _with_linear_symmetries]]	✓
17681	$y'' + y = 0$	[[_2nd_order, _missing_x]]	✓
17683	$y'' + p_1y' + p_2y = 0$	[[_2nd_order, _missing_x]]	✓
17684	$(2x + 1)y'' + (4x - 2)y' - 8y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
17685	$\sin(x)^2 y'' + \cos(x) \sin(x) y' = y$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
17690	$2y'' + y' - y = 0$	[[_2nd_order, _missing_x]]	✓
17692	$y'' - 4y' + 4y = x^2$	[[_2nd_order, _with_linear_symmetries]]	✓
17693	$y'' - 6y' + 8y = e^x + e^{2x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17696	$y'' + 4y = x \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17697	$y'' + y' + y = e^{-\frac{x}{2}} \sin\left(\frac{\sqrt{3}x}{2}\right)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17698	$y'' - y = \frac{e^x - e^{-x}}{e^x + e^{-x}}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17699	$y'' - 2y = 4x^2 e^{x^2}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17700	$y'' + y = \sin(x) \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17702	$y'' + \frac{2y'}{x} - \frac{n(n+1)y}{x^2} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
17703	$x^2y'' - 4xy' + 6y = x$	[[_2nd_order, _with_linear_symmetries]]	✓
17704	$x^2y'' - xy' + 2y = x \ln(x)$	[[_2nd_order, _with_linear_symmetries]]	✓
17705	$x^2y'' - 2y = x^2 + \frac{1}{x}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
17707	$(x+1)^2 y'' + (x+1)y' + y = 4 \cos(\ln(x+1))$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
17708	$y'' - \frac{y'}{x} + \left(1 - \frac{m^2}{x^2}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
17709	$y'' + \frac{2y'}{x} + y = 0$	[_Lienard]	✓
17710	$y'' + \frac{2py'}{x} + y = 0$	[_Lienard]	✓
17711	$xy'' - y' - x^3y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]]]	✓
17712	$y'' - 4xy' + (4x^2 - 1)y = -3e^{x^2} \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17713	$y'' - \frac{y'}{\sqrt{x}} + \frac{(-8 + \sqrt{x} + x)y}{4x^2} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
17736	$y'' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
17737	$y'' - 4y = 0$	[[_2nd_order, _missing_x]]	✓
17777	$y'' - 5y' + 6y = 0$	[[_2nd_order, _missing_x]]	✓
17865	$y'' - ky = 0$	[[_2nd_order, _missing_x]]	✓
17869	$xy'' + y' = 4x$	[[_2nd_order, _missing_y]]	✓
17890	$x^2y'' + xy' = 1$	[[_2nd_order, _missing_y]]	✓
17897	$(x^2 + 1)y'' + xy' = 0$	[[_2nd_order, _missing_y]]	✓
17925	$xy'' - y' = 3x^2$	[[_2nd_order, _missing_y]]	✓
17926	$xy'' + y' = 0$	[[_2nd_order, _missing_y]]	✓
17927	$y'' - y' - 2y = 4x$	[[_2nd_order, _with_linear_symmetries]]	✓
17928	$x^3y'' + x^2y' + xy = 1$	[[_2nd_order, _with_linear_symmetries]]	✓
17929	$y'' - 2y' = 6$	[[_2nd_order, _missing_x]]	✓
17930	$y'' - 2y = \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17931	$y'' = e^x$	[[_2nd_order, _quadrature]]	✓
17932	$y'' - 2y' = 4$	[[_2nd_order, _missing_x]]	✓
17933	$y'' - y = \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
17934	$(x - 1)y'' - xy' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
17935	$y'' + 2y' = 6e^x$	[[_2nd_order, _missing_y]]	✓
17936	$x^2y'' - 3xy' - 5y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
17937	$x^2y'' - 4xy' + (x^2 + 6)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
17938	$y'' - y = 0$	[[_2nd_order, _missing_x]]	✓
17939	<i>i.c.</i> $x^2y'' - 2xy' + 2y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]]]	✓
17940	<i>i.c.</i> $y'' - 3y' + 2y = 0$	[[_2nd_order, _missing_x]]	✓
17941	$y'' - 4y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
17942	<i>i.c.</i> $x^2y'' - 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
17943	<i>i.c.</i> $y'' + y' - 2y = 0$	[[_2nd_order, _missing_x]]	✓
17944	<i>i.c.</i> $y'' + 5y' + 6y = 0$	[[_2nd_order, _missing_x]]	✓
17945	<i>i.c.</i> $y'' + y' = 0$	[[_2nd_order, _missing_x]]	✓
17947	$y'' + 2xy' + (x^2 + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
17959	$xy'' - (x + n)y' + ny = 0$	[_Laguerre]	✓
17960	$xy'' - (x + 1)y' + y = 0$	[_Laguerre]	✓
17961	$xy'' - (x + 2)y' + 2y = 0$	[_Laguerre]	✓
17962	$xy'' - (x + 3)y' + 3y = 0$	[_Laguerre]	✓
17964	$y'' + y' - 6y = 0$	[[_2nd_order, _missing_x]]	✓
17965	$y'' + 2y' + y = 0$	[[_2nd_order, _missing_x]]	✓
17966	$y'' + 8y = 0$	[[_2nd_order, _missing_x]]	✓
17967	$2y'' - 4y' + 8y = 0$	[[_2nd_order, _missing_x]]	✓
17968	$y'' - 4y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
17969	$y'' - 9y' + 20y = 0$	[[_2nd_order, _missing_x]]	✓

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#	ODE	CAS classification	Solved?
17970	$2y'' + 2y' + 3y = 0$	[[_2nd_order, _missing_x]]	✓
17971	$4y'' - 12y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓
17972	$y'' + y' = 0$	[[_2nd_order, _missing_x]]	✓
17973	$y'' - 6y' + 25y = 0$	[[_2nd_order, _missing_x]]	✓
17974	$4y'' + 20y' + 25y = 0$	[[_2nd_order, _missing_x]]	✓
17975	$y'' + 2y' + 3y = 0$	[[_2nd_order, _missing_x]]	✓
17976	$y'' = 4y$	[[_2nd_order, _missing_x]]	✓
17977	$4y'' - 8y' + 7y = 0$	[[_2nd_order, _missing_x]]	✓
17978	$2y'' + y' - y = 0$	[[_2nd_order, _missing_x]]	✓
17979	$16y'' - 8y' + y = 0$	[[_2nd_order, _missing_x]]	✓
17980	$y'' + 4y' + 5y = 0$	[[_2nd_order, _missing_x]]	✓
17981	$y'' + 4y' - 5y = 0$	[[_2nd_order, _missing_x]]	✓
17982	$y'' - 5y' + 6y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
17983	$y'' - 6y' + 5y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
17984	$y'' - 6y' + 9y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
17985	$y'' + 4y' + 5y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
17986	$y'' + 4y' + 2y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
17987	$y'' + 8y' - 9y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
17988	$x^2y'' + 3xy' + 10y = 0$	[[_Emden, _Fowler]]	✓
17989	$2x^2y'' + 10xy' + 8y = 0$	[[_Emden, _Fowler]]	✓
17990	$x^2y'' + 2xy' - 12y = 0$	[[_Emden, _Fowler]]	✓
17991	$4x^2y'' - 3y = 0$	[[_Emden, _Fowler]]	✓
17992	$x^2y'' - 3xy' + 4y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, 'with_symme- try_[0,F(x)']]]	✓

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#	ODE	CAS classification	Solved?
17993	$x^2y'' + 2xy' - 6y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
17994	$x^2y'' + 2xy' + 3y = 0$	[[_Emden, _Fowler]]	✓
17995	$x^2y'' + xy' - 2y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
17996	$x^2y'' + xy' - 16y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
17997	$xy'' + (x^2 - 1)y' + x^3y = 0$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
17999	$y'' + 3y' - 10y = 6e^{4x}$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
18000	$y'' + 4y = 3\sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18001	$y'' + 10y' + 25y = 14e^{-5x}$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
18002	$y'' - 2y' + 5y = 25x^2 + 12$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
18003	$y'' - y' - 6y = 20e^{-2x}$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
18004	$y'' - 3y' + 2y = 14\sin(2x) - 18\cos(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18005	$y'' + y = 2\cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18006	$y'' - 2y' = 12x - 10$	[[_2nd_order, _missing_y]]	✓
18007	$y'' - 2y' + y = 6e^x$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
18008	$y'' - 2y' + 2y = e^x \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18009	$y'' + y' = 10x^4 + 2$	[[_2nd_order, _missing_y]]	✓
18010	$y'' + k^2y = \sin(bx)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18011	$y'' + 4y = 4\cos(2x) + 6\cos(x) + 8x^2 - 4x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
18012	$y'' + 9y = 2 \sin(3x) + 4 \sin(x) - 26 e^{-2x} + 27x^3$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18013	$y'' - 2y' + y = 2x$	[[_2nd_order, _with_linear_symmetries]]	✓
18014	$y'' - y' - 6y = e^{-x}$	[[_2nd_order, _with_linear_symmetries]]	✓
18015	$y'' + 4y = \tan(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18016	$y'' + 2y' + y = e^{-x} \ln(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18017	$y'' - 2y' - 3y = 64x e^{-x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18018	$y'' + 2y' + 5y = e^{-x} \sec(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18019	$2y'' + 3y' + y = e^{-3x}$	[[_2nd_order, _with_linear_symmetries]]	✓
18020	$y'' - 3y' + 2y = \frac{1}{1 + e^{-x}}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18021	$y'' + y = \sec(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18022	$y'' + y = \cot(x)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18023	$y'' + y = \cot(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18024	$y'' + y = x \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18025	$y'' + y = \tan(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18026	$y'' + y = \sec(x) \tan(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18027	$y'' + y = \sec(x) \csc(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18028	$(x^2 - 1)y'' - 2xy' + 2y = (x^2 - 1)^2$	[[_2nd_order, _with_linear_symmetries]]	✓
18029	$(x^2 + x)y'' + (-x^2 + 2)y' - (x + 2)y = x(x + 1)^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18030	$(1 - x)y'' + xy' - y = (1 - x)^2$	[[_2nd_order, _with_linear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
18031	$xy'' - (x + 1)y' + y = x^2e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓
18032	$x^2y'' - 2xy' + 2y = xe^{-x}$	[[_2nd_order, _with_linear_symmetries]]	✓
18056	$y'' - 4y = e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓
18057	$y'' - y = x^2e^{2x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18058	$y'' + 4y' + 4y = 10x^3e^{-2x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18059	$y'' - 2y' + y = e^x$	[[_2nd_order, _with_linear_symmetries]]	✓
18060	$y'' - y = e^{-x}$	[[_2nd_order, _with_linear_symmetries]]	✓
18061	$y'' - 2y' - 3y = 6e^{5x}$	[[_2nd_order, _with_linear_symmetries]]	✓
18062	$y'' - y' + y = x^3 - 3x^2 + 1$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18064	$4y'' + y = x^4$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18067	$y'' + y' - y = -x^4 + 3x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18068	$y'' + y = x^4$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18071	$y'' - 4y' + 3y = x^3e^{2x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18072	$y'' - 7y' + 12y = e^{2x}(x^3 - 5x^2)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18073	$y'' + 2y' + y = 2x^2e^{-2x} + 3e^{2x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18082	$y'' - 4y' + 4y = e^{2x} \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18090	$y'' + xy' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
18189	$t^2x'' - 6tx' + 12x = 0$	[[_Emden, _Fowler]]	✓
18192	$t^2x'' - 2tx' + 2x = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, _with_symmetry_[0,F(x)]]]	✓

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#	ODE	CAS classification	Solved?
18193	$x'' - 5x' + 6x = 0$	[[_2nd_order, _missing_x]]	✓
18194	$x'' - 4x' + 4x = 0$	[[_2nd_order, _missing_x]]	✓
18195	$x'' - 4x' + 5x = 0$	[[_2nd_order, _missing_x]]	✓
18196	$x'' + 3x' = 0$	[[_2nd_order, _missing_x]]	✓
18197	$x'' - 3x' + 2x = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
18198	$x'' + x = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
18199	$x'' + 2x' + x = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
18202	$x'' - x = e^t$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
18206	$x'' + x = \cos(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18209	$y'' + \frac{y'}{x} + k^2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
18241	$\theta'' = -p^2\theta$	[[_2nd_order, _missing_x]]	✓
18256	$\theta'' - p^2\theta = 0$	[[_2nd_order, _missing_x]]	✓
18257	$y'' + y = 0$	[[_2nd_order, _missing_x]]	✓
18258	$y'' + 12y = 7y'$	[[_2nd_order, _missing_x]]	✓
18259	$r'' - a^2r = 0$	[[_2nd_order, _missing_x]]	✓
18261	$v'' - 6v' + 13v = e^{-2u}$	[[_2nd_order, _with_linear_symmetries]]	✓
18262	$y'' + 4y' - y = \sin(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18263	$y'' + 3y = \sin(x) + \frac{\sin(3x)}{3}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18271	$x^2y'' + 3xy' + y = \frac{1}{x}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
18275	$y'' = -m^2y$	[[_2nd_order, _missing_x]]	✓
18278	$xy'' + 2y' = xy$	[[_2nd_order, _with_linear_symmetries]]	✓
18282	$x^2y'' - 5xy' + 5y = \frac{1}{x}$	[[_2nd_order, _with_linear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
18283	$y'' + 4y' + 3y = 2e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓
18284	$v'' + \frac{2v'}{r} = 0$	[[_2nd_order, _missing_y]]	✓
18291	$x^2y'' + xy' + y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
18292	$(-x^2 + 1)y'' - xy' = 0$	[[_2nd_order, _missing_y]]	✓
18294	$v'' + \frac{2xv'}{x^2 + 1} + \frac{v}{(x^2 + 1)^2} = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
18331	$y'' + 3y' + 2y = 0$	[[_2nd_order, _missing_x]]	✓
18332	$y'' + 2y' - 2y = 0$	[[_2nd_order, _missing_x]]	✓
18340	$y'' + 4y' + 3y = 2e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓
18342	$y'' - 4y' + 2y = x$	[[_2nd_order, _with_linear_symmetries]]	✓
18343	$y'' + 3y' - y = e^x$	[[_2nd_order, _with_linear_symmetries]]	✓
18346	$y'' - 2y' + y = e^x$	[[_2nd_order, _with_linear_symmetries]]	✓
18347	$y'' - 2y' + y = x$	[[_2nd_order, _with_linear_symmetries]]	✓
18348	$y'' + y = \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18350	$y'' + y = \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18354	$ey'' = \frac{P(\frac{L}{2} - x)}{2}$	[[_2nd_order, _quadrature]]	✓
18355	$ey'' = \frac{w(\frac{L^2}{4} - x^2)}{2}$	[[_2nd_order, _quadrature]]	✓
18356	$ey'' = -\frac{(wL + P)x}{2} - \frac{wx^2}{2}$	[[_2nd_order, _quadrature]]	✓
18357	$ey'' = -P(L - x)$	[[_2nd_order, _quadrature]]	✓

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#	ODE	CAS classification	Solved?
18358	$ey'' = -PL + (wL + P)x - \frac{w(L^2 + x^2)}{2}$	[[_2nd_order, _quadrature]]	✓
18359	$ey'' = P(-y + a)$	[[_2nd_order, _missing_x]]	✓
18361	$x^2y'' + 3xy' - 8y = x$	[[_2nd_order, _with_linear_symmetries]]	✓
18365	$xy'' + 2y' = 2x$	[[_2nd_order, _missing_y]]	✓
18366	$x^2y'' - xy' + y = \ln(x)$	[[_2nd_order, _with_linear_symmetries]]	✓
18367	$(x^2 - 1)y'' + 4xy' + 2y = 2x$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
18368	$(x^2 + 1)y'' + 4xy' + 2y = x$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
18369	$y'' - \cot(x)y' + \csc(x)^2y = \cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18370	$(x^2 - x)y'' + (3x - 2)y' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
18371	$(3x^2 + x)y'' + 2(1 + 6x)y' + 6y = \sin(x)$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
18374	$y'' = \cos(x)$	[[_2nd_order, _quadrature]]	✓
18375	$x^2y'' = \ln(x)$	[[_2nd_order, _quadrature]]	✓
18376	$y'' = -a^2y$	[[_2nd_order, _missing_x]]	✓
18381	$xy'' + 3y' = 3x$	[[_2nd_order, _missing_y]]	✓
18382	$x = y'' + y'$	[[_2nd_order, _missing_y]]	✓
18385	$V'' + \frac{2V'}{r} = 0$	[[_2nd_order, _missing_y]]	✓
18386	$V'' + \frac{V'}{r} = 0$	[[_2nd_order, _missing_y]]	✓
18400	$y'' - \frac{2y'}{x} + \frac{2y}{x^2} = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
18401	$v'' + \frac{2v'}{r} = 0$	[[_2nd_order, _missing_y]]	✓
18402	$y'' - k^2y = 0$	[[_2nd_order, _missing_x]]	✓
18543	$y'' + 3y' - 54y = 0$	[[_2nd_order, _missing_x]]	✓
18544	$y'' - m^2y = 0$	[[_2nd_order, _missing_x]]	✓

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Table 2.50 second order adjoint  
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#	ODE	CAS classification	Solved?
18545	$2y'' + 5y' - 12y = 0$	[[_2nd_order, _missing_x]]	✓
18546	$9y'' + 18y' - 16y = 0$	[[_2nd_order, _missing_x]]	✓
18549	$y'' + 8y' + 25y = 0$	[[_2nd_order, _missing_x]]	✓
18552	$y'' - 5y' + 6y = e^{4x}$	[[_2nd_order, _with_linear_symmetries]]	✓
18553	$y'' - y = 5x + 2$	[[_2nd_order, _with_linear_symmetries]]	✓
18554	$y'' + 2y' + y = 2e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓
18558	$y'' - 2y' + y = 3e^{\frac{5x}{2}}$	[[_2nd_order, _with_linear_symmetries]]	✓
18562	$y'' + a^2y = \cos(ax)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18563	$y'' - 4y = 2\sin\left(\frac{x}{2}\right)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18566	$y'' + 3y' + 2y = e^{2x}\sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18567	$y'' + 2y = x^2e^{3x} + e^x\cos(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18568	$y'' + 4y = x\sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18569	$y'' - y = x^2\cos(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18573	$y'' + 4y = \sin(3x) + e^x + x^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18574	$y'' - 5y' + 6y = x + e^{mx}$	[[_2nd_order, _with_linear_symmetries]]	✓
18582	$y'' - 2y' + y = x^2e^{3x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18583	$y'' + n^2y = e^xx^4$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18587	$y'' + y' + y = \sin(2x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18593	$y'' - y = x\sin(x) + (x^2 + 1)e^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18594	$y'' - 4y' + 3y = e^x\cos(2x) + \cos(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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Table 2.50 second order adjoint  
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#	ODE	CAS classification	Solved?
18596	$y'' - 9y' + 20y = 20x$	[[_2nd_order, _with_linear_symmetries]]	✓
18599	$x^2y'' - xy' + y = 2 \ln(x)$	[[_2nd_order, _with_linear_symmetries]]	✓
18600	$x^2y'' + y = 3x^2$	[[_2nd_order, _with_linear_symmetries]]	✓
18603	$x^2y'' - 2xy' - 4y = x^4$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
18604	$x^2y'' + 5xy' + 4y = x^4$	[[_2nd_order, _with_linear_symmetries]]	✓
18605	$x^2y'' + 2xy' - 20y = (x + 1)^2$	[[_2nd_order, _with_linear_symmetries]]	✓
18606	$x^2y'' + 7xy' + 5y = x^5$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
18608	$(2x - 1)^3 y'' + (2x - 1) y' - 2y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, ' _with_symmetry_[0,F(x)]']]	✓
18610	$x^2y'' + 4xy' + 2y = e^x$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
18612	$(x + a)^2 y'' - 4(x + a) y' + 6y = x$	[[_2nd_order, _with_linear_symmetries]]	✓
18616	$x^2y'' + xy' - y = x^m$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
18617	$x^2y'' - 3xy' + 4y = x^m$	[[_2nd_order, _with_linear_symmetries]]	✓
18620	$x^2y'' + 3xy' + y = \frac{1}{(1-x)^2}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
18624	$x^5y'' + 3x^3y' + (3 - 6x)x^2y = x^4 + 2x - 5$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18625	$xy'' + 2xy' + 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
18626	$y'' + 2e^x y' + 2y e^x = x^2$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓

## 2.4.23 second order ode constant coeff using laplace

Table 2.51: second order ode constant coeff using laplace

#	ODE	CAS classification	Solved?
530	$x'' + 4x = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
531	$x'' + 9x = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
532	$x'' - x' - 2x = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
533	$x'' + 8x' + 15x = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
534	$x'' + x = \sin(2t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
535	$x'' + 4x = \cos(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
536	$x'' + x = \cos(3t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
537	$x'' + 9x = 1$ i.c.	[[_2nd_order, _missing_x]]	✓
538	$x'' + 4x' + 3x = 1$ i.c.	[[_2nd_order, _missing_x]]	✓
539	$x'' + 3x' + 2x = t$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
541	$x'' + 6x' + 25x = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
542	$x'' - 6x' + 8x = 2$ i.c.	[[_2nd_order, _missing_x]]	✓
543	$x'' - 4x = 3t$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
544	$x'' + 4x' + 8x = e^{-t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
551	$x'' + 4x' + 13x = t e^{-t}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
552	$x'' + 6x' + 18x = \cos(2t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
553	$x'' + 9x = 6 \cos(3t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
554	$x'' + \frac{2x'}{5} + \frac{226x}{25} = 6 e^{-\frac{t}{5}} \cos(3t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
561	$x'' + 4x = f(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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Table 2.51 second order ode constant coeff using laplace

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#	ODE	CAS classification	Solved?
562	$x'' + 2x' + x = f(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
563	$x'' + 4x' + 13x = f(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
564	$x'' + 4x = \delta(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
565	$x'' + 4x = \delta(t) + \delta(t - \pi)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
566	$x'' + 4x' + 4x = 1 + \delta(t - 2)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
567	$x'' + 2x' + x = t + \delta(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
568	$x'' + 2x' + 2x = 2\delta(t - \pi)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
569	$x'' + 9x = \delta(t - 3\pi) + \cos(3t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
570	$x'' + 4x' + 5x = \delta(t - \pi) + \delta(t - 2\pi)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
571	$x'' + 2x' + x = \delta(t) - \delta(t - 2)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
572	$x'' + 4x = f(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
573	$x'' + 6x' + 9x = f(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
574	$x'' + 6x' + 8x = f(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
575	$x'' + 4x' + 8x = f(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1483	$y'' - y' - 6y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
1484	$y'' + 3y' + 2y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
1485	$y'' - 2y' + 2y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
1486	$y'' - 2y' + 4y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
1487	$y'' + 2y' + 5y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓

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Table 2.51 second order ode constant coeff using laplace

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#	ODE	CAS classification	Solved?
1490	$y'' + \omega^2 y = \cos(2t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1491	$y'' - 2y' + 2y = e^{-t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
1492	$y'' + 4y = \begin{cases} 1 & 0 \leq t < \pi \\ 0 & \pi \leq t < \infty \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1493	$y'' + 4y = \begin{cases} 1 & 0 \leq t < 1 \\ 0 & 1 \leq t < \infty \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1494	$y'' + y = \begin{cases} t & 0 \leq t < 1 \\ 2-t & 1 \leq t < 2 \\ 0 & 2 \leq t < \infty \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1495	$y'' + y = \begin{cases} 1 & 0 \leq t < 3\pi \\ 0 & 3\pi \leq t < \infty \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1496	$y'' + 2y' + 2y = \begin{cases} 1 & \pi \leq t < 2\pi \\ 0 & \text{otherwise} \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1497	$y'' + 4y = \sin(t) - \text{Heaviside}(t - 2\pi) \sin(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1498	$y'' + 3y' + 2y = \begin{cases} 1 & 0 \leq t < 10 \\ 0 & \text{otherwise} \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1499	$y'' + y' + \frac{5y}{4} = t - \text{Heaviside}\left(t - \frac{\pi}{2}\right) \left(t - \frac{\pi}{2}\right)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1500	$y'' + y' + \frac{5y}{4} = \begin{cases} \sin(t) & 0 \leq t < \pi \\ 0 & \text{otherwise} \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1501	$y'' + 4y = \text{Heaviside}(t - \pi) - \text{Heaviside}(t - 3\pi)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1503	$u'' + \frac{u'}{4} + u = k \left( \text{Heaviside}\left(t - \frac{3}{2}\right) - \text{Heaviside}\left(t - \frac{5}{2}\right) \right)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1504	$u'' + \frac{u'}{4} + u = \frac{\text{Heaviside}\left(t - \frac{3}{2}\right)}{2} - \frac{\text{Heaviside}\left(t - \frac{5}{2}\right)}{2}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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Table 2.51 second order ode constant coeff using laplace

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#	ODE	CAS classification	Solved?
1505	$u'' + \frac{u'}{4} + u = \frac{\text{Heaviside}(t-5)(t-5) - \text{Heaviside}(t-5-k)(t-5-k)}{k}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1506	$y'' + 2y' + 2y = \delta(t - \pi)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1507	$y'' + 4y = \delta(t - \pi) - \delta(t - 2\pi)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1508	$y'' + 3y' + 2y = \delta(t - 5) + \text{Heaviside}(t - 10)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1509	$y'' + 2y' + 3y = \sin(t) + \delta(t - 3\pi)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1510	$y'' + y = \delta(t - 2\pi) \cos(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1511	$y'' + 4y = 2\delta\left(t - \frac{\pi}{4}\right)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1512	$y'' + 2y' + 2y = \cos(t) + \delta\left(t - \frac{\pi}{2}\right)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1514	$y'' + \frac{y'}{2} + y = \delta(t - 1)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1515	$y'' + \frac{y'}{4} + y = \delta(t - 1)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1516	$y'' + y = \frac{\text{Heaviside}(t-4+k) - \text{Heaviside}(t-4-k)}{2k}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1518	$y'' + 2y' + 2y = \delta(t - \pi)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2671	$y'' - 5y' + 4y = e^{2t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
2672	$2y'' + y' - y = e^{3t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
2673	$y'' + 2y' + y = e^{-t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
2674	$y'' + y = t^2 \sin(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2675	$y'' + 3y' + 7y = \cos(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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Table 2.51 second order ode constant coeff using laplace

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#	ODE	CAS classification	Solved?
2676	$y'' + y' + y = t^3$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2678	$y'' - 3y' + 2y = e^{-t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
2679	$y'' + y = \sin(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2680	$y'' + y = t \sin(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2681	$y'' - 2y' + y = t e^t$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2682	$y'' - 2y' + 7y = \sin(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2683	$y'' + y' + y = 1 + e^{-t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
2684	$y'' + y = \begin{cases} 2 & 0 \leq t \leq 3 \\ 3t - 7 & 3 < t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2685	$y'' + 2y' + y = 2(t - 3) \text{Heaviside}(t - 3)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2686	$y'' + y' + y = \text{Heaviside}(t - \pi) - \text{Heaviside}(t - 2\pi)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2687	$y'' + 4y = \begin{cases} 1 & 0 \leq t < 4 \\ 0 & 4 < t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2688	$y'' + y = \begin{cases} \sin(t) & 0 \leq t < \pi \\ \cos(t) & \pi \leq t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2689	$y'' + y = \begin{cases} \cos(t) & 0 \leq t < \frac{\pi}{2} \\ 0 & \frac{\pi}{2} \leq t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2690	$y'' + 2y' + y = \begin{cases} \sin(2t) & 0 \leq t < \frac{\pi}{2} \\ 0 & \frac{\pi}{2} \leq t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2691	$y'' + y' + 7y = \begin{cases} t & 0 \leq t < 2 \\ 0 & 2 \leq t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2692	$y'' + y = \begin{cases} t^2 & 0 \leq t < 1 \\ 0 & 1 \leq t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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Table 2.51 second order ode constant coeff using laplace

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#	ODE	CAS classification	Solved?
2693	$y'' - 2y' + y = \begin{cases} 0 & 0 \leq t < 1 \\ t & 1 \leq t < 2 \\ 0 & 2 \leq t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2694	$y'' + 4y' + 5y = \delta(t - 1)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2695	$y'' + 4y = \sin(t) + \delta(t - \pi)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2696	$y'' + y' + y = 2\delta(t - 1) - \delta(t - 2)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2697	$y'' + 2y' + y = e^{-t} + 3\delta(t - 3)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3935	$y'' + y' - 2y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
3936	$y'' + 4y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
3937	$y'' - 3y' + 2y = 4$ i.c.	[[_2nd_order, _missing_x]]	✓
3938	$y'' - y' - 12y = 36$ i.c.	[[_2nd_order, _missing_x]]	✓
3939	$y'' + y' - 2y = 10e^{-t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
3940	$y'' - 3y' + 2y = 4e^{3t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
3941	$y'' - 2y' = 30e^{-3t}$ i.c.	[[_2nd_order, _missing_y]]	✓
3942	$y'' - y = 12e^{2t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
3943	$y'' + 4y = 10e^{-t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
3944	$y'' - y' - 6y = 12 - 6e^t$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
3945	$y'' - y = 6\cos(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3946	$y'' - 9y = 13\sin(2t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3947	$y'' - y = 8\sin(t) - 6\cos(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3948	$y'' - y' - 2y = 10\cos(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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Table 2.51 second order ode constant coeff using laplace

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#	ODE	CAS classification	Solved?
3949	$y'' + 5y' + 4y = 20 \sin(2t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3950	$y'' + 5y' + 4y = 20 \sin(2t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3951	$y'' - 3y' + 2y = 3 \cos(t) + \sin(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3952	$y'' + 4y = 9 \sin(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3953	$y'' + y = 6 \cos(2t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3954	$y'' + 9y = 7 \sin(4t) + 14 \cos(4t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3955	$y'' - y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
3963	$y'' - y = \text{Heaviside}(t - 1)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3964	$y'' - y' - 2y = 1 - 3 \text{Heaviside}(t - 2)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3965	$y'' - 4y = \text{Heaviside}(t - 1) - \text{Heaviside}(t - 2)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3966	$y'' + y = t - \text{Heaviside}(t - 1)(t - 1)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3967	$y'' + 3y' + 2y = -10 \text{Heaviside}\left(t - \frac{\pi}{4}\right) \cos\left(t + \frac{\pi}{4}\right)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3968	$y'' + y' - 6y = 30 \text{Heaviside}(t - 1) e^{-t+1}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3969	$y'' + 4y' + 5y = 5 \text{Heaviside}(t - 3)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3970	$y'' - 2y' + 5y = 2 \sin(t) + \text{Heaviside}\left(t - \frac{\pi}{2}\right) (1 + \cos(t))$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3977	$y'' - 3y' + 2y = \delta(t - 1)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3978	$y'' - 4y = \delta(t - 3)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3979	$y'' + 2y' + 5y = \delta\left(t - \frac{\pi}{2}\right)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
3980 i.c.	$y'' - 4y' + 13y = \delta\left(t - \frac{\pi}{4}\right)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3981 i.c.	$y'' + 4y' + 3y = \delta(t - 2)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3982 i.c.	$y'' + 6y' + 13y = \delta\left(t - \frac{\pi}{4}\right)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3983 i.c.	$y'' + 9y = 15 \sin(2t) + \delta\left(t - \frac{\pi}{6}\right)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3984 i.c.	$y'' + 16y = 4 \cos(3t) + \delta\left(t - \frac{\pi}{3}\right)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3985 i.c.	$y'' + 2y' + 5y = 4 \sin(t) + \delta\left(t - \frac{\pi}{6}\right)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4514 i.c.	$y'' + 4y' + 3y = 60 \cos(3t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4515 i.c.	$y'' + y' - 2y = 9e^{-2t}$	[[_2nd_order, _with_linear_symmetries]]	✓
4516 i.c.	$y'' - y' - 2y = 2t^2 + 1$	[[_2nd_order, _with_linear_symmetries]]	✓
4517 i.c.	$y'' + 4y = 8 \sin(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4518 i.c.	$y'' - 2y' + y = 4e^{-t} + 2e^t$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4519 i.c.	$y'' - 2y' + 2y = 8e^{-t} \sin(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4520 i.c.	$y'' - 2y' + 5y = 8e^t \sin(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4521 i.c.	$y'' + y' - 2y = 54te^{-2t}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4522 i.c.	$y'' - y' - 2y = 9e^{2t} \text{Heaviside}(t - 1)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4523 i.c.	$y'' + 2y' + y = 2 \sin(t) \text{Heaviside}(t - \pi)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4524 i.c.	$y'' + 4y = 8 \sin(2t) \text{Heaviside}(t - \pi)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4525 i.c.	$y'' + 4y = 8(t^2 + t - 1) \text{Heaviside}(t - 2)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
4526	$y'' - 3y' + 2y = e^t \text{Heaviside}(t - 2)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4527	$y'' - 5y' + 6y = \delta(t - 2)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4528	$y'' + 4y = 4\text{Heaviside}(t - \pi) + 2\delta(t - \pi)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6547	$y'' - y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
6548	$y'' - y = \sin(x)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6549	$y'' - y = e^x$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
6550	$y'' + 2y' - 3y = \sin(2x)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6551	$y'' + y = \sin(x)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6552	$y'' + y' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
6553	$y'' + 2y' + 5y = 3e^{-2x}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
6554	$y'' + 5y' - 3y = \text{Heaviside}(x - 4)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6558	$x'' + 4x' + 4x = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
6559	$q'' + 9q' + 14q = \frac{\sin(t)}{2}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7025	$y'' - y' - 6y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
7026	$y'' + 9y = 10e^{-t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
7027	$y'' - \frac{y}{4} = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
7028	$y'' - 6y' + 5y = 29 \cos(2t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7029	$y'' + 7y' + 12y = 21e^{3t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
7030	$y'' - 4y' + 4y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓

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#	ODE	CAS classification	Solved?
7031	$y'' - 4y' + 3y = 6t - 8$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
7032	$y'' + \frac{y}{25} = \frac{t^2}{50}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
7033	$y'' + 3y' + \frac{9y}{4} = 9t^3 + 64$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7034	$y'' - 2y' - 3y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
7036	$y'' + 2y' + 5y = 50t - 100$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
7037	$y'' + 3y' - 4y = 6e^{2t-3}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
7038	$9y'' - 6y' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
7039	$y'' + 6y' + 8y = e^{-3t} - e^{-5t}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7040	$y'' + 10y' + 24y = 144t^2$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
7041	$y'' + 9y = \begin{cases} 8 \sin(t) & 0 < t < \pi \\ 0 & \pi < t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7042	$y'' + 3y' + 2y = \begin{cases} 4t & 0 < t < 1 \\ 8 & 1 < t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7043	$y'' + y' - 2y = \begin{cases} 3 \sin(t) - \cos(t) & 0 < t < 2\pi \\ 3 \sin(2t) - \cos(2t) & 2\pi < t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7044	$y'' + 3y' + 2y = \begin{cases} 1 & 0 < t < 1 \\ 0 & 1 < t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7045	$y'' + y = \begin{cases} t & 0 < t < 1 \\ 0 & 1 < t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7046	$y'' + 2y' + 5y = \begin{cases} 10 \sin(t) & 0 < t < 2\pi \\ 0 & 2\pi < t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7047	$y'' + 4y = \begin{cases} 8t^2 & 0 < t < 5 \\ 0 & 5 < t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
7048	$y'' + 4y = \delta(t - \pi)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7049	$y'' + 16y = 4\delta(t - 3\pi)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7050	$y'' + y = \delta(t - \pi) - \delta(t - 2\pi)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7051	$y'' + 4y' + 5y = \delta(t - 1)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7052	$4y'' + 24y' + 37y = 17e^{-t} + \delta\left(t - \frac{1}{2}\right)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7053	$y'' + 3y' + 2y = 10\sin(t) + 10\delta(t - 1)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7054	$y'' + 4y' + 5y = (1 - \text{Heaviside}(t - 10))e^t - e^{10}\delta(t - 10)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7055	$y'' + 5y' + 6y = \delta\left(t - \frac{\pi}{2}\right) + \cos(t)\text{Heaviside}(t - \pi)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7056	$y'' + 5y' + 6y = \text{Heaviside}(t - 1) + \delta(t - 2)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7057	$y'' + 2y' + 5y = 25t - 100\delta(t - \pi)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7843	$y'' + 5y' + 6y = 5e^{3t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
7844	$y'' + y' - 6y = t$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
7845	$y'' - y = t^2$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
7849	$y'' + 3y' - 5y = 1$ i.c.	[[_2nd_order, _missing_x]]	✓
7850	$y'' + 3y' - 2y = -6e^{-t+\pi}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
7851	$y'' + 2y' - y = te^{-t}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7852	$y'' - y' + y = 3e^{-t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
7853	$y'' - 5y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
7854	$y'' + 3y' + 3y = 2$	[[_2nd_order, _missing_x]]	✓

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#	ODE	CAS classification	Solved?
7855	$y'' + y' + 2y = t$	[[_2nd_order, _with_linear_symmetries]]	✓
7856	$y'' - 7y' + 12y = te^{2t}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7857	$i'' + 2i' + 3i = \begin{cases} 30 & 0 < t < 2\pi \\ 0 & 2\pi \leq t \leq 5\pi \\ 10 & 5\pi < t < \infty \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8004	$y'' + 5y' + 4y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
8005	$y'' - 4y' = 6e^{3t} - 3e^{-t}$ i.c.	[[_2nd_order, _missing_y]]	✓
8006	$y'' + y = \sqrt{2} \sin(\sqrt{2}t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8007	$y'' + 9y = e^t$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
8011	$y'' - 2y' + 5y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
8014	$y'' + 2y' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
8015	$y'' - 4y' + 4y = t^3e^{2t}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8016	$y'' - 6y' + 9y = t$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
8017	$y'' - 4y' + 4y = t^3$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8018	$y'' - 6y' + 13y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
8019	$2y'' + 20y' + 51y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
8020	$y'' - y = e^t \cos(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8021	$y'' - 2y' + 5y = t + 1$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
8022	$y'' + 2y' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
8023	$y'' + 8y' + 20y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓

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#	ODE	CAS classification	Solved?
8027	$y'' + 4y = \begin{cases} 1 & 0 \leq t < 1 \\ 0 & 1 \leq t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8028	$y'' + 4y = \text{Heaviside}(t - 2\pi) \sin(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8029	$y'' - 5y' + 6y = \text{Heaviside}(t - 1)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8030	$y'' + y = \begin{cases} 0 & 0 \leq t < \pi \\ 1 & \pi \leq t < 2\pi \\ 0 & 2\pi \leq t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8031	$y'' + 4y' + 3y = 1 - \text{Heaviside}(t - 2) - \text{Heaviside}(-4 + t) + \text{Heaviside}(t - 6)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8034	$y'' + 9y = \cos(3t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8035	$y'' + y = \sin(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8036	$y'' + 16y = \begin{cases} \cos(4t) & 0 \leq t < \pi \\ 0 & \pi \leq t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8037	$y'' + y = \begin{cases} 1 & 0 \leq t < \frac{\pi}{2} \\ \sin(t) & \frac{\pi}{2} \leq t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8040	$y'' + y = \sin(t) + t \sin(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8043	$y'' + y = \delta(t - 2\pi)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8044	$y'' + 16y = \delta(t - 2\pi)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8045	$y'' + y = \delta\left(t - \frac{\pi}{2}\right) + \delta\left(t - \frac{3\pi}{2}\right)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8046	$y'' + y = \delta(t - 2\pi) + \delta(t - 4\pi)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8047	$y'' + 2y' = \delta(t - 1)$ i.c.	[[_2nd_order, _missing_y]]	✓
8048	$y'' - 2y' = 1 + \delta(t - 2)$ i.c.	[[_2nd_order, _missing_y]]	✓

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#	ODE	CAS classification	Solved?
8049	$y'' + 4y' + 5y = \delta(t - 2\pi)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8050	$y'' + 2y' + y = \delta(t - 1)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8051	$y'' + 4y' + 13y = \delta(t - \pi) + \delta(t - 3\pi)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8052	$y'' - 7y' + 6y = e^t + \delta(t - 2) + \delta(-4 + t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8053	$y'' + 2y' + 10y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
8054	$y'' + 2y' + 10y = \delta(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8654	$y'' + 3y' - 4y = 6e^{2t-2}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
12862	$x'' - x' - 6x = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
12863	$x'' - 2x' + 2x = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
12864	$x'' - 2x' + 2x = e^{-t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
12865	$x'' - x' = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
12866	$x'' + \frac{2x'}{5} + 2x = 1 - \text{Heaviside}(t - 5)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12867	$x'' + 9x = \sin(3t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12868	$x'' - 2x = 1$ i.c.	[[_2nd_order, _missing_x]]	✓
12870	$x'' + 4x = \cos(2t) \text{Heaviside}(2\pi - t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12873	$x'' + \pi^2 x = \pi^2 \text{Heaviside}(-t + 1)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12874	$x'' - 4x = 1 - \text{Heaviside}(t - 1)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12875	$x'' + 3x' + 2x = e^{-4t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
12877	$x'' - x = \delta(t - 5)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
12878	$x'' + x = \delta(t - 2)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12879	$x'' + 4x = \delta(t - 2) - \delta(t - 5)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12880	$x'' + x = 3\delta(t - 2\pi)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12881	$y'' + y' + y = \delta(t - 1)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12882	$x'' + 4x = \frac{\text{Heaviside}(t - 5)(t - 5)}{5} + \left(2 - \frac{t}{5}\right)\text{Heaviside}(t - 10)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13322	$y'' - 5y' + 6y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
13323	$y'' + y' - 12y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
13324	$y'' + 4y = 8$ i.c.	[[_2nd_order, _missing_x]]	✓
13325	$y'' + 2y' + 5y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
13326	$y'' - y' - 2y = 18e^{-t}\sin(3t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13327	$y'' + 2y' + y = te^{-2t}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13328	$y'' + 7y' + 10y = 4te^{-3t}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13329	$y'' - 8y' + 15y = 9te^{2t}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13332	$y'' - 3y' + 2y = \begin{cases} 2 & 0 < t < 4 \\ 0 & 4 < t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13333	$y'' + 5y' + 6y = \begin{cases} 6 & 0 < t < 2 \\ 0 & 2 < t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13334	$y'' + 4y' + 5y = \begin{cases} 1 & 0 < t < \frac{\pi}{2} \\ 0 & \frac{\pi}{2} < t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13335	$y'' + 6y' + 8y = \begin{cases} 3 & 0 < t < 2\pi \\ 0 & 2\pi < t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
13336	$y'' + 4y = \begin{cases} -4t + 8\pi & 0 < t < 2\pi \\ 0 & 2 < t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13337	$y'' + y = \begin{cases} t & 0 < t < \pi \\ \pi & \pi < t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13695	$y'' + 9y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
13696	$4y'' - 4y' + 5y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
13697	$y'' + 2y' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
13698	$y'' - 4y' + 5y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
13699	$y'' - y' - 6y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
13700	$4y'' - 4y' + 37y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
13701	$y'' + 3y' + 2y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
13702	$y'' + 2y' + 5y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
13703	$4y'' - 12y' + 13y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
13704	$y'' + 4y' + 13y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
13705	$y'' + 6y' + 9y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
13707	$y'' - 2y' + 5y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
13708	$y'' - 20y' + 51y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
13709	$2y'' + 3y' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
13710	$3y'' + 8y' - 3y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
13711	$2y'' + 20y' + 51y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
13712	$4y'' + 40y' + 101y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓

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Table 2.51 second order ode constant coeff using laplace

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#	ODE	CAS classification	Solved?
13713	$y'' + 6y' + 34y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
13721	$y'' + 2y' + 3y = 9t$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
13722	$4y'' + 16y' + 17y = 17t - 1$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
13723	$4y'' + 5y' + 4y = 3e^{-t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
13724	$y'' - 4y' + 4y = t^2e^{2t}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13725	$y'' + 9y = e^{-2t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
13726	$2y'' - 3y' + 17y = 17t - 1$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
13727	$y'' + 2y' + y = e^{-t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
13728	$y'' - 2y' + 5y = t + 2$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
13730	$y'' + 8y' + 20y = \sin(2t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13731	$4y'' - 4y' + y = t^2$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
13732	$2y'' + y' - y = 4\sin(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13734	$3y'' + 5y' - 2y = 7e^{-2t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
13737	$y'' + 9y = 24\sin(t) \text{ (Heaviside}(t) + \text{Heaviside}(t - \pi))$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13738	$y'' + 2y' + y = \text{Heaviside}(t) - \text{Heaviside}(t - 1)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13739	$y'' + 2y' + 2y = 5\cos(t) \left( \text{Heaviside}(t) - \text{Heaviside}\left(t - \frac{\pi}{2}\right) \right)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13740	$y'' + 5y' + 6y = 36t(\text{Heaviside}(t) - \text{Heaviside}(t - 1))$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13741	$y'' + 4y' + 13y = 39\text{Heaviside}(t) - 507(t - 2)\text{Heaviside}(t - 2)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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Table 2.51 second order ode constant coeff using laplace

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#	ODE	CAS classification	Solved?
13742	$y'' + 4y = 3 \operatorname{Heaviside}(t) - 3 \operatorname{Heaviside}(-4 + t) + (2t - 5) \operatorname{Heaviside}(-4 + t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13743	$4y'' + 4y' + 5y = 25t \left( \operatorname{Heaviside}(t) - \operatorname{Heaviside}\left(t - \frac{\pi}{2}\right) \right)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13744	$y'' + 4y' + 3y = \operatorname{Heaviside}(t) - \operatorname{Heaviside}(t - 1) + \operatorname{Heaviside}(t - 2) - \operatorname{Heaviside}(t - 3)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13745	$y'' - 2y' = \begin{cases} 4 & 0 \leq t < 1 \\ 6 & 1 \leq t \end{cases}$ i.c.	[[_2nd_order, _missing_y]]	✓
13746	$y'' - 3y' + 2y = \begin{cases} 0 & 0 \leq t < 1 \\ 1 & 1 \leq t < 2 \\ -1 & 2 \leq t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13747	$y'' + 3y' + 2y = \begin{cases} 1 & 0 \leq t < 2 \\ -1 & 2 \leq t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13748	$y'' + y = \begin{cases} t & 0 \leq t < \pi \\ -t & \pi \leq t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13749	$y'' + 4y = \begin{cases} 8t & 0 \leq t < \frac{\pi}{2} \\ 8\pi & \frac{\pi}{2} \leq t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13750	$y'' + 4\pi^2 y = 3\delta\left(t - \frac{1}{3}\right) - \delta(t - 1)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13751	$y'' + 2y' + 2y = 3\delta(t - 1)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13752	$y'' + 4y' + 29y = 5\delta(t - \pi) - 5\delta(t - 2\pi)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13753	$y'' + 3y' + 2y = 1 - \delta(t - 1)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13754	$4y'' + 4y' + y = e^{-\frac{t}{2}} \delta(t - 1)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13755	$y'' - 7y' + 6y = \delta(t - 1)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
14198	$y'' - 2y' + 5y = 0$	[[_2nd_order, _missing_x]]	✓

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Table 2.51 second order ode constant coeff using laplace

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#	ODE	CAS classification	Solved?
14200	$y'' - 9y = 2 \sin(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
14201	$y'' + 9y = 2 \sin(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
14202	$y'' + y' - 2y = x e^x - 3x^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
14206 i.c.	$y'' - 9y = x + 2$	[[_2nd_order, _with_linear_symmetries]]	✓
14207 i.c.	$y'' + 9y = x + 2$	[[_2nd_order, _with_linear_symmetries]]	✓
14208 i.c.	$y'' - y' + 6y = -2 \sin(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
14209 i.c.	$y'' - 2y' + 2y = -x^2 + 1$	[[_2nd_order, _with_linear_symmetries]]	✓
14213 i.c.	$y'' + 9y = 1$	[[_2nd_order, _missing_x]]	✓
14214 i.c.	$y'' + 9y = 18 e^{3x}$	[[_2nd_order, _with_linear_symmetries]]	✓
14215 i.c.	$y'' - y' - 2y = 0$	[[_2nd_order, _missing_x]]	✓
14216 i.c.	$y'' - y' - 2y = x^2$	[[_2nd_order, _with_linear_symmetries]]	✓
14217 i.c.	$y'' - 2y' + y = 2 \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
14220 i.c.	$y'' - y' - 2y = \begin{cases} 1 & 2 \leq x < 4 \\ 0 & \text{otherwise} \end{cases}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
14221 i.c.	$y'' - 2y' = \begin{cases} 0 & 0 \leq x < 1 \\ (x-1)^2 & 1 \leq x \end{cases}$	[[_2nd_order, _missing_y]]	✓
14222 i.c.	$y'' - 2y' + y = \begin{cases} 0 & 0 \leq x < 1 \\ x^2 - 2x + 3 & 1 \leq x \end{cases}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
14223 i.c.	$y'' + 4y = \begin{cases} 0 & 0 \leq x < \pi \\ -\sin(3x) & \pi \leq x \end{cases}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
14224 i.c.	$y'' - 4y = \begin{cases} x & 0 \leq x < 1 \\ 1 & 1 \leq x \end{cases}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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Table 2.51 second order ode constant coeff using laplace

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#	ODE	CAS classification	Solved?
14225	$y'' - 4y' + 5y = \begin{cases} x & 0 \leq x < 1 \\ 1 & 1 \leq x \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
14228	$y'' + 9y = \delta(x - \pi) + \delta(x - 3\pi)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
14229	$y'' - 2y' + y = 2\delta(x - 1)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
14230	$y'' - 2y' + 5y = \cos(x) + 2\delta(x - \pi)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
14231	$y'' + 4y = \cos(x) \delta(x - \pi)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
14232	$y'' + a^2y = \delta(x - \pi) f(x)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
14635	$y'' + 4y = 8$ i.c.	[[_2nd_order, _missing_x]]	✓
14636	$y'' - 4y = e^{2t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
14637	$y'' - 4y' + 5y = 2e^t$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
14638	$y'' + 6y' + 13y = 13 \text{Heaviside}(-4 + t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
14639	$y'' + 4y = \cos(2t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
14640	$y'' + 3y = \text{Heaviside}(-4 + t) \cos(-20 + 5t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
14641	$y'' + 4y' + 9y = 20 \text{Heaviside}(t - 2) \sin(t - 2)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
14642	$y'' + 3y = \begin{cases} t & 0 \leq t < 1 \\ 1 & 1 \leq t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
14643	$y'' + 3y = 5\delta(t - 2)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
14644	$y'' + 2y' + 5y = \delta(t - 3)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
14645	$y'' + 2y' + 2y = -2\delta(t - 2)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
14646	$y'' + 2y' + 3y = \delta(t - 1) - 3\delta(-4 + t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
14647	$y'' + 2y' + 2y = e^{-2t} \sin(4t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
14648	$y'' + y' + 5y = \text{Heaviside}(t - 2) \sin(4t - 8)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
14649	$y'' + y' + 8y = (1 - \text{Heaviside}(-4 + t)) \cos(-4 + t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
14650	$y'' + y' + 3y = (1 - \text{Heaviside}(t - 2)) e^{-\frac{t}{10} + \frac{1}{5}} \sin(t - 2)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
14651	$y'' + 16y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
14652	$y'' + 4y = \sin(2t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
14653	$y'' + 2y' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
14654	$y'' + 16y = t$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
15264	$y'' - 4y = t^3$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15265	$y'' + 4y = 20e^{4t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
15266	$y'' + 4y = \sin(2t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15267	$y'' + 4y = 3 \text{Heaviside}(t - 2)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15268	$y'' + 5y' + 6y = e^{4t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
15269	$y'' - 5y' + 6y = t^2 e^{4t}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15270	$y'' - 5y' + 6y = 7$ i.c.	[[_2nd_order, _missing_x]]	✓
15271	$y'' - 4y' + 13y = e^{2t} \sin(3t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15272	$y'' + 4y' + 13y = 4t + 2e^{2t} \sin(3t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15275	$y'' - 9y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
15276	$y'' + 9y = 27t^3$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
15277	$y'' + 8y' + 7y = 165e^{4t}$ i.c.	[[_2nd_order, __with_linear_symmetries]]	✓
15278	$y'' - 8y' + 17y = 0$ i.c.	[[_2nd_order, __missing_x]]	✓
15279	$y'' - 6y' + 9y = e^{3t}t^2$ i.c.	[[_2nd_order, __linear, __nonhomogeneous]]	✓
15280	$y'' + 6y' + 13y = 0$ i.c.	[[_2nd_order, __missing_x]]	✓
15281	$y'' + 8y' + 17y = 0$ i.c.	[[_2nd_order, __missing_x]]	✓
15282	$y'' = e^t \sin(t)$ i.c.	[[_2nd_order, __quadrature]]	✓
15283	$y'' - 4y' + 40y = 122e^{-3t}$ i.c.	[[_2nd_order, __with_linear_symmetries]]	✓
15284	$y'' - 9y = 24e^{-3t}$ i.c.	[[_2nd_order, __with_linear_symmetries]]	✓
15285	$y'' - 4y' + 13y = e^{2t} \sin(3t)$ i.c.	[[_2nd_order, __linear, __nonhomogeneous]]	✓
15286	$y'' + 4y = 1$ i.c.	[[_2nd_order, __missing_x]]	✓
15287	$y'' + 4y = t$ i.c.	[[_2nd_order, __with_linear_symmetries]]	✓
15288	$y'' + 4y = e^{3t}$ i.c.	[[_2nd_order, __with_linear_symmetries]]	✓
15289	$y'' + 4y = \sin(2t)$ i.c.	[[_2nd_order, __linear, __nonhomogeneous]]	✓
15290	$y'' + 4y = \sin(t)$ i.c.	[[_2nd_order, __linear, __nonhomogeneous]]	✓
15291	$y'' - 6y' + 9y = 1$ i.c.	[[_2nd_order, __missing_x]]	✓
15292	$y'' - 6y' + 9y = t$ i.c.	[[_2nd_order, __with_linear_symmetries]]	✓
15293	$y'' - 6y' + 9y = e^{3t}$ i.c.	[[_2nd_order, __with_linear_symmetries]]	✓
15294	$y'' - 6y' + 9y = e^{-3t}$ i.c.	[[_2nd_order, __with_linear_symmetries]]	✓
15295	$y'' - 6y' + 9y = e^t$ i.c.	[[_2nd_order, __with_linear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
15298 i.c.	$y'' = \text{Heaviside}(t - 2)$	[[_2nd_order, _quadrature]]	✓
15299 i.c.	$y'' = \text{Heaviside}(t - 2)$	[[_2nd_order, _quadrature]]	✓
15300 i.c.	$y'' + 9y = \text{Heaviside}(t - 10)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15302 i.c.	$y'' = \begin{cases} 0 & t < 1 \\ 1 & 1 < t < 3 \\ 0 & 3 < t \end{cases}$	[[_2nd_order, _quadrature]]	✓
15303 i.c.	$y'' + 9y = \begin{cases} 0 & t < 1 \\ 1 & 1 < t < 3 \\ 0 & 3 < t \end{cases}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15306 i.c.	$y'' = \delta(t - 3)$	[[_2nd_order, _quadrature]]	✓
15307 i.c.	$y'' = \delta(t - 1) - \delta(-4 + t)$	[[_2nd_order, _quadrature]]	✓
15309	$y'' + y = \delta(t) + \delta(t - \pi)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15310 i.c.	$y'' + y = -2\delta\left(t - \frac{\pi}{2}\right)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15312	$y'' + 3y' = \delta(t)$	[[_2nd_order, _missing_y]]	✓
15313 i.c.	$y'' + 3y' = \delta(t - 1)$	[[_2nd_order, _missing_y]]	✓
15314 i.c.	$y'' + 16y = \delta(t - 2)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15315 i.c.	$y'' - 16y = \delta(t - 10)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15316 i.c.	$y'' + y = \delta(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15317 i.c.	$y'' + 4y' - 12y = \delta(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15318 i.c.	$y'' + 4y' - 12y = \delta(t - 3)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15319 i.c.	$y'' + 6y' + 9y = \delta(-4 + t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15320 i.c.	$y'' - 12y' + 45y = \delta(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
16964	$x'' = 0$ i.c.	[[_2nd_order, _quadrature]]	✓
16965	$x'' = 1$ i.c.	[[_2nd_order, _quadrature]]	✓
16966	$x'' = \cos(t)$ i.c.	[[_2nd_order, _quadrature]]	✓
16967	$x'' + x' = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
16968	$x'' + x' = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
16969	$x'' - x' = 1$ i.c.	[[_2nd_order, _missing_x]]	✓
16970	$x'' + x = t$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
16971	$x'' + 6x' = 12t + 2$ i.c.	[[_2nd_order, _missing_y]]	✓
16972	$x'' - 2x' + 2x = 2$ i.c.	[[_2nd_order, _missing_x]]	✓
16973	$x'' + 4x' + 4x = 4$ i.c.	[[_2nd_order, _missing_x]]	✓
16974	$2x'' - 2x' = (t + 1)e^t$ i.c.	[[_2nd_order, _missing_y]]	✓
16975	$x'' + x = 2 \cos(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17388	$y'' + 2y' - 2y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
17389	$9y'' + 12y' + 4y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
17390	$y'' + 3y' + 2y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
17391	$6y'' + 5y' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
17392	$y'' - 2y' + 2y = t^2 e^t + 7$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17393	$y'' - 5y' - 6y = t^2 + 7$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
17394	$y'' + 4y = 3e^{-2t} \sin(2t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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Table 2.51 second order ode constant coeff using laplace

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#	ODE	CAS classification	Solved?
17395	$y'' + 2y' + 5y = t \cos(2t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17398	$y'' + 16y = \begin{cases} 1 & 0 \leq t < \pi \\ 0 & \pi \leq t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17399	$y'' + y = \begin{cases} t & 0 \leq t < 1 \\ 0 & 1 \leq t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17400	$y'' + 4y = \begin{cases} t & 0 \leq t < 1 \\ 1 & 1 \leq t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17401	$y'' - 4y' - 12y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
17402	$y'' + 3y' + 2y = t$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
17403	$y'' - 8y' + 25y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
17404	$y'' - 4y' + 4y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
17405	$y'' - 2y' + 4y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
17406	$y'' + 4y' + 29y = e^{-2t} \sin(5t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17407	$y'' + w^2y = \cos(2t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17408	$y'' - 2y' + 2y = \cos(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17409	$y'' - 2y' + 2y = e^{-t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
17410	$y'' + 2y' + y = 18e^{-t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
17425	$y'' + y = \begin{cases} 1 & 0 \leq t < \frac{\pi}{2} \\ 0 & \frac{\pi}{2} \leq t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17426	$y'' + 2y' + 2y = \begin{cases} 0 & 0 \leq t < \pi \\ 1 & \pi \leq t \leq 2\pi \\ 0 & t \leq 2\pi \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17427	$y'' + 4y = \sin(t) - \text{Heaviside}(t - 2\pi) \sin(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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Table 2.51 second order ode constant coeff using laplace

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#	ODE	CAS classification	Solved?
17428	$y'' + 4y = \sin(t) - \sin(t) \text{Heaviside}(t - \pi)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17429	$y'' + 3y' + 2y = \begin{cases} 1 & 0 \leq t < 10 \\ 0 & 10 \leq t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17430	$y'' + 3y' + 2y = \text{Heaviside}(t - 2)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17431	$y'' + y = \text{Heaviside}(t - 3\pi)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17432	$y'' + y' + \frac{5y}{4} = t - \text{Heaviside}\left(t - \frac{\pi}{2}\right)\left(t - \frac{\pi}{2}\right)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17433	$y'' + y = \begin{cases} \frac{t}{2} & 0 \leq t < 6 \\ 3 & 6 \leq t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17434	$y'' + y' + \frac{5y}{4} = \begin{cases} \sin(t) & 0 \leq t < \pi \\ 0 & \pi \leq t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17435	$y'' + 4y = \text{Heaviside}(t - \pi) - \text{Heaviside}(t - 3\pi)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17438	$u'' + \frac{u'}{4} + u = \frac{\begin{pmatrix} 1 & \frac{3}{2} \leq t < \frac{5}{2} \\ 0 & \text{otherwise} \end{pmatrix}}{2}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17439	$u'' + \frac{u'}{4} + u = \begin{cases} 1 & \frac{3}{2} \leq t < \frac{5}{2} \\ 0 & \text{otherwise} \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17440	$u'' + \frac{u'}{4} + u = 2 \begin{pmatrix} 1 & \frac{3}{2} \leq t < \frac{5}{2} \\ 0 & \text{otherwise} \end{pmatrix}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17441	$y'' + 2y' + 2y = \delta(t - \pi)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17442	$y'' + 4y = \delta(t - \pi) - \delta(t - 2\pi)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17443	$y'' + 3y' + 2y = \delta(t - \pi) + \text{Heaviside}(t - 10)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17444	$y'' - y = -20\delta(t - 3)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17445	$y'' + 2y' + 3y = \sin(t) + \delta(t - 3\pi)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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Table 2.51 second order ode constant coeff using laplace

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#	ODE	CAS classification	Solved?
17446	$y'' + 4y = \delta(t - 4\pi)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17447	$y'' + y = \delta(t - 2\pi) \cos(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17448	$y'' + 4y = 2\delta\left(t - \frac{\pi}{4}\right)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17449	$y'' + y = \text{Heaviside}\left(t - \frac{\pi}{2}\right) + 3\delta\left(t - \frac{3\pi}{2}\right) - \text{Heaviside}(t - 2\pi)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17450	$2y'' + y' + 6y = \delta\left(t - \frac{\pi}{6}\right) \sin(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17451	$y'' + 2y' + 2y = \cos(t) + \delta\left(t - \frac{\pi}{2}\right)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17453	$y'' + \frac{y'}{2} + y = \delta(t - 1)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17454	$y'' + \frac{y'}{4} + y = \delta(t - 1)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17455	$y'' + y = \delta(t - 1)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17456	$y'' + \frac{y'}{5} + y = k\delta(t - 1)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17457	$y'' + \frac{y'}{10} + y = k\delta(t - 1)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17458	$y'' + w^2y = g(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17459	$y'' + 6y' + 25y = \sin(\alpha t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17460	$4y'' + 4y' + 17y = g(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17461	$y'' + y' + \frac{5y}{4} = 1 - \text{Heaviside}(t - \pi)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17462	$y'' + 4y' + 4y = g(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17463	$y'' + 3y' + 2y = \cos(\alpha t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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Table 2.51 second order ode constant coeff using laplace

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#	ODE	CAS classification	Solved?
17466 i.c.	$\frac{7y''}{5} + y = \text{Heaviside}(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17467 i.c.	$\frac{8y''}{5} + y = \text{Heaviside}(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18129 i.c.	$y'' - 4y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
18130 i.c.	$y'' + 2y' + 2y = 2$	[[_2nd_order, _missing_x]]	✓
18131 i.c.	$y'' + y' = 3x^2$	[[_2nd_order, _missing_y]]	✓
18132 i.c.	$y'' + 2y' + 5y = 3e^{-x} \sin(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18133 i.c.	$y'' - 2ay' + a^2y = 0$	[[_2nd_order, _missing_x]]	✓
18137 i.c.	$y'' + a^2y = f(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18138 i.c.	$y'' + 5y' + 6y = 4e^{3t}$	[[_2nd_order, _with_linear_symmetries]]	✓
18139 i.c.	$y'' + y' - 6y = t$	[[_2nd_order, _with_linear_symmetries]]	✓
18140 i.c.	$y'' - y' = t^2$	[[_2nd_order, _missing_y]]	✓
18141 i.c.	$y'' + 3y' + 2y = f(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓

## 2.4.24 second order ode time varying using laplace

Table 2.52: second order ode time varying using laplace

#	ODE	CAS classification	Solved?
555 i.c.	$tx'' + (t - 2)x' + x = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
556 i.c.	$tx'' + (3t - 1)x' + 3x = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
557 i.c.	$tx'' - (4t + 1)x' + 2(2t + 1)x = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
558 i.c.	$tx'' + 2(t - 1)x' - 2x = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
559 i.c.	$tx'' - 2x' + xt = 0$	[_Lienard]	✓
560 i.c.	$tx'' + (4t - 2)x' + (13t - 4)x = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
15274 i.c.	$ty'' + y' + ty = 0$	[_Lienard]	✓
18134 i.c.	$xy'' + (3x - 1)y' - (4x + 9)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
18135 i.c.	$xy'' + (2x + 3)y' + (x + 3)y = 3e^{-x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✗
18136 i.c.	$y'' + x^2y = 0$	[[_Emden, _Fowler]]	✗

## 2.4.25 second order ode flip role

Table 2.53: second order ode flip role

#	ODE	CAS classification	Solved?
11397	$y''y - y'^2 - 1 - 2ay(1 + y'^2)^{3/2} = 0$	[[_2nd_order, _missing_x]]	✓
11462	$2y(1 - y)y'' - (1 - 3y)y'^2 + h(y) = 0$	[[_2nd_order, _missing_x]]	✓
11465	$3y(1 - y)y'' - 2(1 - 2y)y'^2 - h(y) = 0$	[[_2nd_order, _missing_x]]	✓
11466	$(1 - y)y'' - 3(1 - 2y)y'^2 - h(y) = 0$	[[_2nd_order, _missing_x]]	✓
11467	$ay(y - 1)y'' + (by + c)y'^2 + h(y) = 0$	[[_2nd_order, _missing_x]]	✓
11489	$h(y)y'' + ah(y)y'^2 + j(y) = 0$	[[_2nd_order, _missing_x]]	✓
11529	$y'' - f(y) = 0$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓
13603	$mx'' = f(x)$	[[_2nd_order, _missing_x], [_2nd_order, _reducible, _mu_x_y1]]	✓



## 2.4.26 reduction of order

Table 2.54: reduction of order

#	ODE	CAS classification	Solved?
264	$x^2y'' + xy' - 9y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]]	✓
265	$4y'' - 4y' + y = 0$	[[_2nd_order, _missing_x]]	✓
266	$x^2y'' - x(x+2)y' + (x+2)y = 0$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
267	$(x+1)y'' - (x+2)y' + y = 0$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
268	$(-x^2+1)y'' + 2xy' - 2y = 0$	[_Gegenbauer]	✓
269	$(-x^2+1)y'' - 2xy' + 2y = 0$	[_Gegenbauer]	✓
270	$x^2y'' + xy' + \left(x^2 - \frac{1}{4}\right)y = 0$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
303	$y''' + 3y'' - 54y = 0$	[[_3rd_order, _missing_x]]	✓
304	$3y''' - 2y'' + 12y' - 8y = 0$	[[_3rd_order, _missing_x]]	✓
305	$6y'''' + 5y''' + 25y'' + 20y' + 4y = 0$	[[_high_order, _miss- ing_x]]	✓
306	$9y''' + 11y'' + 4y' - 14y = 0$	[[_3rd_order, _missing_x]]	✓
308	$y''' - 5y'' + 100y' - 500y = 0$ i.c.	[[_3rd_order, _missing_x]]	✓
928	$x^2y'' + xy' - 9y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]]	✓
929	$4y'' - 4y' + y = 0$	[[_2nd_order, _missing_x]]	✓
930	$x^2y'' - x(x+2)y' + (x+2)y = 0$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
931	$(x+1)y'' - (x+2)y' + y = 0$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
932	$(-x^2+1)y'' + 2xy' - 2y = 0$	[_Gegenbauer]	✓
933	$(-x^2+1)y'' - 2xy' + 2y = 0$	[_Gegenbauer]	✓
934	$x^2y'' + xy' + \left(x^2 - \frac{1}{4}\right)y = 0$	[[_2nd_order, _with_lin- ear_symmetries]]	✓

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Table 2.54 reduction of order  
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#	ODE	CAS classification	Solved?
1319	$t^2 y'' - 4ty' + 6y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
1320	$t^2 y'' + 2ty' - 2y = 0$	[[_Emden, _Fowler]]	✓
1321	$t^2 y'' + 3ty' + y = 0$	[[_2nd_order, _exact, _lin- ear, _homogeneous]]	✓
1322	$t^2 y'' - t(t+2)y' + (t+2)y = 0$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
1323	$xy'' - y' + 4x^3 y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)]']]	✓
1324	$(x-1)y'' - xy' + y = 0$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
1325	$x^2 y'' - \left(x - \frac{3}{16}\right)y = 0$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
1326	$x^2 y'' + xy' + \left(x^2 - \frac{1}{4}\right)y = 0$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
1757	$(2x+1)y'' - 2y' - (2x+3)y = (2x+1)^2$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
1758	$x^2 y'' + xy' - y = \frac{4}{x^2}$	[[_2nd_order, _exact, _lin- ear, _nonhomogeneous]]	✓
1759	$x^2 y'' - xy' + y = x$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
1760	$y'' - 3y' + 2y = \frac{1}{1+e^{-x}}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1761	$y'' - 2y' + y = 7x^{3/2}e^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1762	$4x^2 y'' + (-8x^2 + 4x)y' + (4x^2 - 4x - 1)y = 4\sqrt{x}e^x(1+4x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1763	$y'' - 2y' + 2y = e^x \sec(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1764	$y'' + 4xy' + (4x^2 + 2)y = 8e^{-x(x+2)}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1765	$x^2 y'' + xy' - 4y = -6x - 4$	[[_2nd_order, _with_lin- ear_symmetries]]	✓

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Table 2.54 reduction of order

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#	ODE	CAS classification	Solved?
1766	$x^2y'' + 2x(x-1)y' + (x^2 - 2x + 2)y = x^3e^{2x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1767	$x^2y'' - x(2x-1)y' + (x^2 - x - 1)y = e^xx^2$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1768	$(-2x+1)y'' + 2y' + (2x-3)y = (4x^2 - 4x + 1)e^x$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1769	$x^2y'' - 3xy' + 4y = 4x^4$	[[_2nd_order, _with_linear_symmetries]]	✓
1770	$2xy'' + (1+4x)y' + (2x+1)y = 3\sqrt{x}e^{-x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1771	$xy'' - (2x+1)y' + (x+1)y = -e^{-x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1772	$4x^2y'' - 4x(x+1)y' + (2x+3)y = 4x^{5/2}e^{2x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1773	$x^2y'' - 5xy' + 8y = 4x^2$	[[_2nd_order, _with_linear_symmetries]]	✓
1774	$xy'' + (2-2x)y' + (-2+x)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
1775	$x^2y'' - 4xy' + 6y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
1776	$x^2\ln(x)^2y'' - 2x\ln(x)y' + (2+\ln(x))y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
1777	$4xy'' + 2y' + y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
1778	$xy'' - (2x+2)y' + (x+2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
1779	$x^2y'' - (2a-1)xy' + a^2y = 0$	[[_Emden, _Fowler]]	✓
1780	$x^2y'' - 2xy' + (x^2+2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
1781	$xy'' - (1+4x)y' + (4x+2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
1782	$4x^2\sin(x)y'' - 4x(x\cos(x) + \sin(x))y' + (2x\cos(x) + 3\sin(x))y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
1783	$4x^2y'' - 4xy' + (-16x^2+3)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓

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Table 2.54 reduction of order

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#	ODE	CAS classification	Solved?
1784	$(2x + 1)xy'' - 2(2x^2 - 1)y' - 4(x + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
1785	$(x^2 - 2x)y'' + (-x^2 + 2)y' + (2x - 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
1786	$xy'' - (1 + 4x)y' + (4x + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
1787	$x^2y'' - 3xy' + 4y = 4x^4$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
1788	$(3x - 1)y'' - (2 + 3x)y' - (6x - 8)y = 0$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
1789	$(x + 1)^2y'' - 2(x + 1)y' - (x^2 + 2x - 1)y = (x + 1)^3e^x$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1790	$x^2y'' + 2xy' - 2y = x^2$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
1791	$(x^2 - 4)y'' + 4xy' + 2y = x + 2$ i.c.	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
2573	$y'' - \frac{2(t + 1)y'}{t^2 + 2t - 1} + \frac{2y}{t^2 + 2t - 1} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
2574	$y'' - 4ty' + (4t^2 - 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
2575	$(-t^2 + 1)y'' - 2ty' + 2y = 0$	[_Gegenbauer]	✓
2576	$(t^2 + 1)y'' - 2ty' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
2577	$(-t^2 + 1)y'' - 2ty' + 6y = 0$	[_Gegenbauer]	✓
2578	$(2t + 1)y'' - 4(t + 1)y' + 4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
2579	$t^2y'' + ty' + \left(t^2 - \frac{1}{4}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
2580	$ty'' - (1 + 3t)y' + 3y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
2592	$y'' + p(t)y' + q(t)y = t + 1$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2717	$y'''' - 2y''' + y'' + 2y' - 2y = 0$	[[_high_order, _missing_x]]	✓

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Table 2.54 reduction of order  
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#	ODE	CAS classification	Solved?
3783	$x^2 y'' - 3xy' + 4y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)][']]	✓
3784	$xy'' + (-2x + 1)y' + (x - 1)y = 0$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
3785	$x^2 y'' - 2xy' + (x^2 + 2)y = 0$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
3786	$(-x^2 + 1)y'' - 2xy' + 2y = 0$	[_Gegenbauer]	✓
3787	$y'' - \frac{y'}{x} + 4x^2 y = 0$	[[_Emden, _Fowler], [_2nd_order, _lin- ear, '_with_symme- try_[0,F(x)][']]	✓
3788	$4x^2 y'' + 4xy' + (4x^2 - 1)y = 0$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
3789	$y'' + y = \csc(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3790	$xy'' - (2x + 1)y' + 2y = 8x^2 e^{2x}$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
3791	$x^2 y'' - 3xy' + 4y = 8x^4$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
3792	$y'' - 6y' + 9y = 15 e^{3x} \sqrt{x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3793	$y'' - 4y' + 4y = 4 e^{2x} \ln(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3794	$4x^2 y'' + y = \sqrt{x} \ln(x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6202	$x^2(2 - x)y'' + 2xy' - 2y = 0$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
6203	$(x^2 + 1)y'' - 2xy' + 2y = 0$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
6204	$xy'' - 2(x + 1)y' + (x + 2)y = 0$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
6205	$3xy'' - 2(3x - 1)y' + (3x - 2)y = 0$	[[_2nd_order, _with_lin- ear_symmetries]]	✓
6206	$x^2 y'' + (x + 1)y' - y = 0$	[[_2nd_order, _exact, _lin- ear, _homogeneous]]	✓
6207	$x(x + 1)y'' - (x - 1)y' + y = 0$	[[_2nd_order, _with_lin- ear_symmetries]]	✓

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Table 2.54 reduction of order  
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#	ODE	CAS classification	Solved?
7353	$x^2y'' - 7xy' + 15y = 0$	[[_Emden, _Fowler]]	✓
7354	$x^2y'' - xy' + y = 0$	[[_Emden, _Fowler]]	✓
7355	$y'' - 4xy' + (4x^2 - 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
7356	$xy'' - (x + 1)y' + y = 0$	[_Laguerre]	✓
7357	$(-x^2 + 1)y'' - 2xy' + 2y = 0$	[_Gegenbauer]	✓
7358	$y'' - 2xy' + 2y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
7360	$x^2y'' - 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
7361	$x^2y'' - xy' + y = 0$	[[_Emden, _Fowler]]	✓
7681	$y'' + y = 0$	[[_2nd_order, _missing_x]]	✓
7682	$y'' - y = 0$	[[_2nd_order, _missing_x]]	✓
7683	$xy'' + 3y' = 0$	[[_2nd_order, _missing_y]]	✓
7684	$x^2y'' + xy' - 4y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, _with_symmetry_[0,F(x)]]]	✓
7685	$(-x^2 + 1)y'' - 2xy' + 2y = 0$	[_Gegenbauer]	✓
7686	$x^2y'' + xy' + \left(x^2 - \frac{1}{4}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
7687	$y'' - \frac{xy'}{x-1} + \frac{y}{x-1} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
7688	$x^2y'' + 2xy' - 2y = 0$	[[_Emden, _Fowler]]	✓
7689	$x^2y'' - x(x+2)y' + (x+2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
7691	$xy'' - (2x+1)y' + (x+1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
7739	$y'' - y = 3e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓
7740	$y'' + y = -8\sin(3x)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7741	$y'' + y' + y = x^2 + 2x + 2$	[[_2nd_order, _with_linear_symmetries]]	✓
7742	$y'' + y' = \frac{x-1}{x}$	[[_2nd_order, _missing_y]]	✓

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Table 2.54 reduction of order  
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#	ODE	CAS classification	Solved?
12848	$x'' + tx' + x = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
12849	$x'' - tx' + x = 0$	[_Hermite]	✓
12850	$x'' - 2ax' + a^2x = 0$	[[_2nd_order, _missing_x]]	✓
12851	$x'' - \frac{(t+2)x'}{t} + \frac{(t+2)x}{t^2} = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
12852	$t^2x'' + tx' + \left(t^2 - \frac{1}{4}\right)x = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
13075	$x^2y'' - 4xy' + 4y = 0$	[[_Emden, _Fowler]]	✓
13076	$(x+1)^2y'' - 3(x+1)y' + 3y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
13077	$(x^2 - 1)y'' - 2xy' + 2y = 0$	[_Gegenbauer]	✓
13078	$(x^2 - x + 1)y'' - (x^2 + x)y' + (x + 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
13079	$(2x + 1)y'' - 4(x + 1)y' + 4y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
13080	$(x^3 - x^2)y'' - (x^3 + 2x^2 - 2x)y' + (2x^2 + 2x - 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
13460	$t^2y'' - (t^2 + 2t)y' + (t + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
13461	$(x - 1)y'' - xy' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
13462	$(t \cos(t) - \sin(t))x'' - x't \sin(t) - x \sin(t) = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
13463	$(-t^2 + t)x'' + (-t^2 + 2)x' + (2 - t)x = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
13464	$y'' - xy' + y = 0$	[_Hermite]	✓
13465	$\tan(t)x'' - 3x' + (\tan(t) + 3 \cot(t))x = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
13471	$(\tan(x)^2 - 1)y'' - 4 \tan(x)^3 y' + 2y \sec(x)^4 = (\tan(x)^2 - 1)(1 - 2 \sin(x)^2)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13608	$x^3y'' - xy' + y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, 'with_symmetry_[0,F(x)]']]	✓

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Table 2.54 reduction of order  
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#	ODE	CAS classification	Solved?
13806	$(x - 1)y'' - xy' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
13807	$xy'' + 2y' + xy = 0$	[_Lienard]	✓
14948	$y'' - 5y' + 6y = 0$	[[_2nd_order, _missing_x]]	✓
14949	$y'' - 10y' + 25y = 0$	[[_2nd_order, _missing_x]]	✓
14950	$x^2y'' - 6xy' + 12y = 0$	[[_Emden, _Fowler]]	✓
14951	$2x^2y'' - xy' + y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]]]	✓
14952	$4x^2y'' + y = 0$	[[_Emden, _Fowler]]	✓
14953	$y'' - \left(4 + \frac{2}{x}\right)y' + \left(4 + \frac{4}{x}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
14954	$(x + 1)y'' + xy' - y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
14955	$y'' - \frac{y'}{x} - 4x^2y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]]]	✓
14956	$y'' + y = 0$	[[_2nd_order, _missing_x]]	✓
14957	$xy'' + (2x + 2)y' + 2y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
14958	$\sin(x)^2 y'' - 2 \cos(x) \sin(x) y' + (1 + \cos(x)^2) y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
14959	$x^2y'' - 2xy' + (x^2 + 2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
14960	$x^2y'' + xy' + y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]]]	✓
14961	$x^2y'' + xy' + \left(x^2 - \frac{1}{4}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
14962	$y'' - 4y' + 3y = 9e^{2x}$	[[_2nd_order, _with_linear_symmetries]]	✓
14963	$y'' - 6y' + 8y = e^{4x}$	[[_2nd_order, _with_linear_symmetries]]	✓

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Table 2.54 reduction of order  
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#	ODE	CAS classification	Solved?
14964	$x^2y'' + xy' - y = \sqrt{x}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
14965	$x^2y'' - 20y = 27x^5$	[[_2nd_order, _with_linear_symmetries]]	✓
14966	$xy'' + (2x + 2)y' + 2y = 8e^{2x}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
14967	$(x + 1)y'' + xy' - y = (x + 1)^2$	[[_2nd_order, _with_linear_symmetries]]	✓
15866	$y'' - 5y' + 6y = 0$	[[_2nd_order, _missing_x]]	✓
15867	$y'' + 6y' + 8y = 0$	[[_2nd_order, _missing_x]]	✓
15868	$y'' - 4y' + 4y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
15869	$y'' + 10y' + 25y = 0$	[[_2nd_order, _missing_x]]	✓
15870	$y'' + 9y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
15871	$y'' + 49y = 0$	[[_2nd_order, _missing_x]]	✓
15872	$t^2y'' + 4ty' - 4y = 0$	[[_Emden, _Fowler]]	✓
15873	$t^2y'' + 6ty' + 6y = 0$	[[_Emden, _Fowler]]	✓
15874	$t^2y'' + ty' + \left(t^2 - \frac{1}{4}\right)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
15875	$t^2y'' + 3ty' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
15878	$4t^2y'' + 4ty' + (36t^2 - 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
15879	$ty'' + 2y' + 16ty = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
15880	$y'' + b(t)y' + c(t)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
15881	$y'' + b(t)y' + c(t)y = 0$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
16035	$t^2y'' - 4ty' + (t^2 + 6)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
16037	$ty'' + 2y' + ty = 0$	[_Lienard]	✓
16039	$4t^2y'' + 4ty' + (16t^2 - 1)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓

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Table 2.54 reduction of order  
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#	ODE	CAS classification	Solved?
16237	$(t+1)^2 y'' - 2(t+1)y' + 2y = 0$	[[_2nd_order, _with_linear_symmetries], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
16238	$ty'' + 2y' + ty = 0$	[_Lienard]	✓
16814	$x^2(\ln(x) - 1)y'' - xy' + y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
16815	$y'' + (\tan(x) - 2\cot(x))y' + 2\cot(x)^2 y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
16816	$y'' + \tan(x)y' + \cos(x)^2 y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
16817	$(x^2 + 1)y'' + xy' - y = 1$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
16818	$x^2 y'' - xy' - 3y = 5x^4$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
16819	$(x-1)y'' - xy' + y = (x-1)^2 e^x$	[[_2nd_order, _with_linear_symmetries]]	✓
16820	$y'' + y' + e^{-2x}y = e^{-3x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16821	$(x^4 - x^3)y'' + (2x^3 - 2x^2 - x)y' - y = \frac{(x-1)^2}{x}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
16822	$y'' - y' + e^{2x}y = x e^{2x} - 1$	[[_2nd_order, _with_linear_symmetries]]	✓
16823	$x(x-1)y'' - (2x-1)y' + 2y = x^2(2x-3)$	[[_2nd_order, _with_linear_symmetries]]	✓
17248	$ay'' + by' + cy = 0$	[[_2nd_order, _missing_x]]	✓
17249	$t^2 y'' - 4ty' + 6y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓
17250	$t^2 y'' + 2ty' - 2y = 0$	[[_Emden, _Fowler]]	✓
17251	$t^2 y'' + 3ty' + y = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
17252	$t^2 y'' - t(t+2)y' + (t+2)y = 0$	[[_2nd_order, _with_linear_symmetries]]	✓
17253	$xy'' - y' + 4x^3 y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, '_with_symmetry_[0,F(x)]']]	✓

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Table 2.54 reduction of order  
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#	ODE	CAS classification	Solved?
17254	$(x - 1)y'' - xy' + y = 0$	[[_2nd_order, __with_linear_symmetries]]	✓
17255	$x^2y'' - \left(x - \frac{3}{16}\right)y = 0$	[[_2nd_order, __with_linear_symmetries]]	✓
17256	$x^2y'' + xy' + \left(x^2 - \frac{1}{4}\right)y = 0$	[[_2nd_order, __with_linear_symmetries]]	✓
17257	$xy'' - (x + n)y' + ny = 0$	[_Laguerre]	✓
17258	$y'' + a(xy' + y) = 0$	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
17386	$ty'' - (t + 1)y' - y = t^2e^{2t}$	[[_2nd_order, _exact, _linear, _nonhomogeneous]]	✓
17387	$(-t + 1)y'' + ty' - y = 2(t - 1)^2e^{-t}$	[[_2nd_order, __with_linear_symmetries]]	✓
17948	$y'' + y = 0$	[[_2nd_order, _missing_x]]	✓
17949	$y'' - y = 0$	[[_2nd_order, _missing_x]]	✓
17950	$xy'' + 3y' = 0$	[[_2nd_order, _missing_y]]	✓
17951	$x^2y'' + xy' - 4y = 0$	[[_Emden, _Fowler], [_2nd_order, _linear, ' _with_symmetry_[0,F(x)]']]	✓
17952	$(-x^2 + 1)y'' - 2xy' + 2y = 0$	[_Gegenbauer]	✓
17953	$x^2y'' + xy' + \left(x^2 - \frac{1}{4}\right)y = 0$	[[_2nd_order, __with_linear_symmetries]]	✓
17954	$y'' - \frac{xy'}{x-1} + \frac{y}{x-1} = 0$	[[_2nd_order, __with_linear_symmetries]]	✓
17955	$x^2y'' + 2xy' - 2y = 0$	[[_Emden, _Fowler]]	✓
17956	$x^2y'' - x(x + 2)y' + (x + 2)y = 0$	[[_2nd_order, __with_linear_symmetries]]	✓
17958	$xy'' - (2x + 1)y' + (x + 1)y = 0$	[[_2nd_order, __with_linear_symmetries]]	✓

## 2.5 Table of higher order ODEs

Table 2.55: High order differential equations

#	ODE	CAS classification	Solved?
249	$y''' + 2y'' - y' - 2y = 0$ i.c.	[[_3rd_order, _missing_x]]	✓
250	$y''' - 6y'' + 11y' - 6y = 0$ i.c.	[[_3rd_order, _missing_x]]	✓
251	$y''' - 3y'' + 3y' - y = 0$ i.c.	[[_3rd_order, _missing_x]]	✓
252	$y''' - 5y'' + 8y' - 4y = 0$ i.c.	[[_3rd_order, _missing_x]]	✓
253	$y''' + 9y' = 0$ i.c.	[[_3rd_order, _missing_x]]	✓
254	$y''' - 3y'' + 4y' - 2y = 0$ i.c.	[[_3rd_order, _missing_x]]	✓
255	$x^3y''' - 3x^2y'' + 6xy' - 6y = 0$ i.c.	[[_3rd_order, _with_linear_symmetries]]	✓
256	$x^3y''' + 6x^2y'' + 4xy' - 4y = 0$ i.c.	[[_3rd_order, _with_linear_symmetries]]	✓
280	$5y'''' + 3y''' = 0$	[[_high_order, _missing_x]]	✓
281	$y'''' - 8y''' + 16y'' = 0$	[[_high_order, _missing_x]]	✓
282	$y'''' - 3y''' + 3y'' - y' = 0$	[[_high_order, _missing_x]]	✓
283	$9y''' + 12y'' + 4y' = 0$	[[_3rd_order, _missing_x]]	✓
284	$y'''' + 3y''' - 4y = 0$	[[_high_order, _missing_x]]	✓
285	$y'''' - 8y'' + 16y = 0$	[[_high_order, _missing_x]]	✓
286	$y'''' + 18y'' + 81y = 0$	[[_high_order, _missing_x]]	✓
287	$6y'''' + 11y'' + 4y = 0$	[[_high_order, _missing_x]]	✓
288	$y'''' = 16y$	[[_high_order, _missing_x]]	✓
289	$y''' + y'' - y' - y = 0$	[[_3rd_order, _missing_x]]	✓
290	$y'''' + 2y''' + 3y'' + 2y' + y = 0$	[[_high_order, _missing_x]]	✓

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Table 2.55 High order differential equations

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#	ODE	CAS classification	Solved?
294	$2y''' - 3y'' - 2y' = 0$ i.c.	[[_3rd_order, _missing_x]]	✓
295	$3y''' + 2y'' = 0$ i.c.	[[_3rd_order, _missing_x]]	✓
296	$y''' + 10y'' + 25y' = 0$ i.c.	[[_3rd_order, _missing_x]]	✓
297	$y''' + 3y'' - 4y = 0$	[[_3rd_order, _missing_x]]	✓
298	$2y''' - y'' - 5y' - 2y = 0$	[[_3rd_order, _missing_x]]	✓
299	$y''' + 27y = 0$	[[_3rd_order, _missing_x]]	✓
300	$y'''' - y''' + y'' - 3y' - 6y = 0$	[[_high_order, _missing_x]]	✓
301	$y''' + 3y'' + 4y' - 8y = 0$	[[_3rd_order, _missing_x]]	✓
302	$y'''' + y''' - 3y'' - 5y' - 2y = 0$	[[_high_order, _missing_x]]	✓
303	$y''' + 3y'' - 54y = 0$	[[_3rd_order, _missing_x]]	✓
304	$3y''' - 2y'' + 12y' - 8y = 0$	[[_3rd_order, _missing_x]]	✓
305	$6y'''' + 5y''' + 25y'' + 20y' + 4y = 0$	[[_high_order, _missing_x]]	✓
306	$9y''' + 11y'' + 4y' - 14y = 0$	[[_3rd_order, _missing_x]]	✓
307	$y'''' = y'''$ i.c.	[[_high_order, _missing_x]]	✓
308	$y''' - 5y'' + 10y' - 50y = 0$ i.c.	[[_3rd_order, _missing_x]]	✓
312	$y''' = y$ i.c.	[[_3rd_order, _missing_x]]	✓
313	$y'''' = y''' + y'' + y' + 2y$ i.c.	[[_high_order, _missing_x]]	✓
314	$ax^3y''' + bx^2y'' + cxy' + dy = 0$	[[_3rd_order, _with_linear_symmetries]]	✓
317	$x^3y''' + 6x^2y'' + 4xy' = 0$	[[_3rd_order, _missing_y]]	✓
318	$x^3y''' - x^2y'' + xy' = 0$	[[_3rd_order, _missing_y]]	✓
319	$x^3y''' + 3x^2y'' + xy' = 0$	[[_3rd_order, _missing_y]]	✓
320	$x^3y''' - 3x^2y'' + xy' = 0$	[[_3rd_order, _missing_y]]	✓
321	$x^3y''' + 6x^2y'' + 7xy' + y = 0$	[[_3rd_order, _exact, _linear, _homogeneous]]	✓

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Table 2.55 High order differential equations  
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#	ODE	CAS classification	Solved?
332	$y''' + 4y' = 3x - 1$	[[_3rd_order, _missing_y]]	✓
333	$y''' + y' = 2 - \sin(x)$	[[_3rd_order, _missing_y]]	✓
335	$y'''' - 2y'' + y = x e^x$	[[_high_order, _linear, _nonhomogeneous]]	✓
336	$y^{(5)} + 5y'''' - y = 17$	[[_high_order, _missing_x]]	✓
339	$y'''' - y'' + 4y = e^x - x e^{2x}$	[[_high_order, _linear, _nonhomogeneous]]	✓
340	$y^{(5)} + 2y''' + 2y'' = 3x^2 - 1$	[[_high_order, _missing_y]]	✓
341	$y''' - y = e^x + 7$	[[_3rd_order, _with_linear_symmetries]]	✓
343	$y^{(5)} - y''' = e^x + 2x^2 - 5$	[[_high_order, _missing_y]]	✓
345	$y''' - y'' - 12y' = x - 2x e^{-3x}$	[[_3rd_order, _missing_y]]	✓
348	$y'''' + 5y'' + 4y = \sin(x) + \cos(2x)$	[[_high_order, _linear, _nonhomogeneous]]	✓
349	$y'''' + 9y'' = (x^2 + 1) \sin(3x)$	[[_high_order, _missing_y]]	✓
350	$y'''' - 2y'' + y = x^2 \cos(x)$	[[_high_order, _linear, _nonhomogeneous]]	✓
356	<i>i.c.</i> $y'''' - 4y'' = x^2$	[[_high_order, _missing_y]]	✓
357	<i>i.c.</i> $y''' - 2y'' + y' = 1 + x e^x$	[[_3rd_order, _missing_y]]	✓
359	<i>i.c.</i> $y''' + y'' = x + e^{-x}$	[[_3rd_order, _missing_y]]	✓
360	<i>i.c.</i> $y'''' - y = 5$	[[_high_order, _missing_x]]	✓
361	<i>i.c.</i> $y'''' - y''' - y'' - y' - 2y = 8x^5$	[[_high_order, _linear, _nonhomogeneous]]	✓
362	$y'''' + 4y = \cos(x)^3$	[[_high_order, _linear, _nonhomogeneous]]	✓
425	<i>i.c.</i> $y''' = y$	[[_3rd_order, _missing_x]]	✓
545	<i>i.c.</i> $x''' + x'' - 6x' = 0$	[[_3rd_order, _missing_x]]	✓

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Table 2.55 High order differential equations

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#	ODE	CAS classification	Solved?
546	$x'''' - x = 0$ i.c.	[[_high_order, _missing_x]]	✓
547	$x'''' + x = 0$ i.c.	[[_high_order, _missing_x]]	✓
548	$x'''' + 13x'' + 36x = 0$ i.c.	[[_high_order, _missing_x]]	✓
549	$x'''' + 8x'' + 16x = 0$ i.c.	[[_high_order, _missing_x]]	✓
550	$x'''' + 2x'' + x = e^{2t}$ i.c.	[[_high_order, _with_linear_symmetries]]	✓
935	$5y'''' + 3y''' = 0$	[[_high_order, _missing_x]]	✓
936	$y'''' - 8y''' + 16y'' = 0$	[[_high_order, _missing_x]]	✓
937	$y'''' - 3y''' + 3y'' - y' = 0$	[[_high_order, _missing_x]]	✓
938	$9y''' + 12y'' + 4y' = 0$	[[_3rd_order, _missing_x]]	✓
939	$y'''' + 3y''' - 4y = 0$	[[_high_order, _missing_x]]	✓
940	$y'''' - 16y'' + 16y = 0$	[[_high_order, _missing_x]]	✓
941	$y'''' + 18y'' + 81y = 0$	[[_high_order, _missing_x]]	✓
942	$6y'''' + 11y'' + 4y = 0$	[[_high_order, _missing_x]]	✓
943	$y'''' = 16y$	[[_high_order, _missing_x]]	✓
944	$y''' + y'' - y' - y = 0$	[[_3rd_order, _missing_x]]	✓
945	$y'''' + 2y''' + 3y'' + 2y' + y = 0$	[[_high_order, _missing_x]]	✓
946	$2y''' - 3y'' - 2y' = 0$ i.c.	[[_3rd_order, _missing_x]]	✓
947	$3y''' + 2y'' = 0$ i.c.	[[_3rd_order, _missing_x]]	✓
948	$y''' + 10y'' + 25y' = 0$ i.c.	[[_3rd_order, _missing_x]]	✓
949	$y''' + 3y'' - 4y = 0$	[[_3rd_order, _missing_x]]	✓
950	$2y'''' - y'' - 5y' - 2y = 0$	[[_3rd_order, _missing_x]]	✓

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Table 2.55 High order differential equations

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#	ODE	CAS classification	Solved?
951	$y''' + 27y = 0$	[[_3rd_order, _missing_x]]	✓
952	$y'''' - y''' + y'' - 3y' - 6y = 0$	[[_high_order, _missing_x]]	✓
953	$y''' + 3y'' + 4y' - 8y = 0$	[[_3rd_order, _missing_x]]	✓
954	$y'''' + y''' - 3y'' - 5y' - 2y = 0$	[[_high_order, _missing_x]]	✓
955	$y''' - 5y'' + 100y' - 500y = 0$ i.c.	[[_3rd_order, _missing_x]]	✓
956	$y''' = y$ i.c.	[[_3rd_order, _missing_x]]	✓
957	$y'''' = y''' + y'' + y' + 2y$ i.c.	[[_high_order, _missing_x]]	✓
958	$x^3y''' + 6x^2y'' + 4xy' = 0$	[[_3rd_order, _missing_y]]	✓
959	$x^3y''' - x^2y'' + xy' = 0$	[[_3rd_order, _missing_y]]	✓
960	$x^3y''' + 3x^2y'' + xy' = 0$	[[_3rd_order, _missing_y]]	✓
961	$x^3y''' - 3x^2y'' + xy' = 0$	[[_3rd_order, _missing_y]]	✓
962	$x^3y''' + 6x^2y'' + 7xy' + y = 0$	[[_3rd_order, _exact, _linear, _homogeneous]]	✓
1462	$y'''' + 4y''' + 3y = t$	[[_high_order, _with_linear_symmetries]]	✓
1463	$t(t-1)y'''' + e^ty'' + 4t^2y = 0$	[[_high_order, _with_linear_symmetries]]	✗
1464	$y'''' + y'' = 0$	[[_high_order, _missing_x]]	✓
1465	$y''' + 2y'' - y' - 2y = 0$	[[_3rd_order, _missing_x]]	✓
1466	$xy''' - y'' = 0$	[[_3rd_order, _missing_y]]	✓
1467	$x^3y''' + x^2y'' - 2xy' + 2y = 0$	[[_3rd_order, _exact, _linear, _homogeneous]]	✓
1468	$y''' + 2y'' - y' - 3y = 0$	[[_3rd_order, _missing_x]]	✓
1469	$ty'''' + 2y'' - y' + ty = 0$	[[_3rd_order, _with_linear_symmetries]]	✗
1470	$(2-t)y''' + (2t-3)y'' - ty' + y = 0$	[[_3rd_order, _with_linear_symmetries]]	✗
1471	$t^2(3+t)y''' - 3t(t+2)y'' + 6(t+1)y' - 6y = 0$	[[_3rd_order, _with_linear_symmetries]]	✗
1472	$y''' - y'' - y' + y = 0$	[[_3rd_order, _missing_x]]	✓

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Table 2.55 High order differential equations  
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#	ODE	CAS classification	Solved?
1473	$y''' - 3y'' + 3y' + y = 0$	[[_3rd_order, _missing_x]]	✓
1474	$y'''' - 4y''' + 4y'' = 0$	[[_high_order, _missing_x]]	✓
1475	$y^{(6)} + y = 0$	[[_high_order, _missing_x]]	✓
1476	$y^{(6)} - 3y'''' + 3y'' - y = 0$	[[_high_order, _missing_x]]	✓
1477	$y^{(6)} - y'' = 0$	[[_high_order, _missing_x]]	✓
1478	$y^{(5)} - 3y'''' + 3y''' - 3y'' + 2y' = 0$	[[_high_order, _missing_x]]	✓
1479	$y^{(8)} + 8y'''' + 16y = 0$	[[_high_order, _missing_x]]	✓
1480	$y'''' + 2y'' + y = 0$	[[_high_order, _missing_x]]	✓
1481	$y''' + 5y'' + 6y' + 2y = 0$	[[_3rd_order, _missing_x]]	✓
1482	$y'''' - 7y''' + 6y'' + 30y' - 36y = 0$	[[_high_order, _missing_x]]	✓
1488	$y'''' - 4y''' + 6y'' - 4y' + y = 0$	[[_high_order, _missing_x]]	✓
1489	$y'''' - 4y = 0$	[[_high_order, _missing_x]]	✓
1502	$y'''' + 5y'' + 4y = 1 - \text{Heaviside}(t - \pi)$	[[_high_order, _linear, _nonhomogeneous]]	✓
1513	$y'''' - y = \delta(t - 1)$	[[_high_order, _linear, _nonhomogeneous]]	✓
2107	$x^3y''' - x^2y'' - 2xy' + 6y = 0$	[[_3rd_order, _exact, _linear, _homogeneous]]	✓
2108	$y'''' + y''' - 7y'' - y' + 6y = 0$	[[_high_order, _missing_x]]	✓
2109	$x^3y''' - x^2y'' - 2xy' + 6y = 0$	[[_3rd_order, _exact, _linear, _homogeneous]]	✓
2110	$x^3y''' - x^2y'' - 2xy' + 6y = 0$	[[_3rd_order, _exact, _linear, _homogeneous]]	✓
2111	$x^3y''' - x^2y'' - 2xy' + 6y = 0$	[[_3rd_order, _exact, _linear, _homogeneous]]	✓
2112	$x^3y''' - x^2y'' - 2xy' + 6y = 0$	[[_3rd_order, _exact, _linear, _homogeneous]]	✓

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Table 2.55 High order differential equations  
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#	ODE	CAS classification	Solved?
2113	$y''' + y'' - y' - y = 0$	[[_3rd_order, _missing_x]]	✓
2114	$y''' - 3y'' + 7y' - 5y = 0$	[[_3rd_order, _missing_x]]	✓
2115	$y''' - 3y'' + 3y' - y = 0$	[[_3rd_order, _missing_x]]	✓
2116	$y'''' + 8y'' - 9y = 0$	[[_high_order, _missing_x]]	✓
2117	$y''' - y'' + 16y' - 16y = 0$	[[_3rd_order, _missing_x]]	✓
2118	$2y''' + 3y'' - 2y' - 3y = 0$	[[_3rd_order, _missing_x]]	✓
2119	$y''' + 5y'' + 9y' + 5y = 0$	[[_3rd_order, _missing_x]]	✓
2120	$4y''' - 8y'' + 5y' - y = 0$	[[_3rd_order, _missing_x]]	✓
2121	$27y''' + 27y'' + 9y' + y = 0$	[[_3rd_order, _missing_x]]	✓
2122	$y'''' + y'' = 0$	[[_high_order, _missing_x]]	✓
2123	$y'''' - 16y = 0$	[[_high_order, _missing_x]]	✓
2124	$y'''' + 12y'' + 36y = 0$	[[_high_order, _missing_x]]	✓
2125	$16y'''' - 72y'' + 81y = 0$	[[_high_order, _missing_x]]	✓
2126	$6y'''' + 5y''' + 7y'' + 5y' + y = 0$	[[_high_order, _missing_x]]	✓
2127	$4y'''' + 12y''' + 3y'' - 13y' - 6y = 0$	[[_high_order, _missing_x]]	✓
2128	$y'''' - 4y''' + 7y'' - 6y' + 2y = 0$	[[_high_order, _missing_x]]	✓
2129	$y''' - 2y'' + 4y' - 8y = 0$	[[_3rd_order, _missing_x]]	✓
	<i>i.c.</i>		
2130	$y''' + 3y'' - y' - 3y = 0$	[[_3rd_order, _missing_x]]	✓
	<i>i.c.</i>		
2131	$y''' - y'' - y' + y = 0$	[[_3rd_order, _missing_x]]	✓
	<i>i.c.</i>		
2132	$y''' - 2y' - 4y = 0$	[[_3rd_order, _missing_x]]	✓
	<i>i.c.</i>		
2133	$3y'''' - y'' - 7y' + 5y = 0$	[[_3rd_order, _missing_x]]	✓
	<i>i.c.</i>		
2134	$y''' - 6y'' + 12y' - 8y = 0$	[[_3rd_order, _missing_x]]	✓
	<i>i.c.</i>		

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Table 2.55 High order differential equations  
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#	ODE	CAS classification	Solved?
2135	$2y''' - 11y'' + 12y' + 9y = 0$ i.c.	[[_3rd_order, _missing_x]]	✓
2136	$8y''' - 4y'' - 2y' + y = 0$ i.c.	[[_3rd_order, _missing_x]]	✓
2137	$y'''' - 16y = 0$ i.c.	[[_high_order, _missing_x]]	✓
2138	$y'''' - 6y''' + 7y'' + 6y' - 8y = 0$ i.c.	[[_high_order, _missing_x]]	✓
2139	$4y'''' - 13y'' + 9y = 0$ i.c.	[[_high_order, _missing_x]]	✓
2140	$y'''' + 2y''' - 2y'' - 8y' - 8y = 0$ i.c.	[[_high_order, _missing_x]]	✓
2141	$4y'''' + 8y''' + 19y'' + 32y' + 12y = 0$ i.c.	[[_high_order, _missing_x]]	✓
2142	$y'''' - y = 0$	[[_high_order, _missing_x]]	✓
2143	$y'''' + y = 0$	[[_high_order, _missing_x]]	✓
2144	$y'''' + 64y = 0$	[[_high_order, _missing_x]]	✓
2145	$y^{(6)} - y = 0$	[[_high_order, _missing_x]]	✓
2146	$y'''' + 64y = 0$	[[_high_order, _missing_x]]	✓
2147	$y^{(5)} + y'''' + y''' + y'' + y' + y = 0$	[[_high_order, _missing_x]]	✓
2148	$y''' - 6y'' + 11y' - 6y = -e^x(-24x^2 + 76x + 4)$	[[_3rd_order, _linear, _nonhomogeneous]]	✓
2149	$y''' - 2y'' - 5y' + 6y = e^{-3x}(6x^2 - 23x + 32)$	[[_3rd_order, _linear, _nonhomogeneous]]	✓
2150	$4y''' + 8y'' - y' - 2y = -e^x(6x^2 + 45x + 4)$	[[_3rd_order, _linear, _nonhomogeneous]]	✓
2151	$y''' + 3y'' - y' - 3y = e^{-2x}(3x^2 - 17x + 2)$	[[_3rd_order, _linear, _nonhomogeneous]]	✓
2152	$y''' + 3y'' - y' - 3y = e^x(16x^3 + 24x^2 + 2x - 1)$	[[_3rd_order, _linear, _nonhomogeneous]]	✓
2153	$y''' + y'' - 2y = e^x(15x^2 + 34x + 14)$	[[_3rd_order, _linear, _nonhomogeneous]]	✓

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Table 2.55 High order differential equations

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#	ODE	CAS classification	Solved?
2154	$4y''' + 8y'' - y' - 2y = -e^{-2x}(1 - 15x)$	[[_3rd_order, _linear, _nonhomogeneous]]	✓
2155	$y''' - y'' - y' + y = -e^x(7 + 6x)$	[[_3rd_order, _linear, _nonhomogeneous]]	✓
2156	$2y''' - 7y'' + 4y' + 4y = e^{2x}(17 + 30x)$	[[_3rd_order, _linear, _nonhomogeneous]]	✓
2157	$y''' - 5y'' + 3y' + 9y = 2e^{3x}(11 - 24x)$	[[_3rd_order, _linear, _nonhomogeneous]]	✓
2158	$y''' - 7y'' + 8y' + 16y = 2e^{4x}(13 + 15x)$	[[_3rd_order, _linear, _nonhomogeneous]]	✓
2159	$8y''' - 12y'' + 6y' - y = e^{\frac{x}{2}}(1 + 4x)$	[[_3rd_order, _linear, _nonhomogeneous]]	✓
2160	$y'''' + 3y''' - 3y'' - 7y' + 6y = -3e^{-x}(-8x^2 + 8x + 12)$	[[_high_order, _linear, _nonhomogeneous]]	✓
2161	$y'''' + 3y''' + y'' - 3y' - 2y = -3e^{2x}(11 + 12x)$	[[_high_order, _linear, _nonhomogeneous]]	✓
2162	$y'''' + 8y''' + 24y'' + 32y' = -16e^{-2x}(-x^3 + x^2 + x + 1)$	[[_high_order, _missing_y]]	✓
2163	$4y'''' - 11y''' - 9y'' - 2y = -e^x(1 - 6x)$	[[_high_order, _linear, _nonhomogeneous]]	✓
2164	$y'''' - 2y''' + 3y'' - y = e^x(x^2 + 4x + 3)$	[[_high_order, _linear, _nonhomogeneous]]	✓
2165	$y'''' - 4y''' + 6y'' - 4y' + 2y = e^{2x}(x^4 + x + 24)$	[[_high_order, _linear, _nonhomogeneous]]	✓
2166	$2y'''' + 5y''' - 5y'' - 2y = 18e^x(5 + 2x)$	[[_high_order, _linear, _nonhomogeneous]]	✓
2167	$y'''' + y''' - 2y'' - 6y' - 4y = -e^{2x}(15x^2 + 28x + 4)$	[[_high_order, _linear, _nonhomogeneous]]	✓
2168	$2y'''' + y''' - 2y'' - y = 3e^{-\frac{x}{2}}(1 - 6x)$	[[_high_order, _linear, _nonhomogeneous]]	✓
2169	$y'''' - 5y''' + 4y = e^x(-3x^2 + x + 3)$	[[_high_order, _linear, _nonhomogeneous]]	✓
2170	$y'''' - 2y''' - 3y'' + 4y' + 4y = e^{2x}(18x^2 + 33x + 13)$	[[_high_order, _linear, _nonhomogeneous]]	✓
2171	$y'''' - 3y''' + 4y' = e^{2x}(12x^2 + 26x + 15)$	[[_high_order, _missing_y]]	✓
2172	$y'''' - 2y''' + 2y'' - y = e^x(x + 1)$	[[_high_order, _linear, _nonhomogeneous]]	✓

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Table 2.55 High order differential equations

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#	ODE	CAS classification	Solved?
2173	$2y'''' - 5y'''' + 3y'' + y' - y = e^x(11 + 12x)$	[[_high_order, _linear, _nonhomogeneous]]	✓
2174	$y'''' + 3y'''' + 3y'' + y' = e^{-x}(10x^2 - 24x + 5)$	[[_high_order, _missing_y]]	✓
2175	$y'''' - 7y'''' + 18y'' - 20y' + 8y = e^{2x}(-5x^2 - 8x + 3)$	[[_high_order, _linear, _nonhomogeneous]]	✓
2176	$y''' - y'' - 4y' + 4y = e^{-x}((16 + 10x) \cos(x) + (30 - 10x) \sin(x))$	[[_3rd_order, _linear, _nonhomogeneous]]	✓
2177	$y''' + y'' - 4y' - 4y = e^{-x}((1 - 22x) \cos(2x) - (1 + 6x) \sin(2x))$	[[_3rd_order, _linear, _nonhomogeneous]]	✓
2178	$y''' - y'' + 2y' - 2y = e^{2x}((-x^2 + 5x + 27) \cos(x) + (9x^2 + 13x + 2) \sin(x))$	[[_3rd_order, _linear, _nonhomogeneous]]	✓
2179	$y''' - 2y'' + y' - 2y = -e^x((4x^2 + 5x + 9) \cos(2x) - (-3x^2 - 5x + 6) \sin(2x))$	[[_3rd_order, _linear, _nonhomogeneous]]	✓
2180	$y''' + 3y'' + 4y' + 12y = 8 \cos(2x) - 16 \sin(2x)$	[[_3rd_order, _linear, _nonhomogeneous]]	✓
2181	$y''' - y'' + 2y = e^x((20 + 4x) \cos(x) - (12 + 12x) \sin(x))$	[[_3rd_order, _linear, _nonhomogeneous]]	✓
2182	$y''' - 7y'' + 20y' - 24y = -e^{2x}((13 - 8x) \cos(2x) - (8 - 4x) \sin(2x))$	[[_3rd_order, _linear, _nonhomogeneous]]	✓
2183	$y''' - 6y'' + 18y' = -e^{3x}((2 - 3x) \cos(3x) - (3 + 3x) \sin(3x))$	[[_3rd_order, _missing_y]]	✓
2184	$y'''' + 2y'''' - 2y'' - 8y' - 8y = e^x(8 \cos(x) + 16 \sin(x))$	[[_high_order, _linear, _nonhomogeneous]]	✓
2185	$y'''' - 3y'''' + 2y'' + 2y' - 4y = e^x(2 \cos(2x) - \sin(2x))$	[[_high_order, _linear, _nonhomogeneous]]	✓
2186	$y'''' - 8y'''' + 24y'' - 32y' + 15y = e^{2x}(15x \cos(2x) + 32 \sin(2x))$	[[_high_order, _linear, _nonhomogeneous]]	✓
2187	$y'''' + 6y'''' + 13y'' + 12y' + 4y = e^{-x}((4 - x) \cos(x) - (x + 5) \sin(x))$	[[_high_order, _linear, _nonhomogeneous]]	✓
2188	$y'''' + 3y'''' + 2y'' - 2y' - 4y = -e^{-x}(\cos(x) - \sin(x))$	[[_high_order, _linear, _nonhomogeneous]]	✓
2189	$y'''' - 5y'''' + 13y'' - 19y' + 10y = e^x(\cos(2x) + \sin(2x))$	[[_high_order, _linear, _nonhomogeneous]]	✓

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Table 2.55 High order differential equations

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#	ODE	CAS classification	Solved?
2190	$y'''' + 8y'''' + 32y'' + 64y' + 39y$ $= e^{-2x}((4 - 15x) \cos(3x) - (4 + 15x) \sin(3x))$	[[_high_order, _linear, _nonhomogeneous]]	✓
2191	$y'''' - 5y'''' + 13y'' - 19y' + 10y$ $= e^x((7 + 8x) \cos(2x) + (8 - 4x) \sin(2x))$	[[_high_order, _linear, _nonhomogeneous]]	✓
2192	$y'''' + 4y'''' + 8y'' + 8y' + 4y = -2e^x(\cos(x) - \sin(x))$	[[_high_order, _linear, _nonhomogeneous]]	✓
2193	$y'''' - 8y'''' + 32y'' - 64y' + 64y$ $= e^{2x}(\cos(2x) - \sin(2x))$	[[_high_order, _linear, _nonhomogeneous]]	✓
2194	$y'''' - 8y'''' + 26y'' - 40y' + 25y$ $= e^{2x}(3 \cos(x) - (3x + 1) \sin(x))$	[[_high_order, _linear, _nonhomogeneous]]	✓
2195	$y''' - 4y'' + 5y' - 2y = e^{2x} - 4e^x - 2 \cos(x)$ $+ 4 \sin(x)$	[[_3rd_order, _linear, _nonhomogeneous]]	✓
2196	$y''' - y'' + y' - y = 5e^{2x} + 2e^x - 4 \cos(x) + 4 \sin(x)$	[[_3rd_order, _linear, _nonhomogeneous]]	✓
2197	$y''' - y' = -2x - 2 + 4e^x - 6e^{-x} + 96e^{3x}$	[[_3rd_order, _missing_y]]	✓
2198	$y''' - 4y'' + 9y' - 10y = 10e^{2x} + 20e^x \sin(2x) - 10$	[[_3rd_order, _linear, _nonhomogeneous]]	✓
2199	$y''' + 3y'' + 3y' + y = 12e^{-x} + 9 \cos(2x) - 13 \sin(2x)$	[[_3rd_order, _linear, _nonhomogeneous]]	✓
2200	$y''' + y'' - y' - y = 4e^{-x}(1 - 6x) - 2x \cos(x)$ $+ 2(x + 1) \sin(x)$	[[_3rd_order, _linear, _nonhomogeneous]]	✓
2201	$y'''' - 5y'' + 4y = -12e^x + 6e^{-x} + 10 \cos(x)$	[[_high_order, _linear, _nonhomogeneous]]	✓
2202	$y'''' - 4y'''' + 11y'' - 14y' + 10y$ $= -e^x(\sin(x) + 2 \cos(2x))$	[[_high_order, _linear, _nonhomogeneous]]	✓
2203	$y'''' + 2y'''' - 3y'' - 4y' + 4y = 2e^x(x + 1) + e^{-2x}$	[[_high_order, _linear, _nonhomogeneous]]	✓
2204	$y'''' + 4y = \sinh(x) \cos(x) - \cosh(x) \sin(x)$	[[_high_order, _linear, _nonhomogeneous]]	✓
2205	$y'''' + 5y'''' + 9y'' + 7y' + 2y = e^{-x}(30 + 24x) - e^{-2x}$	[[_high_order, _linear, _nonhomogeneous]]	✓
2206	$y'''' - 4y'''' + 7y'' - 6y' + 2y$ $= e^x(12x - 2 \cos(x) + 2 \sin(x))$	[[_high_order, _linear, _nonhomogeneous]]	✓
2207	$y''' - y'' - y' + y = e^{2x}(10 + 3x)$	[[_3rd_order, _linear, _nonhomogeneous]]	✓

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Table 2.55 High order differential equations

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#	ODE	CAS classification	Solved?
2208	$y''' + y'' - 2y = -e^{3x}(17x^2 + 67x + 9)$	[[_3rd_order, _linear, _nonhomogeneous]]	✓
2209	$y''' - 6y'' + 11y' - 6y = e^{2x}(-3x^2 - 4x + 5)$	[[_3rd_order, _linear, _nonhomogeneous]]	✓
2210	$y''' + 2y'' + y' = -2e^{-x}(6x^2 - 18x + 7)$	[[_3rd_order, _missing_y]]	✓
2211	$y''' - 3y'' + 3y' - y = e^x(x + 1)$	[[_3rd_order, _linear, _nonhomogeneous]]	✓
2212	$y'''' - 2y'' + y = -e^{-x}(3x^2 - 9x + 4)$	[[_high_order, _linear, _nonhomogeneous]]	✓
2213	$y''' + 2y'' - y' - 2y = e^{-2x}((23 - 2x)\cos(x) + (8 - 9x)\sin(x))$	[[_3rd_order, _linear, _nonhomogeneous]]	✓
2214	$y'''' - 3y''' + 4y'' - 2y' = e^x((28 + 6x)\cos(2x) + (11 - 12x)\sin(2x))$	[[_high_order, _missing_y]]	✓
2215	$y'''' - 4y''' + 14y'' - 20y' + 25y = e^x((2 + 6x)\cos(2x) + 3\sin(2x))$	[[_high_order, _linear, _nonhomogeneous]]	✓
2216	<i>i.c.</i> $y''' - 2y'' - 5y' + 6y = 2e^x(1 - 6x)$	[[_3rd_order, _linear, _nonhomogeneous]]	✓
2217	<i>i.c.</i> $y''' - y'' - y' + y = -e^{-x}(4 - 8x)$	[[_3rd_order, _linear, _nonhomogeneous]]	✓
2218	<i>i.c.</i> $4y''' - 3y' - y = e^{-\frac{x}{2}}(2 - 3x)$	[[_3rd_order, _linear, _nonhomogeneous]]	✓
2219	<i>i.c.</i> $y'''' + 2y''' + 2y'' + 2y' + y = e^{-x}(20 - 12x)$	[[_high_order, _linear, _nonhomogeneous]]	✓
2220	<i>i.c.</i> $y''' + 2y'' + y' + 2y = 30\cos(x) - 10\sin(x)$	[[_3rd_order, _linear, _nonhomogeneous]]	✓
2221	<i>i.c.</i> $y'''' - 3y''' + 5y'' - 2y' = -2e^x(\cos(x) - \sin(x))$	[[_high_order, _missing_y]]	✓
2222	$x^3y''' - 3x^2y'' + 6xy' - 6y = 2x$	[[_3rd_order, _with_linear_symmetries]]	✓
2223	$4x^3y''' + 4x^2y'' - 5xy' + 2y = 30x^2$	[[_3rd_order, _with_linear_symmetries]]	✓
2224	$x^3y''' + x^2y'' - 2xy' + 2y = x^2$	[[_3rd_order, _exact, _linear, _nonhomogeneous]]	✓
2225	$16x^4y'''' + 96x^3y''' + 72x^2y'' - 24xy' + 9y = 96x^{5/2}$	[[_high_order, _with_linear_symmetries]]	✓
2226	$x^4y'''' - 4x^3y''' + 12x^2y'' - 24xy' + 24y = x^4$	[[_high_order, _with_linear_symmetries]]	✓

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Table 2.55 High order differential equations

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#	ODE	CAS classification	Solved?
2227	$x^4 y'''' + 6x^3 y''' + 2x^2 y'' - 4xy' + 4y = 12x^2$	[[_high_order, _exact, _linear, _nonhomogeneous]]	✓
2228	$x^3 y''' - 2x^2 y'' + 3xy' - 3y = 4x$ i.c.	[[_3rd_order, _with_linear_symmetries]]	✓
2229	$x^3 y''' - 5x^2 y'' + 14xy' - 18y = x^3$ i.c.	[[_3rd_order, _with_linear_symmetries]]	✓
2230	$x^3 y''' - 6x^2 y'' + 16xy' - 16y = 9x^4$ i.c.	[[_3rd_order, _with_linear_symmetries]]	✓
2231	$x^3 y''' + x^2 y'' - 2xy' + 2y = x(x + 1)$ i.c.	[[_3rd_order, _exact, _linear, _nonhomogeneous]]	✓
2232	$x^4 y'''' + 3x^3 y''' - x^2 y'' + 2xy' - 2y = 9x^2$ i.c.	[[_high_order, _exact, _linear, _nonhomogeneous]]	✓
2233	$4x^4 y'''' + 24x^3 y''' + 23x^2 y'' - xy' + y = 6x$ i.c.	[[_high_order, _exact, _linear, _nonhomogeneous]]	✓
2234	$x^4 y'''' + 5x^3 y''' - 3x^2 y'' - 6xy' + 6y = 40x^3$ i.c.	[[_high_order, _exact, _linear, _nonhomogeneous]]	✓
2235	$y''' + 2y'' - y' - 2y = F(x)$	[[_3rd_order, _linear, _nonhomogeneous]]	✓
2236	$x^3 y''' + x^2 y'' - 2xy' + 2y = F(x)$	[[_3rd_order, _exact, _linear, _nonhomogeneous]]	✓
2237	$y'''' - 5y'' + 4y = F(x)$	[[_high_order, _linear, _nonhomogeneous]]	✓
2238	$x^4 y'''' + 6x^3 y''' + 2x^2 y'' - 4xy' + 4y = F(x)$	[[_high_order, _exact, _linear, _nonhomogeneous]]	✓
2677	$y''' - 6y'' + 11y' - 6y = e^{4t}$ i.c.	[[_3rd_order, _with_linear_symmetries]]	✓
2710	$y''' - 2y'' - y' + 2y = 0$	[[_3rd_order, _missing_x]]	✓
2711	$y''' - 6y'' + 5y' + 12y = 0$	[[_3rd_order, _missing_x]]	✓
2712	$y'''' - 5y''' + 6y'' + 4y' - 8y = 0$	[[_high_order, _missing_x]]	✓
2713	$y''' - y'' + y' - y = 0$	[[_3rd_order, _missing_x]]	✓
2714	$y'''' + 4y''' + 14y'' - 20y' + 25y = 0$ i.c.	[[_high_order, _missing_x]]	✓
2715	$y'''' - y = 0$ i.c.	[[_high_order, _missing_x]]	✓
2716	$y^{(5)} - 2y'''' + y''' = 0$ i.c.	[[_high_order, _missing_x]]	✓

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#	ODE	CAS classification	Solved?
2717	$y'''' - 2y'''' + y'' + 2y' - 2y = 0$	[[_high_order, _missing_x]]	✓
2718	$y''' + y' = \tan(t)$	[[_3rd_order, _missing_y]]	✓
2719	$y'''' - y = g(t)$	[[_high_order, _linear, _nonhomogeneous]]	✓
2720	$y'''' + y = g(t)$	[[_high_order, _linear, _nonhomogeneous]]	✓
2721	$y''' + y' = 2t^2 + 4 \sin(t)$	[[_3rd_order, _missing_y]]	✓
2722	$y''' - 4y' = t + \cos(t) + 2e^{-2t}$	[[_3rd_order, _missing_y]]	✓
2723	$y'''' - y = t + \sin(t)$	[[_high_order, _linear, _nonhomogeneous]]	✓
2724	$y'''' + 2y'' + y = t^2 \sin(t)$	[[_high_order, _linear, _nonhomogeneous]]	✓
2725	$y'''' + y'' = t^2$	[[_high_order, _missing_y]]	✓
2726	$y''' + y'' + y' + y = t + e^{-t}$	[[_3rd_order, _with_linear_symmetries]]	✓
2727	$y'''' + 4y'''' + 6y'' + 4y' + y = t^3 e^{-t}$	[[_high_order, _linear, _nonhomogeneous]]	✓
3068	$2y'''' - y'' - 2y' + y = 0$	[[_3rd_order, _missing_x]]	✓
3069	$y''' - 3y'' - 4y' + 12y = 0$	[[_3rd_order, _missing_x]]	✓
3070	$y''' - 4y'' + y' + 6y = 0$	[[_3rd_order, _missing_x]]	✓
3071	$y'''' - 6y'' + 8y = 0$	[[_high_order, _missing_x]]	✓
3072	$y''' - 7y' + 6y = 0$	[[_3rd_order, _missing_x]]	✓
3073	$y''' - 6y'' + 11y' - 6y = 0$	[[_3rd_order, _missing_x]]	✓
3074	$y''' - 4y'' - 17y' + 60y = 0$	[[_3rd_order, _missing_x]]	✓
3075	$y''' - 9y'' + 23y' - 15y = 0$	[[_3rd_order, _missing_x]]	✓
3076	$y'''' + y'''' - 7y'' - y' + 6y = 0$	[[_high_order, _missing_x]]	✓
3077	$2y'''' - 3y'''' - 20y'' + 27y' + 18y = 0$	[[_high_order, _missing_x]]	✓
3078	$12y'''' - 4y'''' - 3y'' + y' = 0$	[[_high_order, _missing_x]]	✓
3079	$y''' - 4y'' + 3y' = 0$	[[_3rd_order, _missing_x]]	✓

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Table 2.55 High order differential equations  
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#	ODE	CAS classification	Solved?
3080	$4y''' + 2y'' - 4y' + y = 0$	[[_3rd_order, _missing_x]]	✓
3081	$y''' - 5y'' - 2y' + 24y = 0$	[[_3rd_order, _missing_x]]	✓
3082	$y'''' + 2y''' - 7y'' - 8y' + 12y = 0$	[[_high_order, _missing_x]]	✓
3083	$y^{(5)} - 3y'''' - 5y''' + 15y'' + 4y' - 12y = 0$	[[_high_order, _missing_x]]	✓
3084	$y^{(5)} + y'''' - 13y''' - 13y'' + 36y' + 36y = 0$	[[_high_order, _missing_x]]	✓
3085	$y^{(5)} + 3y'''' - 15y''' - 19y'' + 30y' = 0$	[[_high_order, _missing_x]]	✓
3086	$y'''' + 3y'' - 4y = 0$	[[_high_order, _missing_x]]	✓
3087	$y^{(5)} + 3y''' + 2y' = 0$	[[_high_order, _missing_x]]	✓
3090	$2y''' + y'' - 4y' - 3y = 0$	[[_3rd_order, _missing_x]]	✓
3091	$y''' - 3y'' + 3y' - y = 0$	[[_3rd_order, _missing_x]]	✓
3092	$y'''' = 0$	[[_high_order, _quadrature]]	✓
3093	$y''' + y'' - y' - y = 0$	[[_3rd_order, _missing_x]]	✓
3094	$4y''' - 3y' + y = 0$	[[_3rd_order, _missing_x]]	✓
3095	$4y^{(5)} - 3y''' - y'' = 0$	[[_high_order, _missing_x]]	✓
3096	$y''' - 7y'' + 16y' - 12y = 0$	[[_3rd_order, _missing_x]]	✓
3097	$4y''' - 8y'' + 5y' - y = 0$	[[_3rd_order, _missing_x]]	✓
3098	$y'''' - y = 0$	[[_high_order, _missing_x]]	✓
3099	$y''' - 8y = 0$	[[_3rd_order, _missing_x]]	✓
3101	$y'''' + y'' - 20y = 0$	[[_high_order, _missing_x]]	✓
3102	$y'''' + 5y'' + 6y = 0$	[[_high_order, _missing_x]]	✓
3103	$y'''' - 4y''' + 6y'' - 8y' + 8y = 0$	[[_high_order, _missing_x]]	✓
3104	$y'''' - 2y''' - 6y' + 2y = 0$	[[_high_order, _missing_x]]	✓

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Table 2.55 High order differential equations

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#	ODE	CAS classification	Solved?
3105	$y'''' + y''' - 3y'' - 4y' - 4y = 0$	[[_high_order, _missing_x]]	✓
3106	$2y''' - 3y'' + 10y' - 15y = 0$	[[_3rd_order, _missing_x]]	✓
3107	$2y''' - 3y'' + 11y' - 40y = 0$	[[_3rd_order, _missing_x]]	✓
3108	$y'''' - 3y''' + 4y'' - 12y' + 16y = 0$	[[_high_order, _missing_x]]	✓
3109	$4y''' + 12y'' - 3y' + 14y = 0$	[[_3rd_order, _missing_x]]	✓
3110	$y^{(5)} - y'''' + 6y''' - 6y'' + 8y' - 8y = 0$	[[_high_order, _missing_x]]	✓
3118	$y'''' - y = e^x$	[[_high_order, _with_linear_symmetries]]	✓
3124	$y''' - 4y'' = x^2 + 8$	[[_3rd_order, _missing_y]]	✓
3126	$y''' - 3y'' + 4y' - 12y = x + e^{2x}$	[[_3rd_order, _with_linear_symmetries]]	✓
3127	$y''' - 4y'' + y' - 4y = e^{4x} \sin(x)$	[[_3rd_order, _linear, _nonhomogeneous]]	✓
3129	$y''' - 2y'' + y' - 2y = x e^{2x}$	[[_3rd_order, _linear, _nonhomogeneous]]	✓
3130	$y'''' + 2n^2y'' + n^4y = \sin(kx)$	[[_high_order, _linear, _nonhomogeneous]]	✓
3134	$y''' + 2y'' = (2x^2 + x) e^{-2x} + 5 \cos(3x)$	[[_3rd_order, _missing_y]]	✓
3136	$y'''' + 4y = 5 e^{2x} \sin(3x)$	[[_high_order, _linear, _nonhomogeneous]]	✓
3153	$y''' + 3y'' - 4y' = \cos(2x)$	[[_3rd_order, _missing_y]]	✓
3154	$y''' + 4y'' - 5y' = e^{3x}$	[[_3rd_order, _missing_y]]	✓
3157	$y''' - 2y'' + y' = e^{2x}$	[[_3rd_order, _missing_y]]	✓
3158	$y'''' - 2y''' + y'' = x^2$	[[_high_order, _missing_y]]	✓
3159	$y''' - 3y'' - 4y' = e^{2x} + \sin(x)$	[[_3rd_order, _missing_y]]	✓
3167	$y''' + y' = \tan(x)$	[[_3rd_order, _missing_y]]	✓
3171	$y''' - 3y'' + 3y' - y = e^x$	[[_3rd_order, _with_linear_symmetries]]	✓
3181	$y''' - y = e^x$	[[_3rd_order, _with_linear_symmetries]]	✓
3182	$y''' - 4y'' + y' - 4y = \sin(x) - e^{4x}$	[[_3rd_order, _linear, _nonhomogeneous]]	✓

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Table 2.55 High order differential equations  
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#	ODE	CAS classification	Solved?
3183	$y'''' + 3y'' - 4y = 4e^x + 3\cos(2x)$	[[_high_order, _linear, _nonhomogeneous]]	✓
3191	$y''' - y = x^2$	[[_3rd_order, _with_linear_symmetries]]	✓
3192	$y''' + 4y'' - 5y' = x^2e^{-x}$	[[_3rd_order, _missing_y]]	✓
3193	$y'''' - 2y''' + y'' = x^2$	[[_high_order, _missing_y]]	✓
3194	$y''' - y' = e^x(\sin(x) - x^2)$	[[_3rd_order, _missing_y]]	✓
3195	$y''' - 4y'' = e^{2x}(x - 3)$	[[_3rd_order, _missing_y]]	✓
3196	$y'''' - 6y''' + 9y'' = \sin(3x) + xe^x$	[[_high_order, _missing_y]]	✓
3197	$y''' - 6y'' + 11y' - 6y = x^2e^{2x}$	[[_3rd_order, _linear, _nonhomogeneous]]	✓
3198	$y''' + 2y' = x^2 + \cos(x)$	[[_3rd_order, _missing_y]]	✓
3199	$y'''' + 3y'' - y' + 2y = \sin(2x)$	[[_high_order, _linear, _nonhomogeneous]]	✓
3200	$y'''' + 2y'' + y' = x^3 - \frac{\cos(2x)}{2}$	[[_high_order, _missing_y]]	✓
3201	$y''' + 4y'' + 5y' = e^{-2x}\cos(x)$	[[_3rd_order, _missing_y]]	✓
3202	$y''' + y'' - 2y' = e^{-2x}\cos(2x)$	[[_3rd_order, _missing_y]]	✓
3203	$y''' + 2y' = x^2\sin(x)$	[[_3rd_order, _missing_y]]	✓
3204	$y'''' - y = x^2\cos(x)$	[[_high_order, _linear, _nonhomogeneous]]	✓
3208	$y''' + 4y' = e^x + \sin(x)$	[[_3rd_order, _missing_y]]	✓
3209	$y^{(5)} + y'''' = x^2$	[[_high_order, _missing_y]]	✓
3211	$y''' + y' = \sin(x)$	[[_3rd_order, _missing_y]]	✓
3212	$y''' - y' = x\sin(x)$	[[_3rd_order, _missing_y]]	✓
3213	$y''' + 2y'' = x\cos(2x)$	[[_3rd_order, _missing_y]]	✓
3229	$x^3y'''' + 2x^2y''' - xy'' + y = \frac{1}{x}$	[[_3rd_order, _exact, _linear, _nonhomogeneous]]	✓
3233	$4x^3y'''' + 8x^2y''' - xy'' + y = x + \ln(x)$	[[_3rd_order, _with_linear_symmetries]]	✓

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Table 2.55 High order differential equations

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#	ODE	CAS classification	Solved?
3234	$3x^3y''' + 4x^2y'' - 10xy' + 10y = \frac{4}{x^2}$	[[_3rd_order, _with_linear_symmetries]]	✓
3235	$x^4y'''' + 7x^3y''' + 9x^2y'' - 6xy' - 6y = \cos(\ln(x))$	[[_high_order, _exact, _linear, _nonhomogeneous]]	✓
3236	$x^3y''' - 2x^2y'' - xy' + 4y = \sin(\ln(x))$	[[_3rd_order, _linear, _nonhomogeneous]]	✓
3491	$y''' - 12y' + 16y = 32x - 8$	[[_3rd_order, _with_linear_symmetries]]	✓
3498	$2yy''' + 2(y + 3y')y'' + 2y'^2 = \sin(x)$	[[_3rd_order, _exact, _nonlinear]]	✗
3499	$xy''' + 2y'' = Ax$	[[_3rd_order, _missing_y]]	✓
3588	$y''' = 6x$ i.c.	[[_3rd_order, _quadrature]]	✓
3700	$y''' - 3y'' - y' + 3y = 0$	[[_3rd_order, _missing_x]]	✓
3701	$y''' + 3y'' - 4y' - 12y = 0$	[[_3rd_order, _missing_x]]	✓
3702	$y''' + 3y'' - 18y' - 40y = 0$	[[_3rd_order, _missing_x]]	✓
3703	$y''' - y'' - 2y' = 0$	[[_3rd_order, _missing_x]]	✓
3704	$y''' + y'' - 10y' + 8y = 0$	[[_3rd_order, _missing_x]]	✓
3705	$y'''' - 2y''' - y'' + 2y' = 0$	[[_high_order, _missing_x]]	✓
3706	$y'''' - 13y'' + 36y = 0$	[[_high_order, _missing_x]]	✓
3709	$x^3y''' + x^2y'' - 2xy' + 2y = 0$	[[_3rd_order, _exact, _linear, _homogeneous]]	✓
3710	$x^3y''' + 3x^2y'' - 6xy' = 0$	[[_3rd_order, _missing_y]]	✓
3713	$y''' + 2y'' - y' - 2y = 4e^{2x}$	[[_3rd_order, _with_linear_symmetries]]	✓
3714	$y''' + y'' - 10y' + 8y = 24e^{-3x}$	[[_3rd_order, _with_linear_symmetries]]	✓
3715	$y''' + 5y'' + 6y' = 6e^{-x}$	[[_3rd_order, _missing_y]]	✓
3721	$y''' + 2y'' - 5y' - 6y = 4x^2$	[[_3rd_order, _with_linear_symmetries]]	✓
3722	$y''' - y'' + y' - y = 9e^{-x}$	[[_3rd_order, _with_linear_symmetries]]	✓
3723	$y''' + 3y'' + 3y' + y = 2e^{-x} + 3e^{2x}$	[[_3rd_order, _linear, _nonhomogeneous]]	✓

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Table 2.55 High order differential equations

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#	ODE	CAS classification	Solved?
3730	$y''' + y'' + y' + y = 4x e^x$	[[_3rd_order, _linear, _nonhomogeneous]]	✓
3731	$y'''' + 104y''' + 2740y'' = 5 e^{-2x} \cos(3x)$	[[_high_order, _missing_y]]	✓
3763	$y''' - 3y'' + 3y' - y = \frac{2 e^x}{x^2}$	[[_3rd_order, _linear, _nonhomogeneous]]	✓
3764	$y''' - 6y'' + 12y' - 8y = 36 e^{2x} \ln(x)$	[[_3rd_order, _linear, _nonhomogeneous]]	✓
3765	$y''' + 3y'' + 3y' + y = \frac{2 e^{-x}}{x^2 + 1}$	[[_3rd_order, _linear, _nonhomogeneous]]	✓
3766	$y''' - 6y'' + 9y' = 12 e^{3x}$	[[_3rd_order, _missing_y]]	✓
3795	$y''' + 3y'' - 4y = 0$	[[_3rd_order, _missing_x]]	✓
3796	$y''' + 11y'' + 36y' + 26y = 0$	[[_3rd_order, _missing_x]]	✓
3799	$y''' - 6y'' + 25y' = x^2$	[[_3rd_order, _missing_y]]	✓
3800	$y''' - 6y'' + 25y' = \sin(4x)$	[[_3rd_order, _missing_y]]	✓
3801	$y''' + 9y'' + 24y' + 16y = 8 e^{-x} + 1$	[[_3rd_order, _with_linear_symmetries]]	✓
4142	$y''' - 3y'' + 2y' = 0$	[[_3rd_order, _missing_x]]	✓
4143	$y''' - y'' - 12y = 0$	[[_3rd_order, _missing_x]]	✓
4144	$y''' - 3y'' + 4y' - 2y = 0$	[[_3rd_order, _missing_x]]	✓
4145	$y''' + 2y'' - 5y' - 6y = 0$	[[_3rd_order, _missing_x]]	✓
4146	$y''' - 3y'' + 3y' - y = 0$	[[_3rd_order, _missing_x]]	✓
4147	$y''' + 4y' = 0$	[[_3rd_order, _missing_x]]	✓
4148	$y'''' + 5y'' + 4y = 0$	[[_high_order, _missing_x]]	✓
4149	$y'''' - y''' - 9y'' - 11y' - 4y = 0$	[[_high_order, _missing_x]]	✓
4150	$y^{(6)} + 9y'''' + 24y'' + 16y = 0$	[[_high_order, _missing_x]]	✓
4151	$y''' - y = 0$	[[_3rd_order, _missing_x]]	✓
4159	$y''' - y'' - 4y' + 4y = 2x^2 - 4x - 1 + 2x^2 e^{2x} + 5x e^{2x} + e^{2x}$	[[_3rd_order, _linear, _nonhomogeneous]]	✓
4160	$y'''' + 10y'' + 9y = \cos(2x + 3)$	[[_high_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
4165	$x^3 y''' + x^2 y'' - 2xy' + 2y = 0$	[[_3rd_order, _exact, _linear, _homogeneous]]	✓
4414	$y''' = 2(y'' - 1) \cot(x)$	[[_3rd_order, _missing_y]]	✓
4444	$y''' - 2y'' + y' - 2y = 0$	[[_3rd_order, _missing_x]]	✓
4445	$y''' + y'' + 9y' + 9y = 0$	[[_3rd_order, _missing_x]]	✓
4446	$y''' + y'' - y' - y = 0$	[[_3rd_order, _missing_x]]	✓
4447	$y''' + 8y = 0$	[[_3rd_order, _missing_x]]	✓
4448	$y''' - 8y = 0$	[[_3rd_order, _missing_x]]	✓
4449	$y'''' + 4y = 0$	[[_high_order, _missing_x]]	✓
4450	$y'''' + 18y'' + 81y = 0$	[[_high_order, _missing_x]]	✓
4451	$y'''' - 4y'' + 16y = 0$	[[_high_order, _missing_x]]	✓
4452	$y'''' - 2y''' + 2y'' - 2y' + y = 0$	[[_high_order, _missing_x]]	✓
4453	$y'''' - 5y''' + 5y'' + 5y' - 6y = 0$	[[_high_order, _missing_x]]	✓
4454	$y^{(5)} - 6y'''' + 9y''' = 0$	[[_high_order, _missing_x]]	✓
4455	$y^{(6)} - 64y = 0$	[[_high_order, _missing_x]]	✓
4461	$y''' + y' = x \cos(x) + \sin(x)$	[[_3rd_order, _missing_y]]	✓
4462	$y''' - 2y'' + 4y' - 8y = e^{2x} \sin(2x) + 2x^2$	[[_3rd_order, _linear, _nonhomogeneous]]	✓
4463	$y''' - 4y'' + 3y' = x^2 + x e^{2x}$	[[_3rd_order, _missing_y]]	✓
4464	$y'''' + 2y'' = 7x - 3 \cos(x)$	[[_high_order, _missing_y]]	✓
4465	$y'''' + 5y'' + 4y = \sin(x) \cos(2x)$	[[_high_order, _linear, _nonhomogeneous]]	✓
4466	$y^{(5)} - 3y''' + y = 9e^{2x}$	[[_high_order, _with_linear_symmetries]]	✓
4467	$y''' - 3y'' + 3y' - y = 48x e^x$	[[_3rd_order, _linear, _nonhomogeneous]]	✓
4468	$y''' - 3y' = 9x^2$	[[_3rd_order, _missing_y]]	✓

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#	ODE	CAS classification	Solved?
4469	$y^{(5)} + 4y''' = 7 + x$	[[_high_order, _missing_y]]	✓
4471	$y'''' + 16y = 64 \cos(2x)$	[[_high_order, _linear, _nonhomogeneous]]	✓
4472	$y'''' + 4y'' - y = 44 \sin(3x)$	[[_high_order, _linear, _nonhomogeneous]]	✓
4473	$y''' + y'' + 5y' + 5y = 5 \cos(2x)$	[[_3rd_order, _linear, _nonhomogeneous]]	✓
4475	$y'''' - y = 4e^{-x}$	[[_high_order, _with_linear_symmetries]]	✓
4477	$y''' - y'' + y' - y = 4 \sin(x)$	[[_3rd_order, _linear, _nonhomogeneous]]	✓
4478	$y'''' - y'' = 2e^x$	[[_high_order, _missing_y]]	✓
4489	$y''' - y'' + y' - y = 15 \sin(2x)$	[[_3rd_order, _linear, _nonhomogeneous]]	✓
4490	$y''' + 3y'' - 4y = 40 \sin(2x)$	[[_3rd_order, _linear, _nonhomogeneous]]	✓
4491	$y''' - y'' + y' - y = 2e^x + 5e^{2x}$	[[_3rd_order, _linear, _nonhomogeneous]]	✓
4492	$y''' - 6y'' + 11y' - 6y = 10e^x \sin(x)$	[[_3rd_order, _linear, _nonhomogeneous]]	✓
4493	$y''' - 2y' - 4y = 50e^{2x} + 50 \sin(x)$	[[_3rd_order, _linear, _nonhomogeneous]]	✓
4494	$y''' - 3y'' + 4y = 12e^{2x} + 4e^{3x}$	[[_3rd_order, _linear, _nonhomogeneous]]	✓
4495	$y'''' - 8y'' + 16y = 32e^{2x} + 16x^3$	[[_high_order, _linear, _nonhomogeneous]]	✓
4496	$y'''' - 18y'' + 81y = 72e^{3x} + 729x^2$	[[_high_order, _linear, _nonhomogeneous]]	✓
4511	$x^3y''' + 2x^2y'' - xy' + y = 9x^2 \ln(x)$	[[_3rd_order, _exact, _linear, _nonhomogeneous]]	✓
4513	$x^3y''' + 3x^2y'' + xy' - y = x^2$	[[_3rd_order, _with_linear_symmetries]]	✓
4529	$y''' - y'' + 4y' - 4y = 10e^{-t}$	[[_3rd_order, _with_linear_symmetries]]	✓
4530	$y'''' - 5y'' + 4y = 120e^{3t} \text{Heaviside}(t-1)$	[[_high_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
4531	$y'''' + 3y'' - 4y = 40t^2 \text{Heaviside}(t - 2)$ i.c.	[[_high_order, _linear, _nonhomogeneous]]	✓
4532	$y'''' + 4y = (2t^2 + t + 1) \delta(t - 1)$ i.c.	[[_high_order, _linear, _nonhomogeneous]]	✓
5921	$y''' + y'' - 10y' - 6y = 0$	[[_3rd_order, _missing_x]]	✓
5922	$y'''' - y''' - 4y'' + 4y' = 0$	[[_high_order, _missing_x]]	✓
5923	$y'''' + 4y''' + y'' - 4y' - 2y = 0$	[[_high_order, _missing_x]]	✓
5924	$y'''' - a^2y = 0$	[[_high_order, _missing_x]]	✓
5927	$y'''' = 0$	[[_high_order, _quadrature]]	✓
5929	$3y''' + 5y'' + y' - y = 0$	[[_3rd_order, _missing_x]]	✓
5930	$y''' - 6y'' + 12y' - 8y = 0$	[[_3rd_order, _missing_x]]	✓
5932	$y'''' + 3y''' = 0$	[[_high_order, _missing_x]]	✓
5933	$y'''' - 2y'' = 0$	[[_high_order, _missing_x]]	✓
5934	$y'''' + 2y''' - 11y'' - 12y' + 36y = 0$	[[_high_order, _missing_x]]	✓
5935	$36y'''' - 37y'' + 4y' + 5y = 0$	[[_high_order, _missing_x]]	✓
5936	$y'''' - 8y'' + 36y = 0$	[[_high_order, _missing_x]]	✓
5939	$y'''' + 5y'' + 6y = 0$	[[_high_order, _missing_x]]	✓
5941	$y'''' + 4y'' + 4y = 0$	[[_high_order, _missing_x]]	✓
5942	$y''' + 8y = 0$	[[_3rd_order, _missing_x]]	✓
5943	$y'''' + 4y'' = 0$	[[_high_order, _missing_x]]	✓
5944	$y^{(5)} + 2y''' + y' = 0$	[[_high_order, _missing_x]]	✓
5949	$3y''' + 5y'' + y' - y = 0$ i.c.	[[_3rd_order, _missing_x]]	✓
6147	$y''' + y = 0$	[[_3rd_order, _missing_x]]	✓

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Table 2.55 High order differential equations

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#	ODE	CAS classification	Solved?
6148	$y''' + y'' - 6y' = 0$	[[_3rd_order, _missing_x]]	✓
6149	$y''' + 3y'' - 9y' - 5y = 0$	[[_3rd_order, _missing_x]]	✓
6150	$y'''' + 4y = 0$	[[_high_order, _missing_x]]	✓
6210	$y''' + 2y'' + 2y' = 0$	[[_3rd_order, _missing_x]]	✓
6229	$y'''' - 2y''' + 13y'' - 18y' + 36y = 0$	[[_high_order, _missing_x]]	✓
6390	$x''' - x'' + x' - x = 0$	[[_3rd_order, _missing_x]]	✓
6392	$x'''' + x = 0$	[[_high_order, _missing_x]]	✓
6393	$x''' - 3x'' - 9x' - 5x = 0$	[[_3rd_order, _missing_x]]	✓
6513	$y''' - 6y'' + 11y' - 6y = 2x e^{-x}$	[[_3rd_order, _linear, _nonhomogeneous]]	✓
6527	$y''' - 3y'' + 3y' - y = 1 + e^x$	[[_3rd_order, _with_linear_symmetries]]	✓
6528	$y''' + y' = \sec(x)$	[[_3rd_order, _missing_y]]	✓
6529	$y''' - 3y'' + 2y' = \frac{e^x}{1 + e^{-x}}$	[[_3rd_order, _missing_y]]	✓
6535	$y'''' = 5x$	[[_high_order, _quadrature]]	✓
6555	$y''' - y = 5$ i.c.	[[_3rd_order, _missing_x]]	✓
6556	$y'''' - y = 0$ i.c.	[[_high_order, _missing_x]]	✓
6557	$y''' - 3y'' + 3y' - y = e^x x^2$ i.c.	[[_3rd_order, _linear, _nonhomogeneous]]	✓
6693	$y''' - 6y'' + 12y' - 8y = 0$	[[_3rd_order, _missing_x]]	✓
6697	$x^3 y'''' + xy' - y = 3x^4$	[[_3rd_order, _with_linear_symmetries]]	✓
6703	$y''' + y'' - 2y' = 0$	[[_3rd_order, _missing_x]]	✓
6705	$y'''' - 6y''' + 12y'' - 8y' = 0$	[[_high_order, _missing_x]]	✓
6708	$y''' - y'' + 9y' - 9y = 0$	[[_3rd_order, _missing_x]]	✓
6709	$y'''' + 4y'' = 0$	[[_high_order, _missing_x]]	✓
6710	$y'''' - 6y''' + 13y'' - 12y' + 4y = 0$	[[_high_order, _missing_x]]	✓

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Table 2.55 High order differential equations  
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#	ODE	CAS classification	Solved?
6711	$y^{(6)} + 9y'''' + 24y'' + 16y = 0$	[[_high_order, _missing_x]]	✓
6714	$y''' - 4y'' = 5$	[[_3rd_order, _missing_x]]	✓
6715	$y^{(5)} - 4y''' = 5$	[[_high_order, _missing_x]]	✓
6716	$y''' - 4y' = x$	[[_3rd_order, _missing_y]]	✓
6733	$y''' + 3y'' + 2y' = x^2 + 4x + 8$	[[_3rd_order, _missing_y]]	✓
6735	$y''' - y'' - 4y' + 4y = 2x^2 - 4x - 1 + 2x^2e^{2x} + 5xe^{2x} + e^{2x}$	[[_3rd_order, _linear, _nonhomogeneous]]	✓
6739	$y'''' - y = \sin(2x)$	[[_high_order, _linear, _nonhomogeneous]]	✓
6740	$y''' + y = \cos(x)$	[[_3rd_order, _linear, _nonhomogeneous]]	✓
6743	$y''' + y'' + y' + y = e^x + e^{-x} + \sin(x)$	[[_3rd_order, _linear, _nonhomogeneous]]	✓
6752	$x^3y''' + 2x^2y'' = x + \sin(\ln(x))$	[[_3rd_order, _missing_y]]	✓
6753	$x^3y''' + xy' - y = 3x^4$	[[_3rd_order, _with_linear_symmetries]]	✓
6776	$y''' + y'' = x^2$	[[_3rd_order, _missing_y]]	✓
6780	$(2x - 3)y''' - (6x - 7)y'' + 4xy' - 4y = 8$	[[_3rd_order, _with_linear_symmetries]]	✗
6781	$(2x^3 - 1)y''' - 6x^2y'' + 6xy' = 0$	[[_3rd_order, _missing_y]]	✓
6784	$(1 + 2y + 3y^2)y''' + 6y'(y'' + y'^2 + 3yy'') = x$	[[_3rd_order, _exact, _nonlinear]]	✗
6785	$3x(y^2y''' + 6yy'y'' + 2y^3) - 3y(yy'' + 2y'^2) = -\frac{2}{x}$	[[_3rd_order, _exact, _nonlinear], [_3rd_order, _with_linear_symmetries]]	✗
6786	$yy''' + 3y'y'' - 2yy'' - 2y'^2 + yy' = e^{2x}$	[[_3rd_order, _exact, _nonlinear], [_3rd_order, _with_linear_symmetries]]	✗
6817	$x^3(x + 1)y''' - (2 + 4x)x^2y'' + (4 + 10x)xy' - (4 + 12x)y = 0$	[[_3rd_order, _with_linear_symmetries]]	✗
6818	$x^3(x^2 + 1)y''' - (4x^2 + 2)x^2y'' + (10x^2 + 4)xy' - (12x^2 + 4)y = 0$	[[_3rd_order, _with_linear_symmetries]]	✗
7161	$y''' - 2xy'' + 4x^2y' + 8x^3y = 0$	[[_3rd_order, _with_linear_symmetries]]	✗

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Table 2.55 High order differential equations

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#	ODE	CAS classification	Solved?
7164	$x^4 y'''' - x^2 y'' + y = 0$	[[_high_order, _with_linear_symmetries]]	✓
7202	$3y''^2 - y' y''' - y'' y'^2 = 0$	[[_3rd_order, _missing_x], [_3rd_order, _missing_y], [_3rd_order, _with_exponential_symmetries], [_3rd_order, _with_linear_symmetries], [_3rd_order, _reducible, _mu_y2], [_3rd_order, _reducible, _mu_poly_yn]]	✓
7205	$y''' - 3y'' + 3y' - y = 4e^t$	[[_3rd_order, _with_linear_symmetries]]	✓
7206	$y'''' + 2y'' + y = 3 \sin(t) - 5 \cos(t)$	[[_high_order, _linear, _nonhomogeneous]]	✓
7207	$y''' - y'' - y' + y = g(t)$	[[_3rd_order, _linear, _nonhomogeneous]]	✓
7208	$y^{(5)} - \frac{y''''}{t} = 0$	[[_high_order, _missing_y]]	✓
7210	$y'''' + 4y''' + 3y'' - 4y' - 4y = f(x)$	[[_high_order, _linear, _nonhomogeneous]]	✓
7215	$y''' + 6y'' + 11y' + 6y = 2 \sin(3x)$	[[_3rd_order, _linear, _nonhomogeneous]]	✓
7229	$\alpha y'' y''' = \sqrt{1 + y''^2}$	[[_3rd_order, _missing_x], [_3rd_order, _missing_y], [_3rd_order, _with_linear_symmetries], [_3rd_order, _reducible, _mu_y2]]	✓
7230	$\alpha^2 y'''' = y''$	[[_high_order, _missing_x]]	✓
7258	$y''' = x^2$	[[_3rd_order, _quadrature]]	✓
7316	$y''' - 8y = 0$	[[_3rd_order, _missing_x]]	✓
7317	$y'''' + 16y = 0$	[[_high_order, _missing_x]]	✓
7318	$y''' - 5y'' + 6y' = 0$	[[_3rd_order, _missing_x]]	✓
7319	$y''' - iy'' + 4y' - 4iy = 0$	[[_3rd_order, _missing_x]]	✓
7320	$y'''' + 5y'' + 4y = 0$	[[_high_order, _missing_x]]	✓

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Table 2.55 High order differential equations

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#	ODE	CAS classification	Solved?
7321	$y'''' - 16y = 0$	[[_high_order, _missing_x]]	✓
7322	$y''' - 3y' - 2y = 0$	[[_3rd_order, _missing_x]]	✓
7323	$y''' - 3iy'' - 3y' + iy = 0$	[[_3rd_order, _missing_x]]	✓
7324	$y''' - 4y' = 0$ i.c.	[[_3rd_order, _missing_x]]	✓
7325	$y^{(5)} - y'''' - y' + y = 0$ i.c.	[[_high_order, _missing_x]]	✓
7328	$y'''' - y = 0$	[[_high_order, _missing_x]]	✓
7329	$y^{(5)} + 2y = 0$	[[_high_order, _missing_x]]	✓
7330	$y'''' - 5y'' + 4y = 0$	[[_high_order, _missing_x]]	✓
7331	$y''' + y = 0$ i.c.	[[_3rd_order, _missing_x]]	✓
7332	$y''' - iy'' + y' - iy = 0$	[[_3rd_order, _missing_x]]	✓
7334	$y'''' - k^4y = 0$ i.c.	[[_high_order, _missing_x]]	✓
7335	$y''' - y = x$	[[_3rd_order, _with_linear_symmetries]]	✓
7336	$y''' - 8y = e^{ix}$	[[_3rd_order, _with_linear_symmetries]]	✓
7337	$y'''' + 16y = \cos(x)$	[[_high_order, _linear, _nonhomogeneous]]	✓
7338	$y'''' - 4y''' + 6y'' - 4y' + y = e^x$	[[_high_order, _with_linear_symmetries]]	✓
7339	$y'''' - y = \cos(x)$	[[_high_order, _linear, _nonhomogeneous]]	✓
7348	$y''' = x^2 + e^{-x} \sin(x)$	[[_3rd_order, _quadrature]]	✓
7349	$y''' + 3y'' + 3y' + y = x^2e^{-x}$	[[_3rd_order, _linear, _nonhomogeneous]]	✓
7359	$x^3y''' - 3x^2y'' + 6xy' - 6y = 0$	[[_3rd_order, _with_linear_symmetries]]	✓
7371	$y''' - xy = 0$ i.c.	[[_3rd_order, _with_linear_symmetries]]	✗
7379	$x^3y''' + 2x^2y'' - xy' + y = 0$	[[_3rd_order, _exact, _linear, _homogeneous]]	✓

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#	ODE	CAS classification	Solved?
7482	$2y''' + y'' - 5y' + 2y = 0$	[[_3rd_order, _missing_x]]	✓
7660	$y''' + y' = \sin(x)$	[[_3rd_order, _missing_y]]	✓
7692	$y''' - 3y'' + 2y' = 0$	[[_3rd_order, _missing_x]]	✓
7693	$y''' - 3y'' + 4y' - 2y = 0$	[[_3rd_order, _missing_x]]	✓
7694	$y''' - y = 0$	[[_3rd_order, _missing_x]]	✓
7695	$y''' + y = 0$	[[_3rd_order, _missing_x]]	✓
7696	$y''' + 3y'' + 3y' + y = 0$	[[_3rd_order, _missing_x]]	✓
7697	$y'''' + 4y''' + 6y'' + 4y' + y = 0$	[[_high_order, _missing_x]]	✓
7698	$y'''' - y = 0$	[[_high_order, _missing_x]]	✓
7699	$y'''' + 5y'' + 4y = 0$	[[_high_order, _missing_x]]	✓
7700	$y'''' - 2a^2y'' + a^4y = 0$	[[_high_order, _missing_x]]	✓
7701	$y'''' + 2a^2y'' + a^4y = 0$	[[_high_order, _missing_x]]	✓
7702	$y'''' + 2y''' + 2y'' + 2y' + y = 0$	[[_high_order, _missing_x]]	✓
7703	$y'''' + 2y''' - 2y'' - 6y' + 5y = 0$	[[_high_order, _missing_x]]	✓
7704	$y''' - 6y'' + 11y' - 6y = 0$	[[_3rd_order, _missing_x]]	✓
7705	$y'''' + y''' - 3y'' - 5y' - 2y = 0$	[[_high_order, _missing_x]]	✓
7706	$y^{(5)} - 6y'''' - 8y''' + 48y'' + 16y' - 96y = 0$	[[_high_order, _missing_x]]	✓
7707	$y'''' = 0$	[[_high_order, _quadrature]]	✓
7708	$y'''' = \sin(x) + 24$	[[_high_order, _quadrature]]	✓
7709	$y''' - 3y'' + 2y' = 10 + 42e^{3x}$	[[_3rd_order, _missing_y]]	✓
7710	$y''' - y' = 1$ i.c.	[[_3rd_order, _missing_x]]	✓
7711	$x^3y''' + 3x^2y'' = 0$	[[_3rd_order, _missing_y]]	✓
7712	$x^3y''' + x^2y'' - 2xy' + 2y = 0$	[[_3rd_order, _exact, _linear, _homogeneous]]	✓

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Table 2.55 High order differential equations

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#	ODE	CAS classification	Solved?
7713	$x^3 y''' + 2x^2 y'' + xy' - y = 0$	[[_3rd_order, __with_linear_symmetries]]	✓
7714	$x^3 y'''' + 8x^2 y''' + 8xy'' - 8y' = 0$	[[_high_order, __missing_y]]	✓
7836	$x^3 y''' + 2x^2 y'' + (x^2 + x)y' + xy = 0$	[[_3rd_order, __with_linear_symmetries]]	✗
7837	$x^3 y''' + x^2 y'' - 3xy' + (x - 1)y = 0$	[[_3rd_order, __with_linear_symmetries]]	✗
7838	$x^3 y''' - 2x^2 y'' + (x^2 + 2x)y' - xy = 0$	[[_3rd_order, __with_linear_symmetries]]	✗
7839	$x^3 y''' + (2x^3 - x^2)y'' - xy' + y = 0$	[[_3rd_order, __with_linear_symmetries]]	✗
8008	<i>i.c.</i> $2y''' + 3y'' - 3y' - 2y = e^{-t}$	[[_3rd_order, __with_linear_symmetries]]	✓
8009	<i>i.c.</i> $y''' + 2y'' - y' - 2y = \sin(3t)$	[[_3rd_order, __linear, __nonhomogeneous]]	✓
8248	$y''' + x^2 y'' + 5xy' + 3y = 0$	[[_3rd_order, __exact, __linear, __homogeneous]]	✗
8291	$x^3 y''' + 4x^2 y'' - 8xy' + 8y = 0$	[[_3rd_order, __with_linear_symmetries]]	✓
8534	$y''' - x^3 y' - x^2 y - x^3 = 0$	[[_3rd_order, __with_linear_symmetries]]	✗
8548	<i>i.c.</i> $y''' + y' + y = x$	[[_3rd_order, __with_linear_symmetries]]	✓
8552	$x^4 y''' + x^3 y'' + x^2 y' + xy = 0$	[[_3rd_order, __with_linear_symmetries]]	✓
8553	$x^4 y''' + x^3 y'' + x^2 y' + xy = x$	[[_3rd_order, __with_linear_symmetries]]	✓
8554	$5x^5 y'''' + 4x^4 y''' + x^2 y' + xy = 0$	[[_high_order, __with_linear_symmetries]]	✓
8841	$y'''' - y''' - 3y'' + 5y' - 2y = x e^x + 3 e^{-2x}$	[[_high_order, __linear, __nonhomogeneous]]	✓
8846	$y''' - xy = 0$	[[_3rd_order, __with_linear_symmetries]]	✗
10714	$y'' - \left( \frac{p''''(x)}{30} + \frac{7p''(x)}{3} + ap(x) + b \right) y = 0$	[[_2nd_order, __with_linear_symmetries]]	✗
10765	$y'' + \frac{f(x) f'''(x) y'}{f(x)^2 + b^2} - \frac{a^2 f'(x)^2 y}{f(x)^2 + b^2} = 0$	[[_2nd_order, __with_linear_symmetries]]	✗

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#	ODE	CAS classification	Solved?
11128	$y''' - \lambda y = 0$	[[_3rd_order, _missing_x]]	✓
11129	$y''' + ya x^3 - bx = 0$	[[_3rd_order, _linear, _nonhomogeneous]]	✗
11130	$y''' - a x^b y = 0$	[[_3rd_order, _with_linear_symmetries]]	✗
11131	$y''' + 3y' - 4y = 0$	[[_3rd_order, _missing_x]]	✓
11132	$y''' - a^2 y' - e^{2ax} \sin(x)^2 = 0$	[[_3rd_order, _missing_y]]	✓
11133	$y''' + 2axy' + ay = 0$	[[_3rd_order, _with_linear_symmetries]]	✗
11134	$y''' - x^2 y'' + (a + b - 1) xy' - bya = 0$	[[_3rd_order, _with_linear_symmetries]]	✗
11135	$y''' + x^{2c-2} y' + (c - 1) x^{2c-3} y = 0$	[[_3rd_order, _with_linear_symmetries]]	✗
11136	$y''' - 3(2 \text{WeierstrassP}(x, g2, g3) + a) y' + by = 0$	[[_3rd_order, _with_linear_symmetries]]	✗
11137	$y''' + \frac{(-n^2 + 1) \text{WeierstrassP}(x, g2, g3) y' + ((-n^2 + 1) \text{WeierstrassPPrime}(x, g2, g3) - a) y}{2} = 0$	[[_3rd_order, _with_linear_symmetries]]	✗
11138	$y''' - (4n(n+1) \text{WeierstrassP}(x, g2, g3) + a) y' - 2n(n+1) \text{WeierstrassPPrime}(x, g2, g3) y = 0$	[[_3rd_order, _with_linear_symmetries]]	✗
11139	$y''' + (A \text{WeierstrassP}(x, g2, g3) + a) y' + B \text{WeierstrassPPrime}(x, g2, g3) y = 0$	[[_3rd_order, _with_linear_symmetries]]	✗
11140	$y''' - (3k^2 \text{JacobiSN}(z, x)^2 + a) y' + (b + c \text{JacobiSN}(z, x)^2 - 3k^2 \text{JacobiSN}(z, x) \text{JacobiCN}(z, x) \text{JacobiDN}(z, x)) y = 0$	[[_3rd_order, _with_linear_symmetries]]	✗
11141	$y''' - (6k^2 \sin(x)^2 + a) y' + by = 0$	[[_3rd_order, _with_linear_symmetries]]	✗
11142	$y''' + 2f(x) y' + f'(x) y = 0$	[[_3rd_order, _with_linear_symmetries]]	✗
11143	$y''' - 2y'' - 3y' + 10y = 0$	[[_3rd_order, _missing_x]]	✓
11144	$y''' - 2y'' - a^2 y' + 2a^2 y - \sinh(x) = 0$	[[_3rd_order, _linear, _nonhomogeneous]]	✓
11145	$y''' - 3ay'' + 3a^2 y' - a^3 y - e^{ax} = 0$	[[_3rd_order, _with_linear_symmetries]]	✓

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Table 2.55 High order differential equations  
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#	ODE	CAS classification	Solved?
11146	$y''' + a_2 y'' + a_1 y' + a_0 y = 0$	[[_3rd_order, _missing_x]]	✓
11147	$y''' - 6xy'' + 2(4x^2 + 2a - 1)y' - 8axy = 0$	[[_3rd_order, _with_linear_symmetries]]	✗
11148	$y''' + 3axy'' + 3a^2x^2y' + a^3x^3y = 0$	[[_3rd_order, _with_linear_symmetries]]	✗
11149	$y''' - y'' \sin(x) - 2y' \cos(x) + y \sin(x) - \ln(x) = 0$	[[_3rd_order, _fully, _exact, _linear]]	✗
11150	$y''' + f(x)y'' + y' + f(x)y = 0$	[[_3rd_order, _with_linear_symmetries]]	✗
11151	$y''' + f(x)(x^2y'' - 2xy' + 2y) = 0$	[[_3rd_order, _with_linear_symmetries]]	✗
11152	$y''' + f(x)y'' + g(x)y' + (f(x)g(x) + g'(x))y = 0$	[[_3rd_order, _with_linear_symmetries]]	✗
11153	$y''' + 3f(x)y'' + (f'(x) + 2f(x)^2 + 4g(x))y' + (4f(x)g(x) + 2g'(x))y = 0$	[[_3rd_order, _with_linear_symmetries]]	✗
11154	$4y''' - 8y'' - 11y' - 3y + 18e^x = 0$	[[_3rd_order, _with_linear_symmetries]]	✓
11155	$27y''' - 36n^2 \text{WeierstrassP}(x, g_2, g_3)y' - 2n(3+n)(4n - 3) \text{WeierstrassPPrime}(x, g_2, g_3)y = 0$	[[_3rd_order, _with_linear_symmetries]]	✗
11156	$xy''' + 3y'' + xy = 0$	[[_3rd_order, _with_linear_symmetries]]	✗
11157	$xy''' + 3y'' - ax^2y = 0$	[[_3rd_order, _with_linear_symmetries]]	✗
11158	$xy''' + (a+b)y'' - xy' - ay = 0$	[[_3rd_order, _with_linear_symmetries]]	✗
11159	$xy''' - (x+2v)y'' - (x-2v-1)y' + (x-1)y = 0$	[[_3rd_order, _with_linear_symmetries]]	✗
11160	$xy''' + (x^2 - 3)y'' + 4xy' + 2y - f(x) = 0$	[[_3rd_order, _fully, _exact, _linear]]	✗
11161	$2xy''' + 3y'' + axy - b = 0$	[[_3rd_order, _linear, _nonhomogeneous]]	✗
11162	$2xy''' - 4(x+v-1)y'' + (2x+6v-5)y' + (1-2v)y = 0$	[[_3rd_order, _with_linear_symmetries]]	✗
11163	$2xy''' + 3(2ax+k)y'' + 6(ak+bx)y' + (3bk+2cx)y = 0$	[[_3rd_order, _with_linear_symmetries]]	✗
11164	$(-2+x)xy''' - (-2+x)xy'' - 2y' + 2y = 0$	[[_3rd_order, _exact, _linear, _homogeneous]]	✗

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#	ODE	CAS classification	Solved?
11165	$(2x - 1)y''' - 8xy' + 8y = 0$	[[_3rd_order, _with_linear_symmetries]]	✗
11166	$(2x - 1)y''' + (4 + x)y'' + 2y' = 0$	[[_3rd_order, _missing_y]]	✓
11167	$x^2y''' - 6y' + ax^2y = 0$	[[_3rd_order, _with_linear_symmetries]]	✗
11168	$x^2y''' + (x + 1)y'' - y = 0$	[[_3rd_order, _with_linear_symmetries]]	✗
11169	$x^2y''' - xy'' + (x^2 + 1)y' = 0$	[[_3rd_order, _missing_y]]	✓
11170	$x^2y''' + 3xy'' + (4a^2x^{2a} + 1 - 4\nu^2a^2)y' = 4a^3x^{2a-1}y$	[[_3rd_order, _with_linear_symmetries]]	✓
11171	$x^2y''' - 3(x - m)xy'' + (2x^2 + 4(n - m)x + m(2m - 1))y' - 2n(2x - 2m + 1)y = 0$	[[_3rd_order, _with_linear_symmetries]]	✗
11172	$x^2y''' + 4xy'' + (x^2 + 2)y' + 3xy - f(x) = 0$	[[_3rd_order, _linear, _nonhomogeneous]]	✗
11173	$x^2y''' + 5xy'' + 4y' - \ln(x) = 0$	[[_3rd_order, _missing_y]]	✓
11174	$x^2y''' + 6xy'' + 6y' = 0$	[[_3rd_order, _missing_y]]	✓
11175	$x^2y''' + 6xy'' + 6y' + ax^2y = 0$	[[_3rd_order, _with_linear_symmetries]]	✗
11176	$x^2y''' - 3(p + q)xy'' + 3p(3q + 1)y' - x^2y = 0$	[[_3rd_order, _with_linear_symmetries]]	✗
11177	$x^2y''' - 2(n + 1)xy'' + (x^2a + 6n)y' - 2axy = 0$	[[_3rd_order, _with_linear_symmetries]]	✗
11178	$x^2y''' - (x^2 - 2x)y'' - \left(x^2 + \nu^2 - \frac{1}{4}\right)y' + \left(x^2 - 2x + \nu^2 - \frac{1}{4}\right)y = 0$	[[_3rd_order, _with_linear_symmetries]]	✗
11179	$x^2y''' - (x + \nu)xy'' + \nu(2x + 1)y' - \nu(x + 1)y = 0$	[[_3rd_order, _with_linear_symmetries]]	✗
11180	$x^2y''' - 2(x^2 - x)y'' + \left(x^2 - 2x + \frac{1}{4} - \nu^2\right)y' + \left(\nu^2 - \frac{1}{4}\right)y = 0$	[[_3rd_order, _with_linear_symmetries]]	✗
11181	$x^2y''' - (x^4 - 6x)y'' - (2x^3 - 6)y' + 2x^2y = 0$	[[_3rd_order, _with_linear_symmetries]]	✗
11182	$(x^2 + 1)y''' + 8xy'' + 10y' - 3 + \frac{1}{x^2} - 2\ln(x) = 0$	[[_3rd_order, _missing_y]]	✓
11183	$(x^2 + 2)y''' - 2xy'' + (x^2 + 2)y' - 2xy = 0$	[[_3rd_order, _with_linear_symmetries]]	✗

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Table 2.55 High order differential equations

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#	ODE	CAS classification	Solved?
11184	$2x(x-1)y''' + 3(2x-1)y'' + (2ax+b)y' + ay = 0$	[[_3rd_order, __with_linear_symmetries]]	✗
11185	$x^3y''' + (-\nu^2 + 1)xy' + (ax^3 + \nu^2 - 1)y = 0$	[[_3rd_order, __with_linear_symmetries]]	✗
11186	$x^3y''' + (4x^3 + (-4\nu^2 + 1)x)y' + (4\nu^2 - 1)y = 0$	[[_3rd_order, __with_linear_symmetries]]	✗
11187	$x^3y''' + (ax^{2\nu} + 1 - \nu^2)xy' + (bx^{3\nu} + a(\nu - 1)x^{2\nu} + \nu^2 - 1)y = 0$	[[_3rd_order, __with_linear_symmetries]]	✗
11188	$x^3y''' + 3x^2y'' - 2xy' + 2y - 6x^3(x-1)\ln(x) + x^3(8+x) = 0$	[[_3rd_order, __with_linear_symmetries]]	✓
11189	$x^3y''' + 3x^2y'' + (-a^2 + 1)xy' = 0$	[[_3rd_order, __missing_y]]	✓
11190	$x^3y''' - 4x^2y'' + (x^2 + 8)xy' - 2(x^2 + 4)y = 0$	[[_3rd_order, __with_linear_symmetries]]	✗
11191	$x^3y''' + 6x^2y'' + (ax^3 - 12)y = 0$	[[_3rd_order, __with_linear_symmetries]]	✓
11192	$x^3y''' + 3(-a + 1)x^2y'' + (4b^2c^2x^{2c+1} + 1 - 4\nu^2c^2 + 3a(a-1)x)y' + (4b^2c^2(c-a)x^{2c} + a(4\nu^2c^2 - a^2))y = 0$	[[_3rd_order, __with_linear_symmetries]]	✗
11193	$x^3y''' + (x+3)x^2y'' + 5(x-6)xy' + (4x+30)y = 0$	[[_3rd_order, __with_linear_symmetries]]	✗
11194	$x^3y''' + x^2y'' + \ln(x) + 2xy' - y - 2x^3 = 0$	[[_3rd_order, __linear, __nonhomogeneous]]	✓
11195	$(x^2 + 1)xy''' + 3(2x^2 + 1)y'' - 12y = 0$	[[_3rd_order, __with_linear_symmetries]]	✗
11196	$(x+3)x^2y''' - 3x(x+2)y'' + 6(x+1)y' - 6y = 0$	[[_3rd_order, __with_linear_symmetries]]	✗
11197	$2(x-a_1)(x-a_2)(x-a_3)y''' + (9x^2 - 6(a_1+a_2+a_3)x + 3a_1a_2+3a_1a_3+3a_2a_3)y'' - 2((n^2+n-3)x+b)y' - n(n+1)y = 0$	[[_3rd_order, __with_linear_symmetries]]	✗
11198	$x^3(x+1)y''' - (2+4x)x^2y'' + (4+10x)xy' - 4(3x+1)y = 0$	[[_3rd_order, __with_linear_symmetries]]	✗
11199	$4x^4y''' - 4x^3y'' + 4x^2y' - 1 = 0$	[[_3rd_order, __missing_y]]	✓
11200	$x^3(x^2+1)y''' - (4x^2+2)x^2y'' + (10x^2+4)xy' - 4(3x^2+1)y = 0$	[[_3rd_order, __with_linear_symmetries]]	✗
11201	$x^6y''' + x^2y'' - 2y = 0$	[[_3rd_order, __with_linear_symmetries]]	✗

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#	ODE	CAS classification	Solved?
11202	$x^6 y''' + 6x^5 y'' + ay = 0$	[[_3rd_order, _with_linear_symmetries]]	✗
11203	$x^2(x^4 + 2x^2 + 2x + 1)y''' - (2x^6 + 3x^4 - 6x^2 - 6x - 1)y'' + (x^6 - 6x^3 - 15x^2 - 12x - 2)y' + (x^4 + 4x^3 + 8x^2 + 6x + 1)y = 0$	[[_3rd_order, _with_linear_symmetries]]	✗
11204	$(x - a)^3(x - b)^3 y''' - cy = 0$	[[_3rd_order, _with_linear_symmetries]]	✗
11205	$y''' \sin(x) + (2 \cos(x) + 1)y'' - y' \sin(x) - \cos(x) = 0$	[[_3rd_order, _missing_y]]	✓
11206	$(\sin(x) + x)y''' + 3(\cos(x) + 1)y'' - 3y' \sin(x) - y \cos(x) + \sin(x) = 0$	[[_3rd_order, _fully, _exact, _linear]]	✗
11207	$y''' \sin(x)^2 + 3y'' \sin(x) \cos(x) + (\cos(2x) + 4\nu(\nu + 1) \sin(x)^2)y' + 2\nu(\nu + 1)y \sin(2x) = 0$	[[_3rd_order, _with_linear_symmetries]]	✗
11208	$f'(x)y'' + f(x)y''' + g'(x)y' + g(x)y'' + h'(x)y + h(x)y' + A(x)(f(x)y'' + g(x)y' + h(x)y) = 0$	[[_3rd_order, _with_linear_symmetries]]	✗
11209	$y''' + xy' + ny = 0$	[[_3rd_order, _with_linear_symmetries]]	✗
11210	$y''' - xy' - ny = 0$	[[_3rd_order, _with_linear_symmetries]]	✗
11211	$y'''' = 0$	[[_high_order, _quadrature]]	✓
11212	$y'''' + 4y - f = 0$	[[_high_order, _missing_x]]	✓
11213	$y'''' + \lambda y = 0$	[[_high_order, _missing_x]]	✓
11214	$y'''' - 12y'' + 12y - 16x^4 e^{x^2} = 0$	[[_high_order, _linear, _nonhomogeneous]]	✓
11215	$y'''' + 2a^2 y'' + a^4 y - \cosh(ax) = 0$	[[_high_order, _linear, _nonhomogeneous]]	✓
11216	$y'''' + (\lambda + 1)a^2 y'' + \lambda a^4 y = 0$	[[_high_order, _missing_x]]	✓
11217	$y'''' + a(bx - 1)y'' + aby' + \lambda y = 0$	[[_high_order, _with_linear_symmetries]]	✗
11218	$y'''' + (x^2 a + b\lambda + c)y'' + (x^2 a + \beta\lambda + \gamma)y = 0$	[[_high_order, _with_linear_symmetries]]	✗

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#	ODE	CAS classification	Solved?
11219	$y'''' + a \operatorname{WeierstrassP}(x, g_2, g_3) y'' + b \operatorname{WeierstrassPPrime}(x, g_2, g_3) y' + \left( c \left( 6 \operatorname{WeierstrassP}(x, g_2, g_3)^2 - \frac{g_2^2}{2} \right) + d \right) y = 0$	[[_high_order, _with_linear_symmetries]]	✗
11220	$y'''' - \left( 12k^2 \operatorname{JacobiSN}(z, x)^2 + a \right) y'' + by' + \left( \alpha \operatorname{JacobiSN}(z, x)^2 + \beta \right) y = 0$	[[_high_order, _with_linear_symmetries]]	✗
11221	$y'''' + 2y''' - 3y'' - 4y' + 4y - 32 \sin(2x) + 24 \cos(2x) = 0$	[[_high_order, _linear, _nonhomogeneous]]	✓
11222	$y'''' + 4axy''' + 6a^2x^2y'' + 4a^3x^3y' + a^4x^4y = 0$	[[_high_order, _with_linear_symmetries]]	✗
11223	$4y'''' - 12y''' + 11y'' - 3y' - 4 \cos(x) = 0$	[[_high_order, _missing_y]]	✓
11224	$xy'''' + 5y''' - 24 = 0$	[[_high_order, _missing_y]]	✓
11225	$xy'''' - (6x^2 + 1) y''' + 12x^3y'' - (9x^2 - 7) x^2y' + 2(x^2 - 3) x^3y = 0$	[[_high_order, _with_linear_symmetries]]	✗
11226	$x^2y'''' - 2(\nu^2x^2 + 6) y'' + \nu^2(\nu^2x^2 + 4) y = 0$	[[_high_order, _with_linear_symmetries]]	✗
11227	$x^2y'''' + 2xy''' + ay - bx^2 = 0$	[[_high_order, _linear, _nonhomogeneous]]	✗
11228	$x^2y'''' + 4xy''' + 2y'' = 0$	[[_high_order, _missing_y]]	✓
11229	$x^2y'''' + 6xy''' + 6y'' = 0$	[[_high_order, _missing_y]]	✓
11230	$x^2y'''' + 6xy''' + 6y'' - \lambda^2y = 0$	[[_high_order, _with_linear_symmetries]]	✗
11231	$x^2y'''' + 8xy''' + 12y'' = 0$	[[_high_order, _missing_y]]	✓
11232	$x^2y'''' + 8xy''' + 12y'' - \lambda^2y = 0$	[[_high_order, _with_linear_symmetries]]	✗
11233	$x^2y'''' + (2n - 2\nu + 4) xy''' + (n - \nu + 1)(n - \nu + 2) y'' - \frac{b^4y}{16} = 0$	[[_high_order, _with_linear_symmetries]]	✗
11234	$x^3y'''' + 2x^2y''' - xy'' + y' - a^4x^3y = 0$	[[_high_order, _with_linear_symmetries]]	✗
11235	$x^3y'''' + 6x^2y''' + 6xy'' = 0$	[[_high_order, _missing_y]]	✓

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Table 2.55 High order differential equations

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#	ODE	CAS classification	Solved?
11236	$x^4 y'''' - 2n(n+1)x^2 y'' + 4n(n+1)xy' + (ax^4 + n(n+1)(3+n)(n-2))y = 0$	[[_high_order, _with_linear_symmetries]]	✗
11237	$x^4 y'''' + 4x^3 y''' - (4n^2 - 1)x^2 y'' + (4n^2 - 1)xy' - 4yx^4 = 0$	[[_high_order, _with_linear_symmetries]]	✗
11238	$x^4 y'''' + 4x^3 y''' - (4n^2 - 1)x^2 y'' - (4n^2 - 1)xy' + (-4x^4 + 4n^2 - 1)y = 0$	[[_high_order, _with_linear_symmetries]]	✗
11239	$x^4 y'''' + 4x^3 y''' - (4n^2 + 3)x^2 y'' + (12n^2 - 3)xy' - (4x^4 + 12n^2 - 3)y = 0$	[[_high_order, _with_linear_symmetries]]	✗
11240	$x^4 y'''' + 6x^3 y''' + (4x^4 + (-\rho^2 - \sigma^2 + 7)x^2) y'' + (16x^3 + (-\rho^2 - \sigma^2 + 1)x) y' + (\rho^2 \sigma^2 + 8x^2) y = 0$	[[_high_order, _with_linear_symmetries]]	✗
11241	$x^4 y'''' + 6x^3 y''' + (4x^4 + (-2\mu^2 - 2\nu^2 + 7)x^2) y'' + (16x^3 + (-2\mu^2 - 2\nu^2 + 1)x) y' + (8x^2 + (\mu^2 - \nu^2)^2) y = 0$	[[_high_order, _with_linear_symmetries]]	✗
11242	$x^4 y'''' + 8x^3 y''' + 12x^2 y'' = 0$	[[_high_order, _missing_y]]	✓
11243	$x^4 y'''' + 8x^3 y''' + 12x^2 y'' + ay = 0$	[[_high_order, _with_linear_symmetries]]	✓
11244	$x^4 y'''' + (6 - 4a)x^3 y''' + (4b^2 c^2 x^{2c} + 6(a-1)^2 - 2c^2(\mu^2 + \nu^2) + 1)x^2 y'' + (4(3c - 2a + 1)b^2 c^2 x^{2c} + (2a - 1)(2c^2(\mu^2 + \nu^2) - 2a(a-1) - 1))xy' + (4(a-c)(a-2c)b^2 c^2 x^{2c} + (c\mu + c\nu + a)(c\mu + c\nu - a)(c\mu - c\nu + a)(c\mu - c\nu - a))y = 0$	[[_high_order, _with_linear_symmetries]]	✗
11245	$x^4 y'''' + (6 - 4a - 4c)x^3 y''' + (-2\nu^2 c^2 + 2a^2 + 4(a+c-1)^2 + 4(a-1)(c-1) - 1)x^2 y'' + (2\nu^2 c^2 - 2a^2 - (2a-1)(2c-1))(2a+2c-1)xy' + ((-\nu^2 c^2 + a^2)(-\nu^2 c^2 + a^2 + 4ac + 4c^2) - b^4 c^4 x^{4c})y = 0$	[[_high_order, _with_linear_symmetries]]	✗
11246	$\nu^4 x^4 y'''' + (4\nu - 2)\nu^3 x^3 y''' + (\nu - 1)(2\nu - 1)\nu^2 x^2 y'' - \frac{b^4 x^{\frac{2}{\nu}} y}{16} = 0$	[[_high_order, _with_linear_symmetries]]	✗

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#	ODE	CAS classification	Solved?
11247	$(x^2 - 1)^2 y'''' + 10x(x^2 - 1)y''' + (24x^2 - 8 - 2(\mu(\mu + 1) + \nu(\nu + 1))(x^2 - 1))y'' - 6x(\mu(\mu + 1) + \nu(\nu + 1) - 2)y' + ((\mu(\mu + 1) - \nu(\nu + 1))^2 - 2\mu(\mu + 1) - 2\nu(\nu + 1))y = 0$	[[_high_order, _with_linear_symmetries]]	✗
11248	$(e^x + 2x)y'''' + 4(e^x + 2)y''' + 6e^xy'' + 4e^xy' + ye^x - \frac{1}{x^5} = 0$	[[_high_order, _fully, _exact, _linear]]	✗
11249	$y'''' \sin(x)^4 + 2y''' \sin(x)^3 \cos(x) + y'' \sin(x)^2 (\sin(x)^2 - 3) + y' \sin(x) \cos(x) (2 \sin(x)^2 + 3) + (a^4 \sin(x)^4 - 3)y = 0$	[[_high_order, _with_linear_symmetries]]	✗
11250	$y'''' \sin(x)^6 + 4y''' \sin(x)^5 \cos(x) - 6y'' \sin(x)^6 - 4y' \sin(x)^5 \cos(x) + y \sin(x)^6 - f = 0$	[[_high_order, _linear, _nonhomogeneous]]	✗
11251	$f(y'''' - 2a^2y'' + a^4y) + 2df(y''' - a^2y') = 0$	[[_high_order, _missing_x]]	✓
11252	$fy'''' = 0$	[[_high_order, _quadrature]]	✓
11253	$y'''' - 2a^2y'' + a^4y - \lambda(ax - b)(y'' - a^2y) = 0$	[[_high_order, _with_linear_symmetries]]	✗
11254	$y^{(5)} + 2y''' + y' - ax - b \sin(x) - c \cos(x) = 0$	[[_high_order, _missing_y]]	✓
11255	$y^{(6)} + y - \sin\left(\frac{3x}{2}\right) \sin\left(\frac{x}{2}\right) = 0$	[[_high_order, _linear, _nonhomogeneous]]	✓
11256	$y^{(5)} - axy - b = 0$	[[_high_order, _linear, _nonhomogeneous]]	✗
11257	$y^{(5)} + ax^\nu y' + a\nu x^{\nu-1}y = 0$	[[_high_order, _with_linear_symmetries]]	✗
11258	$y^{(5)} + ay'''' - f = 0$	[[_high_order, _missing_x]]	✓
11259	$xy^{(5)} - mny'''' + axy = 0$	[[_high_order, _with_linear_symmetries]]	✗
11260	$x(ay' + by'' + cy''' + ey''''y) = 0$	[[_high_order, _missing_x]]	✓
11261	$xy^{(5)} - (aA_1 - A_0)x - A_1 - ((aA_2 - A_1)x + A_2)y' = 0$	[[_high_order, _missing_y]]	✗

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#	ODE	CAS classification	Solved?
11262	$x^2 y'''' - ay = 0$	[[_high_order, _with_linear_symmetries]]	✗
11263	$x^{10} y^{(5)} - ay = 0$	[[_high_order, _with_linear_symmetries]]	✗
11264	$x^{5/2} y^{(5)} - ay = 0$	[[_high_order, _with_linear_symmetries]]	✗
11265	$(x - a)^5 (x - b)^5 y^{(5)} - cy = 0$	[[_high_order, _with_linear_symmetries]]	✗
11512	$y''' - a^2 (y'^5 + 2y'^3 + y') = 0$	[[_3rd_order, _missing_x], [_3rd_order, _missing_y], [_3rd_order, _with_linear_symmetries], [_3rd_order, _reducible, _mu_y2]]	✓
11513	$y''' + yy'' - y'^2 + 1 = 0$	[[_3rd_order, _missing_x], [_3rd_order, _with_linear_symmetries]]	✗
11514	$y''' - yy'' + y'^2 = 0$	[[_3rd_order, _missing_x], [_3rd_order, _with_linear_symmetries]]	✗
11515	$y''' + ayy'' = 0$	[[_3rd_order, _missing_x], [_3rd_order, _with_linear_symmetries]]	✗
11516	$x^2 y'''' + xy'' + (2xy - 1)y' + y^2 - f(x) = 0$	[[_3rd_order, _exact, _nonlinear]]	✗
11517	$x^2 y'''' + x(y - 1)y'' + xy'^2 + (1 - y)y' = 0$	[[_3rd_order, _exact, _nonlinear], [_3rd_order, _with_linear_symmetries], [_3rd_order, _reducible, _mu_y2]]	✗
11518	$yy''' - y'y'' + y^3 y' = 0$	[[_3rd_order, _missing_x], [_3rd_order, _exact, _nonlinear], [_3rd_order, _with_linear_symmetries]]	✗
11519	$4y^2 y'''' - 18yy'y'' + 15y'^3 = 0$	[[_3rd_order, _missing_x], [_3rd_order, _with_linear_symmetries]]	✗
11520	$9y^2 y'''' - 45yy'y'' + 40y'^3 = 0$	[[_3rd_order, _missing_x], [_3rd_order, _with_linear_symmetries]]	✗
11521	$2y'y'''' - 3y'^2 = 0$	[[_3rd_order, _missing_x]]	✓

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#	ODE	CAS classification	Solved?
11522	$(1 + y'^2) y''' - 3y' y''^2 = 0$	[[_3rd_order, _missing_x], [_3rd_order, _missing_y], [_3rd_order, _with_linear_symmetries], [_3rd_order, _reducible, _mu_y2], [_3rd_order, _reducible, _mu_poly_yn]]	✓
11523	$(1 + y'^2) y''' - (3y' + a) y''^2 = 0$	[[_3rd_order, _missing_x], [_3rd_order, _missing_y], [_3rd_order, _with_linear_symmetries], [_3rd_order, _reducible, _mu_y2], [_3rd_order, _reducible, _mu_poly_yn]]	✓
11524	$y'' y''' - a \sqrt{b^2 y''^2 + 1} = 0$	[[_3rd_order, _missing_x], [_3rd_order, _missing_y], [_3rd_order, _with_linear_symmetries], [_3rd_order, _reducible, _mu_y2]]	✓
11525	$y' y'''' - y'' y''' + y'^3 y'' = 0$	[[_high_order, _missing_x], [_high_order, _missing_y], [_high_order, _with_linear_symmetries]]	✗
11526	$y'(f'''(x)y' + 3f''(x)y'' + 3f'(x)y''' + f(x)y'''' - y''fy''') + y'^3(f'(x)y' + f(x)y'') + 2q(x)y'^2 \sin(y) + (q(x)y'' - q'(x)y') \cos(y) = 0$	[NONE]	✗
11527	$3y'' y'''' - 5y''^2 = 0$	[[_high_order, _missing_x], [_high_order, _missing_y], [_high_order, _with_linear_symmetries], [_high_order, _reducible, _mu_poly_yn]]	✓
11528	$9y''^2 y^{(5)} - 45y'' y''' y'''' + 40y'''' = 0$	[[_high_order, _missing_x], [_high_order, _missing_y], [_high_order, _with_linear_symmetries]]	✗
11530	$y''' = f(y)$	[[_3rd_order, _missing_x], [_3rd_order, _with_linear_symmetries]]	✗
12597	$y''' - y' = 0$	[[_3rd_order, _missing_x]]	✓
12598	$y''' - 2y'' - y' + 2y = 0$	[[_3rd_order, _missing_x]]	✓

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#	ODE	CAS classification	Solved?
12599	$4y''' - 3y' + y = 0$	[[_3rd_order, _missing_x]]	✓
12600	$y''' - y'' - y' + y = 0$	[[_3rd_order, _missing_x]]	✓
12601	$y'''' + 2y''' - 2y' - y = 0$	[[_high_order, _missing_x]]	✓
12602	$y''' - 6y'' + 9y' = 0$	[[_3rd_order, _missing_x]]	✓
12603	$y'''' + 2y'' + y = 0$	[[_high_order, _missing_x]]	✓
12604	$y''' - y'' + y' = 0$	[[_3rd_order, _missing_x]]	✓
12605	$y''' - y'' - 2y' = e^{-x}$	[[_3rd_order, _missing_y]]	✓
12607	$y''' + 3y'' + 3y' + y = 2e^{-x} - x^2e^{-x}$	[[_3rd_order, _linear, _nonhomogeneous]]	✓
12610	$y''' - 3y'' - y' + 3y = x^2$	[[_3rd_order, _with_linear_symmetries]]	✓
12612	$y''' - 4y'' + 5y' - 2y = x$	[[_3rd_order, _with_linear_symmetries]]	✓
12619	$y''' - y = x^2$	[[_3rd_order, _with_linear_symmetries]]	✓
12620	$y''' - 2y'' - 3y' = 3x^2 + \sin(x)$	[[_3rd_order, _missing_y]]	✓
12621	$y'''' - 2y'' + y = e^x + 4$	[[_high_order, _with_linear_symmetries]]	✓
12623	$y'''' + 2y'' + y = \cos(x)$	[[_high_order, _linear, _nonhomogeneous]]	✓
12624	$x^3y''' + xy' - y = x \ln(x)$	[[_3rd_order, _with_linear_symmetries]]	✓
12625	$x^3y''' + 2x^2y'' + 2y = 10x + \frac{10}{x}$	[[_3rd_order, _exact, _linear, _nonhomogeneous]]	✓
12629	$y'''' - y = e^x \cos(x)$	[[_high_order, _linear, _nonhomogeneous]]	✓
12631	$y''' - 4y' = x^2 - 3e^{2x}$	[[_3rd_order, _missing_y]]	✓
12632	$y'''' - 2y'' + y = \cos(x)$	[[_high_order, _linear, _nonhomogeneous]]	✓
12633	$x^4y'''' + 6x^3y''' + 9x^2y'' + 3xy' + y = (\ln(x) + 1)^2$	[[_high_order, _linear, _nonhomogeneous]]	✓
12634	$y''' + 2y'' + y' = x^2 - x$	[[_3rd_order, _missing_y]]	✓
12637	$y'''' - y''' - 3y'' + 5y' - 2y = e^{3x}$	[[_high_order, _with_linear_symmetries]]	✓

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Table 2.55 High order differential equations

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#	ODE	CAS classification	Solved?
12639	$x^3y''' + 2x^2y'' - xy' + y = \frac{1}{x}$	[[_3rd_order, _exact, _linear, _nonhomogeneous]]	✓
12640	$y''' - y = xe^x + \cos(x)^2$	[[_3rd_order, _linear, _nonhomogeneous]]	✓
12665	$(xy''' - y'')^2 = y'''^2 + 1$	[[_3rd_order, _missing_y], [_3rd_order, _with_linear_symmetries]]	✓
12673	$(x^2 - 2x + 2)y''' - x^2y'' + 2xy' - 2y = 0$	[[_3rd_order, _with_linear_symmetries]]	✗
12674	$xy''' - y'' - xy' + y = -x^2 + 1$	[[_3rd_order, _with_linear_symmetries]]	✗
12675	$(x + 2)^2 y''' + (x + 2)y'' + y' = 1$	[[_3rd_order, _missing_y]]	✓
12678	$(x^3 - x)y''' + (8x^2 - 3)y'' + 14xy' + 4y = 0$	[[_3rd_order, _fully, _exact, _linear]]	✗
12679	$2x^3yy''' + 6x^3y'y'' + 18x^2yy'' + 18x^2y'^2 + 36xyy' + 6y^2 = 0$	[[_3rd_order, _exact, _nonlinear], [_3rd_order, _with_linear_symmetries]]	✗
12682	$x^2y''' - 5xy'' + (4x^4 + 5)y' - 8x^3y = 0$	[[_3rd_order, _with_linear_symmetries]]	✗
12691	$(x^3 + 1)y''' + 9x^2y'' + 18xy' + 6y = 0$	[[_3rd_order, _fully, _exact, _linear]]	✗
12698	$4x^2y''' + 8xy'' + y' = 0$	[[_3rd_order, _missing_y]]	✓
12853	$x''' + x' = 0$	[[_3rd_order, _missing_x]]	✓
12854	$x''' + x' = 1$	[[_3rd_order, _missing_x]]	✓
12855	$x''' + x'' = 0$	[[_3rd_order, _missing_x]]	✓
12856	$x''' - x' - 8x = 0$	[[_3rd_order, _missing_x]]	✓
12857	$x''' + x'' = 2e^t + 3t^2$	[[_3rd_order, _missing_y]]	✓
12858	$x''' - 8x = 0$	[[_3rd_order, _missing_x]]	✓
12859	$x''' + x'' - x' - 4x = 0$ i.c.	[[_3rd_order, _missing_x]]	✓
12931	$y''' - 2y'' - 4y' + 8y = 0$	[[_3rd_order, _missing_x]]	✓
12932	$y''' - 3y'' - 4y' + 12y = 0$	[[_3rd_order, _missing_x]]	✓
12933	$x^3y''' + 2x^2y'' - 10xy' - 8y = 0$	[[_3rd_order, _fully, _exact, _linear]]	✓
12944	$x^3y''' - 3x^2y'' + 6xy' - 6y = 0$ i.c.	[[_3rd_order, _with_linear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
13073	$y''' - 6y'' + 5y' + 12y = 0$	[[_3rd_order, _missing_x]]	✓
13074	$x^3y''' - 4x^2y'' + 8xy' - 8y = 0$	[[_3rd_order, _with_linear_symmetries]]	✓
13087	$y''' - 3y'' - y' + 3y = 0$	[[_3rd_order, _missing_x]]	✓
13088	$y''' - 6y'' + 5y' + 12y = 0$	[[_3rd_order, _missing_x]]	✓
13095	$y''' - 5y'' + 7y' - 3y = 0$	[[_3rd_order, _missing_x]]	✓
13096	$4y''' + 4y'' - 7y' + 2y = 0$	[[_3rd_order, _missing_x]]	✓
13097	$y''' - 6y'' + 12y' - 8y = 0$	[[_3rd_order, _missing_x]]	✓
13098	$y''' + 4y'' + 5y' + 6y = 0$	[[_3rd_order, _missing_x]]	✓
13099	$y''' - y'' + y' - y = 0$	[[_3rd_order, _missing_x]]	✓
13100	$y'''' + 8y'' + 16y = 0$	[[_high_order, _missing_x]]	✓
13101	$y^{(5)} - 2y'''' + y''' = 0$	[[_high_order, _missing_x]]	✓
13102	$y'''' - y''' - 3y'' + y' + 2y = 0$	[[_high_order, _missing_x]]	✓
13103	$y'''' - 3y''' - 2y'' + 2y' + 12y = 0$	[[_high_order, _missing_x]]	✓
13104	$y'''' + 6y''' + 15y'' + 20y' + 12y = 0$	[[_high_order, _missing_x]]	✓
13105	$y'''' + y = 0$	[[_high_order, _missing_x]]	✓
13106	$y^{(5)} = 0$	[[_high_order, _quadrature]]	✓
13121	$y''' - 6y'' + 11y' - 6y = 0$ i.c.	[[_3rd_order, _missing_x]]	✓
13122	$y''' - 2y'' + 4y' - 8y = 0$ i.c.	[[_3rd_order, _missing_x]]	✓
13123	$y''' - 3y'' + 4y = 0$ i.c.	[[_3rd_order, _missing_x]]	✓
13124	$y''' - 5y'' + 9y' - 5y = 0$ i.c.	[[_3rd_order, _missing_x]]	✓
13125	$y'''' + 2y''' + 6y'' + 2y' + 5y = 0$	[[_high_order, _missing_x]]	✓
13126	$y'''' + 3y''' + y'' + 13y' + 30y = 0$	[[_high_order, _missing_x]]	✓

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Table 2.55 High order differential equations

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#	ODE	CAS classification	Solved?
13135	$y''' + 4y'' + y' - 6y = -18x^2 + 1$	[[_3rd_order, __with_linear_symmetries]]	✓
13136	$y''' + 2y'' - 3y' - 10y = 8x e^{-2x}$	[[_3rd_order, __linear, __nonhomogeneous]]	✓
13137	$y''' + y'' + 3y' - 5y = 5 \sin(2x) + 10x^2 + 3x + 7$	[[_3rd_order, __linear, __nonhomogeneous]]	✓
13138	$4y''' - 4y'' - 5y' + 3y = 3x^3 - 8x$	[[_3rd_order, __linear, __nonhomogeneous]]	✓
13141	$y''' - 3y'' + 4y = 4e^x - 18e^{-x}$	[[_3rd_order, __linear, __nonhomogeneous]]	✓
13142	$y''' - 2y'' - y' + 2y = 9e^{2x} - 8e^{3x}$	[[_3rd_order, __linear, __nonhomogeneous]]	✓
13143	$y''' + y' = 2x^2 + 4 \sin(x)$	[[_3rd_order, __missing_y]]	✓
13144	$y'''' - 3y''' + 2y'' = 3e^{-x} + 6e^{2x} - 6x$	[[_high_order, __missing_y]]	✓
13145	$y''' - 6y'' + 11y' - 6y = x e^x - 4e^{2x} + 6e^{4x}$	[[_3rd_order, __linear, __nonhomogeneous]]	✓
13146	$y''' - 4y'' + 5y' - 2y = 3e^x x^2 - 7e^x$	[[_3rd_order, __linear, __nonhomogeneous]]	✓
13149	$y'''' + 2y''' - 3y'' = 18x^2 + 16x e^x + 4e^{3x} - 9$	[[_high_order, __missing_y]]	✓
13150	$y'''' - 5y''' + 7y'' - 5y' + 6y = 5 \sin(x) - 12 \sin(2x)$	[[_high_order, __linear, __nonhomogeneous]]	✓
13165	$y''' - 4y'' + y' + 6y = 3x e^x + 2e^x - \sin(x)$ i.c.	[[_3rd_order, __linear, __nonhomogeneous]]	✓
13166	$y''' - 6y'' + 9y' - 4y = 8x^2 + 3 - 6e^{2x}$ i.c.	[[_3rd_order, __linear, __nonhomogeneous]]	✓
13172	$y''' - 3y'' + 2y' = e^x x^2 + 3x e^{2x} + 5x^2$	[[_3rd_order, __missing_y]]	✓
13173	$y''' - 6y'' + 12y' - 8y = x e^{2x} + x^2 e^{3x}$	[[_3rd_order, __linear, __nonhomogeneous]]	✓
13174	$y'''' + 3y''' + 4y'' + 3y' + y = x^2 e^{-x} + 3e^{-\frac{x}{2}} \cos\left(\frac{\sqrt{3}x}{2}\right)$	[[_high_order, __linear, __nonhomogeneous]]	✓
13175	$y'''' - 16y = x^2 \sin(2x) + x^4 e^{2x}$	[[_high_order, __linear, __nonhomogeneous]]	✓
13176	$y^{(6)} + 2y^{(5)} + 5y'''' = x^3 + x^2 e^{-x} + e^{-x} \sin(2x)$	[[_high_order, __missing_y]]	✓

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Table 2.55 High order differential equations

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#	ODE	CAS classification	Solved?
13177	$y'''' + 2y'' + y = x^2 \cos(x)$	[[_high_order, _linear, _nonhomogeneous]]	✓
13178	$y'''' + 16y = x e^{x\sqrt{2}} \sin(x\sqrt{2}) + e^{-x\sqrt{2}} \cos(x\sqrt{2})$	[[_high_order, _linear, _nonhomogeneous]]	✓
13179	$y'''' + 3y'' - 4y = \cos(x)^2 - \cosh(x)$	[[_high_order, _linear, _nonhomogeneous]]	✓
13180	$y'''' + 10y'' + 9y = \sin(x) \sin(2x)$	[[_high_order, _linear, _nonhomogeneous]]	✓
13206	$y''' - 3y'' - y' + 3y = e^x x^2$	[[_3rd_order, _linear, _nonhomogeneous]]	✓
13217	$x^3 y''' - 3x^2 y'' + 6xy' - 6y = 0$	[[_3rd_order, _with_linear_symmetries]]	✓
13218	$x^3 y''' + 2x^2 y'' - 10xy' - 8y = 0$	[[_3rd_order, _fully, _exact, _linear]]	✓
13219	$x^3 y''' - x^2 y'' - 6xy' + 18y = 0$	[[_3rd_order, _with_linear_symmetries]]	✓
13225	$x^3 y''' - x^2 y'' + 2xy' - 2y = x^3$	[[_3rd_order, _with_linear_symmetries]]	✓
13330	$y''' - 5y'' + 7y' - 3y = 20 \sin(t)$ i.c.	[[_3rd_order, _linear, _nonhomogeneous]]	✓
13331	$y''' - 6y'' + 11y' - 6y = 36t e^{4t}$ i.c.	[[_3rd_order, _linear, _nonhomogeneous]]	✓
13339	$t^3 x''' - 3t^2 x'' + 6tx' - 6x = 0$	[[_3rd_order, _with_linear_symmetries]]	✓
13341	$t^3 x''' - (3+t)t^2 x'' + 2t(3+t)x' - 2(3+t)x = 0$	[[_3rd_order, _with_linear_symmetries]]	✗
13456	$x''' - 6x'' + 11x' - 6x = e^{-t}$	[[_3rd_order, _with_linear_symmetries]]	✓
13457	$y''' - 3y'' + 2y = \sin(x)$	[[_3rd_order, _linear, _nonhomogeneous]]	✓
13458	$x'''' - 4x''' + 8x'' - 8x' + 4x = \sin(t)$	[[_high_order, _linear, _nonhomogeneous]]	✓
13459	$x'''' - 5x'' + 4x = e^t$	[[_high_order, _with_linear_symmetries]]	✓
13578	$y' + y''' - 3y'' = 0$	[[_3rd_order, _missing_x]]	✓
13586	$y'''' - 16y = x^2 - e^x$	[[_high_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
13587	$y''^2 + y''^2 = 1$	[[_3rd_order, _missing_x], [_3rd_order, _missing_y], [_3rd_order, _with_linear_symmetries], [_3rd_order, _reducible, _mu_y2]]	✗
13588	$x^{(6)} - x'''' = 1$	[[_high_order, _missing_x]]	✓
13589	$x'''' - 2x'' + x = t^2 - 3$	[[_high_order, _with_linear_symmetries]]	✓
13600	$y''' - y = e^x$	[[_3rd_order, _with_linear_symmetries]]	✓
13605	$y^{(6)} - 3y^{(5)} + 3y'''' - y''' = x$	[[_high_order, _missing_y]]	✓
13606	$x'''' + 2x'' + x = \cos(t)$	[[_high_order, _linear, _nonhomogeneous]]	✓
13609	$x'''' + x = t^3$	[[_high_order, _linear, _nonhomogeneous]]	✓
13613	$y^{(6)} - y = e^{2x}$	[[_high_order, _with_linear_symmetries]]	✓
13614	$y^{(6)} + 2y'''' + y'' = x + e^x$	[[_high_order, _missing_y]]	✓
13615	$6y''y'''' - 5y''^2 = 0$	[[_high_order, _missing_x], [_high_order, _missing_y], [_high_order, _with_linear_symmetries], [_high_order, _reducible, _mu_poly_yn]]	✓
13635	$y''' + xy = \sin(x)$	[[_3rd_order, _linear, _nonhomogeneous]]	✗
13637	$y^{(5)} - y'''' + y' = 2x^2 + 3$	[[_high_order, _missing_y]]	✓
13638	$y'' + yy'''' = 1$	[[_high_order, _missing_x], [_high_order, _with_linear_symmetries]]	✗
13639	$y''' + xy = \cosh(x)$	[[_3rd_order, _linear, _nonhomogeneous]]	✗
13641	$y''' + xy = \cosh(x)$	[[_3rd_order, _linear, _nonhomogeneous]]	✗
13647	$y''' = 1$	[[_3rd_order, _quadrature]]	✓
13650	$y''' + xy'' - y^2 = \sin(x)$	[NONE]	✗

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Table 2.55 High order differential equations

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#	ODE	CAS classification	Solved?
13652	$\sin(y'') + yy'''' = 1$	[[_high_order, _missing_x], [_high_order, _with_linear_symmetries]]	✗
13655	$y'''^2 + \sqrt{y} = \sin(x)$	[NONE]	✗
13657	$y''' - 5y'' + y' - y = 0$	[[_3rd_order, _missing_x]]	✓
13659	$3y'''' - 2y'' + y' = 0$	[[_high_order, _missing_x]]	✓
13706	$y'''' + y = 0$ i.c.	[[_high_order, _missing_x]]	✓
13714	$y''' + 8y'' + 16y' = 0$ i.c.	[[_3rd_order, _missing_x]]	✓
13715	$y''' + 6y'' + 13y' = 0$ i.c.	[[_3rd_order, _missing_x]]	✓
13716	$y''' - 6y'' + 13y' = 0$ i.c.	[[_3rd_order, _missing_x]]	✓
13717	$y''' + 4y'' + 29y' = 0$ i.c.	[[_3rd_order, _missing_x]]	✓
13718	$y''' + 6y'' + 25y' = 0$ i.c.	[[_3rd_order, _missing_x]]	✓
13719	$y''' - 6y'' + 10y' = 0$ i.c.	[[_3rd_order, _missing_x]]	✓
13720	$y'''' + 13y'' + 36y = 0$ i.c.	[[_high_order, _missing_x]]	✓
13757	$y''' + y'' + 4y' + 4y = 8$ i.c.	[[_3rd_order, _missing_x]]	✓
13758	$y''' - 2y'' - y' + 2y = 4t$ i.c.	[[_3rd_order, _with_linear_symmetries]]	✓
13759	$y''' - y'' + 4y' - 4y = 8e^{2t} - 5e^t$ i.c.	[[_3rd_order, _linear, _nonhomogeneous]]	✓
13760	$y''' - 5y'' + y' - y = -t^2 + 2t - 10$ i.c.	[[_3rd_order, _with_linear_symmetries]]	✗
13761	$y'''' - 5y'' + 4y = 12 \text{Heaviside}(t) - 12 \text{Heaviside}(t - 1)$ i.c.	[[_high_order, _linear, _nonhomogeneous]]	✓
13762	$y'''' - 16y = 32 \text{Heaviside}(t) - 32 \text{Heaviside}(t - \pi)$ i.c.	[[_high_order, _linear, _nonhomogeneous]]	✓
13771	$y''' + 3y'' + 3y' + y = 5$	[[_3rd_order, _missing_x]]	✓
13773	$y''' = 2y'' - 4y' + \sin(t)$	[[_3rd_order, _missing_y]]	✓

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#	ODE	CAS classification	Solved?
13834	$y''' + \frac{3y''}{x} = 0$	[[_3rd_order, _missing_y]]	✓
13901	$y''' - 2y'' - y' + 2y = 0$	[[_3rd_order, _missing_x]]	✓
13903	$xy''' = 2$	[[_3rd_order, _quadrature]]	✓
13911	$y''' = y'^2$	[[_3rd_order, _missing_x], [_3rd_order, _missing_y], [_3rd_order, _with_linear_symmetries], [_3rd_order, _reducible, _mu_y2], [_3rd_order, _reducible, _mu_poly_yn]]	✓
13912	$y'y''' - 3y''^2 = 0$	[[_3rd_order, _missing_x], [_3rd_order, _missing_y], [_3rd_order, _with_linear_symmetries], [_3rd_order, _reducible, _mu_y2], [_3rd_order, _reducible, _mu_poly_yn]]	✓
13922	$y'''' - 5y'' + 4y = 0$	[[_high_order, _missing_x]]	✓
13923	$y''' - 2y'' - y' + 2y = 0$	[[_3rd_order, _missing_x]]	✓
13924	$y''' - 3ay'' + 3a^2y' - a^3y = 0$	[[_3rd_order, _missing_x]]	✓
13925	$y^{(5)} - 4y''' = 0$	[[_high_order, _missing_x]]	✓
13926	$y'''' + 2y'' + 9y = 0$	[[_high_order, _missing_x]]	✓
13927	$y'''' - 8y'' + 16y = 0$	[[_high_order, _missing_x]]	✓
13928	$y'''' + y = 0$	[[_high_order, _missing_x]]	✓
13929	$y'''' - a^4y = 0$	[[_high_order, _missing_x]]	✓
13940	$y''' - 4y'' + 5y' - 2y = 2x + 3$	[[_3rd_order, _with_linear_symmetries]]	✓
13941	$y'''' - a^4y = 5a^4e^{ax} \sin(ax)$	[[_high_order, _linear, _nonhomogeneous]]	✓
13942	$y'''' + 2a^2y'' + a^4y = 8 \cos(ax)$	[[_high_order, _linear, _nonhomogeneous]]	✓
14001	$y''' - 7y'' + 12y' = 0$	[[_3rd_order, _missing_x]]	✓

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Table 2.55 High order differential equations

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#	ODE	CAS classification	Solved?
14020	$x^3 y''' - 3x^2 y'' + 6xy' - 6y = 0$	[[_3rd_order, __with_linear_symmetries]]	✓
14157	$xy''' + xy' = 4$ i.c.	[[_3rd_order, __missing_y]]	✓
14167	$y''' + y' = 0$ i.c.	[[_3rd_order, __missing_x]]	✓
14173	$y''' - 4y'' + 6y' - 4y = 0$	[[_3rd_order, __missing_x]]	✓
14174	$y'''' - 16y = 0$	[[_high_order, __missing_x]]	✓
14175	$y'''' + 16y = 0$	[[_high_order, __missing_x]]	✓
14176	$y'''' - 4y''' + 8y'' - 8y' + 4y = 0$	[[_high_order, __missing_x]]	✓
14177	$y'''' - 8y' = 0$	[[_high_order, __missing_x]]	✓
14178	$36y'''' - 12y''' - 11y'' + 2y' + y = 0$	[[_high_order, __missing_x]]	✓
14179	$y^{(5)} - 3y'''' + 3y''' - 3y'' + 2y' = 0$	[[_high_order, __missing_x]]	✓
14180	$y^{(5)} - y'''' + y''' + 35y'' + 16y' - 52y = 0$	[[_high_order, __missing_x]]	✓
14181	$y^{(8)} + 8y'''' + 16y = 0$	[[_high_order, __missing_x]]	✓
14183	$y''' + (-3 - 4i)y'' + (-4 + 12i)y' + 12y = 0$	[[_3rd_order, __missing_x]]	✓
14184	$y'''' + (-3 - i)y''' + (4 + 3i)y'' = 0$	[[_high_order, __missing_x]]	✓
14186	$y'''' - 6y''' + 13y'' - 12y' + 4y = 2e^x - 4e^{2x}$	[[_high_order, __linear, __nonhomogeneous]]	✓
14187	$y'''' + 4y'' = 24x^2 - 6x + 14 + 32 \cos(2x)$	[[_high_order, __missing_y]]	✓
14188	$y'''' + 2y'' + y = 3 + \cos(2x)$	[[_high_order, __linear, __nonhomogeneous]]	✓
14189	$y'''' - 3y''' + 3y'' - y' = 6x - 20 - 120e^x x^2$	[[_high_order, __missing_y]]	✓
14190	$y''' - 6y'' + 21y' - 26y = 36e^{2x} \sin(3x)$	[[_3rd_order, __linear, __nonhomogeneous]]	✓
14191	$y''' + y'' - y' - y = (2x^2 + 4x + 8) \cos(x) + (6x^2 + 8x + 12) \sin(x)$	[[_3rd_order, __linear, __nonhomogeneous]]	✓

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Table 2.55 High order differential equations

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#	ODE	CAS classification	Solved?
14192	$y^{(6)} - 12y^{(5)} + 63y^{(4)} - 18y^{(3)} + 315y'' - 300y' + 125y = e^x(48 \cos(x) + 96 \sin(x))$	[[_high_order, _linear, _nonhomogeneous]]	✓
14193	$y''' - 3y'' - 4y' + 12y = 0$ i.c.	[[_3rd_order, _missing_x]]	✓
14194	$y'''' - 2y''' + 2y' - y = 0$ i.c.	[[_high_order, _missing_x]]	✓
14195	$y''' - y'' + y' - y = 2e^x$ i.c.	[[_3rd_order, _with_linear_symmetries]]	✓
14196	$y'''' + 2y'' + y = 3x + 4$ i.c.	[[_high_order, _with_linear_symmetries]]	✓
14203	$y'''' - 2y''' + y'' = xe^x - 3x^2$	[[_high_order, _missing_y]]	✓
14210	$y''' + 3y'' + 2y' = x + \cos(x)$ i.c.	[[_3rd_order, _missing_y]]	✓
14218	$y''' - y'' + 4y' - 4y = 0$ i.c.	[[_3rd_order, _missing_x]]	✓
14676	$y'''' = 1$	[[_high_order, _quadrature]]	✓
14900	$y''' = y''$	[[_3rd_order, _missing_x]]	✓
14901	$xy''' + 2y'' = 6x$	[[_3rd_order, _missing_y]]	✓
14902	$y''' = 2\sqrt{y''}$	[[_3rd_order, _missing_x], [_3rd_order, _missing_y], [_3rd_order, _with_linear_symmetries], [_3rd_order, _reducible, _mu_y2]]	✓
14903	$y'''' = -2y'''$	[[_high_order, _missing_x]]	✓
14923	$y''' = y''$ i.c.	[[_3rd_order, _missing_x]]	✓
14924	$xy''' + 2y'' = 6x$ i.c.	[[_3rd_order, _missing_y]]	✓
14943	$y''' + y = 0$	[[_3rd_order, _missing_x]]	✓
14946	$y'''' + 6y'' + 3y' - 83y - 25 = 0$	[[_high_order, _missing_x]]	✓
14947	$yy''' + 6y'' + 3y' = y$	[[_3rd_order, _missing_x], [_3rd_order, _with_linear_symmetries]]	✗
14968	$y''' - 9y'' + 27y' - 27y = 0$	[[_3rd_order, _missing_x]]	✓

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Table 2.55 High order differential equations  
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#	ODE	CAS classification	Solved?
14969	$y''' - 9y'' + 27y' - 27y = e^{3x} \sin(x)$	[[_3rd_order, _linear, _nonhomogeneous]]	✓
14970	$y'''' - 8y''' + 24y'' - 32y' + 16y = 0$	[[_high_order, _missing_x]]	✓
14971	$x^3y''' - 4y'' + 10y' - 12y = 0$	[[_3rd_order, _with_linear_symmetries]]	✗
14983	$y''' + 4y' = 0$ i.c.	[[_3rd_order, _missing_x]]	✓
14984	$y'''' - y = 0$ i.c.	[[_high_order, _missing_x]]	✓
14989	$y''' - 9y' = 0$	[[_3rd_order, _missing_x]]	✓
14990	$y'''' - 10y'' + 9y = 0$	[[_high_order, _missing_x]]	✓
15029	$y'''' - 4y''' = 0$	[[_high_order, _missing_x]]	✓
15030	$y'''' + 4y'' = 0$	[[_high_order, _missing_x]]	✓
15031	$y'''' - 34y'' + 225y = 0$	[[_high_order, _missing_x]]	✓
15032	$y'''' - 81y = 0$	[[_high_order, _missing_x]]	✓
15033	$y'''' - 18y'' + 81y = 0$	[[_high_order, _missing_x]]	✓
15034	$y^{(5)} + 18y''' + 81y' = 0$	[[_high_order, _missing_x]]	✓
15035	$y''' - y'' + y' - y = 0$	[[_3rd_order, _missing_x]]	✓
15036	$y''' - 6y'' + 11y' - 6y = 0$	[[_3rd_order, _missing_x]]	✓
15037	$y''' - 8y'' + 37y' - 50y = 0$	[[_3rd_order, _missing_x]]	✓
15038	$y''' - 9y'' + 31y' - 39y = 0$	[[_3rd_order, _missing_x]]	✓
15039	$y'''' + y''' + 2y'' + 4y' - 8y = 0$	[[_high_order, _missing_x]]	✓
15040	$y'''' + 2y''' + 10y'' + 18y' + 9y = 0$	[[_high_order, _missing_x]]	✓
15041	$y''' + 4y' = 0$ i.c.	[[_3rd_order, _missing_x]]	✓
15042	$y''' - 6y'' + 12y' - 8y = 0$ i.c.	[[_3rd_order, _missing_x]]	✓

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Table 2.55 High order differential equations

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#	ODE	CAS classification	Solved?
15043	$y'''' + 26y'' + 25y = 0$ i.c.	[[_high_order, _missing_x]]	✓
15044	$y'''' + y''' + 9y'' + 9y' = 0$ i.c.	[[_high_order, _missing_x]]	✓
15045	$y''' - 8y = 0$	[[_3rd_order, _missing_x]]	✓
15046	$y''' + 216y = 0$	[[_3rd_order, _missing_x]]	✓
15047	$y'''' - 3y'' - 4y = 0$	[[_high_order, _missing_x]]	✓
15048	$y'''' + 13y'' + 36y = 0$	[[_high_order, _missing_x]]	✓
15049	$y^{(6)} - 3y'''' + 3y'' - y = 0$	[[_high_order, _missing_x]]	✓
15050	$y^{(6)} - 2y'''' + y = 0$	[[_high_order, _missing_x]]	✓
15051	$16y'''' - y = 0$	[[_high_order, _missing_x]]	✓
15052	$4y'''' + 15y'' - 4y = 0$	[[_high_order, _missing_x]]	✓
15053	$y'''' - 4y'''' + 16y' - 16y = 0$	[[_high_order, _missing_x]]	✓
15054	$y^{(6)} + 16y'''' + 64y = 0$	[[_high_order, _missing_x]]	✓
15079	$x^3y''' + 2x^2y'' - 4xy' + 4y = 0$	[[_3rd_order, _with_linear_symmetries]]	✓
15080	$x^3y''' + 2x^2y'' + xy' - y = 0$	[[_3rd_order, _with_linear_symmetries]]	✓
15081	$x^3y''' - 5x^2y'' + 14xy' - 18y = 0$	[[_3rd_order, _with_linear_symmetries]]	✓
15082	$x^3y''' - 3x^2y'' + 7xy' - 8y = 0$	[[_3rd_order, _with_linear_symmetries]]	✓
15083	$x^4y'''' + 6x^3y''' + 15x^2y'' + 9xy' + 16y = 0$	[[_high_order, _with_linear_symmetries]]	✓
15084	$x^4y'''' + 6x^3y''' - 3x^2y'' - 9xy' + 9y = 0$	[[_high_order, _exact, _linear, _homogeneous]]	✓
15085	$x^4y'''' + 2x^3y''' + x^2y'' - xy' + y = 0$	[[_high_order, _with_linear_symmetries]]	✓
15086	$x^4y'''' + 6x^3y''' + 7x^2y'' + xy' - y = 0$	[[_high_order, _exact, _linear, _homogeneous]]	✓

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Table 2.55 High order differential equations  
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#	ODE	CAS classification	Solved?
15096	$y'''' + y'' = 1$ i.c.	[[_high_order, _missing_x]]	✓
15163	$y'''' - 4y''' = 12e^{-2x}$	[[_high_order, _missing_y]]	✓
15164	$y'''' - 4y''' = 10\sin(2x)$	[[_high_order, _missing_y]]	✓
15165	$y'''' - 4y''' = 32e^{4x}$	[[_high_order, _missing_y]]	✓
15166	$y'''' - 4y''' = 32x$	[[_high_order, _missing_y]]	✓
15167	$y''' - y'' + y' - y = x^2$	[[_3rd_order, _with_linear_symmetries]]	✓
15168	$y''' - y'' + y' - y = 30\cos(2x)$	[[_3rd_order, _linear, _nonhomogeneous]]	✓
15169	$y''' - y'' + y' - y = 6e^x$	[[_3rd_order, _with_linear_symmetries]]	✓
15170	$y^{(5)} + 18y''' + 81y' = x^2e^{3x}$	[[_high_order, _missing_y]]	✓
15171	$y^{(5)} + 18y''' + 81y' = x^2\sin(3x)$	[[_high_order, _missing_y]]	✓
15172	$y^{(5)} + 18y''' + 81y' = x^2e^{3x}\sin(3x)$	[[_high_order, _missing_y]]	✓
15173	$y''' - y'' + y' - y = 30x\cos(2x)$	[[_3rd_order, _linear, _nonhomogeneous]]	✓
15174	$y''' - y'' + y' - y = 3x\cos(x)$	[[_3rd_order, _linear, _nonhomogeneous]]	✓
15175	$y''' - y'' + y' - y = 3xe^x\cos(x)$	[[_3rd_order, _linear, _nonhomogeneous]]	✓
15176	$y''' - y'' + y' - y = 5x^5e^{2x}$	[[_3rd_order, _linear, _nonhomogeneous]]	✓
15205	$y''' - 4y' = 30e^{3x}$	[[_3rd_order, _missing_y]]	✓
15206	$x^3y''' - 3x^2y'' + 6xy' - 6y = x^3$	[[_3rd_order, _with_linear_symmetries]]	✓
15207	$x^3y''' - 3x^2y'' + 6xy' - 6y = e^{-x^2}$	[[_3rd_order, _with_linear_symmetries]]	✓
15208	$y''' - y'' + y' - y = \tan(x)$	[[_3rd_order, _linear, _nonhomogeneous]]	✓
15209	$y'''' - 81y = \sinh(x)$	[[_high_order, _linear, _nonhomogeneous]]	✓

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Table 2.55 High order differential equations

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#	ODE	CAS classification	Solved?
15210	$x^4 y'''' + 6x^3 y''' - 3x^2 y'' - 9xy' + 9y = 12x \sin(x^2)$	[[_high_order, _exact, _linear, _nonhomogeneous]]	✓
15218	$y'''' - 8y'' + 16y = 0$	[[_high_order, _missing_x]]	✓
15223	$y^{(5)} - 6y'''' + 13y''' = 0$	[[_high_order, _missing_x]]	✓
15233	$y''' - 6y'' + 12y' = 8$	[[_3rd_order, _missing_x]]	✓
15236	$y'''' - 16y = 0$	[[_high_order, _missing_x]]	✓
15257	$y''' + 8y = e^{-2x}$	[[_3rd_order, _with_linear_symmetries]]	✓
15258	$y^{(6)} - 64y = e^{-2x}$	[[_high_order, _with_linear_symmetries]]	✓
15273 i.c.	$y''' - 27y = e^{-3t}$	[[_3rd_order, _with_linear_symmetries]]	✓
15321 i.c.	$y''' + 9y' = \delta(t - 1)$	[[_3rd_order, _missing_y]]	✓
15322 i.c.	$y'''' - 16y = \delta(t)$	[[_high_order, _linear, _nonhomogeneous]]	✓
15459	$y''' - 2y'' + 5y' + y = e^x$	[[_3rd_order, _with_linear_symmetries]]	✓
15474	$y''' - 4y'' = 0$	[[_3rd_order, _missing_x]]	✓
15475	$y''' - 2y'' = 0$	[[_3rd_order, _missing_x]]	✓
15500 i.c.	$y''' - 2y'' = 0$	[[_3rd_order, _missing_x]]	✓
15501 i.c.	$y''' - 4y' = 0$	[[_3rd_order, _missing_x]]	✓
15515 i.c.	$y'''' + \frac{25y''}{2} - 5y' + \frac{629y}{16} = 0$	[[_high_order, _missing_x]]	✓
16043	$y''' = 0$	[[_3rd_order, _quadrature]]	✓
16044	$y''' - 10y'' + 25y' = 0$	[[_3rd_order, _missing_x]]	✓
16045	$8y'''' + y'' = 0$	[[_3rd_order, _missing_x]]	✓
16046	$y'''' + 16y'' = 0$	[[_high_order, _missing_x]]	✓
16047	$y''' - 2y'' - y' + 2y = 0$	[[_3rd_order, _missing_x]]	✓
16048	$3y''' - 4y'' - 5y' + 2y = 0$	[[_3rd_order, _missing_x]]	✓

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Table 2.55 High order differential equations  
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#	ODE	CAS classification	Solved?
16049	$6y''' - 5y'' - 2y' + y = 0$	[[_3rd_order, _missing_x]]	✓
16050	$y''' - 5y' + 2y = 0$	[[_3rd_order, _missing_x]]	✓
16051	$5y''' - 15y' + 11y = 0$	[[_3rd_order, _missing_x]]	✓
16052	$y'''' + y''' = 0$	[[_high_order, _missing_x]]	✓
16053	$y'''' - 9y'' = 0$	[[_high_order, _missing_x]]	✓
16054	$y'''' - 16y = 0$	[[_high_order, _missing_x]]	✓
16055	$y'''' - 6y''' - y'' + 54y' - 72y = 0$	[[_high_order, _missing_x]]	✓
16056	$y'''' + 7y''' + 6y'' - 32y' - 32y = 0$	[[_high_order, _missing_x]]	✓
16057	$y'''' + 2y''' - 2y'' + 8y = 0$	[[_high_order, _missing_x]]	✓
16058	$y^{(5)} + 4y'''' = 0$	[[_high_order, _missing_x]]	✓
16059	$y^{(5)} + 4y'''' = 0$	[[_high_order, _missing_x]]	✓
16060	$y^{(5)} + 3y'''' + 3y''' + y'' = 0$	[[_high_order, _missing_x]]	✓
16061	$y'''' + 2y'' + y = 0$	[[_high_order, _missing_x]]	✓
16062	$y'''' + 8y'' + 16y = 0$	[[_high_order, _missing_x]]	✓
16063	$y^{(6)} + 3y'''' + 3y'' + y = 0$	[[_high_order, _missing_x]]	✓
16064	$y^{(6)} + 12y'''' + 48y'' + 64y = 0$	[[_high_order, _missing_x]]	✓
16065	$y''' - 2y'' = 0$ i.c.	[[_3rd_order, _missing_x]]	✓
16066	$y''' - y = 0$ i.c.	[[_3rd_order, _missing_x]]	✓
16067	$y'''' + 16y''' = 0$ i.c.	[[_high_order, _missing_x]]	✓
16068	$y'''' - 8y'' + 16y = 0$ i.c.	[[_high_order, _missing_x]]	✓

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Table 2.55 High order differential equations

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#	ODE	CAS classification	Solved?
16069	$24y''' - 26y'' + 9y' - y = 0$ i.c.	[[_3rd_order, _missing_x]]	✓
16070	$y'''' - 5y'' + 4y = 0$ i.c.	[[_high_order, _missing_x]]	✓
16071	$y'''' - 16y = 0$ i.c.	[[_high_order, _missing_x]]	✓
16072	$8y^{(5)} + 4y'''' + 66y''' - 41y'' - 37y' = 0$ i.c.	[[_high_order, _missing_x]]	✓
16073	$2y^{(5)} + 7y'''' + 17y''' + 17y'' + 5y' = 0$ i.c.	[[_high_order, _missing_x]]	✓
16074	$y^{(5)} + 8y'''' = 0$ i.c.	[[_high_order, _missing_x]]	✓
16075	$y^{(6)} - 3y'''' + 3y'' - y = 0$ i.c.	[[_high_order, _missing_x]]	✓
16076	$y''' + 9y'' + 16y' - 26y = 0$	[[_3rd_order, _missing_x]]	✓
16077	$y'''' + 12y''' + 60y'' + 124y' + 75y = 0$	[[_high_order, _missing_x]]	✓
16078	$y''' + 3y'' + 2y' + 6y = 0$ i.c.	[[_3rd_order, _missing_x]]	✓
16079	$y'''' - 8y''' + 30y'' - 56y' + 49y = 0$ i.c.	[[_high_order, _missing_x]]	✓
16080	$\frac{31y'''}{100} + \frac{56y''}{5} - \frac{49y'}{5} + \frac{53y}{10} = 0$ i.c.	[[_3rd_order, _missing_x]]	✓
16082	$y''' + y'' = e^t$	[[_3rd_order, _missing_y]]	✓
16083	$y'''' - 16y = 1$	[[_high_order, _missing_x]]	✓
16084	$y^{(5)} - y'''' = 1$	[[_high_order, _missing_x]]	✓
16085	$y'''' + 9y'' = 1$	[[_high_order, _missing_x]]	✓
16086	$y'''' + 9y'' = 9e^{3t}$	[[_high_order, _missing_y]]	✓
16087	$y''' + 10y'' + 34y' + 40y = te^{-4t} + 2e^{-3t} \cos(t)$	[[_3rd_order, _linear, _nonhomogeneous]]	✓
16088	$y''' + 6y'' + 11y' + 6y = 2e^{-3t} - te^{-t}$	[[_3rd_order, _linear, _nonhomogeneous]]	✓
16089	$y'''' - 6y''' + 13y'' - 24y' + 36y = 108t$	[[_high_order, _with_linear_symmetries]]	✓

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Table 2.55 High order differential equations

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#	ODE	CAS classification	Solved?
16090	$y''' + 6y'' - 14y' - 104y = -111e^t$	[[_3rd_order, __with_linear_symmetries]]	✓
16091	$y'''' - 10y'''' + 38y'' - 64y' + 40y = 153e^{-t}$	[[_high_order, __with_linear_symmetries]]	✓
16092	$y''' + 4y' = \tan(2t)$	[[_3rd_order, __missing_y]]	✓
16093	$y''' + 4y' = \sec(2t)\tan(2t)$	[[_3rd_order, __missing_y]]	✓
16094	$y'''' + 4y'' = \sec(2t)^2$	[[_high_order, __missing_y]]	✓
16095	$y'''' + 4y'' = \tan(2t)^2$	[[_high_order, __missing_y]]	✓
16096	$y''' + 9y' = \sec(3t)$	[[_3rd_order, __missing_y]]	✓
16097	$y''' + y' = -\sec(t)\tan(t)$	[[_3rd_order, __missing_y]]	✓
16098	$y''' + 4y' = \sec(2t)$	[[_3rd_order, __missing_y]]	✓
16099	$y''' - 2y'' = -\frac{1}{t^2} - \frac{2}{t}$	[[_3rd_order, __missing_y]]	✓
16100	$y''' - 3y'' + 3y' - y = \frac{e^t}{t}$	[[_3rd_order, __linear, __nonhomogeneous]]	✓
16101	$y''' - 4y'' - 11y' + 30y = e^{4t}$	[[_3rd_order, __with_linear_symmetries]]	✓
16102	$y''' + 3y'' - 10y' - 24y = e^{-3t}$	[[_3rd_order, __with_linear_symmetries]]	✓
16103	$y''' - 13y' + 12y = \cos(t)$	[[_3rd_order, __linear, __nonhomogeneous]]	✓
16104	$y''' + 3y'' + 2y' = \cos(t)$	[[_3rd_order, __missing_y]]	✓
16105	$y^{(6)} + y'''' = -24$	[[_high_order, __missing_x]]	✓
16106	$y'''' + y'' = \tan(t)^2$	[[_high_order, __missing_y]]	✓
16107	$y''' - y'' = 3t^2$ i.c.	[[_3rd_order, __missing_y]]	✓
16108	$y'''' + y'' = \sec(t)^2$ i.c.	[[_high_order, __missing_y]]	✓
16109	$y''' + y' = \sec(t)$ i.c.	[[_3rd_order, __missing_y]]	✓
16110	$y'''' + y'' = \cos(t)$ i.c.	[[_high_order, __missing_y]]	✓

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#	ODE	CAS classification	Solved?
16111	$y'''' + y'' = t$ i.c.	[[_high_order, _missing_y]]	✓
16112	$t^2 \ln(t) y''' - ty'' + y' = 1$	[[_3rd_order, _missing_y]]	✓
16113	$(t^2 + t) y''' + (-t^2 + 2) y'' - (t + 2) y' = -2 - t$	[[_3rd_order, _missing_y]]	✓
16114	$2t^3 y''' + t^2 y'' + ty' - y = -3t^2$ i.c.	[[_3rd_order, _with_linear_symmetries]]	✓
16115	$ty'''' + 2y''' = \frac{45}{8t^{7/2}}$ i.c.	[[_high_order, _missing_y]]	✓
16128	$x^3 y''' + 22x^2 y'' + 124xy' + 140y = 0$	[[_3rd_order, _with_linear_symmetries]]	✓
16129	$x^3 y''' - 4x^2 y'' - 46xy' + 100y = 0$	[[_3rd_order, _with_linear_symmetries]]	✓
16130	$x^3 y''' + 2x^2 y'' - 4xy' + 4y = 0$	[[_3rd_order, _with_linear_symmetries]]	✓
16131	$x^3 y''' + 4x^2 y'' + 6xy' + 4y = 0$	[[_3rd_order, _exact, _linear, _homogeneous]]	✓
16132	$x^3 y''' + 2xy' - 2y = 0$	[[_3rd_order, _with_linear_symmetries]]	✓
16133	$x^3 y''' + 3x^2 y'' - 2xy' - 2y = 0$	[[_3rd_order, _exact, _linear, _homogeneous]]	✓
16134	$x^3 y''' + 6x^2 y'' + 7xy' + y = 0$	[[_3rd_order, _exact, _linear, _homogeneous]]	✓
16135	$x^3 y'''' + 6x^2 y''' + 7xy'' + y' = 0$	[[_high_order, _missing_y]]	✓
16144	$x^3 y''' + 3x^2 y'' - 11xy' + 16y = \frac{1}{x^3}$	[[_3rd_order, _with_linear_symmetries]]	✓
16145	$x^3 y''' + 16x^2 y'' + 70xy' + 80y = \frac{1}{x^{13}}$	[[_3rd_order, _with_linear_symmetries]]	✓
16150	$x^3 y''' + 10x^2 y'' - 20xy' + 20y = 0$ i.c.	[[_3rd_order, _with_linear_symmetries]]	✓
16151	$x^3 y''' + 15x^2 y'' + 54xy' + 42y = 0$ i.c.	[[_3rd_order, _with_linear_symmetries]]	✓
16152	$x^3 y''' - 2x^2 y'' + 5xy' - 5y = 0$ i.c.	[[_3rd_order, _with_linear_symmetries]]	✓
16153	$x^3 y''' - 6x^2 y'' + 17xy' - 17y = 0$ i.c.	[[_3rd_order, _with_linear_symmetries]]	✓
16161	$x^3 y''' + 3x^2 y'' + 37xy' = 0$	[[_3rd_order, _missing_y]]	✓

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#	ODE	CAS classification	Solved?
16162	$x^3y''' + 3x^2y'' - 3xy' = 0$	[[_3rd_order, _missing_y]]	✓
16163	$x^3y''' + xy' - y = 0$	[[_3rd_order, _with_linear_symmetries]]	✓
16164	$x^3y''' + 3x^2y'' - 3xy' = -8$	[[_3rd_order, _missing_y]]	✓
16176	$x^3y''' + 16x^2y'' + 79xy' + 125y = 0$	[[_3rd_order, _with_linear_symmetries]]	✓
16177	$x^4y'''' + 5x^3y''' - 12x^2y'' - 12xy' + 48y = 0$	[[_high_order, _with_linear_symmetries]]	✓
16178	$x^4y'''' + 14x^3y''' + 55x^2y'' + 65xy' + 15y = 0$	[[_high_order, _exact, _linear, _homogeneous]]	✓
16179	$x^4y'''' + 8x^3y''' + 27x^2y'' + 35xy' + 45y = 0$	[[_high_order, _with_linear_symmetries]]	✓
16180	$x^4y'''' + 10x^3y''' + 27x^2y'' + 21xy' + 4y = 0$	[[_high_order, _with_linear_symmetries]]	✓
16181	<i>i.c.</i> $x^3y''' + 9x^2y'' + 44xy' + 58y = 0$	[[_3rd_order, _with_linear_symmetries]]	✓
16248	$2y''' + 3y'' + y' = 0$	[[_3rd_order, _missing_x]]	✓
16249	$9y''' + 36y'' + 40y' = 0$	[[_3rd_order, _missing_x]]	✓
16250	$9y''' + 12y'' + 13y' = 0$	[[_3rd_order, _missing_x]]	✓
16261	$y''' + 3y'' - 9y' + 5y = e^t$	[[_3rd_order, _with_linear_symmetries]]	✓
16262	$y''' - 12y'' - 16y' = e^{4t} - e^{-2t}$	[[_3rd_order, _linear, _nonhomogeneous]]	✓
16263	$y'''' + 6y''' + 18y'' + 30y' + 25y = e^{-t} \cos(2t) + e^{-2t} \sin(t)$	[[_high_order, _linear, _nonhomogeneous]]	✓
16264	$y'''' + 4y''' + 14y'' + 20y' + 25y = t^2$	[[_high_order, _with_linear_symmetries]]	✓
16583	$xy''' = 2$	[[_3rd_order, _quadrature]]	✓
16591	$y'''' = x$	[[_high_order, _quadrature]]	✓
16592	$y''' = x + \cos(x)$	[[_3rd_order, _quadrature]]	✓
16603	$y''' = \sqrt{1 - y''^2}$	[[_3rd_order, _missing_x], [_3rd_order, _missing_y], [_3rd_order, _with_linear_symmetries], [_3rd_order, _reducible, _mu_y2]]	✓
16604	$xy''' - y'' = 0$	[[_3rd_order, _missing_y]]	✓

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Table 2.55 High order differential equations

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#	ODE	CAS classification	Solved?
16614	$y''' + y''^2 = 0$	[[_3rd_order, _missing_x], [_3rd_order, _missing_y], [_3rd_order, _with_linear_symmetries], [_3rd_order, _reducible, _mu_y2], [_3rd_order, _reducible, _mu_poly_yn]]	✓
16627	$y''' = 3yy'$ i.c.	[[_3rd_order, _missing_x], [_3rd_order, _exact, _nonlinear], [_3rd_order, _with_linear_symmetries], [_3rd_order, _reducible, _mu_y2]]	✗
16630	$y''' - 3y'' + 3y' - y = 0$ i.c.	[[_3rd_order, _missing_x]]	✓
16633	$y''' + 6y'' + 11y' + 6y = 0$	[[_3rd_order, _missing_x]]	✓
16635	$y^{(6)} + 2y^{(5)} + y'''' = 0$	[[_high_order, _missing_x]]	✓
16637	$y''' - 8y = 0$	[[_3rd_order, _missing_x]]	✓
16638	$y'''' + 4y''' + 10y'' + 12y' + 5y = 0$	[[_high_order, _missing_x]]	✓
16641	$y'''' + 2y''' + 4y'' - 2y' - 5y = 0$	[[_high_order, _missing_x]]	✓
16642	$y^{(5)} + 4y'''' + 5y''' - 6y'' - 4y = 0$	[[_high_order, _missing_x]]	✓
16643	$y''' + 2y'' - y' - 2y = 0$	[[_3rd_order, _missing_x]]	✓
16644	$y''' - 2y'' + 2y' = 0$	[[_3rd_order, _missing_x]]	✓
16645	$y'''' - y = 0$	[[_high_order, _missing_x]]	✓
16646	$y^{(5)} = 0$	[[_high_order, _quadrature]]	✓
16647	$y''' - 3y' - 2y = 0$	[[_3rd_order, _missing_x]]	✓
16648	$2y''' - 3y'' + y' = 0$	[[_3rd_order, _missing_x]]	✓
16649	$y''' + y'' = 0$ i.c.	[[_3rd_order, _missing_x]]	✓
16666	$y''' + y = x$	[[_3rd_order, _with_linear_symmetries]]	✓
16667	$y''' + 6y'' + 11y' + 6y = 1$	[[_3rd_order, _missing_x]]	✓

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#	ODE	CAS classification	Solved?
16668	$y''' + y' = 2$	[[_3rd_order, _missing_x]]	✓
16669	$y''' + y'' = 3$	[[_3rd_order, _missing_x]]	✓
16670	$y'''' - y = 1$	[[_high_order, _missing_x]]	✓
16671	$y'''' - y' = 2$	[[_high_order, _missing_x]]	✓
16672	$y'''' - y'' = 3$	[[_high_order, _missing_x]]	✓
16673	$y'''' - y''' = 4$	[[_high_order, _missing_x]]	✓
16674	$y'''' + 4y''' + 4y'' = 1$	[[_high_order, _missing_x]]	✓
16675	$y'''' + 2y''' + y'' = e^{4x}$	[[_high_order, _missing_y]]	✓
16676	$y'''' + 2y''' + y'' = e^{-x}$	[[_high_order, _missing_y]]	✓
16677	$y'''' + 2y''' + y'' = x e^{-x}$	[[_high_order, _missing_y]]	✓
16678	$y'''' + 4y'' + 4y = \sin(2x)$	[[_high_order, _linear, _nonhomogeneous]]	✓
16679	$y'''' + 4y'' + 4y = \cos(x)$	[[_high_order, _linear, _nonhomogeneous]]	✓
16680	$y'''' + 4y'' + 4y = x \sin(2x)$	[[_high_order, _linear, _nonhomogeneous]]	✓
16681	$y'''' + 2n^2y'' + n^4y = a \sin(nx + \alpha)$	[[_high_order, _linear, _nonhomogeneous]]	✓
16682	$y'''' - 2n^2y'' + n^4y = \cos(nx + \alpha)$	[[_high_order, _linear, _nonhomogeneous]]	✓
16683	$y'''' + 4y''' + 6y'' + 4y' + y = \sin(x)$	[[_high_order, _linear, _nonhomogeneous]]	✓
16684	$y'''' - 4y''' + 6y'' - 4y' + y = e^x$	[[_high_order, _with_linear_symmetries]]	✓
16685	$y'''' - 4y''' + 6y'' - 4y' + y = x e^x$	[[_high_order, _linear, _nonhomogeneous]]	✓
16689	$y''' + y'' = 1$	[[_3rd_order, _missing_x]]	✓
16690	$5y''' - 7y'' = 3$	[[_3rd_order, _missing_x]]	✓
16691	$y'''' - 6y''' = -6$	[[_high_order, _missing_x]]	✓

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#	ODE	CAS classification	Solved?
16692	$3y'''' + y''' = 2$	[[_high_order, _missing_x]]	✓
16693	$y'''' - 2y''' + 2y'' - 2y' + y = 1$	[[_high_order, _missing_x]]	✓
16716	$y''' - y'' + y' - y = x^2 + x$	[[_3rd_order, _with_linear_symmetries]]	✓
16717	$y'''' - 2y''' + 2y'' - 2y' + y = e^x$	[[_high_order, _with_linear_symmetries]]	✓
16719	$y'''' + y'' = x^2 + x$	[[_high_order, _missing_y]]	✓
16722	$y''' - y = \sin(x)$	[[_3rd_order, _linear, _nonhomogeneous]]	✓
16723	$y'''' - 2y'' + y = \cos(x)$	[[_high_order, _linear, _nonhomogeneous]]	✓
16724	$y''' - 3y'' + 3y' - y = e^x \cos(2x)$	[[_3rd_order, _linear, _nonhomogeneous]]	✓
16730	$y''' - y'' = 1 + e^x$	[[_3rd_order, _missing_y]]	✓
16731	$y''' + 4y' = e^{2x} + \sin(2x)$	[[_3rd_order, _missing_y]]	✓
16741	$y'''' + 2y''' + 2y'' + 2y' + y = x e^x + \frac{\cos(x)}{2}$	[[_high_order, _linear, _nonhomogeneous]]	✓
16743	$y'''' + 4y''' = e^x + 3 \sin(2x) + 1$	[[_high_order, _missing_y]]	✓
16759	$y''' - 2y'' + y' = 2x + e^x$	[[_3rd_order, _missing_y]]	✓
16761	$y''' - y'' - 2y' = 4x + 3 \sin(x) + \cos(x)$	[[_3rd_order, _missing_y]]	✓
16762	$y''' - 4y' = x e^{2x} + \sin(x) + x^2$	[[_3rd_order, _missing_y]]	✓
16763	$y^{(5)} - y'''' = x e^x - 1$	[[_high_order, _missing_y]]	✓
16764	$y^{(5)} - y''' = x + 2 e^{-x}$	[[_high_order, _missing_y]]	✓
16779	$y''' - y' = -2x$	[[_3rd_order, _missing_y]]	✓
16780	$y'''' - y = 8 e^x$	[[_high_order, _with_linear_symmetries]]	✓
16781	$y''' - y = 2x$	[[_3rd_order, _with_linear_symmetries]]	✓
16782	$y'''' - y = 8 e^x$	[[_high_order, _with_linear_symmetries]]	✓

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Table 2.55 High order differential equations  
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#	ODE	CAS classification	Solved?
16799	$x^2 y''' - 3xy'' + 3y' = 0$	[[_3rd_order, _missing_y]]	✓
16800	$x^2 y''' = 2y'$	[[_3rd_order, _missing_y]]	✓
16801	$(x + 1)^2 y''' - 12y' = 0$	[[_3rd_order, _missing_y]]	✓
16802	$(2x + 1)^2 y''' + 2(2x + 1)y'' + y' = 0$	[[_3rd_order, _missing_y]]	✓
16832	$y''' + y'' = \frac{x - 1}{x^3}$	[[_3rd_order, _missing_y]]	✓
16869	$y''' + y'' - y' - y = 0$	[[_3rd_order, _missing_x]]	✓
16870	$y'''' - \lambda^4 y = 0$	[[_high_order, _missing_x]]	✓
16872	$x^2 y'''' + 4xy''' + 2y'' = 0$	[[_high_order, _missing_y]]	✓
16873	$x^3 y'''' + 6x^2 y''' + 6xy'' = 0$	[[_high_order, _missing_y]]	✓
16881	$y''' + x \sin(y) = 0$	[NONE]	✗
17396	$y''' + y'' + y' + y = 0$	[[_3rd_order, _missing_x]]	✓
17397	$y'''' - 6y = t e^{-t}$	[[_high_order, _linear, _nonhomogeneous]]	✓
17411	$y'''' - 4y''' + 6y'' - 4y' + y = 0$	[[_high_order, _missing_x]]	✓
17412	$y'''' - y = 0$	[[_high_order, _missing_x]]	✓
17413	$y'''' - 9y = 0$	[[_high_order, _missing_x]]	✓
17436	$y'''' - y = \text{Heaviside}(t - 1) - \text{Heaviside}(t - 2)$	[[_high_order, _linear, _nonhomogeneous]]	✓
17437	$y'''' + 5y'' + 4y = 1 - \text{Heaviside}(t - \pi)$	[[_high_order, _linear, _nonhomogeneous]]	✓
17452	$y'''' - y = \delta(t - 1)$	[[_high_order, _linear, _nonhomogeneous]]	✓
17464	$y'''' - 16y = g(t)$	[[_high_order, _linear, _nonhomogeneous]]	✓
17465	$y'''' + y'' + 16y = g(t)$	[[_high_order, _linear, _nonhomogeneous]]	✗
17470	$y'''' + 6y''' + 3y = t$	[[_high_order, _with_linear_symmetries]]	✓

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Table 2.55 High order differential equations  
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#	ODE	CAS classification	Solved?
17471	$ty''' + \sin(t)y'' + 8y = \cos(t)$	[[_3rd_order, _linear, _nonhomogeneous]]	✗
17472	$t(t-1)y'''' + e^t y'' + 4t^2 y = 0$	[[_high_order, _with_linear_symmetries]]	✗
17473	$y''' + ty'' + t^2 y' + t^2 y = \ln(t)$	[[_3rd_order, _linear, _nonhomogeneous]]	✗
17474	$(x-4)y'''' + (x+1)y'' + \tan(x)y = 0$	[[_high_order, _with_linear_symmetries]]	✗
17475	$(x^2-2)y^{(6)} + x^2 y'' + 3y = 0$	[[_high_order, _with_linear_symmetries]]	✗
17476	$y'''' + 5y''' + 4y = 0$	[[_high_order, _missing_x]]	✓
17477	$ty''' + \sin(t)y'' + 4y = \cos(t)$	[[_3rd_order, _linear, _nonhomogeneous]]	✗
17478	$t(t-1)y'''' + e^t y'' + 7t^2 y = 0$	[[_high_order, _with_linear_symmetries]]	✗
17479	$y''' + ty'' + 5t^2 y' + 2t^3 y = \ln(t)$	[[_3rd_order, _linear, _nonhomogeneous]]	✗
17480	$(x-1)y'''' + (x+5)y'' + \tan(x)y = 0$	[[_high_order, _with_linear_symmetries]]	✗
17481	$(x^2-25)y^{(6)} + x^2 y'' + 5y = 0$	[[_high_order, _with_linear_symmetries]]	✗
17484	$y''' + y' = 0$	[[_3rd_order, _missing_x]]	✓
17485	$y'''' + y'' = 0$	[[_high_order, _missing_x]]	✓
17486	$y''' + 4y'' - 4y' - 16y = 0$	[[_3rd_order, _missing_x]]	✓
17487	$y'''' + 6y''' + 9y'' = 0$	[[_high_order, _missing_x]]	✓
17488	$xy''' - y'' = 0$	[[_3rd_order, _missing_y]]	✓
17489	$x^3 y''' + x^2 y'' - 2xy' + 2y = 0$	[[_3rd_order, _exact, _linear, _homogeneous]]	✓
17646	$y'''' + x^2 = 1$	[[_3rd_order, _quadrature]]	✓
17648	$a^3 y''' y'' = \sqrt{1 + c^2 y''^2}$	[[_3rd_order, _missing_x], [_3rd_order, _missing_y], [_3rd_order, _with_linear_symmetries], [_3rd_order, _reducible, _mu_y2]]	✓

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#	ODE	CAS classification	Solved?
17649	$y''' = \sqrt{1 + y''^2}$	[[_3rd_order, _missing_x], [_3rd_order, _missing_y], [_3rd_order, _with_linear_symmetries], [_3rd_order, _reducible, _mu_y2]]	✓
17651	$y'' - xy''' + y'''^3 = 0$	[[_3rd_order, _missing_y], [_3rd_order, _with_linear_symmetries]]	✓
17665	$5y''''^2 - 3y''y'''' = 0$	[[_high_order, _missing_x], [_high_order, _missing_y], [_high_order, _with_linear_symmetries], [_high_order, _reducible, _mu_poly_yn]]	✓
17666	$40y''''^3 - 45y''y''''y'''' + 9y''^2y^{(5)} = 0$	[[_high_order, _missing_x], [_high_order, _missing_y], [_high_order, _with_linear_symmetries]]	✗
17669	$2x^3y'''' - 6x^2y'' + 12xy' - 12y = 0$	[[_3rd_order, _with_linear_symmetries]]	✓
17670	$y''' - \frac{3y''}{x} + \frac{6y'}{x^2} - \frac{6y}{x^3} = 0$	[[_3rd_order, _fully, _exact, _linear]]	✓
17674	$x^3y'''' - 3x^2y'' + 6xy' - 6y = 0$	[[_3rd_order, _with_linear_symmetries]]	✓
17675	$xy''' - y'' + xy' - y = 0$	[[_3rd_order, _with_linear_symmetries]]	✗
17676	$(-x^2 + 1)y''' - xy'' + y' = 0$	[[_3rd_order, _missing_y]]	✓
17679	$(x^2 + 2)y''' - 2xy'' + (x^2 + 2)y' - 2xy = x^4 + 12$	[[_3rd_order, _linear, _nonhomogeneous]]	✗
17680	$y'''' + y' = 0$	[[_3rd_order, _missing_x]]	✓
17686	$y'''' - 2y'' = 0$	[[_high_order, _missing_x]]	✓
17687	$y''' - 3y'' + 3y' - y = 0$	[[_3rd_order, _missing_x]]	✓
17688	$y'''' + 4y = 0$	[[_high_order, _missing_x]]	✓
17689	$y'''' - y = 0$	[[_high_order, _missing_x]]	✓
17691	$y'''' + 2y''' + 3y'' + 2y' + y = 0$	[[_high_order, _missing_x]]	✓

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#	ODE	CAS classification	Solved?
17694	$y''' + y'' + y' + y = x e^x$	[[_3rd_order, _linear, _nonhomogeneous]]	✓
17695	$y'''' - 4y''' + 6y'' - 4y' + y = (x + 1) e^x$	[[_high_order, _linear, _nonhomogeneous]]	✓
17706	$x^3 y''' - x^2 y'' + 2x y' - 2y = x^3 + 3x$	[[_3rd_order, _with_linear_symmetries]]	✓
17778	$2y''' + y'' - 5y' + 2y = 0$	[[_3rd_order, _missing_x]]	✓
18033	$y''' - 3y'' + 2y' = 0$	[[_3rd_order, _missing_x]]	✓
18034	$y''' - 3y'' + 4y' - 2y = 0$	[[_3rd_order, _missing_x]]	✓
18035	$y''' - y = 0$	[[_3rd_order, _missing_x]]	✓
18036	$y''' + y = 0$	[[_3rd_order, _missing_x]]	✓
18037	$y''' + 3y'' + 3y' + y = 0$	[[_3rd_order, _missing_x]]	✓
18038	$y'''' + 4y''' + 6y'' + 4y' + y = 0$	[[_high_order, _missing_x]]	✓
18039	$y'''' - y = 0$	[[_high_order, _missing_x]]	✓
18040	$y'''' + 5y''' + 4y = 0$	[[_high_order, _missing_x]]	✓
18041	$y'''' + 2a^2 y'' + a^4 y = 0$	[[_high_order, _missing_x]]	✓
18042	$y'''' + 2a^2 y'' + a^4 y = 0$	[[_high_order, _missing_x]]	✓
18043	$y'''' + 2y''' + 2y'' + 2y' + y = 0$	[[_high_order, _missing_x]]	✓
18044	$y'''' + 2y''' - 2y'' - 6y' + 5y = 0$	[[_high_order, _missing_x]]	✓
18045	$y''' - 6y'' + 11y' - 6y = 0$	[[_3rd_order, _missing_x]]	✓
18046	$y'''' + y''' - 3y'' - 5y' - 2y = 0$	[[_high_order, _missing_x]]	✓
18047	$y^{(5)} - 6y'''' - 8y''' + 48y'' + 16y' - 96y = 0$	[[_high_order, _missing_x]]	✓
18048	$y'''' = 0$	[[_high_order, _quadrature]]	✓
18049	$y'''' = \sin(x) + 24$	[[_high_order, _quadrature]]	✓
18050	$y''' - 3y'' + 2y' = 10 + 42 e^{3x}$	[[_3rd_order, _missing_y]]	✓

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#	ODE	CAS classification	Solved?
18051	$y''' - y' = 1$ i.c.	[[_3rd_order, _missing_x]]	✓
18052	$x^3 y''' + 3x^2 y'' = 0$	[[_3rd_order, _missing_y]]	✓
18053	$x^3 y''' + x^2 y'' - 2xy' + 2y = 0$	[[_3rd_order, _exact, _linear, _homogeneous]]	✓
18054	$x^3 y''' + 2x^2 y'' + xy' - y = 0$	[[_3rd_order, _with_linear_symmetries]]	✓
18055	$x^3 y'''' + 8x^2 y''' + 8xy'' - 8y' = 0$	[[_high_order, _missing_y]]	✓
18063	$y''' - 2y' + y = 2x^3 - 3x^2 + 4x + 5$	[[_3rd_order, _linear, _nonhomogeneous]]	✓
18065	$y^{(5)} - y''' = x^2$	[[_high_order, _missing_y]]	✓
18066	$y^{(6)} - y = x^{10}$	[[_high_order, _linear, _nonhomogeneous]]	✓
18069	$y''' - y'' = 12x - 2$	[[_3rd_order, _missing_y]]	✓
18070	$y''' + y'' = 9x^2 - 2x + 1$	[[_3rd_order, _missing_y]]	✓
18074	$y''' - 8y = 16x^2$	[[_3rd_order, _with_linear_symmetries]]	✓
18075	$y'''' - y = -x^3 + 1$	[[_high_order, _linear, _nonhomogeneous]]	✓
18076	$y''' - \frac{y'}{4} = x$	[[_3rd_order, _missing_y]]	✓
18077	$y'''' = \frac{1}{x^3}$	[[_high_order, _quadrature]]	✓
18078	$y''' - y'' + y' = x + 1$	[[_3rd_order, _missing_y]]	✓
18079	$y''' + 2y'' = x$	[[_3rd_order, _missing_y]]	✓
18080	$y''' - 6y'' + 12y' - 8y = e^{2x}$	[[_3rd_order, _with_linear_symmetries]]	✓
18081	$y''' + 3y'' + 3y' + y = 12e^{-x}$	[[_3rd_order, _with_linear_symmetries]]	✓
18260	$y'''' - a^4 y = 0$	[[_high_order, _missing_x]]	✓
18265	$x'''' - 6x''' + 11x'' - 6x' = e^{-3t}$	[[_high_order, _missing_y]]	✓
18266	$x^4 y'''' + x^3 y''' - 20x^2 y'' + 20xy' = 17x^6$	[[_high_order, _missing_y]]	✓

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Table 2.55 High order differential equations

*Continued from previous page*

#	ODE	CAS classification	Solved?
18267	$t^4 x'''' - 2t^3 x''' - 20t^2 x'' + 12tx' + 16x = \cos(3 \ln(t))$	[[_high_order, _exact, _linear, _nonhomogeneous]]	✓
18268	$y''' - y'' - y' + y = 0$	[[_3rd_order, _missing_x]]	✓
18269	$y'''' - 3y''' + 3y'' - y' = e^{2x}$	[[_high_order, _missing_y]]	✓
18270	$y''' - y'' + y' - y = \cos(x)$	[[_3rd_order, _linear, _nonhomogeneous]]	✓
18274	$x^3 y''' + x^2 y'' + xy' + y = 0$	[[_3rd_order, _with_linear_symmetries]]	✓
18281	$y''' + \frac{3y''}{x} = 0$	[[_3rd_order, _missing_y]]	✓
18288	$y' y''' - 3y''^2 + 3y'' y'^2 - 2y'^4 - xy'^5 = 0$	[[_3rd_order, _missing_y], [_3rd_order, _with_exponential_symmetries], [_3rd_order, _with_linear_symmetries]]	✗
18290	$y^2 y''' - (3yy' + 2xy^2) y'' + (2y'^2 + 2xyy' + 3y^2 x^2) y' + x^3 y^3 = 0$		✗
18293	$x^3 v''' + 2x^2 v'' + v = 0$	[[_3rd_order, _with_linear_symmetries]]	✓
18333	$y''' - 3y'' + 2y' = 0$	[[_3rd_order, _missing_x]]	✓
18334	$2y''' + y'' - 4y' - 3y = 0$	[[_3rd_order, _missing_x]]	✓
18335	$y''' - 3y'' + 3y' - y = 0$	[[_3rd_order, _missing_x]]	✓
18336	$y''' + 3y'' + y' - 5y = 0$	[[_3rd_order, _missing_x]]	✓
18337	$2y''' - 3y'' + 2y' + 2y = 0$	[[_3rd_order, _missing_x]]	✓
18338	$y'''' - y = 0$	[[_high_order, _missing_x]]	✓
18339	$y'''' + 2y'' + y = 0$	[[_high_order, _missing_x]]	✓
18341	$y''' + 4y'' + 3y' = x^2$	[[_3rd_order, _missing_y]]	✓
18344	$y''' + 5y'' + 6y' = x$	[[_3rd_order, _missing_y]]	✓
18345	$y''' - 6y'' + 11y' - 6y = x$	[[_3rd_order, _with_linear_symmetries]]	✓
18349	$y''' + y'' - 4y' - 4y = x$	[[_3rd_order, _with_linear_symmetries]]	✓
18351	$y''' - y'' + y' - y = \cos(x)$	[[_3rd_order, _linear, _nonhomogeneous]]	✓

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Table 2.55 High order differential equations

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#	ODE	CAS classification	Solved?
18352	$y''' - 3y'' + 3y' - y = e^x$	[[_3rd_order, _with_linear_symmetries]]	✓
18353	$y'''' - y = x^4$	[[_high_order, _linear, _nonhomogeneous]]	✓
18360	$x^3y''' + 7x^2y'' + 8xy' = \ln(x)^2$	[[_3rd_order, _missing_y]]	✓
18362	$x^3y''' - 3x^2y'' + 6xy' - 6y = x^3$	[[_3rd_order, _with_linear_symmetries]]	✓
18363	$x^3y''' + 2x^2y'' - 4xy' + 4y = \ln(x)$	[[_3rd_order, _with_linear_symmetries]]	✓
18364	$x^3y''' + 4x^2y'' + xy' - y = 0$	[[_3rd_order, _exact, _linear, _homogeneous]]	✓
18372	$(x^3 + x^2 - 3x + 1)y''' + (9x^2 + 6x - 9)y'' + (18x + 6)y' + 6y = x^3$	[[_3rd_order, _fully, _exact, _linear]]	✗
18373	$x^2y''' + 5xy'' + 4y' = -\frac{1}{x^2}$	[[_3rd_order, _missing_y]]	✓
18547	$y''' - 3y'' + 4y = 0$	[[_3rd_order, _missing_x]]	✓
18548	$y'''' - y''' - 9y'' - 11y' - 4y = 0$	[[_high_order, _missing_x]]	✓
18550	$y'''' - m^2y = 0$	[[_high_order, _missing_x]]	✓
18551	$y'''' - 4y''' + 8y'' - 8y' + 4y = 0$	[[_high_order, _missing_x]]	✓
18555	$y''' - y'' - 8y' + 12y = X(x)$	[[_3rd_order, _linear, _nonhomogeneous]]	✓
18556	$y''' + y = 3 + e^{-x} + 5e^{2x}$	[[_3rd_order, _linear, _nonhomogeneous]]	✓
18557	$y''' - y = (1 + e^x)^2$	[[_3rd_order, _linear, _nonhomogeneous]]	✓
18559	$y''' + 3y'' + 2y' = x^2$	[[_3rd_order, _missing_y]]	✓
18560	$y''' + 8y = x^4 + 2x + 1$	[[_3rd_order, _linear, _nonhomogeneous]]	✓
18561	$y''' + y'' - y' - y = \cos(2x)$	[[_3rd_order, _linear, _nonhomogeneous]]	✓
18564	$y''' + y = \sin(3x) - \cos\left(\frac{x}{2}\right)^2$	[[_3rd_order, _linear, _nonhomogeneous]]	✓
18565	$y'''' + y = xe^{2x}$	[[_high_order, _linear, _nonhomogeneous]]	✓

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Table 2.55 High order differential equations  
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#	ODE	CAS classification	Solved?
18570	$y'''' + 4y = 0$	[[_high_order, _missing_x]]	✓
18571	$y^{(5)} - 13y'''' + 26y''' + 82y'' + 104y' + 104y = 0$	[[_high_order, _missing_x]]	✓
18572	$y''' + 2y'' + y' = e^{2x} + x^2 + x$	[[_3rd_order, _missing_y]]	✓
18576	$y''' - 3y'' - 6y' + 8y = x$	[[_3rd_order, _with_linear_symmetries]]	✓
18577	$y'''' + y''' + y'' = x^2(bx + a)$	[[_high_order, _missing_y]]	✓
18578	$y''' - 13y'' + 12y' = x$	[[_3rd_order, _with_linear_symmetries]]	✓
18579	$y'''' + 2n^2y'' + n^4y = \cos(mx)$	[[_high_order, _linear, _nonhomogeneous]]	✓
18580	$y'''' + 2y'' + y = x^2 \cos(x)$	[[_high_order, _linear, _nonhomogeneous]]	✓
18584	$y'''' - a^4y = x^4$	[[_high_order, _linear, _nonhomogeneous]]	✓
18585	$y'''' - 2y''' + y'' = x$	[[_high_order, _missing_y]]	✓
18586	$y'''' - y = e^x \cos(x)$	[[_high_order, _linear, _nonhomogeneous]]	✓
18588	$y''' - 7y'' - 6y = e^{2x}(x + 1)$	[[_3rd_order, _linear, _nonhomogeneous]]	✓
18590	$y''' + 3y'' + 3y' + y = e^{-x}$	[[_3rd_order, _with_linear_symmetries]]	✓
18591	$y'''' - 2y''' - 3y'' + 4y' + 4y = e^x x^2$	[[_high_order, _linear, _nonhomogeneous]]	✓
18592	$y''' - 3y'' + 3y' - y = x e^x + e^x$	[[_3rd_order, _linear, _nonhomogeneous]]	✓
18595	$y''' - 3y'' + 4y' - 2y = e^x + \cos(x)$	[[_3rd_order, _linear, _nonhomogeneous]]	✓
18597	$y''' - 3y'' + 4y = e^{3x}$	[[_3rd_order, _with_linear_symmetries]]	✓
18598	$y''' + y = e^{2x} \sin(x) + e^{\frac{x}{2}} \sin\left(\frac{\sqrt{3}x}{2}\right)$	[[_3rd_order, _linear, _nonhomogeneous]]	✓
18601	$x^3y'''' + 3x^2y''' + xy'' + y = 0$	[[_3rd_order, _exact, _linear, _homogeneous]]	✓

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Table 2.55 High order differential equations

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#	ODE	CAS classification	Solved?
18602	$x^4 y'''' + 6x^3 y'''' + 9x^2 y'' + 3xy' + y = 0$	[[_high_order, _with_linear_symmetries]]	✓
18609	$y''' - \frac{4y''}{x} + \frac{5y'}{x^2} - \frac{2y}{x^3} = 1$	[[_3rd_order, _exact, _linear, _nonhomogeneous]]	✓
18611	$x^3 y''' - 3x^2 y'' + 7xy' - 8y = 0$	[[_3rd_order, _with_linear_symmetries]]	✓
18613	$x^3 y''' + 6x^2 y'' + 4xy' - 4y = 0$	[[_3rd_order, _with_linear_symmetries]]	✓
18614	$x^3 y''' + 2x^2 y'' + 2y = 10c + \frac{10}{x}$	[[_3rd_order, _exact, _linear, _nonhomogeneous]]	✓
18615	$16(x+1)^4 y'''' + 96(x+1)^3 y'''' + 104(x+1)^2 y'' + 8(x+1)y' + y = x^2 + 4x + 3$	[[_high_order, _with_linear_symmetries]]	✗
18618	$x^4 y'''' + 6x^3 y'''' + 9x^2 y'' + 3xy' + y = (\ln(x) + 1)^2$	[[_high_order, _linear, _nonhomogeneous]]	✓
18619	$x^4 y''' + 2x^3 y'' - x^2 y' + xy = 1$	[[_3rd_order, _with_linear_symmetries]]	✓
18623	$xy''' + (x^2 - 3)y'' + 4xy' + 2y = 0$	[[_3rd_order, _fully_exact, _linear]]	✗



## 2.6 Table of ODEs solved using series method

Table 2.56: Differential equations solved using Laplace transform

#	ODE	CAS classification	Solved?
530	$x'' + 4x = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
531	$x'' + 9x = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
532	$x'' - x' - 2x = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
533	$x'' + 8x' + 15x = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
534	$x'' + x = \sin(2t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
535	$x'' + 4x = \cos(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
536	$x'' + x = \cos(3t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
537	$x'' + 9x = 1$ i.c.	[[_2nd_order, _missing_x]]	✓
538	$x'' + 4x' + 3x = 1$ i.c.	[[_2nd_order, _missing_x]]	✓
539	$x'' + 3x' + 2x = t$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
541	$x'' + 6x' + 25x = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
542	$x'' - 6x' + 8x = 2$ i.c.	[[_2nd_order, _missing_x]]	✓
543	$x'' - 4x = 3t$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
544	$x'' + 4x' + 8x = e^{-t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
545	$x''' + x'' - 6x' = 0$ i.c.	[[_3rd_order, _missing_x]]	✓
546	$x'''' - x = 0$ i.c.	[[_high_order, _missing_x]]	✓
547	$x'''' + x = 0$ i.c.	[[_high_order, _missing_x]]	✓
548	$x'''' + 13x'' + 36x = 0$ i.c.	[[_high_order, _missing_x]]	✓
549	$x'''' + 8x'' + 16x = 0$ i.c.	[[_high_order, _missing_x]]	✓

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Table 2.56 Differential equations solved using Laplace transform  
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#	ODE	CAS classification	Solved?
550	$x'''' + 2x'' + x = e^{2t}$ i.c.	[[_high_order, _with_linear_symmetries]]	✓
551	$x'' + 4x' + 13x = te^{-t}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
552	$x'' + 6x' + 18x = \cos(2t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
553	$x'' + 9x = 6 \cos(3t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
554	$x'' + \frac{2x'}{5} + \frac{226x}{25} = 6e^{-\frac{t}{5}} \cos(3t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
555	$tx'' + (t-2)x' + x = 0$ i.c.	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
556	$tx'' + (3t-1)x' + 3x = 0$ i.c.	[[_2nd_order, _exact, _linear, _homogeneous]]	✓
557	$tx'' - (4t+1)x' + 2(2t+1)x = 0$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
558	$tx'' + 2(t-1)x' - 2x = 0$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
559	$tx'' - 2x' + xt = 0$ i.c.	[_Lienard]	✓
560	$tx'' + (4t-2)x' + (13t-4)x = 0$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
561	$x'' + 4x = f(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
562	$x'' + 2x' + x = f(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
563	$x'' + 4x' + 13x = f(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
564	$x'' + 4x = \delta(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
565	$x'' + 4x = \delta(t) + \delta(t-\pi)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
566	$x'' + 4x' + 4x = 1 + \delta(t-2)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
567	$x'' + 2x' + x = t + \delta(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
568	$x'' + 2x' + 2x = 2\delta(t-\pi)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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Table 2.56 Differential equations solved using Laplace transform  
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#	ODE	CAS classification	Solved?
569	$x'' + 9x = \delta(t - 3\pi) + \cos(3t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
570	$x'' + 4x' + 5x = \delta(t - \pi) + \delta(t - 2\pi)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
571	$x'' + 2x' + x = \delta(t) - \delta(t - 2)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
572	$x'' + 4x = f(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
573	$x'' + 6x' + 9x = f(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
574	$x'' + 6x' + 8x = f(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
575	$x'' + 4x' + 8x = f(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1483	$y'' - y' - 6y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
1484	$y'' + 3y' + 2y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
1485	$y'' - 2y' + 2y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
1486	$y'' - 2y' + 4y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
1487	$y'' + 2y' + 5y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
1488	$y'''' - 4y''' + 6y'' - 4y' + y = 0$ i.c.	[[_high_order, _missing_x]]	✓
1489	$y'''' - 4y = 0$ i.c.	[[_high_order, _missing_x]]	✓
1490	$y'' + \omega^2 y = \cos(2t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1491	$y'' - 2y' + 2y = e^{-t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
1492	$y'' + 4y = \begin{cases} 1 & 0 \leq t < \pi \\ 0 & \pi \leq t < \infty \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1493	$y'' + 4y = \begin{cases} 1 & 0 \leq t < 1 \\ 0 & 1 \leq t < \infty \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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Table 2.56 Differential equations solved using Laplace transform  
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#	ODE	CAS classification	Solved?
1494	$y'' + y = \begin{cases} t & 0 \leq t < 1 \\ 2 - t & 1 \leq t < 2 \\ 0 & 2 \leq t < \infty \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1495	$y'' + y = \begin{cases} 1 & 0 \leq t < 3\pi \\ 0 & 3\pi \leq t < \infty \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1496	$y'' + 2y' + 2y = \begin{cases} 1 & \pi \leq t < 2\pi \\ 0 & \text{otherwise} \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1497	$y'' + 4y = \sin(t) - \text{Heaviside}(t - 2\pi) \sin(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1498	$y'' + 3y' + 2y = \begin{cases} 1 & 0 \leq t < 10 \\ 0 & \text{otherwise} \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1499	$y'' + y' + \frac{5y}{4} = t - \text{Heaviside}\left(t - \frac{\pi}{2}\right)\left(t - \frac{\pi}{2}\right)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1500	$y'' + y' + \frac{5y}{4} = \begin{cases} \sin(t) & 0 \leq t < \pi \\ 0 & \text{otherwise} \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1501	$y'' + 4y = \text{Heaviside}(t - \pi) - \text{Heaviside}(t - 3\pi)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1502	$y'''' + 5y'' + 4y = 1 - \text{Heaviside}(t - \pi)$ i.c.	[[_high_order, _linear, _nonhomogeneous]]	✓
1503	$u'' + \frac{u'}{4} + u = k\left(\text{Heaviside}\left(t - \frac{3}{2}\right) - \text{Heaviside}\left(t - \frac{5}{2}\right)\right)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1504	$u'' + \frac{u'}{4} + u = \frac{\text{Heaviside}\left(t - \frac{3}{2}\right)}{2} - \frac{\text{Heaviside}\left(t - \frac{5}{2}\right)}{2}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1505	$u'' + \frac{u'}{4} + u = \frac{\text{Heaviside}(t - 5)(t - 5) - \text{Heaviside}(t - 5 - k)(t - 5 - k)}{k}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1506	$y'' + 2y' + 2y = \delta(t - \pi)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1507	$y'' + 4y = \delta(t - \pi) - \delta(t - 2\pi)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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Table 2.56 Differential equations solved using Laplace transform  
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#	ODE	CAS classification	Solved?
1508	$y'' + 3y' + 2y = \delta(t - 5) + \text{Heaviside}(t - 10)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1509	$y'' + 2y' + 3y = \sin(t) + \delta(t - 3\pi)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1510	$y'' + y = \delta(t - 2\pi) \cos(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1511	$y'' + 4y = 2\delta\left(t - \frac{\pi}{4}\right)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1512	$y'' + 2y' + 2y = \cos(t) + \delta\left(t - \frac{\pi}{2}\right)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1513	$y'''' - y = \delta(t - 1)$ i.c.	[[_high_order, _linear, _nonhomogeneous]]	✓
1514	$y'' + \frac{y'}{2} + y = \delta(t - 1)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1515	$y'' + \frac{y'}{4} + y = \delta(t - 1)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1516	$y'' + y = \frac{\text{Heaviside}(t - 4 + k) - \text{Heaviside}(t - 4 - k)}{2k}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
1518	$y'' + 2y' + 2y = \delta(t - \pi)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2671	$y'' - 5y' + 4y = e^{2t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
2672	$2y'' + y' - y = e^{3t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
2673	$y'' + 2y' + y = e^{-t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
2674	$y'' + y = t^2 \sin(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2675	$y'' + 3y' + 7y = \cos(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2676	$y'' + y' + y = t^3$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2677	$y'''' - 6y'' + 11y' - 6y = e^{4t}$ i.c.	[[_3rd_order, _with_linear_symmetries]]	✓
2678	$y'' - 3y' + 2y = e^{-t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓

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Table 2.56 Differential equations solved using Laplace transform  
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#	ODE	CAS classification	Solved?
2679	$y'' + y = \sin(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2680	$y'' + y = t \sin(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2681	$y'' - 2y' + y = t e^t$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2682	$y'' - 2y' + 7y = \sin(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2683	$y'' + y' + y = 1 + e^{-t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
2684	$y'' + y = \begin{cases} 2 & 0 \leq t \leq 3 \\ 3t - 7 & 3 < t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2685	$y'' + 2y' + y = 2(t - 3) \text{Heaviside}(t - 3)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2686	$y'' + y' + y = \text{Heaviside}(t - \pi) - \text{Heaviside}(t - 2\pi)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2687	$y'' + 4y = \begin{cases} 1 & 0 \leq t < 4 \\ 0 & 4 < t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2688	$y'' + y = \begin{cases} \sin(t) & 0 \leq t < \pi \\ \cos(t) & \pi \leq t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2689	$y'' + y = \begin{cases} \cos(t) & 0 \leq t < \frac{\pi}{2} \\ 0 & \frac{\pi}{2} \leq t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2690	$y'' + 2y' + y = \begin{cases} \sin(2t) & 0 \leq t < \frac{\pi}{2} \\ 0 & \frac{\pi}{2} \leq t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2691	$y'' + y' + 7y = \begin{cases} t & 0 \leq t < 2 \\ 0 & 2 \leq t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2692	$y'' + y = \begin{cases} t^2 & 0 \leq t < 1 \\ 0 & 1 \leq t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2693	$y'' - 2y' + y = \begin{cases} 0 & 0 \leq t < 1 \\ t & 1 \leq t < 2 \\ 0 & 2 \leq t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
2694	$y'' + 4y' + 5y = \delta(t - 1)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2695	$y'' + 4y = \sin(t) + \delta(t - \pi)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2696	$y'' + y' + y = 2\delta(t - 1) - \delta(t - 2)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2697	$y'' + 2y' + y = e^{-t} + 3\delta(t - 3)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
2774	$\begin{bmatrix} x_1'(t) = x_1(t) - 3x_2(t) \\ x_2'(t) = -2x_1(t) + 2x_2(t) \end{bmatrix}$ i.c.	system_of_ODEs	✓
2775	$\begin{bmatrix} x_1'(t) = x_1(t) - x_2(t) \\ x_2'(t) = 5x_1(t) - 3x_2(t) \end{bmatrix}$ i.c.	system_of_ODEs	✓
2776	$\begin{bmatrix} x_1'(t) = 3x_1(t) - 2x_2(t) + t \\ x_2'(t) = 2x_1(t) - 2x_2(t) + 3e^t \end{bmatrix}$ i.c.	system_of_ODEs	✓
2777	$\begin{bmatrix} x_1'(t) = x_1(t) + x_2(t) + 2e^t \\ x_2'(t) = 4x_1(t) + x_2(t) - e^t \end{bmatrix}$ i.c.	system_of_ODEs	✓
2778	$\begin{bmatrix} x_1'(t) = 3x_1(t) - 4x_2(t) + e^t \\ x_2'(t) = x_1(t) - x_2(t) + e^t \end{bmatrix}$ i.c.	system_of_ODEs	✓
2779	$\begin{bmatrix} x_1'(t) = 2x_1(t) - 5x_2(t) + \sin(t) \\ x_2'(t) = x_1(t) - 2x_2(t) + \tan(t) \end{bmatrix}$ i.c.	system_of_ODEs	✓
2780	$\begin{bmatrix} x_1'(t) = 4x_1(t) + 5x_2(t) + 4e^t \cos(t) \\ x_2'(t) = -2x_1(t) - 2x_2(t) \end{bmatrix}$ i.c.	system_of_ODEs	✓
2781	$\begin{bmatrix} x_1'(t) = x_2(t) + f_1(t) \\ x_2'(t) = -x_1(t) + f_2(t) \end{bmatrix}$ i.c.	system_of_ODEs	✓
2782	$\begin{bmatrix} x_1'(t) = 2x_1(t) - 2x_2(t) \\ x_2'(t) = 4x_1(t) - 2x_2(t) + \delta(t - \pi) \end{bmatrix}$ i.c.	system_of_ODEs	✓
2783	$\begin{bmatrix} x_1'(t) = 3x_1(t) - 2x_2(t) + 1 - \text{Heaviside}(t - \pi) \\ x_2'(t) = 2x_1(t) - 2x_2(t) \end{bmatrix}$ i.c.	system_of_ODEs	✓

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#	ODE	CAS classification	Solved?
2784	$\begin{bmatrix} x_1'(t) = x_1(t) + 2x_2(t) - 3x_3(t) \\ x_2'(t) = x_1(t) + x_2(t) + 2x_3(t) \\ x_3'(t) = x_1(t) - x_2(t) + 4x_3(t) \end{bmatrix}$ i.c.	system_of_ODEs	✓
2785	$\begin{bmatrix} x_1'(t) = 2x_1(t) + x_3(t) + e^{2t} \\ x_2'(t) = 2x_2(t) \\ x_3'(t) = 3x_3(t) + e^{2t} \end{bmatrix}$ i.c.	system_of_ODEs	✓
2786	$\begin{bmatrix} x_1'(t) = -x_1(t) - x_2(t) + 2x_3(t) + e^t \\ x_2'(t) = x_1(t) + x_2(t) + x_3(t) \\ x_3'(t) = 2x_1(t) + x_2(t) + 3x_3(t) \end{bmatrix}$ i.c.	system_of_ODEs	✓
2787	$\begin{bmatrix} x_1'(t) = x_1(t) \\ x_2'(t) = 2x_1(t) + x_2(t) - 2x_3(t) \\ x_3'(t) = 3x_1(t) + 2x_2(t) + x_3(t) + e^t \cos(2t) \end{bmatrix}$ i.c.	system_of_ODEs	✓
2788	$\begin{bmatrix} x_1'(t) = 3x_1(t) \\ x_2'(t) = x_1(t) + 3x_2(t) \\ x_3'(t) = 3x_3(t) \\ x_4'(t) = 2x_3(t) + 3x_4(t) \end{bmatrix}$ i.c.	system_of_ODEs	✓
3928	$y' - 2y = 6e^{5t}$ i.c.	[[_linear, 'class A']]	✓
3929	$y' + y = 8e^{3t}$ i.c.	[[_linear, 'class A']]	✓
3930	$y' + 3y = 2e^{-t}$ i.c.	[[_linear, 'class A']]	✓
3931	$y' + 2y = 4t$ i.c.	[[_linear, 'class A']]	✓
3932	$y' - y = 6 \cos(t)$ i.c.	[[_linear, 'class A']]	✓
3933	$y' - y = 5 \sin(2t)$ i.c.	[[_linear, 'class A']]	✓
3934	$y' + y = 5e^t \sin(t)$ i.c.	[[_linear, 'class A']]	✓
3935	$y'' + y' - 2y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
3936	$y'' + 4y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓

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#	ODE	CAS classification	Solved?
3937	$y'' - 3y' + 2y = 4$ i.c.	[[_2nd_order, _missing_x]]	✓
3938	$y'' - y' - 12y = 36$ i.c.	[[_2nd_order, _missing_x]]	✓
3939	$y'' + y' - 2y = 10e^{-t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
3940	$y'' - 3y' + 2y = 4e^{3t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
3941	$y'' - 2y' = 30e^{-3t}$ i.c.	[[_2nd_order, _missing_y]]	✓
3942	$y'' - y = 12e^{2t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
3943	$y'' + 4y = 10e^{-t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
3944	$y'' - y' - 6y = 12 - 6e^t$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
3945	$y'' - y = 6\cos(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3946	$y'' - 9y = 13\sin(2t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3947	$y'' - y = 8\sin(t) - 6\cos(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3948	$y'' - y' - 2y = 10\cos(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3949	$y'' + 5y' + 4y = 20\sin(2t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3950	$y'' + 5y' + 4y = 20\sin(2t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3951	$y'' - 3y' + 2y = 3\cos(t) + \sin(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3952	$y'' + 4y = 9\sin(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3953	$y'' + y = 6\cos(2t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3954	$y'' + 9y = 7\sin(4t) + 14\cos(4t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3955	$y'' - y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓

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Table 2.56 Differential equations solved using Laplace transform  
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#	ODE	CAS classification	Solved?
3956	$y' + 2y = 2 \text{Heaviside}(t - 1)$ i.c.	[[_linear, 'class A']]	✓
3957	$y' - 2y = \text{Heaviside}(t - 2)e^{t-2}$ i.c.	[[_linear, 'class A']]	✓
3958	$y' - y = 4 \text{Heaviside}\left(t - \frac{\pi}{4}\right) \sin\left(t + \frac{\pi}{4}\right)$ i.c.	[[_linear, 'class A']]	✓
3959	$y' + 2y = \text{Heaviside}(t - \pi) \sin(2t)$ i.c.	[[_linear, 'class A']]	✓
3960	$y' + 3y = \begin{cases} 1 & 0 \leq t < 1 \\ 0 & 1 \leq t \end{cases}$ i.c.	[[_linear, 'class A']]	✓
3961	$y' - 3y = \begin{cases} \sin(t) & 0 \leq t < \frac{\pi}{2} \\ 1 & \frac{\pi}{2} \leq t \end{cases}$ i.c.	[[_linear, 'class A']]	✓
3962	$y' - 3y = -10e^{-t+a} \sin(-2t + 2a) \text{Heaviside}(t - a)$ i.c.	[[_linear, 'class A']]	✓
3963	$y'' - y = \text{Heaviside}(t - 1)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3964	$y'' - y' - 2y = 1 - 3 \text{Heaviside}(t - 2)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3965	$y'' - 4y = \text{Heaviside}(t - 1) - \text{Heaviside}(t - 2)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3966	$y'' + y = t - \text{Heaviside}(t - 1)(t - 1)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3967	$y'' + 3y' + 2y = -10 \text{Heaviside}\left(t - \frac{\pi}{4}\right) \cos\left(t + \frac{\pi}{4}\right)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3968	$y'' + y' - 6y = 30 \text{Heaviside}(t - 1)e^{-t+1}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3969	$y'' + 4y' + 5y = 5 \text{Heaviside}(t - 3)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3970	$y'' - 2y' + 5y = 2 \sin(t) + \text{Heaviside}\left(t - \frac{\pi}{2}\right) (1 + \cos(t))$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3971	$y' - y = \begin{cases} 2 & 0 \leq t < 1 \\ -1 & 1 \leq t \end{cases}$ i.c.	[[_linear, 'class A']]	✓

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Table 2.56 Differential equations solved using Laplace transform  
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#	ODE	CAS classification	Solved?
3972	$y' - y = \begin{cases} 2 & 0 \leq t < 1 \\ -1 & 1 \leq t \end{cases}$ i.c.	[[_linear, 'class A']]	✓
3973	$y' + y = \delta(t - 5)$ i.c.	[[_linear, 'class A']]	✓
3974	$y' - 2y = \delta(t - 2)$ i.c.	[[_linear, 'class A']]	✓
3975	$y' + 4y = 3\delta(t - 1)$ i.c.	[[_linear, 'class A']]	✓
3976	$y' - 5y = 2e^{-t} + \delta(t - 3)$ i.c.	[[_linear, 'class A']]	✓
3977	$y'' - 3y' + 2y = \delta(t - 1)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3978	$y'' - 4y = \delta(t - 3)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3979	$y'' + 2y' + 5y = \delta\left(t - \frac{\pi}{2}\right)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3980	$y'' - 4y' + 13y = \delta\left(t - \frac{\pi}{4}\right)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3981	$y'' + 4y' + 3y = \delta(t - 2)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3982	$y'' + 6y' + 13y = \delta\left(t - \frac{\pi}{4}\right)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3983	$y'' + 9y = 15 \sin(2t) + \delta\left(t - \frac{\pi}{6}\right)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3984	$y'' + 16y = 4 \cos(3t) + \delta\left(t - \frac{\pi}{3}\right)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
3985	$y'' + 2y' + 5y = 4 \sin(t) + \delta\left(t - \frac{\pi}{6}\right)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4514	$y'' + 4y' + 3y = 60 \cos(3t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4515	$y'' + y' - 2y = 9e^{-2t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
4516	$y'' - y' - 2y = 2t^2 + 1$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
4517	$y'' + 4y = 8 \sin(2t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
4518	$y'' - 2y' + y = 4e^{-t} + 2e^t$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4519	$y'' - 2y' + 2y = 8e^{-t} \sin(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4520	$y'' - 2y' + 5y = 8e^t \sin(2t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4521	$y'' + y' - 2y = 54te^{-2t}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4522	$y'' - y' - 2y = 9e^{2t} \text{Heaviside}(t - 1)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4523	$y'' + 2y' + y = 2 \sin(t) \text{Heaviside}(t - \pi)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4524	$y'' + 4y = 8 \text{Heaviside}(t - \pi) \sin(2t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4525	$y'' + 4y = 8(t^2 + t - 1) \text{Heaviside}(t - 2)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4526	$y'' - 3y' + 2y = e^t \text{Heaviside}(t - 2)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4527	$y'' - 5y' + 6y = \delta(t - 2)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4528	$y'' + 4y = 4 \text{Heaviside}(t - \pi) + 2\delta(t - \pi)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
4529	$y''' - y'' + 4y' - 4y = 10e^{-t}$ i.c.	[[_3rd_order, _with_linear_symmetries]]	✓
4530	$y'''' - 5y'' + 4y = 120e^{3t} \text{Heaviside}(t - 1)$ i.c.	[[_high_order, _linear, _nonhomogeneous]]	✓
4531	$y'''' + 3y'' - 4y = 40t^2 \text{Heaviside}(t - 2)$ i.c.	[[_high_order, _linear, _nonhomogeneous]]	✓
4532	$y'''' + 4y = (2t^2 + t + 1) \delta(t - 1)$ i.c.	[[_high_order, _linear, _nonhomogeneous]]	✓
4552	$\begin{cases} x'(t) - x(t) - 2y(t) = 16te^t \\ 2x(t) - y'(t) - 2y(t) = 0 \end{cases}$ i.c.	system_of_ODEs	✓
4553	$\begin{cases} x'(t) - 2x(t) + y(t) = 5e^t \cos(t) \\ x(t) + y'(t) - 2y(t) = 10e^t \sin(t) \end{cases}$ i.c.	system_of_ODEs	✓
4554	$\begin{cases} x'(t) - 4x(t) + 3y(t) = \sin(t) \\ 2x(t) + y'(t) - y(t) = 2 \cos(t) \end{cases}$ i.c.	system_of_ODEs	✓

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Table 2.56 Differential equations solved using Laplace transform  
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#	ODE	CAS classification	Solved?
4555	$\begin{cases} x'(t) - 2x(t) - y(t) = 2e^t \\ x(t) - y'(t) + 2y(t) = 3e^{4t} \end{cases}$ i.c.	system_of_ODEs	✓
4556	$\begin{cases} x''(t) + x'(t) + y'(t) - 2y(t) = 40e^{3t} \\ x'(t) + x(t) - y'(t) = 36e^t \end{cases}$ i.c.	system_of_ODEs	✗
4557	$\begin{cases} x'(t) - 2x(t) - y(t) = 2e^t \\ y'(t) - 2y(t) - 4z(t) = 4e^{2t} \\ x(t) - z'(t) - z(t) = 0 \end{cases}$ i.c.	system_of_ODEs	✓
4558	$\begin{cases} x''(t) + 2x(t) - 2y'(t) = 0 \\ 3x'(t) + y''(t) - 8y(t) = 240e^t \end{cases}$ i.c.	system_of_ODEs	✗
4559	$\begin{cases} x'(t) - x(t) - 2y(t) = 0 \\ x(t) - y'(t) = 15 \cos(t) \text{Heaviside}(t - \pi) \end{cases}$ i.c.	system_of_ODEs	✓
4560	$\begin{cases} x'(t) - x(t) + y(t) = 2 \sin(t) (1 - \text{Heaviside}(t - \pi)) \\ 2x(t) - y'(t) - y(t) = 0 \end{cases}$ i.c.	system_of_ODEs	✓
4561	$\begin{cases} 2x'(t) + x(t) - 5y'(t) - 4y(t) = 28e^t \text{Heaviside}(t - 2) \\ 3x'(t) - 2x(t) - 4y'(t) + y(t) = 0 \end{cases}$ i.c.	system_of_ODEs	✓
6544	$y' + 2y = 0$ i.c.	[_quadrature]	✓
6545	$y' + 2y = 2$ i.c.	[_quadrature]	✓
6546	$y' + 2y = e^x$ i.c.	[[_linear, 'class A']]	✓
6547	$y'' - y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
6548	$y'' - y = \sin(x)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6549	$y'' - y = e^x$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
6550	$y'' + 2y' - 3y = \sin(2x)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6551	$y'' + y = \sin(x)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
6552	$y'' + y' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
6553	$y'' + 2y' + 5y = 3e^{-2x}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
6554	$y'' + 5y' - 3y = \text{Heaviside}(x - 4)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
6555	$y''' - y = 5$ i.c.	[[_3rd_order, _missing_x]]	✓
6556	$y'''' - y = 0$ i.c.	[[_high_order, _missing_x]]	✓
6557	$y''' - 3y'' + 3y' - y = e^x x^2$ i.c.	[[_3rd_order, _linear, _nonhomogeneous]]	✓
6558	$x'' + 4x' + 4x = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
6559	$q'' + 9q' + 14q = \frac{\sin(t)}{2}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7023	$y' + \frac{26y}{5} = \frac{97 \sin(2t)}{5}$ i.c.	[[_linear, 'class A']]	✓
7024	$y' + 2y = 0$ i.c.	[_quadrature]	✓
7025	$y'' - y' - 6y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
7026	$y'' + 9y = 10e^{-t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
7027	$y'' - \frac{y}{4} = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
7028	$y'' - 6y' + 5y = 29 \cos(2t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7029	$y'' + 7y' + 12y = 21e^{3t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
7030	$y'' - 4y' + 4y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
7031	$y'' - 4y' + 3y = 6t - 8$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
7032	$y'' + \frac{y}{25} = \frac{t^2}{50}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
7033	$y'' + 3y' + \frac{9y}{4} = 9t^3 + 64$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7034	$y'' - 2y' - 3y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
7035	$y' - 6y = 0$ i.c.	[_quadrature]	✓
7036	$y'' + 2y' + 5y = 50t - 100$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
7037	$y'' + 3y' - 4y = 6e^{2t-3}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
7038	$9y'' - 6y' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
7039	$y'' + 6y' + 8y = e^{-3t} - e^{-5t}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7040	$y'' + 10y' + 24y = 144t^2$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
7041	$y'' + 9y = \begin{cases} 8 \sin(t) & 0 < t < \pi \\ 0 & \pi < t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7042	$y'' + 3y' + 2y = \begin{cases} 4t & 0 < t < 1 \\ 8 & 1 < t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7043	$y'' + y' - 2y = \begin{cases} 3 \sin(t) - \cos(t) & 0 < t < 2\pi \\ 3 \sin(2t) - \cos(2t) & 2\pi < t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7044	$y'' + 3y' + 2y = \begin{cases} 1 & 0 < t < 1 \\ 0 & 1 < t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7045	$y'' + y = \begin{cases} t & 0 < t < 1 \\ 0 & 1 < t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7046	$y'' + 2y' + 5y = \begin{cases} 10 \sin(t) & 0 < t < 2\pi \\ 0 & 2\pi < t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7047	$y'' + 4y = \begin{cases} 8t^2 & 0 < t < 5 \\ 0 & 5 < t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7048	$y'' + 4y = \delta(t - \pi)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
7049	$y'' + 16y = 4\delta(t - 3\pi)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7050	$y'' + y = \delta(t - \pi) - \delta(t - 2\pi)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7051	$y'' + 4y' + 5y = \delta(t - 1)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7052	$4y'' + 24y' + 37y = 17e^{-t} + \delta\left(t - \frac{1}{2}\right)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7053	$y'' + 3y' + 2y = 10\sin(t) + 10\delta(t - 1)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7054	$y'' + 4y' + 5y = (1 - \text{Heaviside}(t - 10))e^t - e^{10}\delta(t - 10)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7055	$y'' + 5y' + 6y = \delta\left(t - \frac{\pi}{2}\right) + \cos(t)\text{Heaviside}(t - \pi)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7056	$y'' + 5y' + 6y = \text{Heaviside}(t - 1) + \delta(t - 2)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7057	$y'' + 2y' + 5y = 25t - 100\delta(t - \pi)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7843	$y'' + 5y' + 6y = 5e^{3t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
7844	$y'' + y' - 6y = t$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
7845	$y'' - y = t^2$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
7846	$Li' + Ri = E_0 \text{Heaviside}(t)$ i.c.	[[_linear, 'class A']]	✓
7847	$Li' + Ri = E_0\delta(t)$ i.c.	[[_linear, 'class A']]	✓
7848	$Li' + Ri = E_0 \sin(\omega t)$ i.c.	[[_linear, 'class A']]	✓
7849	$y'' + 3y' - 5y = 1$ i.c.	[[_2nd_order, _missing_x]]	✓
7850	$y'' + 3y' - 2y = -6e^{-t+\pi}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
7851	$y'' + 2y' - y = te^{-t}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7852	$y'' - y' + y = 3e^{-t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓

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Table 2.56 Differential equations solved using Laplace transform  
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#	ODE	CAS classification	Solved?
7853	$y'' - 5y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
7854	$y'' + 3y' + 3y = 2$	[[_2nd_order, _missing_x]]	✓
7855	$y'' + y' + 2y = t$	[[_2nd_order, _with_linear_symmetries]]	✓
7856	$y'' - 7y' + 12y = t e^{2t}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
7857	$i'' + 2i' + 3i = \begin{cases} 30 & 0 < t < 2\pi \\ 0 & 2\pi \leq t \leq 5\pi \\ 10 & 5\pi < t < \infty \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8000	$y' - y = 1$ i.c.	[_quadrature]	✓
8001	$2y' + y = 0$ i.c.	[_quadrature]	✓
8002	$y' + 6y = e^{4t}$ i.c.	[[_linear, 'class A']]	✓
8003	$y' - y = 2 \cos(5t)$ i.c.	[[_linear, 'class A']]	✓
8004	$y'' + 5y' + 4y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
8005	$y'' - 4y' = 6e^{3t} - 3e^{-t}$ i.c.	[[_2nd_order, _missing_y]]	✓
8006	$y'' + y = \sqrt{2} \sin(\sqrt{2}t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8007	$y'' + 9y = e^t$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
8008	$2y''' + 3y'' - 3y' - 2y = e^{-t}$ i.c.	[[_3rd_order, _with_linear_symmetries]]	✓
8009	$y''' + 2y'' - y' - 2y = \sin(3t)$ i.c.	[[_3rd_order, _linear, _nonhomogeneous]]	✓
8010	$y' + y = e^{-3t} \cos(2t)$ i.c.	[[_linear, 'class A']]	✓
8011	$y'' - 2y' + 5y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
8012	$y' + 4y = e^{-4t}$ i.c.	[[_linear, 'class A']]	✓
8013	$y' - y = 1 + t e^t$ i.c.	[[_linear, 'class A']]	✓

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#	ODE	CAS classification	Solved?
8014	$y'' + 2y' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
8015	$y'' - 4y' + 4y = t^3 e^{2t}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8016	$y'' - 6y' + 9y = t$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
8017	$y'' - 4y' + 4y = t^3$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8018	$y'' - 6y' + 13y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
8019	$2y'' + 20y' + 51y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
8020	$y'' - y = e^t \cos(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8021	$y'' - 2y' + 5y = t + 1$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
8022	$y'' + 2y' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
8023	$y'' + 8y' + 20y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
8024	$y' + y = \begin{cases} 0 & 0 \leq t < 1 \\ 5 & 1 \leq t \end{cases}$ i.c.	[[_linear, 'class A']]	✓
8025	$y' + y = \begin{cases} 1 & 0 \leq t < 1 \\ -1 & 1 \leq t \end{cases}$ i.c.	[[_linear, 'class A']]	✓
8026	$y' + y = \begin{cases} t & 0 \leq t < 1 \\ 0 & 1 \leq t \end{cases}$ i.c.	[[_linear, 'class A']]	✓
8027	$y'' + 4y = \begin{cases} 1 & 0 \leq t < 1 \\ 0 & 1 \leq t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8028	$y'' + 4y = \text{Heaviside}(t - 2\pi) \sin(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8029	$y'' - 5y' + 6y = \text{Heaviside}(t - 1)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8030	$y'' + y = \begin{cases} 0 & 0 \leq t < \pi \\ 1 & \pi \leq t < 2\pi \\ 0 & 2\pi \leq t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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Table 2.56 Differential equations solved using Laplace transform  
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#	ODE	CAS classification	Solved?
8031	$y'' + 4y' + 3y = 1 - \text{Heaviside}(t - 2)$ $- \text{Heaviside}(-4 + t)$ $+ \text{Heaviside}(t - 6)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8032	$y' + y = t \sin(t)$ i.c.	[[_linear, 'class A']]	✓
8033	$y' - y = t e^t \sin(t)$ i.c.	[[_linear, 'class A']]	✓
8034	$y'' + 9y = \cos(3t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8035	$y'' + y = \sin(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8036	$y'' + 16y = \begin{cases} \cos(4t) & 0 \leq t < \pi \\ 0 & \pi \leq t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8037	$y'' + y = \begin{cases} 1 & 0 \leq t < \frac{\pi}{2} \\ \sin(t) & \frac{\pi}{2} \leq t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8040	$y'' + y = \sin(t) + t \sin(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8041	$y' - 3y = \delta(t - 2)$ i.c.	[[_linear, 'class A']]	✓
8042	$y' + y = \delta(t - 1)$ i.c.	[[_linear, 'class A']]	✓
8043	$y'' + y = \delta(t - 2\pi)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8044	$y'' + 16y = \delta(t - 2\pi)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8045	$y'' + y = \delta\left(t - \frac{\pi}{2}\right) + \delta\left(t - \frac{3\pi}{2}\right)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8046	$y'' + y = \delta(t - 2\pi) + \delta(t - 4\pi)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8047	$y'' + 2y' = \delta(t - 1)$ i.c.	[[_2nd_order, _missing_y]]	✓
8048	$y'' - 2y' = 1 + \delta(t - 2)$ i.c.	[[_2nd_order, _missing_y]]	✓
8049	$y'' + 4y' + 5y = \delta(t - 2\pi)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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Table 2.56 Differential equations solved using Laplace transform  
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#	ODE	CAS classification	Solved?
8050	$y'' + 2y' + y = \delta(t - 1)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8051	$y'' + 4y' + 13y = \delta(t - \pi) + \delta(t - 3\pi)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8052	$y'' - 7y' + 6y = e^t + \delta(t - 2) + \delta(-4 + t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8053	$y'' + 2y' + 10y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
8054	$y'' + 2y' + 10y = \delta(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
8654	$y'' + 3y' - 4y = 6e^{2t-2}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
8734	$ty' + y = t$ i.c.	[_linear]	✓
8735	$y' - ty = 0$ i.c.	[_separable]	✓
8736	$ty' + y = 0$ i.c.	[_separable]	✓
8737	$ty' + y = 0$ i.c.	[_separable]	✓
8738	$ty' + y = 0$ i.c.	[_separable]	✓
8739	$ty' + y = 0$	[_separable]	✓
8740	$ty' + y = 0$ i.c.	[_separable]	✓
8741	$ty' + y = \sin(t)$ i.c.	[_linear]	✗
8742	$ty' + y = t$ i.c.	[_linear]	✓
8743	$ty' + y = t$ i.c.	[_linear]	✓
8744	$y' + t^2y = 0$ i.c.	[_separable]	✓
8745	$(at + 1)y' + y = t$ i.c.	[_linear]	✓
8746	$y' + (at + tb)y = 0$ i.c.	[_separable]	✓
8747	$y' + (at + tb)y = 0$ i.c.	[_separable]	✓

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Table 2.56 Differential equations solved using Laplace transform  
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#	ODE	CAS classification	Solved?
12860	$x' + 5x = \text{Heaviside}(t - 2)$ i.c.	[[_linear, 'class A']]	✓
12861	$x' + x = \sin(2t)$ i.c.	[[_linear, 'class A']]	✓
12862	$x'' - x' - 6x = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
12863	$x'' - 2x' + 2x = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
12864	$x'' - 2x' + 2x = e^{-t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
12865	$x'' - x' = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
12866	$x'' + \frac{2x'}{5} + 2x = 1 - \text{Heaviside}(t - 5)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12867	$x'' + 9x = \sin(3t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12868	$x'' - 2x = 1$ i.c.	[[_2nd_order, _missing_x]]	✓
12869	$x' = 2x + \text{Heaviside}(t - 1)$ i.c.	[[_linear, 'class A']]	✓
12870	$x'' + 4x = \cos(2t) \text{Heaviside}(2\pi - t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12871	$x' = x - 2 \text{Heaviside}(t - 1)$ i.c.	[[_linear, 'class A']]	✓
12872	$x' = -x + \text{Heaviside}(t - 1) - \text{Heaviside}(t - 2)$ i.c.	[[_linear, 'class A']]	✓
12873	$x'' + \pi^2 x = \pi^2 \text{Heaviside}(-t + 1)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12874	$x'' - 4x = 1 - \text{Heaviside}(t - 1)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12875	$x'' + 3x' + 2x = e^{-4t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
12876	$x' + 3x = \delta(t - 1) + \text{Heaviside}(-4 + t)$ i.c.	[[_linear, 'class A']]	✓
12877	$x'' - x = \delta(t - 5)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12878	$x'' + x = \delta(t - 2)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
12879	$x'' + 4x = \delta(t - 2) - \delta(t - 5)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12880	$x'' + x = 3\delta(t - 2\pi)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12881	$y'' + y' + y = \delta(t - 1)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
12882	$x'' + 4x = \frac{\text{Heaviside}(t - 5)(t - 5)}{5} + \left(2 - \frac{t}{5}\right)\text{Heaviside}(t - 10)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13320	$y' - y = e^{3t}$ i.c.	[[_linear, 'class A']]	✓
13321	$y' + y = 2 \sin(t)$ i.c.	[[_linear, 'class A']]	✓
13322	$y'' - 5y' + 6y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
13323	$y'' + y' - 12y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
13324	$y'' + 4y = 8$ i.c.	[[_2nd_order, _missing_x]]	✓
13325	$y'' + 2y' + 5y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
13326	$y'' - y' - 2y = 18e^{-t} \sin(3t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13327	$y'' + 2y' + y = te^{-2t}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13328	$y'' + 7y' + 10y = 4te^{-3t}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13329	$y'' - 8y' + 15y = 9te^{2t}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13330	$y''' - 5y'' + 7y' - 3y = 20 \sin(t)$ i.c.	[[_3rd_order, _linear, _nonhomogeneous]]	✓
13331	$y''' - 6y'' + 11y' - 6y = 36te^{4t}$ i.c.	[[_3rd_order, _linear, _nonhomogeneous]]	✓
13332	$y'' - 3y' + 2y = \begin{cases} 2 & 0 < t < 4 \\ 0 & 4 < t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13333	$y'' + 5y' + 6y = \begin{cases} 6 & 0 < t < 2 \\ 0 & 2 < t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
13334 i.c.	$y'' + 4y' + 5y = \begin{cases} 1 & 0 < t < \frac{\pi}{2} \\ 0 & \frac{\pi}{2} < t \end{cases}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13335 i.c.	$y'' + 6y' + 8y = \begin{cases} 3 & 0 < t < 2\pi \\ 0 & 2\pi < t \end{cases}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13336 i.c.	$y'' + 4y = \begin{cases} -4t + 8\pi & 0 < t < 2\pi \\ 0 & 2 < t \end{cases}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13337 i.c.	$y'' + y = \begin{cases} t & 0 < t < \pi \\ \pi & \pi < t \end{cases}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13695 i.c.	$y'' + 9y = 0$	[[_2nd_order, _missing_x]]	✓
13696 i.c.	$4y'' - 4y' + 5y = 0$	[[_2nd_order, _missing_x]]	✓
13697 i.c.	$y'' + 2y' + y = 0$	[[_2nd_order, _missing_x]]	✓
13698 i.c.	$y'' - 4y' + 5y = 0$	[[_2nd_order, _missing_x]]	✓
13699 i.c.	$y'' - y' - 6y = 0$	[[_2nd_order, _missing_x]]	✓
13700 i.c.	$4y'' - 4y' + 37y = 0$	[[_2nd_order, _missing_x]]	✓
13701 i.c.	$y'' + 3y' + 2y = 0$	[[_2nd_order, _missing_x]]	✓
13702 i.c.	$y'' + 2y' + 5y = 0$	[[_2nd_order, _missing_x]]	✓
13703 i.c.	$4y'' - 12y' + 13y = 0$	[[_2nd_order, _missing_x]]	✓
13704 i.c.	$y'' + 4y' + 13y = 0$	[[_2nd_order, _missing_x]]	✓
13705 i.c.	$y'' + 6y' + 9y = 0$	[[_2nd_order, _missing_x]]	✓
13706 i.c.	$y'''' + y = 0$	[[_high_order, _missing_x]]	✓
13707 i.c.	$y'' - 2y' + 5y = 0$	[[_2nd_order, _missing_x]]	✓
13708 i.c.	$y'' - 20y' + 51y = 0$	[[_2nd_order, _missing_x]]	✓

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#	ODE	CAS classification	Solved?
13709	$2y'' + 3y' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
13710	$3y'' + 8y' - 3y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
13711	$2y'' + 20y' + 51y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
13712	$4y'' + 40y' + 101y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
13713	$y'' + 6y' + 34y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
13714	$y''' + 8y'' + 16y' = 0$ i.c.	[[_3rd_order, _missing_x]]	✓
13715	$y''' + 6y'' + 13y' = 0$ i.c.	[[_3rd_order, _missing_x]]	✓
13716	$y''' - 6y'' + 13y' = 0$ i.c.	[[_3rd_order, _missing_x]]	✓
13717	$y''' + 4y'' + 29y' = 0$ i.c.	[[_3rd_order, _missing_x]]	✓
13718	$y''' + 6y'' + 25y' = 0$ i.c.	[[_3rd_order, _missing_x]]	✓
13719	$y''' - 6y'' + 10y' = 0$ i.c.	[[_3rd_order, _missing_x]]	✓
13720	$y'''' + 13y'' + 36y = 0$ i.c.	[[_high_order, _missing_x]]	✓
13721	$y'' + 2y' + 3y = 9t$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
13722	$4y'' + 16y' + 17y = 17t - 1$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
13723	$4y'' + 5y' + 4y = 3e^{-t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
13724	$y'' - 4y' + 4y = t^2e^{2t}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13725	$y'' + 9y = e^{-2t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
13726	$2y'' - 3y' + 17y = 17t - 1$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
13727	$y'' + 2y' + y = e^{-t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
13728	$y'' - 2y' + 5y = t + 2$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
13729	$2y' + y = e^{-\frac{t}{2}}$ i.c.	[[_linear, 'class A']]	✓
13730	$y'' + 8y' + 20y = \sin(2t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13731	$4y'' - 4y' + y = t^2$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
13732	$2y'' + y' - y = 4\sin(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13733	$y' - y = e^{2t}$ i.c.	[[_linear, 'class A']]	✓
13734	$3y'' + 5y' - 2y = 7e^{-2t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
13735	$y' + y = \text{Heaviside}(t) - \text{Heaviside}(t - 2)$ i.c.	[[_linear, 'class A']]	✓
13736	$y' - 2y = 4t(\text{Heaviside}(t) - \text{Heaviside}(t - 2))$ i.c.	[[_linear, 'class A']]	✓
13737	$y'' + 9y = 24\sin(t)(\text{Heaviside}(t) + \text{Heaviside}(t - \pi))$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13738	$y'' + 2y' + y = \text{Heaviside}(t) - \text{Heaviside}(t - 1)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13739	$y'' + 2y' + 2y = 5\cos(t)\left(\text{Heaviside}(t) - \text{Heaviside}\left(t - \frac{\pi}{2}\right)\right)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13740	$y'' + 5y' + 6y = 36t(\text{Heaviside}(t) - \text{Heaviside}(t - 1))$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13741	$y'' + 4y' + 13y = 39\text{Heaviside}(t) - 507(t - 2)\text{Heaviside}(t - 2)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13742	$y'' + 4y = 3\text{Heaviside}(t) - 3\text{Heaviside}(-4 + t) + (2t - 5)\text{Heaviside}(-4 + t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13743	$4y'' + 4y' + 5y = 25t\left(\text{Heaviside}(t) - \text{Heaviside}\left(t - \frac{\pi}{2}\right)\right)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
13744	$y'' + 4y' + 3y = \text{Heaviside}(t) - \text{Heaviside}(t-1) + \text{Heaviside}(t-2) - \text{Heaviside}(t-3)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13745	$y'' - 2y' = \begin{cases} 4 & 0 \leq t < 1 \\ 6 & 1 \leq t \end{cases}$ i.c.	[[_2nd_order, _missing_y]]	✓
13746	$y'' - 3y' + 2y = \begin{cases} 0 & 0 \leq t < 1 \\ 1 & 1 \leq t < 2 \\ -1 & 2 \leq t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13747	$y'' + 3y' + 2y = \begin{cases} 1 & 0 \leq t < 2 \\ -1 & 2 \leq t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13748	$y'' + y = \begin{cases} t & 0 \leq t < \pi \\ -t & \pi \leq t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13749	$y'' + 4y = \begin{cases} 8t & 0 \leq t < \frac{\pi}{2} \\ 8\pi & \frac{\pi}{2} \leq t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13750	$y'' + 4\pi^2 y = 3\delta\left(t - \frac{1}{3}\right) - \delta(t-1)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13751	$y'' + 2y' + 2y = 3\delta(t-1)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13752	$y'' + 4y' + 29y = 5\delta(t-\pi) - 5\delta(t-2\pi)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13753	$y'' + 3y' + 2y = 1 - \delta(t-1)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13754	$4y'' + 4y' + y = e^{-\frac{t}{2}}\delta(t-1)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13755	$y'' - 7y' + 6y = \delta(t-1)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
13756	$10Q' + 100Q = \text{Heaviside}(t-1) - \text{Heaviside}(t-2)$ i.c.	[[_linear, 'class A']]	✓
13757	$y''' + y'' + 4y' + 4y = 8$ i.c.	[[_3rd_order, _missing_x]]	✓
13758	$y''' - 2y'' - y' + 2y = 4t$ i.c.	[[_3rd_order, _with_linear_symmetries]]	✓
13759	$y''' - y'' + 4y' - 4y = 8e^{2t} - 5e^t$ i.c.	[[_3rd_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
13760	$y''' - 5y'' + y' - y = -t^2 + 2t - 10$ i.c.	[[_3rd_order, __with_linear_symmetries]]	✗
13761	$y'''' - 5y'' + 4y = 12 \text{Heaviside}(t) - 12 \text{Heaviside}(t - 1)$ i.c.	[[_high_order, __linear, __nonhomogeneous]]	✓
13762	$y'''' - 16y = 32 \text{Heaviside}(t) - 32 \text{Heaviside}(t - \pi)$ i.c.	[[_high_order, __linear, __nonhomogeneous]]	✓
14197	$y' - y = 0$	[_quadrature]	✓
14198	$y'' - 2y' + 5y = 0$	[[_2nd_order, __missing_x]]	✓
14199	$y' + 2y = 4$	[_quadrature]	✓
14200	$y'' - 9y = 2 \sin(3x)$	[[_2nd_order, __linear, __nonhomogeneous]]	✓
14201	$y'' + 9y = 2 \sin(3x)$	[[_2nd_order, __linear, __nonhomogeneous]]	✓
14202	$y'' + y' - 2y = x e^x - 3x^2$	[[_2nd_order, __linear, __nonhomogeneous]]	✓
14203	$y'''' - 2y''' + y'' = x e^x - 3x^2$	[[_high_order, __missing_y]]	✓
14204	$y' = e^x$ i.c.	[_quadrature]	✓
14205	$y' - y = 2 e^x$ i.c.	[[_linear, 'class A']]	✓
14206	$y'' - 9y = x + 2$ i.c.	[[_2nd_order, __with_linear_symmetries]]	✓
14207	$y'' + 9y = x + 2$ i.c.	[[_2nd_order, __with_linear_symmetries]]	✓
14208	$y'' - y' + 6y = -2 \sin(3x)$ i.c.	[[_2nd_order, __linear, __nonhomogeneous]]	✓
14209	$y'' - 2y' + 2y = -x^2 + 1$ i.c.	[[_2nd_order, __with_linear_symmetries]]	✓
14210	$y''' + 3y'' + 2y' = x + \cos(x)$ i.c.	[[_3rd_order, __missing_y]]	✓
14211	$y' - 2y = 6$ i.c.	[_quadrature]	✓
14212	$y' + y = e^x$ i.c.	[[_linear, 'class A']]	✓
14213	$y'' + 9y = 1$ i.c.	[[_2nd_order, __missing_x]]	✓

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#	ODE	CAS classification	Solved?
14214	$y'' + 9y = 18e^{3x}$ i.c.	[[_2nd_order, __with_linear_symmetries]]	✓
14215	$y'' - y' - 2y = 0$ i.c.	[[_2nd_order, __missing_x]]	✓
14216	$y'' - y' - 2y = x^2$ i.c.	[[_2nd_order, __with_linear_symmetries]]	✓
14217	$y'' - 2y' + y = 2\sin(x)$ i.c.	[[_2nd_order, __linear, __nonhomogeneous]]	✓
14218	$y''' - y'' + 4y' - 4y = 0$ i.c.	[[_3rd_order, __missing_x]]	✓
14219	$y' + 2y = \begin{cases} 2 & 0 \leq x < 1 \\ 1 & 1 \leq x \end{cases}$ i.c.	[[_linear, 'class A']]	✓
14220	$y'' - y' - 2y = \begin{cases} 1 & 2 \leq x < 4 \\ 0 & \text{otherwise} \end{cases}$ i.c.	[[_2nd_order, __linear, __nonhomogeneous]]	✓
14221	$y'' - 2y' = \begin{cases} 0 & 0 \leq x < 1 \\ (x-1)^2 & 1 \leq x \end{cases}$ i.c.	[[_2nd_order, __missing_y]]	✓
14222	$y'' - 2y' + y = \begin{cases} 0 & 0 \leq x < 1 \\ x^2 - 2x + 3 & 1 \leq x \end{cases}$ i.c.	[[_2nd_order, __linear, __nonhomogeneous]]	✓
14223	$y'' + 4y = \begin{cases} 0 & 0 \leq x < \pi \\ -\sin(3x) & \pi \leq x \end{cases}$ i.c.	[[_2nd_order, __linear, __nonhomogeneous]]	✓
14224	$y'' - 4y = \begin{cases} x & 0 \leq x < 1 \\ 1 & 1 \leq x \end{cases}$ i.c.	[[_2nd_order, __linear, __nonhomogeneous]]	✓
14225	$y'' - 4y' + 5y = \begin{cases} x & 0 \leq x < 1 \\ 1 & 1 \leq x \end{cases}$ i.c.	[[_2nd_order, __linear, __nonhomogeneous]]	✓
14226	$y' + 3y = \delta(-2 + x)$ i.c.	[[_linear, 'class A']]	✓
14227	$y' - 3y = \delta(x - 1) + 2\text{Heaviside}(-2 + x)$ i.c.	[[_linear, 'class A']]	✓
14228	$y'' + 9y = \delta(x - \pi) + \delta(x - 3\pi)$ i.c.	[[_2nd_order, __linear, __nonhomogeneous]]	✓
14229	$y'' - 2y' + y = 2\delta(x - 1)$ i.c.	[[_2nd_order, __linear, __nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
14230	$y'' - 2y' + 5y = \cos(x) + 2\delta(x - \pi)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
14231	$y'' + 4y = \cos(x)\delta(x - \pi)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
14232	$y'' + a^2y = \delta(x - \pi)f(x)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
14635	$y'' + 4y = 8$ i.c.	[[_2nd_order, _missing_x]]	✓
14636	$y'' - 4y = e^{2t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
14637	$y'' - 4y' + 5y = 2e^t$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
14638	$y'' + 6y' + 13y = 13\text{Heaviside}(-4 + t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
14639	$y'' + 4y = \cos(2t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
14640	$y'' + 3y = \text{Heaviside}(-4 + t)\cos(-20 + 5t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
14641	$y'' + 4y' + 9y = 20\text{Heaviside}(t - 2)\sin(t - 2)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
14642	$y'' + 3y = \begin{cases} t & 0 \leq t < 1 \\ 1 & 1 \leq t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
14643	$y'' + 3y = 5\delta(t - 2)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
14644	$y'' + 2y' + 5y = \delta(t - 3)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
14645	$y'' + 2y' + 2y = -2\delta(t - 2)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
14646	$y'' + 2y' + 3y = \delta(t - 1) - 3\delta(-4 + t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
14647	$y'' + 2y' + 2y = e^{-2t}\sin(4t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
14648	$y'' + y' + 5y = \text{Heaviside}(t - 2)\sin(4t - 8)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
14649	$y'' + y' + 8y = (1 - \text{Heaviside}(-4 + t))\cos(-4 + t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
14650	$y'' + y' + 3y = (1 - \text{Heaviside}(t - 2))e^{-\frac{t}{10} + \frac{1}{5}}\sin(t - 2)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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#	ODE	CAS classification	Solved?
14651	$y'' + 16y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
14652	$y'' + 4y = \sin(2t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
14653	$y'' + 2y' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
14654	$y'' + 16y = t$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
15261	$y' + 4y = 0$ i.c.	[_quadrature]	✓
15262	$y' - 2y = t^3$ i.c.	[[_linear, 'class A']]	✓
15263	$y' + 3y = \text{Heaviside}(-4 + t)$ i.c.	[[_linear, 'class A']]	✓
15264	$y'' - 4y = t^3$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15265	$y'' + 4y = 20e^{4t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
15266	$y'' + 4y = \sin(2t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15267	$y'' + 4y = 3 \text{Heaviside}(t - 2)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15268	$y'' + 5y' + 6y = e^{4t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
15269	$y'' - 5y' + 6y = t^2e^{4t}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15270	$y'' - 5y' + 6y = 7$ i.c.	[[_2nd_order, _missing_x]]	✓
15271	$y'' - 4y' + 13y = e^{2t} \sin(3t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15272	$y'' + 4y' + 13y = 4t + 2e^{2t} \sin(3t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15273	$y''' - 27y = e^{-3t}$ i.c.	[[_3rd_order, _with_linear_symmetries]]	✓
15274	$ty'' + y' + ty = 0$ i.c.	[_Lienard]	✓
15275	$y'' - 9y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓

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#	ODE	CAS classification	Solved?
15276	$y'' + 9y = 27t^3$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15277	$y'' + 8y' + 7y = 165e^{4t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
15278	$y'' - 8y' + 17y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
15279	$y'' - 6y' + 9y = e^{3t}t^2$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15280	$y'' + 6y' + 13y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
15281	$y'' + 8y' + 17y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
15282	$y'' = e^t \sin(t)$ i.c.	[[_2nd_order, _quadrature]]	✓
15283	$y'' - 4y' + 40y = 122e^{-3t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
15284	$y'' - 9y = 24e^{-3t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
15285	$y'' - 4y' + 13y = e^{2t} \sin(3t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15286	$y'' + 4y = 1$ i.c.	[[_2nd_order, _missing_x]]	✓
15287	$y'' + 4y = t$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
15288	$y'' + 4y = e^{3t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
15289	$y'' + 4y = \sin(2t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15290	$y'' + 4y = \sin(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15291	$y'' - 6y' + 9y = 1$ i.c.	[[_2nd_order, _missing_x]]	✓
15292	$y'' - 6y' + 9y = t$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
15293	$y'' - 6y' + 9y = e^{3t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
15294	$y'' - 6y' + 9y = e^{-3t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓

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#	ODE	CAS classification	Solved?
15295 i.c.	$y'' - 6y' + 9y = e^t$	[[_2nd_order, __with_linear_symmetries]]	✓
15296 i.c.	$y' = \text{Heaviside}(t - 3)$	[_quadrature]	✓
15297 i.c.	$y' = \text{Heaviside}(t - 3)$	[_quadrature]	✓
15298 i.c.	$y'' = \text{Heaviside}(t - 2)$	[[_2nd_order, __quadrature]]	✓
15299 i.c.	$y'' = \text{Heaviside}(t - 2)$	[[_2nd_order, __quadrature]]	✓
15300 i.c.	$y'' + 9y = \text{Heaviside}(t - 10)$	[[_2nd_order, __linear, __nonhomogeneous]]	✓
15301 i.c.	$y' = \begin{cases} 0 & t < 1 \\ 1 & 1 < t < 3 \\ 0 & 3 < t \end{cases}$	[_quadrature]	✓
15302 i.c.	$y'' = \begin{cases} 0 & t < 1 \\ 1 & 1 < t < 3 \\ 0 & 3 < t \end{cases}$	[[_2nd_order, __quadrature]]	✓
15303 i.c.	$y'' + 9y = \begin{cases} 0 & t < 1 \\ 1 & 1 < t < 3 \\ 0 & 3 < t \end{cases}$	[[_2nd_order, __linear, __nonhomogeneous]]	✓
15304 i.c.	$y' = 3\delta(t - 2)$	[_quadrature]	✓
15305 i.c.	$y' = \delta(t - 2) - \delta(-4 + t)$	[_quadrature]	✓
15306 i.c.	$y'' = \delta(t - 3)$	[[_2nd_order, __quadrature]]	✓
15307 i.c.	$y'' = \delta(t - 1) - \delta(-4 + t)$	[[_2nd_order, __quadrature]]	✓
15308 i.c.	$y' + 2y = 4\delta(t - 1)$	[[_linear, 'class A']]	✓
15309	$y'' + y = \delta(t) + \delta(t - \pi)$	[[_2nd_order, __linear, __nonhomogeneous]]	✓
15310 i.c.	$y'' + y = -2\delta\left(t - \frac{\pi}{2}\right)$	[[_2nd_order, __linear, __nonhomogeneous]]	✓
15311 i.c.	$y' + 3y = \delta(t - 2)$	[[_linear, 'class A']]	✓

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#	ODE	CAS classification	Solved?
15312	$y'' + 3y' = \delta(t)$	[[_2nd_order, _missing_y]]	✓
15313	$y'' + 3y' = \delta(t - 1)$ i.c.	[[_2nd_order, _missing_y]]	✓
15314	$y'' + 16y = \delta(t - 2)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15315	$y'' - 16y = \delta(t - 10)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15316	$y'' + y = \delta(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15317	$y'' + 4y' - 12y = \delta(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15318	$y'' + 4y' - 12y = \delta(t - 3)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15319	$y'' + 6y' + 9y = \delta(-4 + t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15320	$y'' - 12y' + 45y = \delta(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
15321	$y''' + 9y' = \delta(t - 1)$ i.c.	[[_3rd_order, _missing_y]]	✓
15322	$y'''' - 16y = \delta(t)$ i.c.	[[_high_order, _linear, _nonhomogeneous]]	✓
16959	$x' + 3x = e^{-2t}$ i.c.	[[_linear, 'class A']]	✓
16960	$x' - 3x = 3t^3 + 3t^2 + 2t + 1$ i.c.	[[_linear, 'class A']]	✓
16961	$x' - x = \cos(t) - \sin(t)$ i.c.	[[_linear, 'class A']]	✓
16962	$2x' + 6x = te^{-3t}$ i.c.	[[_linear, 'class A']]	✓
16963	$x' + x = 2 \sin(t)$ i.c.	[[_linear, 'class A']]	✓
16964	$x'' = 0$ i.c.	[[_2nd_order, _quadrature]]	✓
16965	$x'' = 1$ i.c.	[[_2nd_order, _quadrature]]	✓
16966	$x'' = \cos(t)$ i.c.	[[_2nd_order, _quadrature]]	✓
16967	$x'' + x' = 0$ i.c.	[[_2nd_order, _missing_x]]	✓

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Table 2.56 Differential equations solved using Laplace transform  
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#	ODE	CAS classification	Solved?
16968	$x'' + x' = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
16969	$x'' - x' = 1$ i.c.	[[_2nd_order, _missing_x]]	✓
16970	$x'' + x = t$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
16971	$x'' + 6x' = 12t + 2$ i.c.	[[_2nd_order, _missing_y]]	✓
16972	$x'' - 2x' + 2x = 2$ i.c.	[[_2nd_order, _missing_x]]	✓
16973	$x'' + 4x' + 4x = 4$ i.c.	[[_2nd_order, _missing_x]]	✓
16974	$2x'' - 2x' = (t + 1)e^t$ i.c.	[[_2nd_order, _missing_y]]	✓
16975	$x'' + x = 2 \cos(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17388	$y'' + 2y' - 2y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
17389	$9y'' + 12y' + 4y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
17390	$y'' + 3y' + 2y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
17391	$6y'' + 5y' + y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
17392	$y'' - 2y' + 2y = t^2 e^t + 7$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17393	$y'' - 5y' - 6y = t^2 + 7$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
17394	$y'' + 4y = 3e^{-2t} \sin(2t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17395	$y'' + 2y' + 5y = t \cos(2t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17396	$y''' + y'' + y' + y = 0$ i.c.	[[_3rd_order, _missing_x]]	✓
17397	$y'''' - 6y = te^{-t}$ i.c.	[[_high_order, _linear, _nonhomogeneous]]	✓
17398	$y'' + 16y = \begin{cases} 1 & 0 \leq t < \pi \\ 0 & \pi \leq t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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Table 2.56 Differential equations solved using Laplace transform  
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#	ODE	CAS classification	Solved?
17399 i.c.	$y'' + y = \begin{cases} t & 0 \leq t < 1 \\ 0 & 1 \leq t \end{cases}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17400 i.c.	$y'' + 4y = \begin{cases} t & 0 \leq t < 1 \\ 1 & 1 \leq t \end{cases}$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17401 i.c.	$y'' - 4y' - 12y = 0$	[[_2nd_order, _missing_x]]	✓
17402 i.c.	$y'' + 3y' + 2y = t$	[[_2nd_order, _with_linear_symmetries]]	✓
17403 i.c.	$y'' - 8y' + 25y = 0$	[[_2nd_order, _missing_x]]	✓
17404 i.c.	$y'' - 4y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
17405 i.c.	$y'' - 2y' + 4y = 0$	[[_2nd_order, _missing_x]]	✓
17406 i.c.	$y'' + 4y' + 29y = e^{-2t} \sin(5t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17407 i.c.	$y'' + w^2y = \cos(2t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17408 i.c.	$y'' - 2y' + 2y = \cos(t)$	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17409 i.c.	$y'' - 2y' + 2y = e^{-t}$	[[_2nd_order, _with_linear_symmetries]]	✓
17410 i.c.	$y'' + 2y' + y = 18e^{-t}$	[[_2nd_order, _with_linear_symmetries]]	✓
17411 i.c.	$y'''' - 4y''' + 6y'' - 4y' + y = 0$	[[_high_order, _missing_x]]	✓
17412 i.c.	$y'''' - y = 0$	[[_high_order, _missing_x]]	✓
17413 i.c.	$y'''' - 9y = 0$	[[_high_order, _missing_x]]	✓
17414 i.c.	$\begin{bmatrix} y_1'(t) = -5y_1(t) + y_2(t) \\ y_2'(t) = -9y_1(t) + 5y_2(t) \end{bmatrix}$	system_of_ODEs	✓
17415 i.c.	$\begin{bmatrix} y_1'(t) = 5y_1(t) - 2y_2(t) \\ y_2'(t) = 6y_1(t) - 2y_2(t) \end{bmatrix}$	system_of_ODEs	✓

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Table 2.56 Differential equations solved using Laplace transform  
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#	ODE	CAS classification	Solved?
17416	$\begin{cases} y_1'(t) = 4y_1(t) - 4y_2(t) \\ y_2'(t) = 5y_1(t) - 4y_2(t) \end{cases}$ i.c.	system_of_ODEs	✓
17417	$\begin{cases} y_1'(t) = 6y_2(t) \\ y_2'(t) = -6y_1(t) \end{cases}$ i.c.	system_of_ODEs	✓
17418	$\begin{cases} y_1'(t) = -4y_1(t) - y_2(t) \\ y_2'(t) = y_1(t) - 2y_2(t) \end{cases}$ i.c.	system_of_ODEs	✓
17419	$\begin{cases} y_1'(t) = 2y_1(t) - 64y_2(t) \\ y_2'(t) = y_1(t) - 14y_2(t) \end{cases}$ i.c.	system_of_ODEs	✓
17420	$\begin{cases} y_1'(t) = -4y_1(t) - y_2(t) + 2e^t \\ y_2'(t) = y_1(t) - 2y_2(t) + \sin(2t) \end{cases}$ i.c.	system_of_ODEs	✓
17421	$\begin{cases} y_1'(t) = 5y_1(t) - y_2(t) + e^{-t} \\ y_2'(t) = y_1(t) + 3y_2(t) + 2e^t \end{cases}$ i.c.	system_of_ODEs	✓
17422	$\begin{cases} y_1'(t) = -y_1(t) - 5y_2(t) + 3 \\ y_2'(t) = y_1(t) + 3y_2(t) + 5 \cos(t) \end{cases}$ i.c.	system_of_ODEs	✓
17423	$\begin{cases} y_1'(t) = -2y_1(t) + y_2(t) \\ y_2'(t) = y_1(t) - 2y_2(t) + \sin(t) \end{cases}$ i.c.	system_of_ODEs	✓
17424	$\begin{cases} y_1'(t) = y_2(t) - y_3(t) \\ y_2'(t) = y_1(t) + y_3(t) - e^{-t} \\ y_3'(t) = y_1(t) + y_2(t) + e^t \end{cases}$ i.c.	system_of_ODEs	✓
17425	$y'' + y = \begin{cases} 1 & 0 \leq t < \frac{\pi}{2} \\ 0 & \frac{\pi}{2} \leq t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17426	$y'' + 2y' + 2y = \begin{cases} 0 & 0 \leq t < \pi \\ 1 & \pi \leq t \leq 2\pi \\ 0 & t \leq 2\pi \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17427	$y'' + 4y = \sin(t) - \text{Heaviside}(t - 2\pi) \sin(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17428	$y'' + 4y = \sin(t) - \sin(t) \text{Heaviside}(t - \pi)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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Table 2.56 Differential equations solved using Laplace transform  
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#	ODE	CAS classification	Solved?
17429	$y'' + 3y' + 2y = \begin{cases} 1 & 0 \leq t < 10 \\ 0 & 10 \leq t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17430	$y'' + 3y' + 2y = \text{Heaviside}(t - 2)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17431	$y'' + y = \text{Heaviside}(t - 3\pi)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17432	$y'' + y' + \frac{5y}{4} = t - \text{Heaviside}\left(t - \frac{\pi}{2}\right)\left(t - \frac{\pi}{2}\right)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17433	$y'' + y = \begin{cases} \frac{t}{2} & 0 \leq t < 6 \\ 3 & 6 \leq t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17434	$y'' + y' + \frac{5y}{4} = \begin{cases} \sin(t) & 0 \leq t < \pi \\ 0 & \pi \leq t \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17435	$y'' + 4y = \text{Heaviside}(t - \pi) - \text{Heaviside}(t - 3\pi)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17436	$y'''' - y = \text{Heaviside}(t - 1) - \text{Heaviside}(t - 2)$ i.c.	[[_high_order, _linear, _nonhomogeneous]]	✓
17437	$y'''' + 5y'' + 4y = 1 - \text{Heaviside}(t - \pi)$ i.c.	[[_high_order, _linear, _nonhomogeneous]]	✓
17438	$u'' + \frac{u'}{4} + u = \frac{\begin{pmatrix} 1 & \frac{3}{2} \leq t < \frac{5}{2} \\ 0 & \text{otherwise} \end{pmatrix}}{2}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17439	$u'' + \frac{u'}{4} + u = \begin{cases} 1 & \frac{3}{2} \leq t < \frac{5}{2} \\ 0 & \text{otherwise} \end{cases}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17440	$u'' + \frac{u'}{4} + u = 2\left(\begin{cases} 1 & \frac{3}{2} \leq t < \frac{5}{2} \\ 0 & \text{otherwise} \end{cases}\right)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17441	$y'' + 2y' + 2y = \delta(t - \pi)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17442	$y'' + 4y = \delta(t - \pi) - \delta(t - 2\pi)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17443	$y'' + 3y' + 2y = \delta(t - \pi) + \text{Heaviside}(t - 10)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17444	$y'' - y = -20\delta(t - 3)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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Table 2.56 Differential equations solved using Laplace transform  
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#	ODE	CAS classification	Solved?
17445	$y'' + 2y' + 3y = \sin(t) + \delta(t - 3\pi)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17446	$y'' + 4y = \delta(t - 4\pi)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17447	$y'' + y = \delta(t - 2\pi) \cos(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17448	$y'' + 4y = 2\delta\left(t - \frac{\pi}{4}\right)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17449	$y'' + y = \text{Heaviside}\left(t - \frac{\pi}{2}\right) + 3\delta\left(t - \frac{3\pi}{2}\right) - \text{Heaviside}(t - 2\pi)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17450	$2y'' + y' + 6y = \delta\left(t - \frac{\pi}{6}\right) \sin(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17451	$y'' + 2y' + 2y = \cos(t) + \delta\left(t - \frac{\pi}{2}\right)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17452	$y'''' - y = \delta(t - 1)$ i.c.	[[_high_order, _linear, _nonhomogeneous]]	✓
17453	$y'' + \frac{y'}{2} + y = \delta(t - 1)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17454	$y'' + \frac{y'}{4} + y = \delta(t - 1)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17455	$y'' + y = \delta(t - 1)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17456	$y'' + \frac{y'}{5} + y = k\delta(t - 1)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17457	$y'' + \frac{y'}{10} + y = k\delta(t - 1)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17458	$y'' + w^2y = g(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17459	$y'' + 6y' + 25y = \sin(\alpha t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17460	$4y'' + 4y' + 17y = g(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17461	$y'' + y' + \frac{5y}{4} = 1 - \text{Heaviside}(t - \pi)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓

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Table 2.56 Differential equations solved using Laplace transform  
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#	ODE	CAS classification	Solved?
17462	$y'' + 4y' + 4y = g(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17463	$y'' + 3y' + 2y = \cos(\alpha t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17464	$y'''' - 16y = g(t)$ i.c.	[[_high_order, _linear, _nonhomogeneous]]	✓
17465	$y'''' + y'' + 16y = g(t)$ i.c.	[[_high_order, _linear, _nonhomogeneous]]	✗
17466	$\frac{7y''}{5} + y = \text{Heaviside}(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17467	$\frac{8y''}{5} + y = \text{Heaviside}(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
17539	$\begin{bmatrix} x_1'(t) = -4x_1(t) - x_2(t) \\ x_2'(t) = x_1(t) - 2x_2(t) \end{bmatrix}$	system_of_ODEs	✓
17540	$\begin{bmatrix} x_1'(t) = 5x_1(t) - x_2(t) \\ x_2'(t) = x_1(t) + 3x_2(t) \end{bmatrix}$	system_of_ODEs	✓
17541	$\begin{bmatrix} x_1'(t) = -x_1(t) - 5x_2(t) \\ x_2'(t) = x_1(t) + 3x_2(t) \end{bmatrix}$	system_of_ODEs	✓
17542	$\begin{bmatrix} x_1'(t) = x_2(t) - x_3(t) \\ x_2'(t) = x_1(t) + x_3(t) \\ x_3'(t) = x_1(t) + x_2(t) \end{bmatrix}$	system_of_ODEs	✓
18128	$y' + y = 3e^{2x}$ i.c.	[[_linear, 'class A']]	✓
18129	$y'' - 4y' + 4y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
18130	$y'' + 2y' + 2y = 2$ i.c.	[[_2nd_order, _missing_x]]	✓
18131	$y'' + y' = 3x^2$ i.c.	[[_2nd_order, _missing_y]]	✓
18132	$y'' + 2y' + 5y = 3e^{-x} \sin(x)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✓
18133	$y'' - 2ay' + a^2y = 0$ i.c.	[[_2nd_order, _missing_x]]	✓
18134	$xy'' + (3x - 1)y' - (4x + 9)y = 0$ i.c.	[[_2nd_order, _with_linear_symmetries]]	✓
18135	$xy'' + (2x + 3)y' + (x + 3)y = 3e^{-x}$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	✗

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Table 2.56 Differential equations solved using Laplace transform  
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#	ODE	CAS classification	Solved?
18136	$y'' + x^2y = 0$ i.c.	[[_Emden, _Fowler]]	<b>X</b>
18137	$y'' + a^2y = f(x)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	<b>✓</b>
18138	$y'' + 5y' + 6y = 4e^{3t}$ i.c.	[[_2nd_order, _with_linear_symmetries]]	<b>✓</b>
18139	$y'' + y' - 6y = t$ i.c.	[[_2nd_order, _with_linear_symmetries]]	<b>✓</b>
18140	$y'' - y' = t^2$ i.c.	[[_2nd_order, _missing_y]]	<b>✓</b>
18141	$y'' + 3y' + 2y = f(t)$ i.c.	[[_2nd_order, _linear, _nonhomogeneous]]	<b>✓</b>



## 2.7 Table of system of ODEs

Table 2.57: System of differential equations

#	ODE	Solved?
540	$\begin{cases} x' = 2x + y \\ y' = 6x + 3y \end{cases}$ i.c.	✓
576	$\begin{cases} x' = y \\ y' = -x \end{cases}$	✓
577	$\begin{cases} x' = y \\ y' = x \end{cases}$	✓
578	$\begin{cases} x' = -2y \\ y' = 2x \end{cases}$ i.c.	✓
579	$\begin{cases} x' = 10y \\ y' = -10x \end{cases}$ i.c.	✓
580	$\begin{cases} x' = \frac{y}{2} \\ y' = -8x \end{cases}$	✓
581	$\begin{cases} x' = 8y \\ y' = -2x \end{cases}$	✓
582	$\begin{cases} x' = y \\ y' = 6x - y \end{cases}$ i.c.	✓
583	$\begin{cases} x' = -y \\ y' = 10x - 7y \end{cases}$ i.c.	✓
584	$\begin{cases} x' = -y \\ y' = 13x + 4y \end{cases}$ i.c.	✓
585	$\begin{cases} x' = y \\ y' = -9x + 6y \end{cases}$	✓
586	$\begin{cases} 10x'_1 = -x_1 + x_3 \\ 10x'_2 = x_1 - x_2 \\ 10x'_3 = x_2 - x_3 \end{cases}$	✓
587	$\begin{cases} x' = -x + 3y \\ y' = 2y \end{cases}$	✓
588	$\begin{cases} x' = x - 2y \\ y' = 2x - 3y \end{cases}$	✓

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Table 2.57 System of differential equations

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#	ODE	Solved?
589	$\begin{cases} x' = -3x + 2y \\ y' = -3x + 4y \end{cases}$	✓
	<i>i.c.</i>	
590	$\begin{cases} x' = 3x - y \\ y' = 5x - 3y \end{cases}$	✓
	<i>i.c.</i>	
591	$\begin{cases} x' = -3x - 4y \\ y' = 2x + y \end{cases}$	✓
592	$\begin{cases} x' = x + 9y \\ y' = -2x - 5y \end{cases}$	✓
	<i>i.c.</i>	
593	$\begin{cases} x' = 4x + y + 2t \\ y' = -2x + y \end{cases}$	✓
594	$\begin{cases} x' = 2x + y \\ y' = x + 2y - e^{2t} \end{cases}$	✓
595	$\begin{cases} x' = 2x - 3y + 2 \sin(2t) \\ y' = x - 2y - \cos(2t) \end{cases}$	✓
596	$\begin{cases} x' + 2y' = 4x + 5y \\ 2x' - y' = 3x \end{cases}$	✓
	<i>i.c.</i>	
597	$\begin{cases} -x' + 2y' = x + 3y + e^t \\ 3x' - 4y' = x - 15y + e^{-t} \end{cases}$	✓
598	$\begin{cases} x' = x + 2y + z \\ y' = 6x - y \\ z' = -x - 2y - z \end{cases}$	✓
599	$\begin{cases} x' = x - 2y \\ y' = -4x + 4y - 2z \\ z' = -4y + 4z \end{cases}$	✓
600	$\begin{cases} x' = y + z + e^{-t} \\ y' = x + z \\ z' = x + y \end{cases}$	✓
601	$\begin{cases} x' = -3y \\ y' = 3x \end{cases}$	✓
602	$\begin{cases} x' = 3x - 2y \\ y' = 2x + y \end{cases}$	✓

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Table 2.57 System of differential equations

*Continued from previous page*

#	ODE	Solved?
603	$\begin{bmatrix} x' = 2x + 4y + 3e^t \\ y' = 5x - y - t^2 \end{bmatrix}$	✓
604	$\begin{bmatrix} x' = xt - e^t y + \cos(t) \\ y' = e^{-t}x + t^2 y - \sin(t) \end{bmatrix}$	✗
605	$\begin{bmatrix} x' = y + z \\ y' = x + z \\ z' = x + y \end{bmatrix}$	✓
606	$\begin{bmatrix} x' = 2x - 3y \\ y' = x + y + 2z \\ z' = 5y - 7z \end{bmatrix}$	✓
607	$\begin{bmatrix} x' = 3x - 4y + z + t \\ y' = x - 3z + t^2 \\ z' = 6y - 7z + t^3 \end{bmatrix}$	✓
608	$\begin{bmatrix} x' = xt - y + e^t z \\ y' = 2x + t^2 y - z \\ z' = e^{-t}x + 3ty + t^3 z \end{bmatrix}$	✗
609	$\begin{bmatrix} x'_1 = x_2 \\ x'_2 = 2x_3 \\ x'_3 = 3x_4 \\ x'_4 = 4x_1 \end{bmatrix}$	✓
610	$\begin{bmatrix} x'_1 = x_2 + x_3 + 1 \\ x'_2 = x_3 + x_4 + t \\ x'_3 = x_1 + x_4 + t^2 \\ x'_4 = x_1 + x_2 + t^3 \end{bmatrix}$	✓
611	$\begin{bmatrix} x'_1 = 4x_1 + 2x_2 \\ x'_2 = -3x_1 - x_2 \end{bmatrix}$	✓
612	$\begin{bmatrix} x'_1 = -3x_1 + 2x_2 \\ x'_2 = -3x_1 + 4x_2 \end{bmatrix}$ i.c.	✓
613	$\begin{bmatrix} x'_1 = 3x_1 - x_2 \\ x'_2 = 5x_1 - 3x_2 \end{bmatrix}$ i.c.	✓
614	$\begin{bmatrix} x'_1 = 4x_1 + x_2 \\ x'_2 = -2x_1 + x_2 \end{bmatrix}$ i.c.	✓

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Table 2.57 System of differential equations

*Continued from previous page*

#	ODE	Solved?
615	$\begin{bmatrix} x_1' = 4x_1 - 3x_2 \\ x_2' = 6x_1 - 7x_2 \end{bmatrix}$	✓
	i.c.	
616	$\begin{bmatrix} x_1' = 3x_1 - 2x_2 \\ x_2' = -x_1 + 3x_2 - 2x_3 \\ x_3' = -x_2 + 3x_3 \end{bmatrix}$	✓
	i.c.	
617	$\begin{bmatrix} x_1' = x_2 + x_3 \\ x_2' = x_1 + x_3 \\ x_3' = x_1 + x_2 \end{bmatrix}$	✓
	i.c.	
618	$\begin{bmatrix} x_1' = x_1 + 2x_2 + x_3 \\ x_2' = 6x_1 - x_2 \\ x_3' = -x_1 - 2x_2 - x_3 \end{bmatrix}$	✓
	i.c.	
619	$\begin{bmatrix} x_1' = -8x_1 - 11x_2 - 2x_3 \\ x_2' = 6x_1 + 9x_2 + 2x_3 \\ x_3' = -6x_1 - 6x_2 + x_3 \end{bmatrix}$	✓
	i.c.	
620	$\begin{bmatrix} x_1' = x_1 - 4x_2 - 2x_4 \\ x_2' = x_2 \\ x_3' = 6x_1 - 12x_2 - x_3 - 6x_4 \\ x_4' = -4x_2 - x_4 \end{bmatrix}$	✓
	i.c.	
621	$\begin{bmatrix} x_1' = x_1 + 2x_2 \\ x_2' = 2x_1 + x_2 \end{bmatrix}$	✓
622	$\begin{bmatrix} x_1' = 2x_1 + 3x_2 \\ x_2' = 2x_1 + x_2 \end{bmatrix}$	✓
623	$\begin{bmatrix} x_1' = 3x_1 + 4x_2 \\ x_2' = 3x_1 + 2x_2 \end{bmatrix}$	✓
	i.c.	
624	$\begin{bmatrix} x_1' = 4x_1 + x_2 \\ x_2' = 6x_1 - x_2 \end{bmatrix}$	✓
625	$\begin{bmatrix} x_1' = 6x_1 - 7x_2 \\ x_2' = x_1 - 2x_2 \end{bmatrix}$	✓
626	$\begin{bmatrix} x_1' = 9x_1 + 5x_2 \\ x_2' = -6x_1 - 2x_2 \end{bmatrix}$	✓
	i.c.	

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Table 2.57 System of differential equations

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#	ODE	Solved?
627	$\begin{cases} x_1' = -3x_1 + 4x_2 \\ x_2' = 6x_1 - 5x_2 \end{cases}$	✓
628	$\begin{cases} x_1' = x_1 - 5x_2 \\ x_2' = x_1 - x_2 \end{cases}$	✓
629	$\begin{cases} x_1' = 2x_1 - 5x_2 \\ x_2' = 4x_1 - 2x_2 \end{cases}$ i.c.	✓
630	$\begin{cases} x_1' = -3x_1 - 2x_2 \\ x_2' = 9x_1 + 3x_2 \end{cases}$	✓
631	$\begin{cases} x_1' = x_1 - 2x_2 \\ x_2' = 2x_1 + x_2 \end{cases}$ i.c.	✓
632	$\begin{cases} x_1' = x_1 - 5x_2 \\ x_2' = x_1 + 3x_2 \end{cases}$	✓
633	$\begin{cases} x_1' = 5x_1 - 9x_2 \\ x_2' = 2x_1 - x_2 \end{cases}$	✓
634	$\begin{cases} x_1' = 3x_1 - 4x_2 \\ x_2' = 4x_1 + 3x_2 \end{cases}$	✓
635	$\begin{cases} x_1' = 7x_1 - 5x_2 \\ x_2' = 4x_1 + 3x_2 \end{cases}$	✓
636	$\begin{cases} x_1' = -50x_1 + 20x_2 \\ x_2' = 100x_1 - 60x_2 \end{cases}$	✓
637	$\begin{cases} x_1' = 4x_1 + x_2 + 4x_3 \\ x_2' = x_1 + 7x_2 + x_3 \\ x_3' = 4x_1 + x_2 + 4x_3 \end{cases}$	✓
638	$\begin{cases} x_1' = x_1 + 2x_2 + 2x_3 \\ x_2' = 2x_1 + 7x_2 + x_3 \\ x_3' = 2x_1 + x_2 + 7x_3 \end{cases}$	✓
639	$\begin{cases} x_1' = 4x_1 + x_2 + x_3 \\ x_2' = x_1 + 4x_2 + x_3 \\ x_3' = x_1 + x_2 + 4x_3 \end{cases}$	✓
640	$\begin{cases} x_1' = 5x_1 + x_2 + 3x_3 \\ x_2' = x_1 + 7x_2 + x_3 \\ x_3' = 3x_1 + x_2 + 5x_3 \end{cases}$	✓

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#	ODE	Solved?
641	$\begin{bmatrix} x'_1 = 5x_1 - 6x_3 \\ x'_2 = 2x_1 - x_2 - 2x_3 \\ x'_3 = 4x_1 - 2x_2 - 4x_3 \end{bmatrix}$	✓
642	$\begin{bmatrix} x'_1 = 3x_1 + 2x_2 + 2x_3 \\ x'_2 = -5x_1 - 4x_2 - 2x_3 \\ x'_3 = 5x_1 + 5x_2 + 3x_3 \end{bmatrix}$	✓
643	$\begin{bmatrix} x'_1 = 3x_1 + x_2 + x_3 \\ x'_2 = -5x_1 - 3x_2 - x_3 \\ x'_3 = 5x_1 + 5x_2 + 3x_3 \end{bmatrix}$	✓
644	$\begin{bmatrix} x'_1 = 2x_1 + x_2 - x_3 \\ x'_2 = -4x_1 - 3x_2 - x_3 \\ x'_3 = 4x_1 + 4x_2 + 2x_3 \end{bmatrix}$	✓
645	$\begin{bmatrix} x'_1 = 5x_1 + 5x_2 + 2x_3 \\ x'_2 = -6x_1 - 6x_2 - 5x_3 \\ x'_3 = 6x_1 + 6x_2 + 5x_3 \end{bmatrix}$	✓
646	$\begin{bmatrix} x'_1 = 3x_1 + x_3 \\ x'_2 = 9x_1 - x_2 + 2x_3 \\ x'_3 = -9x_1 + 4x_2 - x_3 \end{bmatrix}$	✓
	i.c.	
647	$\begin{bmatrix} x'_1 = x_1 \\ x'_2 = 2x_1 + 2x_2 \\ x'_3 = 3x_2 + 3x_3 \\ x'_4 = 4x_3 + 4x_4 \end{bmatrix}$	✓
648	$\begin{bmatrix} x'_1 = -2x_1 + 9x_4 \\ x'_2 = 4x_1 + 2x_2 - 10x_4 \\ x'_3 = -x_3 + 8x_4 \\ x'_4 = x_4 \end{bmatrix}$	✓
649	$\begin{bmatrix} x'_1 = 2x_1 \\ x'_2 = -21x_1 - 5x_2 - 27x_3 - 9x_4 \\ x'_3 = 5x_3 \\ x'_4 = -21x_3 - 2x_4 \end{bmatrix}$	✓
650	$\begin{bmatrix} x'_1 = 4x_1 + x_2 + x_3 + 7x_4 \\ x'_2 = x_1 + 4x_2 + 10x_3 + x_4 \\ x'_3 = x_1 + 10x_2 + 4x_3 + x_4 \\ x'_4 = 7x_1 + x_2 + x_3 + 4x_4 \end{bmatrix}$	✓
	i.c.	
922	$\begin{bmatrix} x' = -3y \\ y' = 3x \end{bmatrix}$	✓

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#	ODE	Solved?
923	$\begin{cases} x' = 3x - 2y \\ y' = 2x + y \end{cases}$	✓
924	$\begin{cases} x' = 2x + 4y + 3e^t \\ y' = 5x - y - t^2 \end{cases}$	✓
925	$\begin{cases} x' = y + z \\ y' = x + z \\ z' = x + y \end{cases}$	✓
926	$\begin{cases} x'_1 = x_2 \\ x'_2 = 2x_3 \\ x'_3 = 3x_4 \\ x'_4 = 4x_1 \end{cases}$	✓
927	$\begin{cases} x'_1 = x_2 + x_3 + 1 \\ x'_2 = x_3 + x_4 + t \\ x'_3 = x_1 + x_4 + t^2 \\ x'_4 = x_1 + x_2 + t^3 \end{cases}$	✓
963	$\begin{cases} x'_1 = 6x_1 \\ x'_2 = -3x_1 - x_2 \end{cases}$	✓
964	$\begin{cases} x'_1 = -3x_1 + 2x_2 \\ x'_2 = -3x_1 + 4x_2 \end{cases}$	✓
965	$\begin{cases} x'_1 = x_1 + 2x_2 \\ x'_2 = 2x_1 + x_2 \end{cases}$	✓
966	$\begin{cases} x'_1 = 2x_1 + 3x_2 \\ x'_2 = 2x_1 + x_2 \end{cases}$	✓
967	$\begin{cases} x'_1 = 3x_1 + 4x_2 \\ x'_2 = 3x_1 + 2x_2 \end{cases}$	✓
	<i>i.c.</i>	
968	$\begin{cases} x'_1 = 4x_1 + x_2 \\ x'_2 = 6x_1 - x_2 \end{cases}$	✓
969	$\begin{cases} x'_1 = 6x_1 - 7x_2 \\ x'_2 = x_1 - 2x_2 \end{cases}$	✓
970	$\begin{cases} x'_1 = 9x_1 + 5x_2 \\ x'_2 = -6x_1 - 2x_2 \end{cases}$	✓
	<i>i.c.</i>	
971	$\begin{cases} x'_1 = -3x_1 + 4x_2 \\ x'_2 = 6x_1 - 5x_2 \end{cases}$	✓

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Table 2.57 System of differential equations

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#	ODE	Solved?
972	$\begin{bmatrix} x'_1 = x_1 - 5x_2 \\ x'_2 = x_1 - x_2 \end{bmatrix}$	✓
973	$\begin{bmatrix} x'_1 = 2x_1 - 5x_2 \\ x'_2 = 4x_1 - 2x_2 \end{bmatrix}$	✓
	i.c.	
974	$\begin{bmatrix} x'_1 = -3x_1 - 2x_2 \\ x'_2 = 9x_1 + 3x_2 \end{bmatrix}$	✓
975	$\begin{bmatrix} x'_1 = x_1 - 2x_2 \\ x'_2 = 2x_1 + x_2 \end{bmatrix}$	✓
	i.c.	
976	$\begin{bmatrix} x'_1 = x_1 - 5x_2 \\ x'_2 = x_1 + 3x_2 \end{bmatrix}$	✓
977	$\begin{bmatrix} x'_1 = 5x_1 - 9x_2 \\ x'_2 = 2x_1 - x_2 \end{bmatrix}$	✓
978	$\begin{bmatrix} x'_1 = 3x_1 - 4x_2 \\ x'_2 = 4x_1 + 3x_2 \end{bmatrix}$	✓
979	$\begin{bmatrix} x'_1 = 7x_1 - 5x_2 \\ x'_2 = 4x_1 + 3x_2 \end{bmatrix}$	✓
980	$\begin{bmatrix} x'_1 = -50x_1 + 20x_2 \\ x'_2 = 100x_1 - 60x_2 \end{bmatrix}$	✓
981	$\begin{bmatrix} x'_1 = 4x_1 + x_2 + 4x_3 \\ x'_2 = x_1 + 7x_2 + x_3 \\ x'_3 = 4x_1 + x_2 + 4x_3 \end{bmatrix}$	✓
982	$\begin{bmatrix} x'_1 = x_1 + 2x_2 + 2x_3 \\ x'_2 = 2x_1 + 7x_2 + x_3 \\ x'_3 = 2x_1 + x_2 + 7x_3 \end{bmatrix}$	✓
983	$\begin{bmatrix} x'_1 = 4x_1 + x_2 + x_3 \\ x'_2 = x_1 + 4x_2 + x_3 \\ x'_3 = x_1 + x_2 + 4x_3 \end{bmatrix}$	✓
984	$\begin{bmatrix} x'_1 = 5x_1 + x_2 + 3x_3 \\ x'_2 = x_1 + 7x_2 + x_3 \\ x'_3 = 3x_1 + x_2 + 5x_3 \end{bmatrix}$	✓
985	$\begin{bmatrix} x'_1 = 5x_1 - 6x_3 \\ x'_2 = 2x_1 - x_2 - 2x_3 \\ x'_3 = 4x_1 - 2x_2 - 4x_3 \end{bmatrix}$	✓

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#	ODE	Solved?
986	$\begin{bmatrix} x'_1 = 3x_1 + 2x_2 + 2x_3 \\ x'_2 = -5x_1 - 4x_2 - 2x_3 \\ x'_3 = 5x_1 + 5x_2 + 3x_3 \end{bmatrix}$	✓
987	$\begin{bmatrix} x'_1 = 3x_1 + x_2 + x_3 \\ x'_2 = -5x_1 - 3x_2 - x_3 \\ x'_3 = 5x_1 + 5x_2 + 3x_3 \end{bmatrix}$	✓
988	$\begin{bmatrix} x'_1 = 2x_1 + x_2 - x_3 \\ x'_2 = -4x_1 - 3x_2 - x_3 \\ x'_3 = 4x_1 + 4x_2 + 2x_3 \end{bmatrix}$	✓
989	$\begin{bmatrix} x'_1 = 5x_1 + 5x_2 + 2x_3 \\ x'_2 = -6x_1 - 6x_2 - 5x_3 \\ x'_3 = 6x_1 + 6x_2 + 5x_3 \end{bmatrix}$	✓
990	$\begin{bmatrix} x'_1 = 3x_1 + x_3 \\ x'_2 = 9x_1 - x_2 + 2x_3 \\ x'_3 = -9x_1 + 4x_2 - x_3 \end{bmatrix}$	✓
	<i>i.c.</i>	
991	$\begin{bmatrix} x'_1 = x_1 \\ x'_2 = 2x_1 + 2x_2 \\ x'_3 = 3x_2 + 3x_3 \\ x'_4 = 4x_3 + 4x_4 \end{bmatrix}$	✓
992	$\begin{bmatrix} x'_1 = -2x_1 + 9x_4 \\ x'_2 = 4x_1 + 2x_2 - 10x_4 \\ x'_3 = -x_3 + 8x_4 \\ x'_4 = x_4 \end{bmatrix}$	✓
993	$\begin{bmatrix} x'_1 = 2x_1 \\ x'_2 = -21x_1 - 5x_2 - 27x_3 - 9x_4 \\ x'_3 = 5x_3 \\ x'_4 = -21x_3 - 2x_4 \end{bmatrix}$	✓
994	$\begin{bmatrix} x'_1 = 4x_1 + x_2 + x_3 + 7x_4 \\ x'_2 = x_1 + 4x_2 + 10x_3 + x_4 \\ x'_3 = x_1 + 10x_2 + 4x_3 + x_4 \\ x'_4 = 7x_1 + x_2 + x_3 + 4x_4 \end{bmatrix}$	✓
	<i>i.c.</i>	
995	$\begin{bmatrix} x'_1 = -40x_1 - 12x_2 + 54x_3 \\ x'_2 = 35x_1 + 13x_2 - 46x_3 \\ x'_3 = -25x_1 - 7x_2 + 34x_3 \end{bmatrix}$	✓

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Table 2.57 System of differential equations

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#	ODE	Solved?
996	$\begin{bmatrix} x'_1 = -20x_1 + 11x_2 + 13x_3 \\ x'_2 = 12x_1 - x_2 - 7x_3 \\ x'_3 = -48x_1 + 21x_2 + 31x_3 \end{bmatrix}$	✓
997	$\begin{bmatrix} x'_1 = 147x_1 + 23x_2 - 202x_3 \\ x'_2 = -90x_1 - 9x_2 + 129x_3 \\ x'_3 = 90x_1 + 15x_2 - 123x_3 \end{bmatrix}$	✓
998	$\begin{bmatrix} x'_1 = 9x_1 - 7x_2 - 5x_3 \\ x'_2 = -12x_1 + 7x_2 + 11x_3 + 9x_4 \\ x'_3 = 24x_1 - 17x_2 - 19x_3 - 9x_4 \\ x'_4 = -18x_1 + 13x_2 + 17x_3 + 9x_4 \end{bmatrix}$	✓
999	$\begin{bmatrix} x'_1 = 13x_1 - 42x_2 + 106x_3 + 139x_4 \\ x'_2 = 2x_1 - 16x_2 + 52x_3 + 70x_4 \\ x'_3 = x_1 + 6x_2 - 20x_3 - 31x_4 \\ x'_4 = -x_1 - 6x_2 + 22x_3 + 33x_4 \end{bmatrix}$	✓
1000	$\begin{bmatrix} x'_1 = 23x_1 - 18x_2 - 16x_3 \\ x'_2 = -8x_1 + 6x_2 + 7x_3 + 9x_4 \\ x'_3 = 34x_1 - 27x_2 - 26x_3 - 9x_4 \\ x'_4 = -26x_1 + 21x_2 + 25x_3 + 12x_4 \end{bmatrix}$	✓
1001	$\begin{bmatrix} x'_1 = 47x_1 - 8x_2 + 5x_3 - 5x_4 \\ x'_2 = -10x_1 + 32x_2 + 18x_3 - 2x_4 \\ x'_3 = 139x_1 - 40x_2 - 167x_3 - 121x_4 \\ x'_4 = -232x_1 + 64x_2 + 360x_3 + 248x_4 \end{bmatrix}$	✓
1002	$\begin{bmatrix} x'_1 = 139x_1 - 14x_2 - 52x_3 - 14x_4 + 28x_5 \\ x'_2 = -22x_1 + 5x_2 + 7x_3 + 8x_4 - 7x_5 \\ x'_3 = 370x_1 - 38x_2 - 139x_3 - 38x_4 + 76x_5 \\ x'_4 = 152x_1 - 16x_2 - 59x_3 - 13x_4 + 35x_5 \\ x'_5 = 95x_1 - 10x_2 - 38x_3 - 7x_4 + 23x_5 \end{bmatrix}$	✓
1003	$\begin{bmatrix} x'_1 = 9x_1 + 13x_2 - 13x_6 \\ x'_2 = -14x_1 + 19x_2 - 10x_3 - 20x_4 + 10x_5 + 4x_6 \\ x'_3 = -30x_1 + 12x_2 - 7x_3 - 30x_4 + 12x_5 + 18x_6 \\ x'_4 = -12x_1 + 10x_2 - 10x_3 - 9x_4 + 10x_5 + 2x_6 \\ x'_5 = 6x_1 + 9x_2 + 6x_4 + 5x_5 - 15x_6 \\ x'_6 = -14x_1 + 23x_2 - 10x_3 - 20x_4 + 10x_5 \end{bmatrix}$	✓
1004	$\begin{bmatrix} x'_1 = 9x_1 + 4x_2 \\ x'_2 = -6x_1 - x_2 \\ x'_3 = 6x_1 + 4x_2 + 3x_3 \end{bmatrix}$	✓
1005	$\begin{bmatrix} x'_1 = x_1 - 3x_2 \\ x'_2 = 3x_1 + 7x_2 \end{bmatrix}$	✓

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Table 2.57 System of differential equations

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#	ODE	Solved?
1006	$\begin{bmatrix} x'_1 = x_2 + 2x_3 \\ x'_2 = -5x_1 - 3x_2 - 7x_3 \\ x'_3 = x_1 \end{bmatrix}$	✓
1007	$\begin{bmatrix} x'_1 = x_3 \\ x'_2 = x_4 \\ x'_3 = -2x_1 + 2x_2 - 3x_3 + x_4 \\ x'_4 = 2x_1 - 2x_2 + x_3 - 3x_4 \end{bmatrix}$	✓
1008	$\begin{bmatrix} x'_1 = -2x_1 + x_2 \\ x'_2 = -x_1 - 4x_2 \end{bmatrix}$	✓
1009	$\begin{bmatrix} x'_1 = 3x_1 - x_2 \\ x'_2 = x_1 + x_2 \end{bmatrix}$	✓
1010	$\begin{bmatrix} x'_1 = x_1 - 2x_2 \\ x'_2 = 2x_1 + 5x_2 \end{bmatrix}$	✓
1011	$\begin{bmatrix} x'_1 = 3x_1 - x_2 \\ x'_2 = x_1 + 5x_2 \end{bmatrix}$	✓
1012	$\begin{bmatrix} x'_1 = 7x_1 + x_2 \\ x'_2 = -4x_1 + 3x_2 \end{bmatrix}$	✓
1013	$\begin{bmatrix} x'_1 = x_1 - 4x_2 \\ x'_2 = 4x_1 + 9x_2 \end{bmatrix}$	✓
1014	$\begin{bmatrix} x'_1 = 2x_1 \\ x'_2 = -7x_1 + 9x_2 + 7x_3 \\ x'_3 = 2x_3 \end{bmatrix}$	✓
1015	$\begin{bmatrix} x'_1 = 25x_1 + 12x_2 \\ x'_2 = -18x_1 - 5x_2 \\ x'_3 = 6x_1 + 6x_2 + 13x_3 \end{bmatrix}$	✓
1016	$\begin{bmatrix} x'_1 = -19x_1 + 12x_2 + 84x_3 \\ x'_2 = 5x_2 \\ x'_3 = -8x_1 + 4x_2 + 33x_3 \end{bmatrix}$	✓
1017	$\begin{bmatrix} x'_1 = -13x_1 + 40x_2 - 48x_3 \\ x'_2 = -8x_1 + 23x_2 - 24x_3 \\ x'_3 = 3x_3 \end{bmatrix}$	✓
1018	$\begin{bmatrix} x'_1 = -3x_1 - 4x_3 \\ x'_2 = -x_1 - x_2 - x_3 \\ x'_3 = x_1 + x_3 \end{bmatrix}$	✓

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Table 2.57 System of differential equations

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#	ODE	Solved?
1019	$\begin{bmatrix} x'_1 = -x_1 + x_3 \\ x'_2 = -x_2 + x_3 \\ x'_3 = x_1 - x_2 - x_3 \end{bmatrix}$	✓
1020	$\begin{bmatrix} x'_1 = -x_1 + x_3 \\ x'_2 = x_2 - 4x_3 \\ x'_3 = x_2 - 3x_3 \end{bmatrix}$	✓
1021	$\begin{bmatrix} x'_1 = x_3 \\ x'_2 = -5x_1 - x_2 - 5x_3 \\ x'_3 = 4x_1 + x_2 - 2x_3 \end{bmatrix}$	✓
1022	$\begin{bmatrix} x'_1 = -2x_1 - 9x_2 \\ x'_2 = x_1 + 4x_2 \\ x'_3 = x_1 + 3x_2 + x_3 \end{bmatrix}$	✓
1023	$\begin{bmatrix} x'_1 = x_1 \\ x'_2 = -2x_1 - 2x_2 - 3x_3 \\ x'_3 = 2x_1 + 3x_2 + 4x_3 \end{bmatrix}$	✓
1024	$\begin{bmatrix} x'_1 = x_1 \\ x'_2 = 18x_1 + 7x_2 + 4x_3 \\ x'_3 = -27x_1 - 9x_2 - 5x_3 \end{bmatrix}$	✓
1025	$\begin{bmatrix} x'_1 = x_1 \\ x'_2 = x_1 + 3x_2 + x_3 \\ x'_3 = -2x_1 - 4x_2 - x_3 \end{bmatrix}$	✓
1026	$\begin{bmatrix} x'_1 = x_1 - 4x_2 - 2x_4 \\ x'_2 = x_2 \\ x'_3 = 6x_1 - 12x_2 - x_3 - 6x_4 \\ x'_4 = -4x_2 - x_4 \end{bmatrix}$	✓
1027	$\begin{bmatrix} x'_1 = 2x_1 + x_2 + x_4 \\ x'_2 = 2x_2 + x_3 \\ x'_3 = 2x_3 + x_4 \\ x'_4 = 2x_4 \end{bmatrix}$	✓
1028	$\begin{bmatrix} x'_1 = -x_1 - 4x_2 \\ x'_2 = x_1 + 3x_2 \\ x'_3 = x_1 + 2x_2 + x_3 \\ x'_4 = x_2 + x_4 \end{bmatrix}$	✓
1029	$\begin{bmatrix} x'_1 = x_1 + 3x_2 + 7x_3 \\ x'_2 = -x_2 - 4x_3 \\ x'_3 = x_2 + 3x_3 \\ x'_4 = -6x_2 - 14x_3 + x_4 \end{bmatrix}$	✓

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Table 2.57 System of differential equations

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#	ODE	Solved?
1030	$\begin{bmatrix} x'_1 = 39x_1 + 8x_2 - 16x_3 \\ x'_2 = -36x_1 - 5x_2 + 16x_3 \\ x'_3 = 72x_1 + 16x_2 - 29x_3 \end{bmatrix}$	✓
1031	$\begin{bmatrix} x'_1 = 28x_1 + 50x_2 + 100x_3 \\ x'_2 = 15x_1 + 33x_2 + 60x_3 \\ x'_3 = -15x_1 - 30x_2 - 57x_3 \end{bmatrix}$	✓
1032	$\begin{bmatrix} x'_1 = -2x_1 + 17x_2 + 4x_3 \\ x'_2 = -x_1 + 6x_2 + x_3 \\ x'_3 = x_2 + 2x_3 \end{bmatrix}$	✓
1033	$\begin{bmatrix} x'_1 = 5x_1 - x_2 + x_3 \\ x'_2 = x_1 + 3x_2 \\ x'_3 = -3x_1 + 2x_2 + x_3 \end{bmatrix}$	✓
1034	$\begin{bmatrix} x'_1 = -3x_1 + 5x_2 - 5x_3 \\ x'_2 = 3x_1 - x_2 + 3x_3 \\ x'_3 = 8x_1 - 8x_2 + 10x_3 \end{bmatrix}$	✓
1035	$\begin{bmatrix} x'_1 = -15x_1 - 7x_2 + 4x_3 \\ x'_2 = 34x_1 + 16x_2 - 11x_3 \\ x'_3 = 17x_1 + 7x_2 + 5x_3 \end{bmatrix}$	✓
1036	$\begin{bmatrix} x'_1 = -x_1 + x_2 + x_3 - 2x_4 \\ x'_2 = 7x_1 - 4x_2 - 6x_3 + 11x_4 \\ x'_3 = 5x_1 - x_2 + x_3 + 3x_4 \\ x'_4 = 6x_1 - 2x_2 - 2x_3 + 6x_4 \end{bmatrix}$	✓
1037	$\begin{bmatrix} x'_1 = 2x_1 + x_2 - 2x_3 + x_4 \\ x'_2 = 3x_2 - 5x_3 + 3x_4 \\ x'_3 = -13x_2 + 22x_3 - 12x_4 \\ x'_4 = -27x_2 + 45x_3 - 25x_4 \end{bmatrix}$	✓
1038	$\begin{bmatrix} x'_1 = 35x_1 - 12x_2 + 4x_3 + 30x_4 \\ x'_2 = 22x_1 - 8x_2 + 3x_3 + 19x_4 \\ x'_3 = -10x_1 + 3x_2 - 9x_4 \\ x'_4 = -27x_1 + 9x_2 - 3x_3 - 23x_4 \end{bmatrix}$	✓
1039	$\begin{bmatrix} x'_1 = 11x_1 - x_2 + 26x_3 + 6x_4 - 3x_5 \\ x'_2 = 3x_2 \\ x'_3 = -9x_1 - 24x_3 - 6x_4 + 3x_5 \\ x'_4 = 3x_1 + 9x_3 + 5x_4 - x_5 \\ x'_5 = -48x_1 - 3x_2 - 138x_3 - 30x_4 + 18x_5 \end{bmatrix}$	✓

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Table 2.57 System of differential equations

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#	ODE	Solved?
1040	$\begin{bmatrix} x'_1 = 3x_1 - 4x_2 + x_3 \\ x'_2 = 4x_1 + 3x_2 + x_4 \\ x'_3 = 3x_3 - 4x_4 \\ x'_4 = 4x_3 + 3x_4 \end{bmatrix}$	✓
1041	$\begin{bmatrix} x'_1 = 2x_1 - 8x_3 - 3x_4 \\ x'_2 = -18x_1 - x_2 \\ x'_3 = -9x_1 - 3x_2 - 25x_3 - 9x_4 \\ x'_4 = 33x_1 + 10x_2 + 90x_3 + 32x_4 \end{bmatrix}$	✓
1400	$\begin{bmatrix} x'_1 = -\frac{x_1}{10} + \frac{3x_2}{40} \\ x'_2 = \frac{x_1}{10} - \frac{x_2}{5} \end{bmatrix}$	✓
	<i>i.c.</i>	
1401	$\begin{bmatrix} x'_1 = 3x_1 - 2x_2 \\ x'_2 = 4x_1 - x_2 \end{bmatrix}$	✓
1402	$\begin{bmatrix} x'_1 = -x_1 - 4x_2 \\ x'_2 = x_1 - x_2 \end{bmatrix}$	✓
1403	$\begin{bmatrix} x'_1 = 2x_1 - 5x_2 \\ x'_2 = x_1 - 2x_2 \end{bmatrix}$	✓
1404	$\begin{bmatrix} x'_1 = 2x_1 - \frac{5x_2}{2} \\ x'_2 = \frac{9x_1}{5} - x_2 \end{bmatrix}$	✓
1405	$\begin{bmatrix} x'_1 = x_1 - x_2 \\ x'_2 = 5x_1 - 3x_2 \end{bmatrix}$	✓
1406	$\begin{bmatrix} x'_1 = x_1 + 2x_2 \\ x'_2 = -5x_1 - x_2 \end{bmatrix}$	✓
1407	$\begin{bmatrix} x'_1 = x_1 \\ x'_2 = 2x_1 + x_2 - 2x_3 \\ x'_3 = 3x_1 + 2x_2 + x_3 \end{bmatrix}$	✓
1408	$\begin{bmatrix} x'_1 = -3x_1 + 2x_3 \\ x'_2 = x_1 - x_2 \\ x'_3 = -2x_1 - x_2 \end{bmatrix}$	✓
1409	$\begin{bmatrix} x'_1 = x_1 - 5x_2 \\ x'_2 = x_1 - 3x_2 \end{bmatrix}$	✓
	<i>i.c.</i>	
1410	$\begin{bmatrix} x'_1 = -3x_1 + 2x_2 \\ x'_2 = -x_1 - x_2 \end{bmatrix}$	✓
	<i>i.c.</i>	

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#	ODE	Solved?
1411	$\begin{bmatrix} x_1' = \frac{3x_1}{4} - 2x_2 \\ x_2' = x_1 - \frac{5x_2}{4} \end{bmatrix}$	✓
1412	$\begin{bmatrix} x_1' = -\frac{4x_1}{5} + 2x_2 \\ x_2' = -x_1 + \frac{6x_2}{5} \end{bmatrix}$	✓
1413	$\begin{bmatrix} x_1' = -\frac{x_1}{4} + x_2 \\ x_2' = -x_1 - \frac{x_2}{4} \\ x_3' = -\frac{x_3}{4} \end{bmatrix}$	✓
1414	$\begin{bmatrix} x_1' = -\frac{x_1}{4} + x_2 \\ x_2' = -x_1 - \frac{x_2}{4} \\ x_3' = \frac{x_3}{10} \end{bmatrix}$	✓
1415	$\begin{bmatrix} x_1' = -\frac{x_1}{2} - \frac{x_2}{8} \\ x_2' = 2x_1 - \frac{x_2}{2} \end{bmatrix}$	✓
1416	$\begin{bmatrix} x_1' = 3x_1 - 4x_2 \\ x_2' = x_1 - x_2 \end{bmatrix}$	✓
1417	$\begin{bmatrix} x_1' = 4x_1 - 2x_2 \\ x_2' = 8x_1 - 4x_2 \end{bmatrix}$	✓
1418	$\begin{bmatrix} x_1' = -\frac{3x_1}{2} + x_2 \\ x_2' = -\frac{x_1}{4} - \frac{x_2}{2} \end{bmatrix}$	✓
1419	$\begin{bmatrix} x_1' = -3x_1 + \frac{5x_2}{2} \\ x_2' = -\frac{5x_1}{2} + 2x_2 \end{bmatrix}$	✓
1420	$\begin{bmatrix} x_1' = x_1 + x_2 + x_3 \\ x_2' = 2x_1 + x_2 - x_3 \\ x_3' = -x_2 + x_3 \end{bmatrix}$	✓
1421	$\begin{bmatrix} x_1' = x_2 + x_3 \\ x_2' = x_1 + x_3 \\ x_3' = x_1 + x_2 \end{bmatrix}$	✓
1422	$\begin{bmatrix} x_1' = x_1 - 4x_2 \\ x_2' = 4x_1 - 7x_2 \end{bmatrix}$ i.c.	✓
1423	$\begin{bmatrix} x_1' = -\frac{5x_1}{2} + \frac{3x_2}{2} \\ x_2' = -\frac{3x_1}{2} + \frac{x_2}{2} \end{bmatrix}$ i.c.	✓

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#	ODE	Solved?
1424	$\begin{cases} x_1' = 2x_1 + \frac{3x_2}{2} \\ x_2' = -\frac{3x_1}{2} - x_2 \end{cases}$	✓
1425	$\begin{cases} x_1' = 3x_1 + 9x_2 \\ x_2' = -x_1 - 3x_2 \end{cases}$	✓
1426	$\begin{cases} x_1' = x_1 \\ x_2' = -4x_1 + x_2 \\ x_3' = 3x_1 + 6x_2 + 2x_3 \end{cases}$	✓
1427	$\begin{cases} x_1' = -\frac{5x_1}{2} + x_2 + x_3 \\ x_2' = x_1 - \frac{5x_2}{2} + x_3 \\ x_3' = x_1 + x_2 - \frac{5x_3}{2} \end{cases}$	✓
1428	$\begin{cases} x_1' = 2x_1 - x_2 + e^t \\ x_2' = 3x_1 - 2x_2 + t \end{cases}$	✓
1429	$\begin{cases} x_1' = x_1 + \sqrt{3}x_2 + e^t \\ x_2' = \sqrt{3}x_1 - x_2 + \sqrt{3}e^{-t} \end{cases}$	✓
1430	$\begin{cases} x_1' = 2x_1 - 5x_2 - \cos(t) \\ x_2' = x_1 - 2x_2 + \sin(t) \end{cases}$	✓
1431	$\begin{cases} x_1' = x_1 + x_2 + e^{-2t} \\ x_2' = 4x_1 - 2x_2 - 2e^t \end{cases}$	✓
1432	$\begin{cases} x_1' = 4x_1 - 2x_2 + \frac{1}{t^3} \\ x_2' = 8x_1 - 4x_2 - \frac{1}{t^2} \end{cases}$	✓
1433	$\begin{cases} x_1' = -4x_1 + 2x_2 + \frac{1}{t} \\ x_2' = 2x_1 - x_2 + \frac{2}{t} + 4 \end{cases}$	✓
1434	$\begin{cases} x_1' = x_1 + x_2 + 2e^t \\ x_2' = 4x_1 + x_2 - e^t \end{cases}$	✓
1435	$\begin{cases} x_1' = 2x_1 - x_2 + e^t \\ x_2' = 3x_1 - 2x_2 - e^t \end{cases}$	✓
1436	$\begin{cases} x_1' = -\frac{5x_1}{4} + \frac{3x_2}{4} + 2t \\ x_2' = \frac{3x_1}{4} - \frac{5x_2}{4} + e^t \end{cases}$	✓
1437	$\begin{cases} x_1' = -3x_1 + \sqrt{2}x_2 + e^{-t} \\ x_2' = \sqrt{2}x_1 - 2x_2 - e^{-t} \end{cases}$	✓

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#	ODE	Solved?
1438	$\begin{cases} x_1' = 2x_1 - 5x_2 \\ x_2' = x_1 - 2x_2 + \cos(t) \end{cases}$	✓
1439	$\begin{cases} x_1' = 2x_1 - 5x_2 + \csc(t) \\ x_2' = x_1 - 2x_2 + \sec(t) \end{cases}$	✓
1440	$\begin{cases} x_1' = -\frac{x_1}{2} - \frac{x_2}{8} + \frac{e^{-\frac{t}{2}}}{2} \\ x_2' = 2x_1 - \frac{x_2}{2} \end{cases}$	✓
1441	$\begin{cases} x_1' = -2x_1 + x_2 + 2e^{-t} \\ x_2' = x_1 - 2x_2 + 3t \end{cases}$	✓
	<i>i.c.</i>	
1442	$\begin{cases} x_1' = 3x_1 - 2x_2 \\ x_2' = 2x_1 - 2x_2 \end{cases}$	✓
1443	$\begin{cases} x_1' = 5x_1 - x_2 \\ x_2' = 3x_1 + x_2 \end{cases}$	✓
1444	$\begin{cases} x_1' = 2x_1 - x_2 \\ x_2' = 3x_1 - 2x_2 \end{cases}$	✓
1445	$\begin{cases} x_1' = x_1 - 4x_2 \\ x_2' = 4x_1 - 7x_2 \end{cases}$	✓
1446	$\begin{cases} x_1' = x_1 - 5x_2 \\ x_2' = x_1 - 3x_2 \end{cases}$	✓
1447	$\begin{cases} x_1' = 2x_1 - 5x_2 \\ x_2' = x_1 - 2x_2 \end{cases}$	✓
1448	$\begin{cases} x_1' = 3x_1 - 2x_2 \\ x_2' = 4x_1 - x_2 \end{cases}$	✓
1449	$\begin{cases} x_1' = -x_1 - x_2 \\ x_2' = -\frac{5x_2}{2} \end{cases}$	✓
1450	$\begin{cases} x_1' = 3x_1 - 4x_2 \\ x_2' = x_1 - x_2 \end{cases}$	✓
1451	$\begin{cases} x_1' = x_1 + 2x_2 \\ x_2' = -5x_1 \end{cases}$	✓
1452	$\begin{cases} x_1' = -x_1 \\ x_2' = -x_2 \end{cases}$	✓

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#	ODE	Solved?
1453	$\begin{cases} x'_1 = 2x_1 - \frac{5x_2}{2} \\ x'_2 = \frac{9x_1}{5} - x_2 \end{cases}$	✓
1454	$\begin{cases} x'_1 = x_1 + x_2 - 2 \\ x'_2 = x_1 - x_2 \end{cases}$	✓
1455	$\begin{cases} x'_1 = -2x_1 + x_2 - 2 \\ x'_2 = x_1 - 2x_2 + 1 \end{cases}$	✓
1456	$\begin{cases} x'_1 = -x_1 - x_2 - 1 \\ x'_2 = 2x_1 - x_2 + 5 \end{cases}$	✓
1457	$\begin{cases} x' = -x \\ y' = -2y \end{cases}$	✓
	i.c.	
1458	$\begin{cases} x' = -x \\ y' = 2y \end{cases}$	✓
	i.c.	
1459	$\begin{cases} x' = -x \\ y' = 2y \end{cases}$	✓
	i.c.	
1460	$\begin{cases} x' = -y \\ y' = x \end{cases}$	✓
	i.c.	
1461	$\begin{cases} x' = -y \\ y' = x \end{cases}$	✓
	i.c.	
2239	$\begin{cases} y'_1 = y_1 + 2y_2 \\ y'_2 = 2y_1 + y_2 \end{cases}$	✓
2240	$\begin{cases} y'_1 = -\frac{5y_1}{4} + \frac{3y_2}{4} \\ y'_2 = \frac{3y_1}{4} - \frac{5y_2}{4} \end{cases}$	✓
2241	$\begin{cases} y'_1 = -\frac{4y_1}{5} + \frac{3y_2}{5} \\ y'_2 = -\frac{2y_1}{5} - \frac{11y_2}{5} \end{cases}$	✓
2242	$\begin{cases} y'_1 = -y_1 - 4y_2 \\ y'_2 = -y_1 - y_2 \end{cases}$	✓
2243	$\begin{cases} y'_1 = 2y_1 - 4y_2 \\ y'_2 = -y_1 - y_2 \end{cases}$	✓
2244	$\begin{cases} y'_1 = 4y_1 - 3y_2 \\ y'_2 = 2y_1 - y_2 \end{cases}$	✓

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#	ODE	Solved?
2245	$\begin{bmatrix} y_1' = -6y_1 - 3y_2 \\ y_2' = y_1 - 2y_2 \end{bmatrix}$	✓
2246	$\begin{bmatrix} y_1' = y_1 - y_2 - 2y_3 \\ y_2' = y_1 - 2y_2 - 3y_3 \\ y_3' = -4y_1 + y_2 - y_3 \end{bmatrix}$	✓
2247	$\begin{bmatrix} y_1' = -6y_1 - 4y_2 - 8y_3 \\ y_2' = -4y_1 - 4y_3 \\ y_3' = -8y_1 - 4y_2 - 6y_3 \end{bmatrix}$	✓
2248	$\begin{bmatrix} y_1' = 3y_1 + 5y_2 + 8y_3 \\ y_2' = y_1 - y_2 - 2y_3 \\ y_3' = -y_1 - y_2 - y_3 \end{bmatrix}$	✓
2249	$\begin{bmatrix} y_1' = y_1 - y_2 + 2y_3 \\ y_2' = 12y_1 - 4y_2 + 10y_3 \\ y_3' = -6y_1 + y_2 - 7y_3 \end{bmatrix}$	✓
2250	$\begin{bmatrix} y_1' = 4y_1 - y_2 - 4y_3 \\ y_2' = 4y_1 - 3y_2 - 2y_3 \\ y_3' = y_1 - y_2 - y_3 \end{bmatrix}$	✓
2251	$\begin{bmatrix} y_1' = -2y_1 + 2y_2 - 6y_3 \\ y_2' = 2y_1 + 6y_2 + 2y_3 \\ y_3' = -2y_1 - 2y_2 + 2y_3 \end{bmatrix}$	✓
2252	$\begin{bmatrix} y_1' = 3y_1 + 2y_2 - 2y_3 \\ y_2' = -2y_1 + 7y_2 - 2y_3 \\ y_3' = -10y_1 + 10y_2 - 5y_3 \end{bmatrix}$	✓
2253	$\begin{bmatrix} y_1' = 3y_1 + y_2 - y_3 \\ y_2' = 3y_1 + 5y_2 + y_3 \\ y_3' = -6y_1 + 2y_2 + 4y_3 \end{bmatrix}$	✓
2254	$\begin{bmatrix} y_1' = 3y_1 + 4y_2 \\ y_2' = -y_1 + 7y_2 \end{bmatrix}$	✓
2255	$\begin{bmatrix} y_1' = -y_2 \\ y_2' = y_1 - 2y_2 \end{bmatrix}$	✓
2256	$\begin{bmatrix} y_1' = -7y_1 + 4y_2 \\ y_2' = -y_1 - 11y_2 \end{bmatrix}$	✓
2257	$\begin{bmatrix} y_1' = 3y_1 + y_2 \\ y_2' = -y_1 + y_2 \end{bmatrix}$	✓

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#	ODE	Solved?
2258	$\begin{bmatrix} y_1' = 4y_1 + 12y_2 \\ y_2' = -3y_1 - 8y_2 \end{bmatrix}$	✓
2259	$\begin{bmatrix} y_1' = -10y_1 + 9y_2 \\ y_2' = -4y_1 + 2y_2 \end{bmatrix}$	✓
2260	$\begin{bmatrix} y_1' = -13y_1 + 16y_2 \\ y_2' = -9y_1 + 11y_2 \end{bmatrix}$	✓
2261	$\begin{bmatrix} y_1' = 2y_2 + y_3 \\ y_2' = -4y_1 + 6y_2 + y_3 \\ y_3' = 4y_2 + 2y_3 \end{bmatrix}$	✓
2262	$\begin{bmatrix} y_1' = \frac{y_1}{3} + \frac{y_2}{3} - y_3 \\ y_2' = -\frac{4y_1}{3} - \frac{4y_2}{3} + y_3 \\ y_3' = -\frac{2y_1}{3} + \frac{y_2}{3} \end{bmatrix}$	✓
2263	$\begin{bmatrix} y_1' = -y_1 + y_2 - y_3 \\ y_2' = -2y_1 + 2y_3 \\ y_3' = -y_1 + 3y_2 - y_3 \end{bmatrix}$	✓
2264	$\begin{bmatrix} y_1' = 4y_1 - 2y_2 - 2y_3 \\ y_2' = -2y_1 + 3y_2 - y_3 \\ y_3' = 2y_1 - y_2 + 3y_3 \end{bmatrix}$	✓
2265	$\begin{bmatrix} y_1' = 6y_1 - 5y_2 + 3y_3 \\ y_2' = 2y_1 - y_2 + 3y_3 \\ y_3' = 2y_1 + y_2 + y_3 \end{bmatrix}$	✓
2266	$\begin{bmatrix} y_1' = -11y_1 + 8y_2 \\ y_2' = -2y_1 - 3y_2 \end{bmatrix}$ i.c.	✓
2267	$\begin{bmatrix} y_1' = 15y_1 - 9y_2 \\ y_2' = 16y_1 - 9y_2 \end{bmatrix}$ i.c.	✓
2268	$\begin{bmatrix} y_1' = -3y_1 - 4y_2 \\ y_2' = y_1 - 7y_2 \end{bmatrix}$ i.c.	✓
2269	$\begin{bmatrix} y_1' = -7y_1 + 24y_2 \\ y_2' = -6y_1 + 17y_2 \end{bmatrix}$ i.c.	✓
2270	$\begin{bmatrix} y_1' = -7y_1 + 3y_2 \\ y_2' = -3y_1 - y_2 \end{bmatrix}$ i.c.	✓

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#	ODE	Solved?
2271	$\begin{cases} y_1' = -y_1 + y_2 \\ y_2' = y_1 - y_2 - 2y_3 \\ y_3' = -y_1 - y_2 - y_3 \end{cases}$ <i>i.c.</i>	✓
2272	$\begin{cases} y_1' = -2y_1 + 2y_2 + y_3 \\ y_2' = -2y_1 + 2y_2 + y_3 \\ y_3' = -3y_1 + 3y_2 + 2y_3 \end{cases}$ <i>i.c.</i>	✓
2273	$\begin{cases} y_1' = -7y_1 - 4y_2 + 4y_3 \\ y_2' = y_1 + y_3 \\ y_3' = -9y_1 - 5y_2 + 6y_3 \end{cases}$ <i>i.c.</i>	✓
2274	$\begin{cases} y_1' = -y_1 - 4y_2 - y_3 \\ y_2' = 3y_1 + 6y_2 + y_3 \\ y_3' = -3y_1 - 2y_2 + 3y_3 \end{cases}$ <i>i.c.</i>	✓
2275	$\begin{cases} y_1' = 4y_1 - 8y_2 - 4y_3 \\ y_2' = -3y_1 - y_2 - 4y_3 \\ y_3' = y_1 - y_2 + 9y_3 \end{cases}$ <i>i.c.</i>	✓
2276	$\begin{cases} y_1' = -5y_1 - y_2 + 11y_3 \\ y_2' = -7y_1 + y_2 + 13y_3 \\ y_3' = -4y_1 + 8y_3 \end{cases}$ <i>i.c.</i>	✓
2277	$\begin{cases} y_1' = 5y_1 - y_2 + y_3 \\ y_2' = -y_1 + 9y_2 - 3y_3 \\ y_3' = -2y_1 + 2y_2 + 4y_3 \end{cases}$	✓
2278	$\begin{cases} y_1' = y_1 + 10y_2 - 12y_3 \\ y_2' = 2y_1 + 2y_2 + 3y_3 \\ y_3' = 2y_1 - y_2 + 6y_3 \end{cases}$	✓
2279	$\begin{cases} y_1' = -6y_1 - 4y_2 - 4y_3 \\ y_2' = 2y_1 - y_2 + y_3 \\ y_3' = 2y_1 + 3y_2 + y_3 \end{cases}$	✓
2280	$\begin{cases} y_1' = 2y_2 - 2y_3 \\ y_2' = -y_1 + 5y_2 - 3y_3 \\ y_3' = y_1 + y_2 + y_3 \end{cases}$	✓
2281	$\begin{cases} y_1' = -2y_1 - 12y_2 + 10y_3 \\ y_2' = 2y_1 - 24y_2 + 11y_3 \\ y_3' = 2y_1 - 24y_2 + 8y_3 \end{cases}$	✓

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#	ODE	Solved?
2282	$\begin{bmatrix} y_1' = -y_1 - 12y_2 + 8y_3 \\ y_2' = y_1 - 9y_2 + 4y_3 \\ y_3' = y_1 - 6y_2 + y_3 \end{bmatrix}$	✓
2283	$\begin{bmatrix} y_1' = -4y_1 - y_3 \\ y_2' = -y_1 - 3y_2 - y_3 \\ y_3' = y_1 - 2y_3 \end{bmatrix}$	✓
2284	$\begin{bmatrix} y_1' = -3y_1 - 3y_2 + 4y_3 \\ y_2' = 4y_1 + 5y_2 - 8y_3 \\ y_3' = 2y_1 + 3y_2 - 5y_3 \end{bmatrix}$	✓
2285	$\begin{bmatrix} y_1' = -3y_1 - y_2 \\ y_2' = y_1 - y_2 \\ y_3' = -y_1 - y_2 - 2y_3 \end{bmatrix}$	✓
2286	$\begin{bmatrix} y_1' = -y_1 + 2y_2 \\ y_2' = -5y_1 + 5y_2 \end{bmatrix}$	✓
2287	$\begin{bmatrix} y_1' = -11y_1 + 4y_2 \\ y_2' = -26y_1 + 9y_2 \end{bmatrix}$	✓
2288	$\begin{bmatrix} y_1' = y_1 + 2y_2 \\ y_2' = -4y_1 + 5y_2 \end{bmatrix}$	✓
2289	$\begin{bmatrix} y_1' = 5y_1 - 6y_2 \\ y_2' = 3y_1 - y_2 \end{bmatrix}$	✓
2290	$\begin{bmatrix} y_1' = -3y_1 - 3y_2 + y_3 \\ y_2' = 2y_2 + 2y_3 \\ y_3' = 5y_1 + y_2 + y_3 \end{bmatrix}$	✓
2291	$\begin{bmatrix} y_1' = -3y_1 + 3y_2 + y_3 \\ y_2' = y_1 - 5y_2 - 3y_3 \\ y_3' = -3y_1 + 7y_2 + 3y_3 \end{bmatrix}$	✓
2292	$\begin{bmatrix} y_1' = 2y_1 + y_2 - y_3 \\ y_2' = y_2 + y_3 \\ y_3' = y_1 + y_3 \end{bmatrix}$	✓
2293	$\begin{bmatrix} y_1' = -3y_1 + y_2 - 3y_3 \\ y_2' = 4y_1 - y_2 + 2y_3 \\ y_3' = 4y_1 - 2y_2 + 3y_3 \end{bmatrix}$	✓
2698	$\begin{bmatrix} x' = 6x - 3y \\ y' = 2x + y \end{bmatrix}$	✓

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#	ODE	Solved?
2699	$\begin{cases} x' = -2x + y + t \\ y' = -4x + 3y - 1 \end{cases}$	✓
2700	$\begin{cases} x' = 6x - 3y \\ y' = 2x + y \end{cases}$	✓
2701	$\begin{cases} x' = x + y + e^t \\ y' = x - y - e^t \end{cases}$	✓
2702	$\begin{cases} x' = x + y \\ y' = 4x + y \end{cases}$ i.c.	✓
2703	$\begin{cases} x' = x - 3y \\ y' = -2x + 2y \end{cases}$ i.c.	✓
2704	$\begin{cases} x' = x - y \\ y' = 5x - 3y \end{cases}$ i.c.	✓
2705	$\begin{cases} x' = 3x - 2y \\ y' = 4x - y \end{cases}$ i.c.	✓
2706	$\begin{cases} x' = 4x + 5y + 4e^t \cos(t) \\ y' = -2x - 2y \end{cases}$ i.c.	✓
2707	$\begin{cases} x' = 3x - 4y + e^t \\ y' = x - y + e^t \end{cases}$ i.c.	✓
2708	$\begin{cases} x' = 2x - 5y + \sin(t) \\ y' = x - 2y + \tan(t) \end{cases}$ i.c.	✓
2709	$\begin{cases} x' = y + f_1(t) \\ y' = -x + f_2(t) \end{cases}$ i.c.	✓
2728	$\begin{cases} x'_1 = 6x_1 - 3x_2 \\ x'_2 = 2x_1 + x_2 \end{cases}$	✓
2729	$\begin{cases} x'_1 = -2x_1 + x_2 \\ x'_2 = -4x_1 + 3x_2 \end{cases}$	✓
2730	$\begin{cases} x'_1 = 3x_1 + 2x_2 + 4x_3 \\ x'_2 = 2x_1 + 2x_3 \\ x'_3 = 4x_1 + 2x_2 + 3x_3 \end{cases}$	✓

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#	ODE	Solved?
2731	$\begin{bmatrix} x'_1 = 7x_1 - x_2 + 6x_3 \\ x'_2 = -10x_1 + 4x_2 - 12x_3 \\ x'_3 = -2x_1 + x_2 - x_3 \end{bmatrix}$	✓
2732	$\begin{bmatrix} x'_1 = -7x_1 + 6x_3 \\ x'_2 = 5x_2 \\ x'_3 = 6x_1 + 2x_3 \end{bmatrix}$	✓
2733	$\begin{bmatrix} x'_1 = x_1 + 2x_2 + 3x_3 + 6x_4 \\ x'_2 = 3x_1 + 6x_2 + 9x_3 + 18x_4 \\ x'_3 = 5x_1 + 10x_2 + 15x_3 + 30x_4 \\ x'_4 = 7x_1 + 14x_2 + 21x_3 + 42x_4 \end{bmatrix}$	✓
2734	$\begin{bmatrix} x'_1 = x_1 + x_2 \\ x'_2 = 4x_1 + x_2 \end{bmatrix}$	✓
	i.c.	
2735	$\begin{bmatrix} x'_1 = x_1 - 3x_2 \\ x'_2 = -2x_1 + 2x_2 \end{bmatrix}$	✓
	i.c.	
2736	$\begin{bmatrix} x'_1 = 3x_1 + x_2 - x_3 \\ x'_2 = x_1 + 3x_2 - x_3 \\ x'_3 = 3x_1 + 3x_2 - x_3 \end{bmatrix}$	✓
	i.c.	
2737	$\begin{bmatrix} x'_1 = x_1 - x_2 \\ x'_2 = x_1 + 2x_2 + x_3 \\ x'_3 = x_1 + 10x_2 + 2x_3 \end{bmatrix}$	✓
	i.c.	
2738	$\begin{bmatrix} x'_1 = x_1 - 3x_2 + 2x_3 \\ x'_2 = -x_2 \\ x'_3 = -x_2 - 2x_3 \end{bmatrix}$	✓
	i.c.	
2739	$\begin{bmatrix} x'_1 = 3x_1 + x_2 - 2x_3 \\ x'_2 = -x_1 + 2x_2 + x_3 \\ x'_3 = 4x_1 + x_2 - 3x_3 \end{bmatrix}$	✓
	i.c.	
2740	$\begin{bmatrix} x'_1 = -3x_1 + 2x_2 \\ x'_2 = -x_1 - x_2 \end{bmatrix}$	✓
2741	$\begin{bmatrix} x'_1 = x_1 - 5x_2 \\ x'_2 = x_1 - 3x_2 \\ x'_3 = x_3 \end{bmatrix}$	✓

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#	ODE	Solved?
2742	$\begin{cases} x'_1 = x_1 \\ x'_2 = 3x_1 + x_2 - 2x_3 \\ x'_3 = 2x_1 + 2x_2 + x_3 \end{cases}$	✓
2743	$\begin{cases} x'_1 = x_1 + x_3 \\ x'_2 = x_2 - x_3 \\ x'_3 = -2x_1 - x_3 \end{cases}$	✓
2744	$\begin{cases} x'_1 = x_1 - x_2 \\ x'_2 = 5x_1 - 3x_2 \end{cases}$	✓
	i.c.	
2745	$\begin{cases} x'_1 = 3x_1 - 2x_2 \\ x'_2 = 4x_1 - x_2 \end{cases}$	✓
	i.c.	
2746	$\begin{cases} x'_1 = -3x_1 + 2x_3 \\ x'_2 = x_1 - x_2 \\ x'_3 = -2x_1 - x_2 \end{cases}$	✓
	i.c.	
2747	$\begin{cases} x'_1 = 2x_2 \\ x'_2 = -2x_1 \\ x'_3 = -3x_4 \\ x'_4 = 3x_3 \end{cases}$	✓
	i.c.	
2748	$\begin{cases} x'_1 = x_1 + x_2 \\ x'_2 = x_2 \\ x'_3 = 2x_3 \end{cases}$	✓
2749	$\begin{cases} x'_1 = 2x_1 + x_2 + 3x_3 \\ x'_2 = 2x_2 - x_3 \\ x'_3 = 2x_3 \end{cases}$	✓
	i.c.	
2750	$\begin{cases} x'_1 = -x_2 + x_3 \\ x'_2 = 2x_1 - 3x_2 + x_3 \\ x'_3 = x_1 - x_2 - x_3 \end{cases}$	✓
2751	$\begin{cases} x'_1 = x_1 + x_2 + x_3 \\ x'_2 = 2x_1 + x_2 - x_3 \\ x'_3 = -3x_1 + 2x_2 + 4x_3 \end{cases}$	✓
2752	$\begin{cases} x'_1 = -x_1 - x_2 \\ x'_2 = -x_2 \\ x'_3 = -2x_3 \end{cases}$	✓

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#	ODE	Solved?
2753	$\begin{bmatrix} x'_1 = 2x_1 - x_3 \\ x'_2 = 2x_2 + x_3 \\ x'_3 = 2x_3 \\ x'_4 = -x_3 + 2x_4 \end{bmatrix}$	✓
2754	$\begin{bmatrix} x'_1 = -x_1 + x_2 + 2x_3 \\ x'_2 = -x_1 + x_2 + x_3 \\ x'_3 = -2x_1 + x_2 + 3x_3 \end{bmatrix}$	✓
2755	$\begin{bmatrix} x'_1 = -4x_1 - 4x_2 \\ x'_2 = 10x_1 + 9x_2 + x_3 \\ x'_3 = -4x_1 - 3x_2 + x_3 \end{bmatrix}$	✓
2756	$\begin{bmatrix} x'_1 = x_1 + 2x_2 - 3x_3 \\ x'_2 = x_1 + x_2 + 2x_3 \\ x'_3 = x_1 - x_2 + 4x_3 \end{bmatrix}$	✓
2757	$\begin{bmatrix} x'_1 = 3x_1 \\ x'_2 = x_1 + 3x_2 \\ x'_3 = 3x_3 \\ x'_4 = 2x_3 + 3x_4 \end{bmatrix}$	✓
2758	$\begin{bmatrix} x'_1 = x_1 \\ x'_2 = 2x_1 + x_2 - 2x_3 \\ x'_3 = 3x_1 + 2x_2 + x_3 + e^t \cos(2t) \end{bmatrix}$	✓
2759	$\begin{bmatrix} x'_1 = x_1 + e^{ct} \\ x'_2 = 2x_1 + x_2 - 2x_3 \\ x'_3 = 3x_1 + 2x_2 + x_3 \end{bmatrix}$	✓
2760	$\begin{bmatrix} x'_1 = 4x_1 + 5x_2 + 4e^t \cos(t) \\ x'_2 = -2x_1 - 2x_2 \end{bmatrix}$	✓
2761	$\begin{bmatrix} x'_1 = 3x_1 - 4x_2 + e^t \\ x'_2 = x_1 - x_2 + e^t \end{bmatrix}$	✓
2762	$\begin{bmatrix} x'_1 = 2x_1 - 5x_2 + \sin(t) \\ x'_2 = x_1 - 2x_2 + \tan(t) \end{bmatrix}$	✓
2763	$\begin{bmatrix} x'_1 = x_2 + f_1(t) \\ x'_2 = -x_1 + f_2(t) \end{bmatrix}$	✓

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#	ODE	Solved?
2764	$\begin{cases} x_1' = 2x_1 + x_3 + e^{2t} \\ x_2' = 2x_2 \\ x_3' = x_2 + 3x_3 + e^{2t} \end{cases}$	✓
	i.c.	
2765	$\begin{cases} x_1' = -x_1 - x_2 - 2x_3 + e^t \\ x_2' = x_1 + x_2 + x_3 \\ x_3' = 2x_1 + x_2 + 3x_3 \end{cases}$	✓
	i.c.	
2766	$\begin{cases} x_1' = 2x_1 + x_2 + e^{3t} \\ x_2' = 3x_1 - 2x_2 + e^{3t} \end{cases}$	✓
2767	$\begin{cases} x_1' = x_1 - x_2 - t^2 \\ x_2' = x_1 + 3x_2 + 2t \end{cases}$	✓
2768	$\begin{cases} x_1' = x_1 + 3x_2 + 2x_3 + \sin(t) \\ x_2' = -x_1 + 2x_2 + x_3 \\ x_3' = 4x_1 - x_2 - x_3 \end{cases}$	✓
2769	$\begin{cases} x_1' = x_1 + 2x_2 - 3x_3 + e^t \\ x_2' = x_1 + x_2 + 2x_3 \\ x_3' = x_1 - x_2 + 4x_3 - e^t \end{cases}$	✓
2770	$\begin{cases} x_1' = -x_1 - x_2 + 1 \\ x_2' = -4x_2 - x_3 + t \\ x_3' = 5x_2 + e^t \end{cases}$	✓
2771	$\begin{cases} x_1' = x_1 + x_2 - x_3 + e^{2t} \\ x_2' = 2x_1 + 3x_2 - 4x_3 + 2e^{2t} \\ x_3' = 4x_1 + x_2 - 4x_3 + e^{2t} \end{cases}$	✓
2772	$\begin{cases} x_1' = x_1 - x_2 - x_3 + e^{3t} \\ x_2' = x_1 + 3x_2 + x_3 - e^{3t} \\ x_3' = -3x_1 + x_2 - x_3 - e^{3t} \end{cases}$	✓
2773	$\begin{cases} x_1' = 3x_1 + 2x_2 + 4x_3 + 2e^{8t} \\ x_2' = 2x_1 + 2x_3 + e^{8t} \\ x_3' = 4x_1 + 2x_2 + 3x_3 + 2e^{8t} \end{cases}$	✓
2774	$\begin{cases} x_1' = x_1 - 3x_2 \\ x_2' = -2x_1 + 2x_2 \end{cases}$	✓
	i.c.	
2775	$\begin{cases} x_1' = x_1 - x_2 \\ x_2' = 5x_1 - 3x_2 \end{cases}$	✓
	i.c.	

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#	ODE	Solved?
2776	$\begin{bmatrix} x'_1 = 3x_1 - 2x_2 + t \\ x'_2 = 2x_1 - 2x_2 + 3e^t \end{bmatrix}$ i.c.	✓
2777	$\begin{bmatrix} x'_1 = x_1 + x_2 + 2e^t \\ x'_2 = 4x_1 + x_2 - e^t \end{bmatrix}$ i.c.	✓
2778	$\begin{bmatrix} x'_1 = 3x_1 - 4x_2 + e^t \\ x'_2 = x_1 - x_2 + e^t \end{bmatrix}$ i.c.	✓
2779	$\begin{bmatrix} x'_1 = 2x_1 - 5x_2 + \sin(t) \\ x'_2 = x_1 - 2x_2 + \tan(t) \end{bmatrix}$ i.c.	✓
2780	$\begin{bmatrix} x'_1 = 4x_1 + 5x_2 + 4e^t \cos(t) \\ x'_2 = -2x_1 - 2x_2 \end{bmatrix}$ i.c.	✓
2781	$\begin{bmatrix} x'_1 = x_2 + f_1(t) \\ x'_2 = -x_1 + f_2(t) \end{bmatrix}$ i.c.	✓
2782	$\begin{bmatrix} x'_1 = 2x_1 - 2x_2 \\ x'_2 = 4x_1 - 2x_2 + \delta(t - \pi) \end{bmatrix}$ i.c.	✓
2783	$\begin{bmatrix} x'_1 = 3x_1 - 2x_2 + 1 - \text{Heaviside}(t - \pi) \\ x'_2 = 2x_1 - 2x_2 \end{bmatrix}$ i.c.	✓
2784	$\begin{bmatrix} x'_1 = x_1 + 2x_2 - 3x_3 \\ x'_2 = x_1 + x_2 + 2x_3 \\ x'_3 = x_1 - x_2 + 4x_3 \end{bmatrix}$ i.c.	✓
2785	$\begin{bmatrix} x'_1 = 2x_1 + x_3 + e^{2t} \\ x'_2 = 2x_2 \\ x'_3 = 3x_3 + e^{2t} \end{bmatrix}$ i.c.	✓
2786	$\begin{bmatrix} x'_1 = -x_1 - x_2 + 2x_3 + e^t \\ x'_2 = x_1 + x_2 + x_3 \\ x'_3 = 2x_1 + x_2 + 3x_3 \end{bmatrix}$ i.c.	✓

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#	ODE	Solved?
2787	$\begin{bmatrix} x'_1 = x_1 \\ x'_2 = 2x_1 + x_2 - 2x_3 \\ x'_3 = 3x_1 + 2x_2 + x_3 + e^t \cos(2t) \end{bmatrix}$	✓
	i.c.	
2788	$\begin{bmatrix} x'_1 = 3x_1 \\ x'_2 = x_1 + 3x_2 \\ x'_3 = 3x_3 \\ x'_4 = 2x_3 + 3x_4 \end{bmatrix}$	✓
	i.c.	
2789	$\begin{bmatrix} x' = x - x^2 - 2xy \\ y' = 2y - 2y^2 - 3xy \end{bmatrix}$	✗
2790	$\begin{bmatrix} x' = -bxy + m \\ y' = bxy - gy \end{bmatrix}$	✗
2791	$\begin{bmatrix} x' = ax - bxy \\ y' = -cy + dxy \\ z' = z + x^2 + y^2 \end{bmatrix}$	✗
2792	$\begin{bmatrix} x' = -x - xy^2 \\ y' = -y - yx^2 \\ z' = 1 - z + x^2 \end{bmatrix}$	✗
2793	$\begin{bmatrix} x' = xy^2 - x \\ y' = x \sin(\pi y) \end{bmatrix}$	✗
2794	$\begin{bmatrix} x' = \cos(y) \\ y' = \sin(x) - 1 \end{bmatrix}$	✗
2795	$\begin{bmatrix} x' = -1 - y - e^x \\ y' = x^2 + y(e^x - 1) \\ z' = x + \sin(z) \end{bmatrix}$	✗
2796	$\begin{bmatrix} x' = x - y^2 \\ y' = x^2 - y \\ z' = e^z - x \end{bmatrix}$	✗
2797	$\begin{bmatrix} x' = x - y \\ y' = 2x - y \end{bmatrix}$	✓
	i.c.	
2798	$\begin{bmatrix} x' = x + y + z - 2e^{-t} \\ y' = 2x + y - z - 2e^{-t} \\ z' = -3x + 2y + 4z + 3e^{-t} \end{bmatrix}$	✓
	i.c.	

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#	ODE	Solved?
2799	$\begin{bmatrix} x' = x + y \\ y' = -2x - 2y \end{bmatrix}$	✓
2800	$\begin{bmatrix} x' = -3x - 4y \\ y' = 2x + y \end{bmatrix}$	✓
2801	$\begin{bmatrix} x' = -5x + 3y \\ y' = y - x \end{bmatrix}$	✓
2802	$\begin{bmatrix} x' = x - 4y \\ y' = 4x - 7y \end{bmatrix}$	✓
2803	$\begin{bmatrix} x' = -7x + y - 6z \\ y' = 10x - 4y + 12z \\ z' = 2x - y + z \end{bmatrix}$	✓
2804	$\begin{bmatrix} x' = 3x + 2y + 4z \\ y' = 2x + 2z \\ z' = 4x + 2y + 3z \end{bmatrix}$	✓
2805	$\begin{bmatrix} x' = 2y + z \\ y' = -x - 3y - z \\ z' = x + y - z \end{bmatrix}$	✓
2806	$\begin{bmatrix} x' = -2x + y + z \\ y' = -3x + 2y + 3z \\ z' = x - y - 2z \end{bmatrix}$	✓
2807	$\begin{bmatrix} x' = 2y \\ y' = -2x \\ z' = 2h \\ h' = -2z \end{bmatrix}$	✓
2808	$\begin{bmatrix} x' = 2y + z \\ y' = -2x + h \\ z' = 2h \\ h' = -2z \end{bmatrix}$	✓
2812	$\begin{bmatrix} x'_1 = x_2 \\ x'_2 = -\frac{(x_1^2 + \sqrt{x_1^2 + 4x_2^2})x_1}{2} \end{bmatrix}$	✗
2813	$\begin{bmatrix} x'_1 = -x_1 - x_2 + 1 \\ x'_2 = 2x_1 - x_2 + 5 \end{bmatrix}$	✓
2814	$\begin{bmatrix} x' = x - x^3 - xy \\ y' = 2y - y^5 - yx^4 \end{bmatrix}$	✗

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#	ODE	Solved?
2815	$\begin{cases} x' = x^2 + y^2 + 1 \\ y' = x^2 - y^2 \end{cases}$	X
2816	$\begin{cases} x' = x^2 + y^2 - 1 \\ y' = 2xy \end{cases}$	X
2817	$\begin{cases} x' = 6x - 6x^2 - 2xy \\ y' = 4y - 4y^2 - 2xy \end{cases}$	X
2818	$\begin{cases} x' = \tan(x + y) \\ y' = x + x^3 \end{cases}$	X
2819	$\begin{cases} x' = e^y - x \\ y' = e^x + y \end{cases}$	X
2825	$\begin{cases} x'_1 = -5x_1 + x_2 \\ x'_2 = x_1 - 5x_2 \end{cases}$	✓
2826	$\begin{cases} x'_1 = -x_2 \\ x'_2 = 8x_1 - 6x_2 \end{cases}$	✓
2827	$\begin{cases} x'_1 = 4x_1 - x_2 \\ x'_2 = -2x_1 + 5x_2 \end{cases}$	✓
2828	$\begin{cases} x'_1 = -4x_1 - x_2 \\ x'_2 = x_1 - 6x_2 \end{cases}$	✓
2829	$\begin{cases} x'_1 = x_1 - 4x_2 \\ x'_2 = -8x_1 + 4x_2 \end{cases}$	✓
2830	$\begin{cases} x'_1 = 3x_1 - x_2 \\ x'_2 = 5x_1 - 3x_2 \end{cases}$	✓
2831	$\begin{cases} x'_1 = 2x_2 \\ x'_2 = -2x_1 - x_2 \end{cases}$	✓
2832	$\begin{cases} x'_1 = x_1 - x_2 \\ x'_2 = 5x_1 - 3x_2 \end{cases}$	✓
2833	$\begin{cases} x'_1 = 2x_1 + x_2 \\ x'_2 = -5x_1 - 2x_2 \end{cases}$	✓
2834	$\begin{cases} x'_1 = 4x_2 \\ x'_2 = -9x_1 \end{cases}$	✓
3237	$\begin{cases} x' - x = \cos(t) \\ y' + y = 4t \end{cases}$	✓

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#	ODE	Solved?
3238	$\begin{cases} x' + 5x = 3t^2 \\ y' + y = e^{3t} \end{cases}$	✓
3239	$\begin{cases} x' + 2x = 3t \\ x' + 2y' + y = \cos(2t) \end{cases}$	✓
3240	$\begin{cases} x' - x + y = 2 \sin(t) \\ x' + y' = 3y - 3x \end{cases}$	✓
3241	$\begin{cases} 2x' + 3x - y = e^t \\ 5x - 3y' = y + 2t \end{cases}$	✓
3242	$\begin{cases} 5y' - 3x' - 5y = 5t \\ 3x' - 5y' - 2x = 0 \end{cases}$	✓
3243	$\begin{cases} x' = 3x \\ y' = 2x + 3y \\ z' = 3y - 2z \end{cases}$	✓
3810	$\begin{cases} x'_1 = 2x_1 + x_2 \\ x'_2 = 2x_1 + 3x_2 \end{cases}$	✓
3811	$\begin{cases} x'_1 = 2x_1 - 3x_2 \\ x'_2 = x_1 - 2x_2 \end{cases}$	✓
3812	$\begin{cases} x'_1 = 4x_1 + 2x_2 \\ x'_2 = x_2 - x_1 \end{cases}$	✓
3813	$\begin{cases} x'_1 = 2x_1 + 4x_2 \\ x'_2 = -4x_1 - 6x_2 \end{cases}$	✓
3814	$\begin{cases} x'_1 = 2x_2 \\ x'_2 = -2x_1 \end{cases}$	✓
3815	$\begin{cases} x'_1 = x_1 - 3x_2 \\ x'_2 = 3x_1 + x_2 \end{cases}$	✓
3816	$\begin{cases} x'_1 = 2x_1 \\ x'_2 = x_2 - x_3 \\ x'_3 = x_2 + x_3 \end{cases}$	✓
3817	$\begin{cases} x'_1 = -2x_1 + x_2 + x_3 \\ x'_2 = x_1 - x_2 + 3x_3 \\ x'_3 = -x_2 - 3x_3 \end{cases}$	✓
3818	$\begin{cases} x'_1 = 2x_2 \\ x'_2 = x_1 + x_2 \end{cases}$	✓
	<i>i.c.</i>	

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#	ODE	Solved?
3819	$\begin{cases} x_1' = 2x_1 + 5x_2 \\ x_2' = -x_1 - 2x_2 \end{cases}$ i.c.	✓
3820	$\begin{cases} x_1' = 2x_1 + x_2 \\ x_2' = -x_1 + 4x_2 \end{cases}$ i.c.	✓
3821	$\begin{cases} x_1' = x_1 + 2x_2 + 5e^{4t} \\ x_2' = 2x_1 + x_2 \end{cases}$	✓
3822	$\begin{cases} x_1' = -2x_1 + x_2 + t \\ x_2' = -2x_1 + x_2 + 1 \end{cases}$	✓
3823	$\begin{cases} x_1' = x_1 + x_2 + e^{2t} \\ x_2' = 3x_1 - x_2 + 5e^{2t} \end{cases}$	✓
3824	$\begin{cases} x_1' = -\tan(t)x_1 + 3\cos(t)^2 \\ x_2' = x_1 + \tan(t)x_2 + 2\sin(t) \end{cases}$ i.c.	✗
3825	$\begin{cases} x_1' = 2x_1 - 4x_2 \\ x_2' = x_1 - 3x_2 \end{cases}$	✓
3826	$\begin{cases} x_1' = x_2 \\ x_2' = -bx_1 - ax_2 \end{cases}$	✓
3827	$\begin{cases} x_1' = 3x_2 \\ x_2' = -3x_1 \end{cases}$	✓
3828	$\begin{cases} x_1' = -2x_1 + 3x_2 \\ x_2' = -2x_1 + 5x_2 \end{cases}$ i.c.	✓
3829	$\begin{cases} x_1' = x_1 - 2x_2 \\ x_2' = 2x_1 + x_2 \end{cases}$	✓
3830	$\begin{cases} x_1' = 3x_1 + x_2 \\ x_2' = x_2 - x_1 \end{cases}$	✓
3831	$\begin{cases} x_1' = 2x_1 - x_2 + 3x_3 \\ x_2' = 3x_1 + x_2 \\ x_3' = 2x_1 - x_2 + 3x_3 \end{cases}$	✓
3832	$\begin{cases} x_1' = \frac{x_1}{t} \\ x_2' = x_2 \end{cases}$	✗

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#	ODE	Solved?
3833	$\begin{bmatrix} x_1' = \frac{x_1}{t} + tx_2 \\ x_2' = -\frac{x_1}{t} \end{bmatrix}$	<b>X</b>
3834	$\begin{bmatrix} x_1' = -x_1 + 2x_2 \\ x_2' = 2x_1 + 2x_2 \end{bmatrix}$	<b>✓</b>
3835	$\begin{bmatrix} x_1' = -2x_1 - 7x_2 \\ x_2' = -x_1 + 4x_2 \end{bmatrix}$	<b>✓</b>
3836	$\begin{bmatrix} x_1' = -4x_2 \\ x_2' = 4x_1 \end{bmatrix}$	<b>✓</b>
3837	$\begin{bmatrix} x_1' = x_1 - 2x_2 \\ x_2' = 5x_1 - 5x_2 \end{bmatrix}$	<b>✓</b>
3838	$\begin{bmatrix} x_1' = -x_1 + 2x_2 \\ x_2' = -2x_1 - x_2 \end{bmatrix}$	<b>✓</b>
3839	$\begin{bmatrix} x_1' = 2x_1 \\ x_2' = 5x_2 - 7x_3 \\ x_3' = 2x_2 - 4x_3 \end{bmatrix}$	<b>✓</b>
3840	$\begin{bmatrix} x_1' = -x_1 \\ x_2' = x_1 + 5x_2 - x_3 \\ x_3' = x_1 + 6x_2 - 2x_3 \end{bmatrix}$	<b>✓</b>
3841	$\begin{bmatrix} x_1' = x_2 \\ x_2' = -x_1 \\ x_3' = 5x_3 \end{bmatrix}$	<b>✓</b>
3842	$\begin{bmatrix} x_1' = 2x_1 + 3x_3 \\ x_2' = -4x_2 \\ x_3' = -3x_1 + 2x_3 \end{bmatrix}$	<b>✓</b>
3843	$\begin{bmatrix} x_1' = 3x_1 + 2x_2 + 6x_3 \\ x_2' = -2x_1 + x_2 - 2x_3 \\ x_3' = -x_1 - 2x_2 - 4x_3 \end{bmatrix}$	<b>✓</b>
3844	$\begin{bmatrix} x_1' = -3x_2 + x_3 \\ x_2' = -2x_1 - x_2 + x_3 \\ x_3' = 2x_3 \end{bmatrix}$	<b>✓</b>
3845	$\begin{bmatrix} x_1' = 3x_1 - x_3 \\ x_2' = -3x_2 - x_3 \\ x_3' = 2x_2 - x_3 \end{bmatrix}$	<b>✓</b>

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#	ODE	Solved?
3846	$\begin{bmatrix} x_1' = x_1 + x_2 - x_3 \\ x_2' = x_1 + x_2 + x_3 \\ x_3' = -x_1 + x_2 + x_3 \end{bmatrix}$	✓
3847	$\begin{bmatrix} x_1' = 2x_1 - x_2 + 3x_3 \\ x_2' = 2x_1 - x_2 + 3x_3 \\ x_3' = 2x_1 - x_2 + 3x_3 \end{bmatrix}$	✓
3848	$\begin{bmatrix} x_1' = x_1 + 2x_2 + 3x_3 + 4x_4 \\ x_2' = 4x_1 + 3x_2 + 2x_3 + x_4 \\ x_3' = 4x_1 + 5x_2 + 6x_3 + 7x_4 \\ x_4' = 7x_1 + 6x_2 + 5x_3 + 4x_4 \end{bmatrix}$	✓
3849	$\begin{bmatrix} x_1' = x_2 \\ x_2' = -x_1 \\ x_3' = -x_4 \\ x_4' = x_3 \end{bmatrix}$	✓
3850	$\begin{bmatrix} x_1' = -x_1 + 4x_2 \\ x_2' = 2x_1 - 3x_2 \end{bmatrix}$	✓
	<i>i.c.</i>	
3851	$\begin{bmatrix} x_1' = -x_1 - 6x_2 \\ x_2' = 3x_1 + 5x_2 \end{bmatrix}$	✓
	<i>i.c.</i>	
3852	$\begin{bmatrix} x_1' = 2x_1 - x_2 + 3x_3 \\ x_2' = 3x_1 + x_2 \\ x_3' = 2x_1 - x_2 + 3x_3 \end{bmatrix}$	✓
	<i>i.c.</i>	
3853	$\begin{bmatrix} x_1' = 4x_2 \\ x_2' = -4x_1 \end{bmatrix}$	✓
	<i>i.c.</i>	
3854	$\begin{bmatrix} x_1' = x_2 \\ x_2' = -bx_1 - ax_2 \end{bmatrix}$	✓
3855	$\begin{bmatrix} x_1' = x_1 + x_2 \\ x_2' = -x_1 + 3x_2 \end{bmatrix}$	✓
3856	$\begin{bmatrix} x_1' = -2x_2 \\ x_2' = 2x_1 + 4x_2 \end{bmatrix}$	✓
3857	$\begin{bmatrix} x_1' = -3x_1 - 2x_2 \\ x_2' = 2x_1 + x_2 \end{bmatrix}$	✓

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#	ODE	Solved?
3858	$\begin{bmatrix} x'_1 = x_2 \\ x'_2 = x_3 \\ x'_3 = x_1 + x_2 - x_3 \end{bmatrix}$	✓
3859	$\begin{bmatrix} x'_1 = 2x_1 + 2x_2 - x_3 \\ x'_2 = 2x_1 + x_2 - x_3 \\ x'_3 = 2x_1 + 3x_2 - x_3 \end{bmatrix}$	✓
3860	$\begin{bmatrix} x'_1 = -2x_1 \\ x'_2 = x_1 - 3x_2 - x_3 \\ x'_3 = -x_1 + x_2 - x_3 \end{bmatrix}$	✓
3861	$\begin{bmatrix} x'_1 = 15x_1 - 32x_2 + 12x_3 \\ x'_2 = 8x_1 - 17x_2 + 6x_3 \\ x'_3 = -x_3 \end{bmatrix}$	✓
3862	$\begin{bmatrix} x'_1 = 4x_1 \\ x'_2 = x_1 + 4x_2 \\ x'_3 = x_2 + 4x_3 \end{bmatrix}$	✓
3863	$\begin{bmatrix} x'_1 = x_1 \\ x'_2 = 3x_2 + 2x_3 \\ x'_3 = 2x_1 - 2x_2 - x_3 \end{bmatrix}$	✓
3864	$\begin{bmatrix} x'_1 = 3x_1 + x_2 \\ x'_2 = -x_1 + 5x_2 \\ x'_3 = 4x_3 \end{bmatrix}$	✓
3865	$\begin{bmatrix} x'_1 = x_2 - x_1 \\ x'_2 = -2x_1 - 3x_2 + x_3 \\ x'_3 = x_1 + x_2 - 2x_3 \end{bmatrix}$	✓
3866	$\begin{bmatrix} x'_1 = -x_2 \\ x'_2 = x_1 \\ x'_3 = x_1 + 2x_3 + x_4 \\ x'_4 = x_2 + 2x_4 \end{bmatrix}$	✓
3867	$\begin{bmatrix} x'_1 = -2x_1 + 3x_2 \\ x'_2 = 3x_1 - 2x_2 \\ x'_3 = x_1 + x_3 + x_4 \\ x'_4 = x_2 + x_4 \end{bmatrix}$	✓
3868	$\begin{bmatrix} x'_1 = -x_2 \\ x'_2 = x_1 \\ x'_3 = x_1 - x_4 \\ x'_4 = x_2 + x_3 \end{bmatrix}$	✓

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Table 2.57 System of differential equations

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#	ODE	Solved?
3869	$\begin{bmatrix} x_1' = -2x_1 - x_2 \\ x_2' = x_1 - 4x_2 \end{bmatrix}$ <p>i.c.</p>	✓
3870	$\begin{bmatrix} x_1' = -2x_1 - x_2 + 4x_3 \\ x_2' = -x_2 \\ x_3' = -x_1 - 3x_2 + 2x_3 \end{bmatrix}$ <p>i.c.</p>	✓
3871	$\begin{bmatrix} x_1' = 4x_1 - 3x_2 + e^{2t} \\ x_2' = 2x_1 - x_2 + e^t \end{bmatrix}$	✓
3872	$\begin{bmatrix} x_1' = 2x_1 - x_2 \\ x_2' = -x_1 + 2x_2 + 4e^t \end{bmatrix}$	✓
3873	$\begin{bmatrix} x_1' = 3x_1 + x_2 + te^{3t} \\ x_2' = 3x_2 + e^{3t} \end{bmatrix}$	✓
3874	$\begin{bmatrix} x_1' = -x_1 + x_2 + 20e^{3t} \\ x_2' = 3x_1 + x_2 + 12e^t \end{bmatrix}$	✓
3875	$\begin{bmatrix} x_1' = -x_1 + 2x_2 + 54te^{3t} \\ x_2' = -2x_1 + 4x_2 + 9e^{3t} \end{bmatrix}$	✓
3876	$\begin{bmatrix} x_1' = 2x_1 + 4x_2 + 8\sin(2t) \\ x_2' = -2x_1 - 2x_2 + 8\cos(2t) \end{bmatrix}$	✓
3877	$\begin{bmatrix} x_1' = 3x_1 + 2x_2 - 3e^t \\ x_2' = -2x_1 - x_2 + 6te^t \end{bmatrix}$	✓
3878	$\begin{bmatrix} x_1' = x_1 - e^t \\ x_2' = 2x_1 - 3x_2 + 2x_3 + 6e^{-t} \\ x_3' = x_1 - 2x_2 + 2x_3 + e^t \end{bmatrix}$	✓
3879	$\begin{bmatrix} x_1' = -x_1 - 2x_2 + 2x_3 - e^{3t} \\ x_2' = 2x_1 + 4x_2 - x_3 + 4e^{3t} \\ x_3' = 3x_3 + 3e^{3t} \end{bmatrix}$	✓
3880	$\begin{bmatrix} x_1' = 2x_1 - 3x_2 + 34\sin(t) \\ x_2' = -4x_1 - 2x_2 + 17\cos(t) \end{bmatrix}$	✓
3881	$\begin{bmatrix} x_1' = 2x_1 + x_2 \\ x_2' = 2x_2 \end{bmatrix}$	✓
3882	$\begin{bmatrix} x_1' = x_1 + 2x_2 \\ x_2' = -x_2 \end{bmatrix}$	✓

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#	ODE	Solved?
3883	$\begin{bmatrix} x'_1 = 3x_1 \\ x'_2 = 3x_2 - x_3 \\ x'_3 = x_2 + x_3 \end{bmatrix}$	✓
3884	$\begin{bmatrix} x'_1 = -3x_1 - 2x_2 \\ x'_2 = 2x_1 + x_2 \end{bmatrix}$	✓
3885	$\begin{bmatrix} x'_1 = 3x_1 - x_2 \\ x'_2 = 4x_1 - x_2 \end{bmatrix}$	✓
3886	$\begin{bmatrix} x'_1 = 2x_1 \\ x'_2 = x_2 - 8x_3 \\ x'_3 = 2x_2 - 7x_3 \end{bmatrix}$	✓
3887	$\begin{bmatrix} x'_1 = x_2 + 3x_3 \\ x'_2 = 2x_1 + 3x_2 - 2x_3 \\ x'_3 = 2x_2 + 2x_3 \end{bmatrix}$	✓
3888	$\begin{bmatrix} x'_1 = -8x_1 + 6x_2 - 3x_3 \\ x'_2 = -12x_1 + 10x_2 - 3x_3 \\ x'_3 = -2x_3 \end{bmatrix}$	✓
3889	$\begin{bmatrix} x'_1 = x_1 \\ x'_2 = 6x_2 - 7x_3 + 3x_4 \\ x'_3 = 3x_3 - x_4 \\ x'_4 = -4x_2 + 9x_3 - 3x_4 \end{bmatrix}$	✓
3890	$\begin{bmatrix} x'_1 = -x_2 \\ x'_2 = x_1 \\ x'_3 = x_2 - x_4 \\ x'_4 = x_2 + x_3 \end{bmatrix}$	✓
3891	$\begin{bmatrix} x'_1 = (2t - 1)x_1 \\ x'_2 = e^{-t^2+t}x_1 + x_2 \end{bmatrix}$	✗
3892	$\begin{bmatrix} x'_1 = t \cot(t^2)x_1 + \frac{t \cos(t^2)x_3}{2} \\ x'_2 = \frac{x_2}{t} - x_3 + 2 - t \sin(t) \\ x'_3 = \csc(t^2)x_1 + x_2 - x_3 + 1 - t \cos(t) \end{bmatrix}$	✗
3893	$\begin{bmatrix} x'_1 = -6x_1 + x_2 \\ x'_2 = 6x_1 - 5x_2 \end{bmatrix}$	✓
3894	$\begin{bmatrix} x'_1 = 9x_1 - 2x_2 \\ x'_2 = 5x_1 - 2x_2 \end{bmatrix}$	✓
3895	$\begin{bmatrix} x'_1 = 10x_1 - 4x_2 \\ x'_2 = 4x_1 + 2x_2 \end{bmatrix}$	✓

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#	ODE	Solved?
3896	$\begin{bmatrix} x_1' = -8x_1 + 5x_2 \\ x_2' = -5x_1 + 2x_2 \end{bmatrix}$	✓
3897	$\begin{bmatrix} x_1' = 3x_1 + 4x_3 \\ x_2' = 2x_2 \\ x_3' = -4x_1 - 5x_3 \end{bmatrix}$	✓
3898	$\begin{bmatrix} x_1' = -3x_1 - x_2 \\ x_2' = 4x_1 - 7x_2 \\ x_3' = 6x_1 + 6x_2 + 4x_3 \end{bmatrix}$	✓
3899	$\begin{bmatrix} x_1' = 3x_1 + 13x_2 \\ x_2' = -x_1 - 3x_2 \end{bmatrix}$	✓
3900	$\begin{bmatrix} x_1' = -3x_1 - 10x_2 \\ x_2' = 5x_1 + 11x_2 \end{bmatrix}$	✓
3901	$\begin{bmatrix} x_1' = -x_1 - 5x_2 + x_3 \\ x_2' = 4x_1 - 9x_2 - x_3 \\ x_3' = 3x_3 \end{bmatrix}$	✓
3902	$\begin{bmatrix} x_1' = -4x_1 \\ x_2' = 2x_1 + 5x_2 - 9x_3 \\ x_3' = 5x_2 - x_3 \end{bmatrix}$	✓
3903	$\begin{bmatrix} x_1' = 2x_1 - 2x_2 + x_3 \\ x_2' = x_1 - 4x_2 + x_3 \\ x_3' = 2x_1 + 2x_2 - 3x_3 \end{bmatrix}$	✓
3904	$\begin{bmatrix} x_1' = 2x_1 - 4x_2 + 3x_3 \\ x_2' = -9x_1 - 3x_2 - 9x_3 \\ x_3' = 4x_1 + 4x_2 + 3x_3 \end{bmatrix}$	✓
3905	$\begin{bmatrix} x_1' = -17x_1 - 42x_3 \\ x_2' = -7x_1 + 4x_2 - 14x_3 \\ x_3' = 7x_1 + 18x_3 \end{bmatrix}$	✓
3906	$\begin{bmatrix} x_1' = -16x_1 + 30x_2 - 18x_3 \\ x_2' = -8x_1 + 8x_2 + 16x_3 \\ x_3' = 8x_1 - 15x_2 + 9x_3 \end{bmatrix}$	✓
3907	$\begin{bmatrix} x_1' = -7x_1 - 6x_2 - 7x_3 \\ x_2' = -3x_1 - 3x_2 - 3x_3 \\ x_3' = 7x_1 + 6x_2 + 7x_3 \end{bmatrix}$	✓
3908	$\begin{bmatrix} x_1' = 3x_1 - x_2 - 2x_3 \\ x_2' = x_1 + 6x_2 + x_3 \\ x_3' = x_1 + 6x_3 \end{bmatrix}$	✓

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#	ODE	Solved?
3909	$\begin{cases} x'_1 = -x_1 - 4x_2 - 2x_3 \\ x'_2 = -4x_1 - 5x_2 - 6x_3 \\ x'_3 = 4x_1 + 8x_2 + 7x_3 \end{cases}$	✓
3910	$\begin{cases} x'_1 = 7x_1 - 2x_2 + 2x_3 \\ x'_2 = 4x_2 - x_3 \\ x'_3 = -x_1 + x_2 + 4x_3 \end{cases}$	✓
3911	$\begin{cases} x'_1 = -3x_1 - x_2 - 2x_3 \\ x'_2 = x_1 + x_3 \\ x'_3 = x_1 \end{cases}$	✓
3912	$\begin{cases} x'_1 = -2x_1 - x_3 \\ x'_2 = -x_2 \\ x'_3 = x_1 \end{cases}$	✓
3913	$\begin{cases} x'_1 = 2x_1 + 13x_2 \\ x'_2 = -x_1 - 2x_2 \\ x'_3 = 2x_3 + 4x_4 \\ x'_4 = 2x_4 \end{cases}$	✓
3914	$\begin{cases} x'_1 = 7x_1 - x_4 \\ x'_2 = 6x_2 \\ x'_3 = -x_3 \\ x'_4 = 2x_1 + 5x_4 \end{cases}$	✓
3915	$\begin{cases} x'_1 = -6x_1 + x_2 + 1 \\ x'_2 = 6x_1 - 5x_2 + e^{-t} \end{cases}$	✓
3916	$\begin{cases} x'_1 = 9x_1 - 2x_2 + 9t \\ x'_2 = 5x_1 - 2x_2 \end{cases}$	✓
3917	$\begin{cases} x'_1 = 10x_1 - 4x_2 \\ x'_2 = 4x_1 + 2x_2 + \frac{e^{6t}}{t} \end{cases}$	✓
3918	$\begin{cases} x'_1 = 2x_1 - 4x_2 + 3x_3 + e^{6t} \\ x'_2 = -9x_1 - 3x_2 - 9x_3 + 1 \\ x'_3 = 4x_1 + 4x_2 + 3x_3 \end{cases}$	✓
3919	$\begin{cases} x'_1 = 2x_1 - 2x_2 + x_3 + t \\ x'_2 = x_1 - 4x_2 + x_3 \\ x'_3 = 2x_1 + 2x_2 - 3x_3 + 1 \end{cases}$	✓
3920	$\begin{cases} x'_1 = -3x_1 + 4x_2 \\ x'_2 = 8x_1 + x_2 \end{cases}$	✓

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#	ODE	Solved?
3921	$\begin{bmatrix} x'_1 = -6x_2 \\ x'_2 = x_1 - 5x_2 \end{bmatrix}$	✓
3922	$\begin{bmatrix} x'_1 = 5x_1 + 9x_2 \\ x'_2 = -2x_1 - x_2 \end{bmatrix}$	✓
3923	$\begin{bmatrix} x'_1 = -4x_1 \\ x'_2 = -4x_2 \end{bmatrix}$	✓
3924	$\begin{bmatrix} x'_1 = 7x_1 - 2x_2 \\ x'_2 = x_1 + 4x_2 \end{bmatrix}$	✓
3925	$\begin{bmatrix} x'_1 = -3x_1 - 5x_2 \\ x'_2 = x_1 - 7x_2 \end{bmatrix}$	✓
3926	$\begin{bmatrix} x'_1 = -2x_1 - x_2 \\ x'_2 = x_1 - 4x_2 \end{bmatrix}$	✓
3927	$\begin{bmatrix} x'_1 = 10x_1 - 8x_2 \\ x'_2 = 2x_1 + 2x_2 \end{bmatrix}$	✓
4166	$\begin{bmatrix} y'_1 = y_2 \\ y'_2 = 3y_2 - 2y_1 \end{bmatrix}$	✓
4167	$\begin{bmatrix} y'_1 = y_1 + y_2 \\ y'_2 = 3y_2 - y_1 \end{bmatrix}$	✓
4168	$\begin{bmatrix} y'_1 = y_1 - y_2 \\ y'_2 = 2y_1 + 3y_2 \end{bmatrix}$	✓
4169	$\begin{bmatrix} y'_1 = 4y_2 \\ y'_2 = 4y_2 - y_1 \end{bmatrix}$	✓
4170	$\begin{bmatrix} y'_1 = y_1 + y_2 \\ y'_2 = y_1 - y_2 \end{bmatrix}$	✓
4171	$\begin{bmatrix} y'_1 = y_2 \\ y'_2 = y_1 \end{bmatrix}$	✓
4172	$\begin{bmatrix} y'_1 = y_2 - y_1 \\ y'_2 = 3y_1 - 4y_2 \end{bmatrix}$	✓
4173	$\begin{bmatrix} 2y'_1 = y_1 + y_2 \\ 2y'_2 = 5y_2 - 3y_1 \end{bmatrix}$	✓
	<i>i.c.</i>	

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#	ODE	Solved?
4174	$\begin{cases} y_1' = -2y_2 \\ y_2' = y_1 + 2y_2 \end{cases}$ i.c.	✓
4175	$\begin{cases} y_1' = 1 \\ y_2' = 2y_1 \end{cases}$	✓
4176	$\begin{cases} 2y_1' + y_2' - 4y_1 - y_2 = e^x \\ y_1' + 3y_1 + y_2 = 0 \end{cases}$	✓
4177	$\begin{cases} y_1' = y_2 \\ y_2' = -y_1 + y_3 \\ y_3' = -y_2 \end{cases}$	✓
4533	$\begin{cases} x' + 2x - y = 0 \\ x + y' - 2y = 0 \end{cases}$	✓
4534	$\begin{cases} 2x' + x - 5y' - 4y = 0 \\ -y' - 2x + y = 0 \end{cases}$	✓
4535	$\begin{cases} x' - x + 3y = 0 \\ 3x - y' + y = 0 \end{cases}$	✓
4536	$\begin{cases} x'' + x' + y' - 2y = 0 \\ x' + x - y' = 0 \end{cases}$	✗
4537	$\begin{cases} x'' - 3x - 4y = 0 \\ x + y'' + y = 0 \end{cases}$	✗
4538	$\begin{cases} y_1' - y_2 = 0 \\ 4y_1 + y_2' - 4y_2 - 2y_3 = 0 \\ -2y_1 + y_2 + y_3' + y_3 = 0 \end{cases}$	✓
4539	$\begin{cases} y_1' - 2y_1 + 3y_2 - 3y_3 = 0 \\ -4y_1 + y_2' + 5y_2 - 3y_3 = 0 \\ -4y_1 + 4y_2 + y_3' - 2y_3 = 0 \end{cases}$	✓
4540	$\begin{cases} x' + x + 2y = 8 \\ 2x + y' - 2y = 2e^{-t} - 8 \end{cases}$	✓
4541	$\begin{cases} x' = 2x - 3y + te^{-t} \\ y' = 2x - 3y + e^{-t} \end{cases}$	✓
4542	$\begin{cases} x' - x - 2y = e^t \\ -4x + y' - 3y = 1 \end{cases}$	✓
4543	$\begin{cases} x' - 4x + 3y = \sin(t) \\ -2x + y' + y = -2\cos(t) \end{cases}$	✓

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#	ODE	Solved?
4544	$\begin{cases} x' - y = 0 \\ -x + y' = e^t + e^{-t} \end{cases}$	✓
4545	$\begin{cases} x' + 2x + 5y = 0 \\ -x + y' - 2y = \sin(2t) \end{cases}$	✓
4546	$\begin{cases} x' - 2x + 2y' = -4e^{2t} \\ 2x' - 3x + 3y' - y = 0 \end{cases}$	✓
4547	$\begin{cases} 3x' + 2x + y' - 6y = 5e^t \\ 4x' + 2x + y' - 8y = 5e^t + 2t - 3 \end{cases}$	✓
4548	$\begin{cases} x' - 5x + 3y = 2e^{3t} \\ -x + y' - y = 5e^{-t} \end{cases}$	✓
4549	$\begin{cases} x' - 2x + y = 0 \\ x + y' - 2y = -5e^t \sin(t) \end{cases}$	✓
4550	$\begin{cases} x' + 4x + 2y = \frac{2}{e^t - 1} \\ 6x - y' + 3y = \frac{3}{e^t - 1} \end{cases}$	✗
4551	$\begin{cases} x' - x + y = \sec(t) \\ -2x + y' + y = 0 \end{cases}$	✓
4552	$\begin{cases} x' - x - 2y = 16te^t \\ 2x - y' - 2y = 0 \end{cases}$	✓
	<i>i.c.</i>	
4553	$\begin{cases} x' - 2x + y = 5e^t \cos(t) \\ x + y' - 2y = 10e^t \sin(t) \end{cases}$	✓
	<i>i.c.</i>	
4554	$\begin{cases} x' - 4x + 3y = \sin(t) \\ 2x + y' - y = 2\cos(t) \end{cases}$	✓
	<i>i.c.</i>	
4555	$\begin{cases} x' - 2x - y = 2e^t \\ x - y' + 2y = 3e^{4t} \end{cases}$	✓
	<i>i.c.</i>	
4556	$\begin{cases} x'' + x' + y' - 2y = 40e^{3t} \\ x' + x - y' = 36e^t \end{cases}$	✗
	<i>i.c.</i>	
4557	$\begin{cases} x' - 2x - y = 2e^t \\ y' - 2y - 4z = 4e^{2t} \\ x - z' - z = 0 \end{cases}$	✓
	<i>i.c.</i>	

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Table 2.57 System of differential equations

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#	ODE	Solved?
4558	$\begin{cases} x'' + 2x - 2y' = 0 \\ 3x' + y'' - 8y = 240e^t \end{cases}$ <i>i.c.</i>	<b>X</b>
4559	$\begin{cases} x' - x - 2y = 0 \\ x - y' = 15 \cos(t) \text{Heaviside}(t - \pi) \end{cases}$ <i>i.c.</i>	<b>✓</b>
4560	$\begin{cases} x' - x + y = 2 \sin(t) (1 - \text{Heaviside}(t - \pi)) \\ 2x - y' - y = 0 \end{cases}$ <i>i.c.</i>	<b>✓</b>
4561	$\begin{cases} 2x' + x - 5y' - 4y = 28e^t \text{Heaviside}(t - 2) \\ 3x' - 2x - 4y' + y = 0 \end{cases}$ <i>i.c.</i>	<b>✓</b>
4562	$\begin{cases} x'_1 = x_1 - x_2 \\ x'_2 = -4x_1 + x_2 \end{cases}$	<b>✓</b>
4563	$\begin{cases} x'_1 = x_1 - 3x_2 \\ x'_2 = 3x_1 + x_2 \end{cases}$	<b>✓</b>
4564	$\begin{cases} x'_1 = 5x_1 + 3x_2 \\ x'_2 = -3x_1 - x_2 \end{cases}$ <i>i.c.</i>	<b>✓</b>
4565	$\begin{cases} x'_1 = 2x_1 - x_2 + x_3 \\ x'_2 = x_1 + 2x_2 - x_3 \\ x'_3 = x_1 - x_2 + 2x_3 \end{cases}$	<b>✓</b>
4566	$\begin{cases} x'_1 = 3x_1 - x_2 + x_3 \\ x'_2 = x_1 + x_2 + x_3 \\ x'_3 = 4x_1 - x_2 + 4x_3 \end{cases}$	<b>✓</b>
4567	$\begin{cases} x'_1 = 2x_1 + x_2 \\ x'_2 = x_1 + 3x_2 - x_3 \\ x'_3 = -x_1 + 2x_2 + 3x_3 \end{cases}$	<b>✓</b>
4568	$\begin{cases} x'_1 = 3x_1 - 2x_2 - x_3 \\ x'_2 = 3x_1 - 4x_2 - 3x_3 \\ x'_3 = 2x_1 - 4x_2 \end{cases}$	<b>✓</b>
4569	$\begin{cases} x'_1 = x_1 - x_2 + x_3 \\ x'_2 = x_1 + x_2 - x_3 \\ x'_3 = -2x_2 + 2x_3 \end{cases}$ <i>i.c.</i>	<b>✓</b>

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#	ODE	Solved?
4570	$\begin{bmatrix} x_1' = -x_1 + x_2 - 2x_3 \\ x_2' = 4x_1 + x_2 \\ x_3' = 2x_1 + x_2 - x_3 \end{bmatrix}$	✓
4571	$\begin{bmatrix} x_1' = 2x_1 + x_2 + 26 \sin(t) \\ x_2' = 3x_1 + 4x_2 \end{bmatrix}$	✓
4572	$\begin{bmatrix} x_1' = -x_1 + 8x_2 + 9t \\ x_2' = x_1 + x_2 + 3e^{-t} \end{bmatrix}$	✓
4573	$\begin{bmatrix} x_1' = -x_1 + 2x_2 \\ x_2' = -3x_1 + 4x_2 + \frac{e^{3t}}{1+e^{2t}} \end{bmatrix}$	✗
4574	$\begin{bmatrix} x_1' = -4x_1 - 2x_2 + \frac{2}{e^t - 1} \\ x_2' = 6x_1 + 3x_2 - \frac{3}{e^t - 1} \end{bmatrix}$	✗
4575	$\begin{bmatrix} x_1' = x_1 + x_2 + e^{2t} \\ x_2' = -2x_1 + 3x_2 \end{bmatrix}$	✓
4576	$\begin{bmatrix} x_1' = -x_1 - 5x_2 \\ x_2' = x_1 + x_2 + \frac{4}{\sin(2t)} \end{bmatrix}$	✓
4577	$\begin{bmatrix} x_1' = 2x_1 + x_2 + 27t \\ x_2' = -x_1 + 4x_2 \end{bmatrix}$	✓
4578	$\begin{bmatrix} x_1' = 3x_1 - x_2 + e^t \\ x_2' = 4x_1 - x_2 \end{bmatrix}$	✓
4579	$\begin{bmatrix} x_1' = 3x_1 - 2x_2 \\ x_2' = 2x_1 - x_2 + 35e^{tt^{3/2}} \end{bmatrix}$	✓
4580	$\begin{bmatrix} x_1' = x_1 - x_2 + x_3 \\ x_2' = x_1 + x_2 - x_3 + 6e^{-t} \\ x_3' = 2x_1 - x_2 \end{bmatrix}$	✓
4581	$\begin{bmatrix} x_1' = x_1 - 2x_2 - x_3 \\ x_2' = -x_1 + x_2 + x_3 + 12t \\ x_3' = x_1 - x_3 \end{bmatrix}$	✓
4582	$\begin{bmatrix} x_1' = -3x_1 + 4x_2 - 2x_3 + e^t \\ x_2' = x_1 + x_2 \\ x_3' = 6x_1 - 6x_2 + 5x_3 \end{bmatrix}$	✓
4583	$\begin{bmatrix} x_1' = x_1 - x_2 - x_3 + 4e^t \\ x_2' = x_1 + x_2 \\ x_3' = 3x_1 + x_3 \end{bmatrix}$	✓

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#	ODE	Solved?
4584	$\begin{cases} x_1' = 2x_1 - x_2 + 2x_3 \\ x_2' = x_1 + 2x_3 \\ x_3' = -2x_1 + x_2 - x_3 + 4 \sin(t) \end{cases}$	✓
4585	$\begin{cases} x_1' = 4x_1 - x_2 - x_3 + e^{3t} \\ x_2' = x_1 + 2x_2 - x_3 \\ x_3' = x_1 + x_2 + 2x_3 \end{cases}$	✓
4586	$\begin{cases} x_1' = 2x_1 - x_2 - x_3 + 2e^{2t} \\ x_2' = 3x_1 - 2x_2 - 3x_3 \\ x_3' = -x_1 + x_2 + 2x_3 \end{cases}$	✓
4587	$\begin{cases} x_1' = 2x_1 - x_3 + 24t \\ x_2' = x_1 - x_2 \\ x_3' = 3x_1 - x_2 - x_3 \end{cases}$	✓
6788	$\begin{cases} x' - y' + y = -e^t \\ x + y' - y = e^{2t} \end{cases}$	✓
6789	$\begin{cases} x' + 2x + y' + y = t \\ 5x + y' + 3y = t^2 \end{cases}$	✓
6790	$\begin{cases} x' + x + 2y' + 7y = e^t + 2 \\ -2x + y' + 3y = e^t - 1 \end{cases}$	✓
6791	$\begin{cases} x' - x + y' + 3y = e^{-t} - 1 \\ x' + 2x + y' + 3y = 1 + e^{2t} \end{cases}$	✓
6792	$\begin{cases} x' - x + y' + 2y = 1 + e^t \\ y' + 2y + z' + z = e^t + 2 \\ x' - x + z' + z = 3 + e^t \end{cases}$	✓
7242	$\begin{cases} x_1' = 3x_1 - 18x_2 \\ x_2' = 2x_1 - 9x_2 \end{cases}$	✓
	<i>i.c.</i>	
7243	$\begin{cases} x_1' = x_1 + 3x_2 \\ x_2' = 5x_1 + 3x_2 \end{cases}$	✓
7244	$\begin{cases} x_1' = -x_1 + 3x_2 \\ x_2' = -3x_1 + 5x_2 \end{cases}$	✓
	<i>i.c.</i>	
7245	$\begin{cases} x_1' = 4x_1 - x_2 \\ x_2' = 5x_1 + 2x_2 \end{cases}$	✓
7246	$\begin{cases} x_1' = -2x_1 + x_2 \\ x_2' = x_1 - 2x_2 \end{cases}$	✓

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#	ODE	Solved?
7247	$\begin{bmatrix} x_1' = -2x_1 + x_2 + 2e^{-t} \\ x_2' = x_1 - 2x_2 + 3t \end{bmatrix}$	✓
7248	$\begin{bmatrix} x_1' = 3x_1 - x_2 \\ x_2' = 16x_1 - 5x_2 \end{bmatrix}$	✓
7249	$\begin{bmatrix} x_1' = x_1 - 2x_2 \\ x_2' = 3x_1 - 4x_2 \end{bmatrix}$	✓
7250	$\begin{bmatrix} x_1' = 3x_1 - 18x_2 \\ x_2' = 2x_1 - 9x_2 \end{bmatrix}$	✓
7251	$\begin{bmatrix} x_1' = -x_1 + 3x_2 \\ x_2' = -3x_1 + 5x_2 \end{bmatrix}$	✓
7252	$\begin{bmatrix} x_1' = 3x_1 - 18x_2 \\ x_2' = 2x_1 - 9x_2 \end{bmatrix}$	✓
7253	$\begin{bmatrix} x_1' = 3x_1 - x_2 \\ x_2' = 4x_1 - 2x_2 \end{bmatrix}$	✓
7254	$\begin{bmatrix} x_1' = x_1 + x_2 - 8 \\ x_2' = x_1 + x_2 + 3 \end{bmatrix}$	✓
7255	$\begin{bmatrix} x_1' = x_1 + x_2 - 8 \\ x_2' = x_1 + x_2 + 3 \end{bmatrix}$	✓
7445	$\begin{bmatrix} y_1' = y_1 \\ y_2' = y_1 + y_2 \end{bmatrix}$	✓
7446	$\begin{bmatrix} y_1' = y_2 \\ y_2' = 6y_1 + y_2 \end{bmatrix}$	✓
7447	$\begin{bmatrix} y_1' = y_1 + y_2 \\ y_2' = y_1 + y_2 + e^{3x} \end{bmatrix}$	✓
7448	$\begin{bmatrix} y_1' = 3y_1 + xy_3 \\ y_2' = y_2 + x^3y_3 \\ y_3' = 2xy_1 - y_2 + e^x y_3 \end{bmatrix}$	✗

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#	ODE	Solved?
7858	$\begin{cases} x' = x + 3y \\ y' = 3x + y \end{cases}$	✓
7859	$\begin{cases} x' = x + 3y \\ y' = 3x + y \end{cases}$ i.c.	✓
7860	$\begin{cases} x' = x + 2y \\ y' = 3x + 2y \end{cases}$	✓
7861	$\begin{cases} x' = x + 2y + t - 1 \\ y' = 3x + 2y - 5t - 2 \end{cases}$	✓
7862	$\begin{cases} x' = x + y \\ y' = y \end{cases}$	✓
7863	$\begin{cases} x' = x \\ y' = y \end{cases}$	✓
7864	$\begin{cases} x' = -3x + 4y \\ y' = -2x + 3y \end{cases}$	✓
7865	$\begin{cases} x' = 4x - 2y \\ y' = 5x + 2y \end{cases}$	✓
7866	$\begin{cases} x' = 5x + 4y \\ y' = y - x \end{cases}$	✓
7867	$\begin{cases} x' = 4x - 3y \\ y' = 8x - 6y \end{cases}$	✓
7868	$\begin{cases} x' = 2x \\ y' = 3y \end{cases}$	✓
7869	$\begin{cases} x' = -4x - y \\ y' = x - 2y \end{cases}$	✓
7870	$\begin{cases} x' = 7x + 6y \\ y' = 2x + 6y \end{cases}$	✓
7871	$\begin{cases} x' = x - 2y \\ y' = 4x + 5y \end{cases}$	✓
7872	$\begin{cases} x' = x + y - 5t + 2 \\ y' = 4x - 2y - 8t - 8 \end{cases}$	✓
7873	$\begin{cases} x' = 3x - 4y \\ y' = 4x - 7y \end{cases}$	✓

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#	ODE	Solved?
7874	$\begin{cases} x' = x + y \\ y' = 4x + y \end{cases}$	✓
7875	$\begin{cases} x' = -3x + \sqrt{2}y \\ y' = \sqrt{2}x - 2y \end{cases}$	✓
7876	$\begin{cases} x' = 5x + 3y \\ y' = -6x - 4y \end{cases}$	✓
7877	$\begin{cases} x' = 3x + 2y \\ y' = -2x - y \end{cases}$	✓
7878	$\begin{cases} x' = x + y \\ y' = y - x \end{cases}$	✓
7879	$\begin{cases} x' = 3x - 5y \\ y' = -x + 2y \end{cases}$	✓
7880	$\begin{cases} x' = x + 2y \\ y' = -4x + y \end{cases}$	✓
7881	$\begin{cases} x' = 3x + 2y + z \\ y' = -2x - y + 3z \\ z' = x + y + z \end{cases}$	✓
7882	$\begin{cases} x' = -x + y - z \\ y' = 2x - y - 4z \\ z' = 3x - y + z \end{cases}$	✓
7883	$\begin{cases} x' = x + 2y - 4t + 1 \\ y' = -x + 2y + 3t + 4 \end{cases}$	✓
7884	$\begin{cases} x' = -2x + y - t + 3 \\ y' = x + 4y + t - 2 \end{cases}$	✓
7885	$\begin{cases} x' = -4x + y - t + 3 \\ y' = -x - 5y + t + 1 \end{cases}$	✓
7886	$\begin{cases} x' = xy + 1 \\ y' = y - x \end{cases}$ i.c.	✗
7887	$\begin{cases} x' = ty + 1 \\ y' = -xt + y \end{cases}$ i.c.	✗
8055	$\begin{cases} x' = 3x - 5y \\ y' = 4x + 8y \end{cases}$	✓

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#	ODE	Solved?
8056	$\begin{bmatrix} x' = 4x - 7y \\ y' = 5x \end{bmatrix}$	✓
8057	$\begin{bmatrix} x' = -3x + 4y - 9z \\ y' = 6x - y \\ z' = 10x + 4y + 3z \end{bmatrix}$	✓
8058	$\begin{bmatrix} x' = x - y \\ y' = x + 2z \\ z' = z - x \end{bmatrix}$	✓
8059	$\begin{bmatrix} x' = x - y + z + t - 1 \\ y' = 2x + y - z - 3t^2 \\ z' = x + y + z + t^2 - t + 2 \end{bmatrix}$	✓
8060	$\begin{bmatrix} x' = -3x + 4y + e^{-t} \sin(2t) \\ y' = 5x + 9z + 4e^{-t} \cos(2t) \\ z' = y + 6z - e^{-t} \end{bmatrix}$	✓
8061	$\begin{bmatrix} x' = 4x + 2y + e^t \\ y' = -x + 3y - e^t \end{bmatrix}$	✓
8062	$\begin{bmatrix} x' = 7x + 5y - 9z - 8e^{-2t} \\ y' = 4x + y + z + 2e^{5t} \\ z' = -2y + 3z + e^{5t} - 3e^{-2t} \end{bmatrix}$	✓
8063	$\begin{bmatrix} x' = x - y + 2z + e^{-t} - 3t \\ y' = 3x - 4y + z + 2e^{-t} + t \\ z' = -2x + 5y + 6z + 2e^{-t} - t \end{bmatrix}$	✓
8064	$\begin{bmatrix} x' = 3x - 7y + 4 \sin(t) + (-4 + t)e^{4t} \\ y' = x + y + 8 \sin(t) + (2t + 1)e^{4t} \end{bmatrix}$	✓
8065	$\begin{bmatrix} x' = 3x - 4y \\ y' = 4x - 7y \end{bmatrix}$	✓
8066	$\begin{bmatrix} x' = -2x + 5y \\ y' = -2x + 4y \end{bmatrix}$	✓
8067	$\begin{bmatrix} x' = -x + \frac{y}{4} \\ y' = x - y \end{bmatrix}$	✓
8068	$\begin{bmatrix} x' = 2x + y \\ y' = -x \end{bmatrix}$	✓
8069	$\begin{bmatrix} x' = x + 2y + z \\ y' = 6x - y \\ z' = -x - 2y - z \end{bmatrix}$	✓

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#	ODE	Solved?
8070	$\begin{bmatrix} x' = x + z \\ y' = x + y \\ z' = -2x - z \end{bmatrix}$	✓
8071	$\begin{bmatrix} x' = x + 2y \\ y' = 4x + 3y \end{bmatrix}$	✓
8072	$\begin{bmatrix} x' = 2x + 2y \\ y' = x + 3y \end{bmatrix}$	✓
8073	$\begin{bmatrix} x' = -4x + 2y \\ y' = -\frac{5x}{2} + 2y \end{bmatrix}$	✓
8074	$\begin{bmatrix} x' = -\frac{5x}{2} + 2y \\ y' = \frac{3x}{4} - 2y \end{bmatrix}$	✓
8075	$\begin{bmatrix} x' = 10x - 5y \\ y' = 8x - 12y \end{bmatrix}$	✓
8076	$\begin{bmatrix} x' = -6x + 2y \\ y' = -3x + y \end{bmatrix}$	✓
8077	$\begin{bmatrix} x' = x + y - z \\ y' = 2y \\ z' = y - z \end{bmatrix}$	✓
8078	$\begin{bmatrix} x' = 2x - 7y \\ y' = 5x + 10y + 4z \\ z' = 5y + 2z \end{bmatrix}$	✓
8079	$\begin{bmatrix} x' = y - x \\ y' = x + 2y + z \\ z' = 3y - z \end{bmatrix}$	✓
8080	$\begin{bmatrix} x' = x + z \\ y' = y \\ z' = x + z \end{bmatrix}$	✓
8081	$\begin{bmatrix} x' = -x - y \\ y' = \frac{3x}{4} - \frac{3y}{2} + 3z \\ z' = \frac{x}{8} + \frac{y}{4} - \frac{z}{2} \end{bmatrix}$	✓
8082	$\begin{bmatrix} x' = -x - y \\ y' = \frac{3x}{4} - \frac{3y}{2} + 3z \\ z' = \frac{x}{8} + \frac{y}{4} - \frac{z}{2} \end{bmatrix}$	✓

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#	ODE	Solved?
8083	$\begin{cases} x' = -x + 4y + 2z \\ y' = 4x - y - 2z \\ z' = 6z \end{cases}$	✓
8084	$\begin{cases} x' = \frac{x}{2} \\ y' = x - \frac{y}{2} \end{cases}$ i.c.	✓
8085	$\begin{cases} x' = x + y + 4z \\ y' = 2y \\ z' = x + y + z \end{cases}$ i.c.	✓
8086	$\begin{cases} x' = \frac{9x}{10} + \frac{21y}{10} + \frac{16z}{5} \\ y' = \frac{7x}{10} + \frac{13y}{2} + \frac{21z}{5} \\ z' = \frac{11x}{10} + \frac{17y}{10} + \frac{17z}{5} \end{cases}$	✓
8087	$\begin{cases} x'_1 = x_1 + 2x_3 - \frac{9x_4}{5} \\ x'_2 = \frac{51x_2}{10} - x_4 + 3x_5 \\ x'_3 = x_1 + 2x_2 - 3x_3 \\ x'_4 = x_2 - \frac{31x_3}{10} + 4x_4 \\ x'_5 = -\frac{14x_1}{5} + \frac{3x_4}{2} - x_5 \end{cases}$	✓
8088	$\begin{cases} x' = 3x - y \\ y' = 9x - 3y \end{cases}$	✓
8089	$\begin{cases} x' = -6x + 5y \\ y' = -5x + 4y \end{cases}$	✓
8090	$\begin{cases} x' = -x + 3y \\ y' = -3x + 5y \end{cases}$	✓
8091	$\begin{cases} x' = 12x - 9y \\ y' = 4x \end{cases}$	✓
8092	$\begin{cases} x' = 3x - y - z \\ y' = x + y - z \\ z' = x - y + z \end{cases}$	✓
8093	$\begin{cases} x' = 3x + 2y + 4z \\ y' = 2x + 2z \\ z' = 4x + 2y + 3z \end{cases}$	✓
8094	$\begin{cases} x' = 5x - 4y \\ y' = x + 2z \\ z' = 2y + 5z \end{cases}$	✓

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#	ODE	Solved?
8095	$\begin{cases} x' = x \\ y' = 3y + z \\ z' = z - y \end{cases}$	✓
8096	$\begin{cases} x' = x \\ y' = 2x + 2y - z \\ z' = y \end{cases}$	✓
8097	$\begin{cases} x' = 4x + y \\ y' = 4y + z \\ z' = 4z \end{cases}$	✓
8098	$\begin{cases} x' = 2x + 4y \\ y' = -x + 6y \end{cases}$ i.c.	✓
8099	$\begin{cases} x' = z \\ y' = y \\ z' = x \end{cases}$ i.c.	✓
8100	$\begin{cases} x' = 6x - y \\ y' = 5x + 2y \end{cases}$	✓
8101	$\begin{cases} x' = x + y \\ y' = -2x - y \end{cases}$	✓
8102	$\begin{cases} x' = 5x + y \\ y' = -2x + 3y \end{cases}$	✓
8103	$\begin{cases} x' = 4x + 5y \\ y' = -2x + 6y \end{cases}$	✓
8104	$\begin{cases} x' = 4x - 5y \\ y' = 5x - 4y \end{cases}$	✓
8105	$\begin{cases} x' = x - 8y \\ y' = x - 3y \end{cases}$	✓
8106	$\begin{cases} x' = z \\ y' = -z \\ z' = y \end{cases}$	✓
8107	$\begin{cases} x' = 2x + y + 2z \\ y' = 3x + 6z \\ z' = -4x - 3z \end{cases}$	✓

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#	ODE	Solved?
8108	$\begin{cases} x' = x - 12y - 14z \\ y' = x + 2y - 3z \\ z' = x + y - 2z \end{cases}$	✓
	<i>i.c.</i>	
8109	$\begin{cases} x' = 2x + 3y - 7 \\ y' = -x - 2y + 5 \end{cases}$	✓
8110	$\begin{cases} x' = 5x + 9y + 2 \\ y' = -x + 11y + 6 \end{cases}$	✓
8385	$\begin{cases} x' = -2x + 3y \\ y' = -2x + 5y \end{cases}$	✓
	<i>i.c.</i>	
8386	$\begin{cases} x' = -x + 4y \\ y' = 2x - 3y \end{cases}$	✓
	<i>i.c.</i>	
8387	$\begin{cases} x' = 2x - y \\ y' = -x + 2y + 4e^t \end{cases}$	✓
8388	$\begin{cases} x' = 6x - 7y + 10 \\ y' = x - 2y - 2e^t \end{cases}$	✓
8459	$\begin{cases} x' = 9x + 4y \\ y' = -6x - y \\ z' = 6x + 4y + 3z \end{cases}$	✓
8460	$\begin{cases} x' = x - 3y \\ y' = 3x + 7y \end{cases}$	✓
8461	$\begin{cases} x' = x - 2y \\ y' = 2x + 5y \end{cases}$	✓
8462	$\begin{cases} x' = 7x + y \\ y' = -4x + 3y \end{cases}$	✓
8463	$\begin{cases} x' = x + y \\ y' = y \\ z' = z \end{cases}$	✓
8464	$\begin{cases} x' = 2x + y - z \\ y' = -x + 2z \\ z' = -x - 2y + 4z \end{cases}$	✓
8635	$\begin{cases} x' = x + 2y + 2t + 1 \\ y' = 5x + y + 3t - 1 \end{cases}$	✓

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#	ODE	Solved?
8731	$\begin{bmatrix} x' + y' - x = y + t \\ x' + y' = 2x + 3y + e^t \end{bmatrix}$	✓
8732	$\begin{bmatrix} 2x' + y' - x = y + t \\ x' + y' = 2x + 3y + e^t \end{bmatrix}$	✓
8733	$\begin{bmatrix} x' + y' - x = y + t + \sin(t) + \cos(t) \\ x' + y' = 2x + 3y + e^t \end{bmatrix}$	✓
8848	$\begin{bmatrix} x' = 3x + y \\ y' = y - x \end{bmatrix}$	✓
11531	$\begin{bmatrix} x' = ax \\ y' = b \end{bmatrix}$	✓
11532	$\begin{bmatrix} x' = ay \\ y' = -ax \end{bmatrix}$	✓
11533	$\begin{bmatrix} x' = ay \\ y' = bx \end{bmatrix}$	✓
11534	$\begin{bmatrix} x' = ax - y \\ y' = x + ay \end{bmatrix}$	✓
11535	$\begin{bmatrix} x' = ax + by \\ y' = cx + by \end{bmatrix}$	✓
11536	$\begin{bmatrix} ax' + by' = \alpha x + \beta y \\ bx' - ay' = \beta x - \alpha y \end{bmatrix}$	✓
11537	$\begin{bmatrix} x' = -y \\ y' = 2x + 2y \end{bmatrix}$	✓
11538	$\begin{bmatrix} x' + 3x + 4y = 0 \\ y' + 2x + 5y = 0 \end{bmatrix}$	✓
11539	$\begin{bmatrix} x' = -5x - 2y \\ y' = x - 7y \end{bmatrix}$	✓
11540	$\begin{bmatrix} x' = a_1x + b_1y + c_1 \\ y' = a_2x + b_2y + c_2 \end{bmatrix}$	✓
11541	$\begin{bmatrix} x' + 2y = 3t \\ y' - 2x = 4 \end{bmatrix}$	✓
11542	$\begin{bmatrix} x' + y - t^2 + 6t + 1 = 0 \\ -x + y' = -3t^2 + 3t + 1 \end{bmatrix}$	✓

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#	ODE	Solved?
11543	$\begin{bmatrix} x' + 3x - y = e^{2t} \\ y' + x + 5y = e^t \end{bmatrix}$	✓
11544	$\begin{bmatrix} x' + 2x + y' + y = e^{2t} + t \\ x' - x + y' + 3y = e^t - 1 \end{bmatrix}$	✓
11545	$\begin{bmatrix} x' + y' - y = e^t \\ 2x' + y' + 2y = \cos(t) \end{bmatrix}$	✓
11546	$\begin{bmatrix} 4x' + 9y' + 2x + 31y = e^t \\ 3x' + 7y' + x + 24y = 3 \end{bmatrix}$	✓
11547	$\begin{bmatrix} 4x' + 9y' + 11x + 31y = e^t \\ 3x' + 7y' + 8x + 24y = e^{2t} \end{bmatrix}$	✓
11548	$\begin{bmatrix} 4x' + 9y' + 44x + 49y = t \\ 3x' + 7y' + 34x + 38y = e^t \end{bmatrix}$	✓
11549	$\begin{bmatrix} x' = xf(t) + yg(t) \\ y' = -xg(t) + yf(t) \end{bmatrix}$	✗
11550	$\begin{bmatrix} x' + (ax + by)f(t) = g(t) \\ y' + (cx + dy)f(t) = h(t) \end{bmatrix}$	✗
11551	$\begin{bmatrix} x' = x \cos(t) \\ y' = x e^{-\sin(t)} \end{bmatrix}$	✗
11552	$\begin{bmatrix} tx' + y = 0 \\ ty' + x = 0 \end{bmatrix}$	✗
11553	$\begin{bmatrix} tx' + 2x = t \\ ty' - (t+2)x - ty = -t \end{bmatrix}$	✗
11554	$\begin{bmatrix} tx' + 2x - 2y = t \\ ty' + x + 5y = t^2 \end{bmatrix}$	✗
11555	$\begin{bmatrix} t^2(1 - \sin(t))x' = t(1 - 2\sin(t))x + t^2y \\ t^2(1 - \sin(t))y' = (t \cos(t) - \sin(t))x + t(1 - t \cos(t))y \end{bmatrix}$	✗
11556	$\begin{bmatrix} x' + y' + y = f(t) \\ x'' + y'' + y' + x + y = g(t) \end{bmatrix}$	✗
11557	$\begin{bmatrix} 2x' + y' - 3x = 0 \\ x'' + y' - 2y = e^{2t} \end{bmatrix}$	✗
11558	$\begin{bmatrix} x' + x - y' = 2t \\ x'' + y' - 9x + 3y = \sin(2t) \end{bmatrix}$	✗

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#	ODE	Solved?
11559	$\begin{bmatrix} x' - x + 2y = 0 \\ x'' - 2y' = 2t - \cos(2t) \end{bmatrix}$	X
11560	$\begin{bmatrix} tx' - ty' - 2y = 0 \\ tx'' + 2x' + xt = 0 \end{bmatrix}$	X
11561	$\begin{bmatrix} x'' + ay = 0 \\ y'' - a^2y = 0 \end{bmatrix}$	X
11562	$\begin{bmatrix} x'' = ax + by \\ y'' = cx + dy \end{bmatrix}$	X
11563	$\begin{bmatrix} x'' = a_1x + b_1y + c_1 \\ y'' = a_2x + b_2y + c_2 \end{bmatrix}$	X
11564	$\begin{bmatrix} x'' + x + y = -5 \\ y'' - 4x - 3y = -3 \end{bmatrix}$	X
11565	$\begin{bmatrix} x'' = \left(3 \cos(at + b)^2 - 1\right) c^2x + \frac{3c^2y \sin(2atb)}{2} \\ y'' = \left(3 \sin(at + b)^2 - 1\right) c^2y + \frac{3c^2x \sin(2atb)}{2} \end{bmatrix}$	X
11566	$\begin{bmatrix} x'' + 6x + 7y = 0 \\ y'' + 3x + 2y = 2t \end{bmatrix}$	X
11567	$\begin{bmatrix} x'' - ay' + bx = 0 \\ y'' + ax' + by = 0 \end{bmatrix}$	X
11568	$\begin{bmatrix} a_1x'' + b_1x' + c_1x - Ay' = B e^{i\omega t} \\ a_2y'' + b_2y' + c_2y + Ax' = 0 \end{bmatrix}$	X
11569	$\begin{bmatrix} x'' + a(x' - y') + b_1x = c_1e^{i\omega t} \\ y'' + a(y' - x') + b_2y = c_2e^{i\omega t} \end{bmatrix}$	X
11570	$\begin{bmatrix} a_{11}x'' + b_{11}x' + c_{11}x + a_{12}y'' + b_{12}y' + c_{12}y = 0 \\ a_{21}x'' + b_{21}x' + c_{21}x + a_{22}y'' + b_{22}y' + c_{22}y = 0 \end{bmatrix}$	X
11571	$\begin{bmatrix} x'' - 2x' - y' + y = 0 \\ y''' - y'' + 2x' - x = t \end{bmatrix}$	X
11572	$\begin{bmatrix} x'' + y'' + y' = \sinh(2t) \\ 2x'' + y'' = 2t \end{bmatrix}$	X
11573	$\begin{bmatrix} x'' - x' + y' = 0 \\ x'' + y'' - x = 0 \end{bmatrix}$	X

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#	ODE	Solved?
11574	$\begin{cases} x' = 2x \\ y' = 3x - 2y \\ z' = 2y + 3z \end{cases}$	✓
11575	$\begin{cases} x' = 4x \\ y' = x - 2y \\ z' = x - 4y + z \end{cases}$	✓
11576	$\begin{cases} x' = y - z \\ y' = x + y \\ z' = x + z \end{cases}$	✓
11577	$\begin{cases} x' - y + z = 0 \\ -x + y' - y = t \\ z' - x - z = t \end{cases}$	✓
11578	$\begin{cases} ax' = bc(y - z) \\ by' = ca(z - x) \\ cz' = ab(x - y) \end{cases}$	✓
11579	$\begin{cases} x' = cy - bz \\ y' = az - cx \\ z' = bx - ay \end{cases}$	✓
11580	$\begin{cases} x' = h(t)y - g(t)z \\ y' = f(t)z - h(t)x \\ z' = xg(t) - yf(t) \end{cases}$	✗
11581	$\begin{cases} x' = x + y - z \\ y' = y + z - x \\ z' = x - y + z \end{cases}$	✓
11582	$\begin{cases} x' = -3x + 48y - 28z \\ y' = -4x + 40y - 22z \\ z' = -6x + 57y - 31z \end{cases}$	✓
11583	$\begin{cases} x' = 6x - 72y + 44z \\ y' = 4x - 4y + 26z \\ z' = 6x - 63y + 38z \end{cases}$	✓
11584	$\begin{cases} x' = ax + gy + \beta z \\ y' = gx + by + \alpha z \\ z' = \beta x + \alpha y + cz \end{cases}$	✓
11585	$\begin{cases} tx' = 2x - t \\ t^3y' = -x + t^2y + t \\ t^4z' = -x - t^2y + t^3z + t \end{cases}$	✗

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#	ODE	Solved?
11586	$\begin{cases} atx' = bc(y - z) \\ bty' = ca(z - x) \\ ctz' = ab(x - y) \end{cases}$	X
11587	$\begin{cases} x'_1 = ax_2 + bx_3 \cos(ct) + bx_4 \sin(ct) \\ x'_2 = -ax_1 + bx_3 \sin(ct) - bx_4 \cos(ct) \\ x'_3 = -bx_1 \cos(ct) - bx_2 \sin(ct) + ax_4 \\ x'_4 = -bx_1 \sin(ct) + bx_2 \cos(ct) - ax_3 \end{cases}$	X
11588	$\begin{cases} x' = -x(x + y) \\ y' = y(x + y) \end{cases}$	X
11589	$\begin{cases} x' = (ay + b)x \\ y' = (cx + d)y \end{cases}$	X
11590	$\begin{cases} x' = x(a(px + qy) + \alpha) \\ y' = y(\beta + b(px + qy)) \end{cases}$	X
11591	$\begin{cases} x' = h(a - x)(c - x - y) \\ y' = k(b - y)(c - x - y) \end{cases}$	X
11592	$\begin{cases} x' = y^2 - \cos(x) \\ y' = -y \sin(x) \end{cases}$	X
11593	$\begin{cases} x' = -xy^2 + x + y \\ y' = yx^2 - x - y \end{cases}$	X
11594	$\begin{cases} x' = x + y - x(x^2 + y^2) \\ y' = -x + y - y(x^2 + y^2) \end{cases}$	X
11595	$\begin{cases} x' = -y + x(x^2 + y^2 - 1) \\ y' = x + y(x^2 + y^2 - 1) \end{cases}$	X
11596	$y' = \begin{cases} x' = -y(x^2 + y^2) \\ x^2 + y^2 & 2x \leq x^2 + y^2 \\ \left(\frac{x}{2} - \frac{y^2}{2x}\right)(x^2 + y^2) & \text{otherwise} \end{cases}$	X
11597	$\begin{cases} x' = -y + \begin{pmatrix} x(x^2 + y^2 - 1) \sin\left(\frac{1}{x^2 + y^2}\right) & x^2 + y^2 \neq 1 \\ 0 & \text{otherwise} \end{pmatrix} \\ y' = x + \begin{pmatrix} y(x^2 + y^2 - 1) \sin\left(\frac{1}{x^2 + y^2}\right) & x^2 + y^2 \neq 1 \\ 0 & \text{otherwise} \end{pmatrix} \end{cases}$	X
11598	$\begin{cases} (t^2 + 1)x' = -xt + y \\ (t^2 + 1)y' = -x - ty \end{cases}$	X

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#	ODE	Solved?
11599	$\begin{cases} (x^2 + y^2 - t^2) x' = -2xt \\ (x^2 + y^2 - t^2) y' = -2ty \end{cases}$	X
11600	$\begin{cases} x'^2 + tx' + ay' - x = 0 \\ x'y' + ty' - y = 0 \end{cases}$	X
11601	$\begin{cases} x = tx' + f(x', y') \\ y = ty' + g(x', y') \end{cases}$	X
11602	$\begin{cases} x'' = a e^{2x} - e^{-x} + e^{-2x} \cos(y)^2 \\ y'' = e^{-2x} \sin(y) \cos(y) - \frac{\sin(y)}{\cos(y)^3} \end{cases}$	X
11603	$\begin{cases} x'' = \frac{kx}{(x^2 + y^2)^{3/2}} \\ y'' = \frac{ky}{(x^2 + y^2)^{3/2}} \end{cases}$	X
11604	$\begin{cases} x' = y - z \\ y' = x^2 + y \\ z' = x^2 + z \end{cases}$	X
11605	$\begin{cases} ax' = (b - c) yz \\ by' = (c - a) zx \\ cz' = (-b + a) xy \end{cases}$	X
11606	$\begin{cases} x' = x(y - z) \\ y' = y(z - x) \\ z' = z(x - y) \end{cases}$	X
11607	$\begin{cases} x' + y' = xy \\ y' + z' = yz \\ x' + z' = xz \end{cases}$	X
11608	$\begin{cases} x' = \frac{x^2}{2} - \frac{y}{24} \\ y' = 2xy - 3z \\ z' = 3xz - \frac{y^2}{6} \end{cases}$	X
11609	$\begin{cases} x' = x(y^2 - z^2) \\ y' = y(z^2 - x^2) \\ z' = z(x^2 - y^2) \end{cases}$	X
11610	$\begin{cases} x' = x(y^2 - z^2) \\ y' = -y(z^2 + x^2) \\ z' = z(x^2 + y^2) \end{cases}$	X

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#	ODE	Solved?
11611	$\begin{bmatrix} x' = -xy^2 + x + y \\ y' = yx^2 - x - y \\ z' = y^2 - x^2 \end{bmatrix}$	X
11612	$\begin{bmatrix} (x - y)(x - z)x' = f(t) \\ (y - x)(y - z)y' = f(t) \\ (z - x)(z - y)z' = f(t) \end{bmatrix}$	X
11613	$\begin{bmatrix} x'_1 \sin(x_2) = x_4 \sin(x_3) + x_5 \cos(x_3) \\ x'_2 = x_4 \cos(x_3) - x_5 \sin(x_3) \\ x'_3 + x'_1 \cos(x_2) = a \\ x'_4 - (1 - \lambda)ax_5 = -m \sin(x_2) \cos(x_3) \\ x'_5 + (1 - \lambda)ax_4 = m \sin(x_2) \sin(x_3) \end{bmatrix}$	X
12700	$\begin{bmatrix} 3x' + 3x + 2y = e^t \\ 4x - 3y' + 3y = 3t \end{bmatrix}$	✓
12883	$\begin{bmatrix} x' = -3y \\ y' = 2x \end{bmatrix}$	✓
12884	$\begin{bmatrix} x' = -2y \\ y' = -4x \end{bmatrix}$	✓
12885	$\begin{bmatrix} x' = -3x \\ y' = 2y \end{bmatrix}$	✓
12886	$\begin{bmatrix} x' = 4y \\ y' = 2y \end{bmatrix}$	✓
12887	$\begin{bmatrix} x' = x \\ y' = x + 2y \end{bmatrix}$	✓
12888	$\begin{bmatrix} x' = x - y \\ y' = x + y \end{bmatrix}$	✓
12889	$\begin{bmatrix} x' = x + 2y \\ y' = x \end{bmatrix}$	✓
12890	$\begin{bmatrix} x' = -x - 2y \\ y' = 2x - y \end{bmatrix}$	✓
12891	$\begin{bmatrix} x' = -2x - 3y \\ y' = -x + 4y \end{bmatrix}$	✓
12892	$\begin{bmatrix} x' = -3y \\ y' = -2x + y \end{bmatrix}$	✓
12893	$\begin{bmatrix} x' = -2x \\ y' = x \end{bmatrix}$	✓

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#	ODE	Solved?
12894	$\begin{cases} x' = -2x - y \\ y' = -4y \end{cases}$	✓
12895	$\begin{cases} x' = x - 2y \\ y' = -2x + 4y \end{cases}$	✓
12896	$\begin{cases} x' = -6y \\ y' = 6y \end{cases}$	✓
12897	$\begin{cases} x' = 2x + 3y \\ y' = -x - 14 \end{cases}$	✓
12898	$\begin{cases} x' = 3y - 3x \\ y' = x + 2y - 1 \end{cases}$	✓
12899	$\begin{cases} x' = y - x \\ y' = -3y \end{cases}$	✓
12900	$\begin{cases} x' = x \\ y' = 3x - 4y \end{cases}$	✓
12901	$\begin{cases} x' = y - x \\ y' = x - 2y \end{cases}$	✓
12902	$\begin{cases} x' = x + y \\ y' = 3y - 3x \end{cases}$	✓
12903	$\begin{cases} x' = x - 2y \\ y' = 3x - 4y \end{cases}$	✓
	<i>i.c.</i>	
12904	$\begin{cases} x' = 5x - y \\ y' = 3x + y \end{cases}$	✓
	<i>i.c.</i>	
12905	$\begin{cases} x' = -3x + y \\ y' = -3y \end{cases}$	✓
12906	$\begin{cases} x' = x - y \\ y' = x + 3y \end{cases}$	✓
12907	$\begin{cases} x' = x + 2y \\ y' = 3x + 2y \end{cases}$	✓
12908	$\begin{cases} x' = -3x + 4y \\ y' = -3y \end{cases}$	✓
12909	$\begin{cases} x' = 2x + 2y \\ y' = 6x + 3y \end{cases}$	✓

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#	ODE	Solved?
12910	$\begin{cases} x' = -5x + 3y \\ y' = 2x - 10y \end{cases}$	✓
12911	$\begin{cases} x' = 2x \\ y' = 2y \end{cases}$	✓
12912	$\begin{cases} x' = 3x - 2y \\ y' = 4x - y \end{cases}$	✓
12913	$\begin{cases} x' = 5x - 4y \\ y' = x + y \end{cases}$	✓
12914	$\begin{cases} x' = 9y \\ y' = -x \end{cases}$	✓
12915	$\begin{cases} x' = 2x + y \\ y' = -x \end{cases}$ i.c.	✓
12916	$\begin{cases} x' = x - 2y \\ y' = -2x + 4y \end{cases}$	✓
12917	$\begin{cases} x' = 3x - y + 1 \\ y' = x + y + 2 \end{cases}$ i.c.	✓
12918	$\begin{cases} x' = -5x + 3y + e^{-t} \\ y' = 2x - 10y \end{cases}$	✓
12919	$\begin{cases} x' = y \\ y' = -x + \cos(wt) \end{cases}$	✓
12920	$\begin{cases} x' = 3x + 2y + 3 \\ y' = 7x + 5y + 2t \end{cases}$	✓
12921	$\begin{cases} x' = x - 3y \\ y' = 3x + 7y \end{cases}$	✓
13280	$\begin{cases} x' + y' - 2x - 4y = e^t \\ x' + y' - y = e^{4t} \end{cases}$	✓
13281	$\begin{cases} x' + y' - x = -2t \\ x' + y' - 3x - y = t^2 \end{cases}$	✓
13282	$\begin{cases} x' + y' - x - 3y = e^t \\ x' + y' + x = e^{3t} \end{cases}$	✓
13283	$\begin{cases} x' + y' - x - 2y = 2e^t \\ x' + y' - 3x - 4y = e^{2t} \end{cases}$	✓

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#	ODE	Solved?
13284	$\begin{cases} 2x' + y' - x - y = e^{-t} \\ x' + 2x + y' + y = e^t \end{cases}$	✓
13285	$\begin{cases} 2x' + y' - 3x - y = t \\ x' + y' - 4x - y = e^t \end{cases}$	✓
13286	$\begin{cases} x' + y' - x - 6y = e^{3t} \\ x' + 2y' - 2x - 6y = t \end{cases}$	✓
13287	$\begin{cases} x' + y' - x - 3y = 3t \\ x' + 2y' - 2x - 3y = 1 \end{cases}$	✓
13288	$\begin{cases} x' + y' + 2y = \sin(t) \\ x' + y' - x - y = 0 \end{cases}$	✓
13289	$\begin{cases} x' - y' - 2x + 4y = t \\ x' + y' - x - y = 1 \end{cases}$	✓
13290	$\begin{cases} 2x' + y' + x + 5y = 4t \\ x' + y' + 2x + 2y = 2 \end{cases}$	✓
13291	$\begin{cases} x' + y' - x + 5y = t^2 \\ x' + 2y' - 2x + 4y = 2t + 1 \end{cases}$	✓
13292	$\begin{cases} 2x' + y' + x + y = t^2 + 4t \\ x' + y' + 2x + 2y = 2t^2 - 2t \end{cases}$	✓
13293	$\begin{cases} 3x' + 2y' - x + y = t - 1 \\ x' + y' - x = t + 2 \end{cases}$	✓
13294	$\begin{cases} 2x' + 4y' + x - y = 3e^t \\ x' + y' + 2x + 2y = e^t \end{cases}$	✓
13295	$\begin{cases} 2x' + y' - x - y = -2t \\ x' + y' + x - y = t^2 \end{cases}$	✓
13296	$\begin{cases} 2x' + y' - x - y = 1 \\ x' + y' + 2x - y = t \end{cases}$	✓
13297	$\begin{cases} x' = 3x + 4y \\ y' = 2x + y \end{cases}$	✓
13298	$\begin{cases} x' = 5x + 3y \\ y' = 4x + y \end{cases}$	✓
13299	$\begin{cases} x' = 5x + 2y + 5t \\ y' = 3x + 4y + 17t \end{cases}$	✓

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#	ODE	Solved?
13300	$\begin{cases} x' = 5x - 2y \\ y' = 4x - y \end{cases}$	✓
13301	$\begin{cases} x' = 5x - y \\ y' = 3x + y \end{cases}$	✓
13302	$\begin{cases} x' = -2x + 7y \\ y' = 3x + 2y \end{cases}$ i.c.	✓
13303	$\begin{cases} x' = -2x + y \\ y' = 7x + 4y \end{cases}$ i.c.	✓
13318	$\begin{cases} x' = x + y - z \\ y' = 2x + 3y - 4z \\ z' = 4x + y - 4z \end{cases}$	✓
13319	$\begin{cases} x' = x - y - z \\ y' = x + 3y + z \\ z' = -3x - 6y + 6z \end{cases}$	✓
13362	$\begin{cases} x' = x + 3y \\ y' = 3x + y \end{cases}$	✓
13363	$\begin{cases} x' = 3x + 2y \\ y' = x + 2y \end{cases}$	✓
13364	$\begin{cases} x' = 3x + 4y \\ y' = 3x + 2y \end{cases}$	✓
13365	$\begin{cases} x' = 2x + 5y \\ y' = x - 2y \end{cases}$	✓
13366	$\begin{cases} x' = 2x - 4y \\ y' = 2x - 2y \end{cases}$	✓
13367	$\begin{cases} x' = x - 2y \\ y' = 4x + 5y \end{cases}$	✓
13368	$\begin{cases} x' = x - y \\ y' = x + 5y \end{cases}$	✓
13369	$\begin{cases} x' = x + 7y \\ y' = 3x + 5y \end{cases}$	✓
13370	$\begin{cases} x' = x + y \\ y' = 3x - y \end{cases}$	✓

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#	ODE	Solved?
13371	$\begin{cases} x' = ax + by \\ y' = cx + dy \end{cases}$	✓
13372	$\begin{cases} x' = 4x - 4y - x(x^2 + y^2) \\ y' = 4x + 4y - y(x^2 + y^2) \end{cases}$	✗
13373	$\begin{cases} x' = y + \frac{x(1-x^2-y^2)}{\sqrt{x^2+y^2}} \\ y' = -x + \frac{y(1-x^2-y^2)}{\sqrt{x^2+y^2}} \end{cases}$	✗
13379	$\begin{cases} x' = x - x^2 \\ y' = 2y - y^2 \end{cases}$	✗
13493	$\begin{cases} x' = 4x - y \\ y' = 2x + y + t^2 \end{cases}$ i.c.	✓
13494	$\begin{cases} x' = x - 4y + \cos(2t) \\ y' = x + y \end{cases}$ i.c.	✓
13495	$\begin{cases} x' = 2x + 2y \\ y' = 6x + 3y + e^t \end{cases}$ i.c.	✓
13496	$\begin{cases} x' = 5x - 4y + e^{3t} \\ y' = x + y \end{cases}$ i.c.	✓
13497	$\begin{cases} x' = 2x + 5y \\ y' = -2x + \cos(3t) \end{cases}$ i.c.	✓
13498	$\begin{cases} x' = x + y + e^{-t} \\ y' = 4x - 2y + e^{2t} \end{cases}$ i.c.	✓
13499	$\begin{cases} x' = 8x + 14y \\ y' = 7x + y \end{cases}$ i.c.	✓
13509	$\begin{cases} x' = 8x + 14y \\ y' = 7x + y \end{cases}$	✓
13510	$\begin{cases} x' = 2x \\ y' = -5x - 3y \end{cases}$	✓
13511	$\begin{cases} x' = 11x - 2y \\ y' = 3x + 4y \end{cases}$	✓

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#	ODE	Solved?
13512	$\begin{cases} x' = x + 20y \\ y' = 40x - 19y \end{cases}$	✓
13513	$\begin{cases} x' = -2x + 2y \\ y' = x - y \end{cases}$	✓
13514	$\begin{cases} x' = -y \\ y' = x - y \end{cases}$	✓
13515	$\begin{cases} x' = -2x + 3y \\ y' = -6x + 4y \end{cases}$	✓
13516	$\begin{cases} x' = -11x - 2y \\ y' = 13x - 9y \end{cases}$	✓
13517	$\begin{cases} x' = 7x - 5y \\ y' = 10x - 3y \end{cases}$	✓
13518	$\begin{cases} x' = 5x - 4y \\ y' = x + y \end{cases}$	✓
13519	$\begin{cases} x' = -6x + 2y \\ y' = -2x - 2y \end{cases}$	✓
13520	$\begin{cases} x' = -3x - y \\ y' = x - 5y \end{cases}$	✓
13521	$\begin{cases} x' = 13x \\ y' = 13y \end{cases}$	✓
13522	$\begin{cases} x' = 7x - 4y \\ y' = x + 3y \end{cases}$	✓
13523	$\begin{cases} x' = y - x \\ y' = y - x \end{cases}$	✓
13620	$\begin{cases} x' = y \\ y' = -x \end{cases}$	✓
	<i>i.c.</i>	
13621	$\begin{cases} x' + 5x + y = e^t \\ y' - x - 3y = e^{2t} \end{cases}$	✓
13622	$\begin{cases} x' = y \\ y' = z \\ z' = x \end{cases}$	✓
13623	$\begin{cases} x' = y \\ y' = \frac{y^2}{x} \end{cases}$	✗

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#	ODE	Solved?
13774	$\begin{bmatrix} x' = x - 2y \\ y' = 3x - 4y \end{bmatrix}$	✓
13775	$\begin{bmatrix} x' = \frac{5x}{4} + \frac{3y}{4} \\ y' = \frac{x}{2} - \frac{3y}{2} \end{bmatrix}$	✓
13776	$\begin{bmatrix} x' - x + 2y = 0 \\ y' + y - x = 0 \end{bmatrix}$	✓
13777	$\begin{bmatrix} x' + 5x - 2y = 0 \\ 2x + y' - y = 0 \end{bmatrix}$	✓
13778	$\begin{bmatrix} x' - 3x + 2y = 0 \\ y' - x + 3y = 0 \end{bmatrix}$	✓
13779	$\begin{bmatrix} x' + x - z = 0 \\ x + y' - y = 0 \\ z' + x + 2y - 3z = 0 \end{bmatrix}$	✓
13780	$\begin{bmatrix} x' = -\frac{x}{2} + 2y - 3z \\ y' = y - \frac{z}{2} \\ z' = -2x + z \end{bmatrix}$	✓
13781	$\begin{bmatrix} x' + y' = y \\ x' - y' = x \end{bmatrix}$	✓
13782	$\begin{bmatrix} x' + 2y' = t \\ x' - y' = x + y \end{bmatrix}$	✓
13783	$\begin{bmatrix} x' - y' = x + y - t \\ 2x' + 3y' = 2x + 6 \end{bmatrix}$	✓
13784	$\begin{bmatrix} 2x' - y' = t \\ 3x' + 2y' = y \end{bmatrix}$	✓
13785	$\begin{bmatrix} 5x' - 3y' = x + y \\ 3x' - y' = t \end{bmatrix}$	✓
13786	$\begin{bmatrix} x' - 4y' = 0 \\ 2x' - 3y' = y + t \end{bmatrix}$	✓
13787	$\begin{bmatrix} 3x' + 2y' = \sin(t) \\ x' - 2y' = x + y + t \end{bmatrix}$	✓
13788	$\begin{bmatrix} x' = -4x + 9y + 12e^{-t} \\ y' = -5x + 2y \end{bmatrix}$	✓

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#	ODE	Solved?
13789	$\begin{cases} x' = -7x + 6y + 6e^{-t} \\ y' = -12x + 5y + 37 \end{cases}$	✓
13790	$\begin{cases} x' = -7x + 10y + 18e^t \\ y' = -10x + 9y + 37 \end{cases}$	✓
13791	$\begin{cases} x' = -14x + 39y + 78 \sinh(t) \\ y' = -6x + 16y + 6 \cosh(t) \end{cases}$	✓
13792	$\begin{cases} x' = 2x + 4y - 2z - 2 \sinh(t) \\ y' = 4x + 2y - 2z + 10 \cosh(t) \\ z' = -x + 3y + z + 5 \end{cases}$	✓
13793	$\begin{cases} x' = 2x + 6y - 2z + 50e^t \\ y' = 6x + 2y - 2z + 21e^{-t} \\ z' = -x + 6y + z + 9 \end{cases}$	✓
13794	$\begin{cases} x' = -2x - 2y + 4z \\ y' = -2x + y + 2z \\ z' = -4x - 2y + 6z + e^{2t} \end{cases}$	✓
13795	$\begin{cases} x' = 3x - 2y + 3z \\ y' = x - y + 2z + 2e^{-t} \\ z' = -2x + 2y - 2z \end{cases}$	✓
13796	$\begin{cases} x' = 7x + y - 1 - 6e^t \\ y' = -4x + 3y + 4e^t - 3 \end{cases}$	✓
13797	$\begin{cases} x' = 3x - 2y + 24 \sin(t) \\ y' = 9x - 3y + 12 \cos(t) \end{cases}$	✓
13798	$\begin{cases} x' = 7x - 4y + 10e^t \\ y' = 3x + 14y + 6e^{2t} \end{cases}$	✓
13799	$\begin{cases} x' = -7x + 4y + 6e^{3t} \\ y' = -5x + 2y + 6e^{2t} \end{cases}$	✓
13800	$\begin{cases} x' = -3x - 3y + z \\ y' = 2y + 2z + 29e^{-t} \\ z' = 5x + y + z + 39e^t \end{cases}$	✓

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#	ODE	Solved?
13801	$\begin{cases} x' = 2x + y - z + 5 \sin(t) \\ y' = y + z - 10 \cos(t) \\ z' = x + z + 2 \end{cases}$	✓
	i.c.	
13802	$\begin{cases} x' = -3x + 3y + z + 5 \sin(2t) \\ y' = x - 5y - 3z + 5 \cos(2t) \\ z' = -3x + 7y + 3z + 23 e^t \end{cases}$	✓
	i.c.	
13803	$\begin{cases} x' = -3x + y - 3z + 2 e^t \\ y' = 4x - y + 2z + 4 e^t \\ z' = 4x - 2y + 3z + 4 e^t \end{cases}$	✓
	i.c.	
13804	$\begin{cases} x' = x + 5y + 10 \sinh(t) \\ y' = 19x - 13y + 24 \sinh(t) \end{cases}$	✓
13805	$\begin{cases} x' = 9x - 3y - 6t \\ y' = -x + 11y + 10t \end{cases}$	✓
13948	$\begin{cases} x' = y + 1 \\ y' = 1 + x \end{cases}$	✓
	i.c.	
13949	$\begin{cases} x' = x - 2y \\ y' = x - y \end{cases}$	✓
	i.c.	
13950	$\begin{cases} 4x' - y' + 3x = \sin(t) \\ x' + y = \cos(t) \end{cases}$	✓
13961	$\begin{cases} x' = 2x - 3y \\ y' = 5x + 6y \end{cases}$	✓
13962	$\begin{cases} x' = -4x - 10y \\ y' = x - 2y \end{cases}$	✓
13963	$\begin{cases} x' = 12x + 18y \\ y' = -8x - 12y \end{cases}$	✓
13966	$\begin{cases} x' = y - x \\ y' = -x - 3y \end{cases}$	✓
	i.c.	
13967	$\begin{cases} x' = x - 5y \\ y' = x - y \end{cases}$	✓
13968	$\begin{cases} x' = x + y \\ y' = x - 2y \end{cases}$	✓

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#	ODE	Solved?
13969	$\begin{bmatrix} x' = -4x + 2y \\ y' = 3x - 2y \end{bmatrix}$	✓
13970	$\begin{bmatrix} x' = x + 2y \\ y' = 2x + 2y \end{bmatrix}$	✓
13971	$\begin{bmatrix} x' = 4x - 2y \\ y' = 3x - y \end{bmatrix}$	✓
13972	$\begin{bmatrix} x' = 2x + y \\ y' = y - x \end{bmatrix}$	✓
13973	$\begin{bmatrix} x' = 3x - y \\ y' = x + y \end{bmatrix}$	✓
13974	$\begin{bmatrix} x' = x - y \\ y' = 2x - 2y \end{bmatrix}$	✓
13975	$\begin{bmatrix} x' = x \\ y' = 2x - 3y \end{bmatrix}$	✓
13976	$\begin{bmatrix} x' = x \\ y' = x + 3y \end{bmatrix}$	✓
13977	$\begin{bmatrix} x' = -y \\ y' = 2x - 4y \end{bmatrix}$	✓
13978	$\begin{bmatrix} x' = x \\ y' = y \end{bmatrix}$	✓
13979	$\begin{bmatrix} x' = 0 \\ y' = x \end{bmatrix}$	✓
13985	$\begin{bmatrix} x' = x - 5y \\ y' = x - y \end{bmatrix}$	✓
14233	$\begin{bmatrix} y_1' = 2y_1 - 3y_2 \\ y_2' = y_1 - 2y_2 \end{bmatrix}$	✓
14234	$\begin{bmatrix} y_1' = y_1 - 2y_2 \\ y_2' = y_1 + 3y_2 \end{bmatrix}$	✓
14235	$\begin{bmatrix} y_1' = y_1 + 2y_2 + x - 1 \\ y_2' = 3y_1 + 2y_2 - 5x - 2 \end{bmatrix}$	✓
	<i>i.c.</i>	
14236	$\begin{bmatrix} y_1' = \frac{2y_1}{x} - \frac{y_2}{x^2} - 3 + \frac{1}{x} - \frac{1}{x^2} \\ y_2' = 2y_1 + 1 - 6x \end{bmatrix}$	✗
	<i>i.c.</i>	

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#	ODE	Solved?
14237	$\begin{cases} y_1' = \frac{5y_1}{x} + \frac{4y_2}{x} - 2x \\ y_2' = -\frac{6y_1}{x} - \frac{5y_2}{x} + 5x \end{cases}$	✗
	i.c.	
14238	$\begin{cases} y_1' = 3y_1 - 2y_2 \\ y_2' = y_2 - y_1 \end{cases}$	✓
	i.c.	
14239	$\begin{cases} y_1' = \sin(x)y_1 + \sqrt{x}y_2 + \ln(x) \\ y_2' = \tan(x)y_1 - e^x y_2 + 1 \end{cases}$	✗
	i.c.	
14240	$\begin{cases} y_1' = \sin(x)y_1 + \sqrt{x}y_2 + \ln(x) \\ y_2' = \tan(x)y_1 - e^x y_2 + 1 \end{cases}$	✗
	i.c.	
14241	$\begin{cases} y_1' = e^{-x}y_1 - \sqrt{x+1}y_2 + x^2 \\ y_2' = \frac{y_1}{(-2+x)^2} \end{cases}$	✗
	i.c.	
14242	$\begin{cases} y_1' = e^{-x}y_1 - \sqrt{x+1}y_2 + x^2 \\ y_2' = \frac{y_1}{(-2+x)^2} \end{cases}$	✗
	i.c.	
14251	$\begin{cases} y_1' = 2y_1 - 3y_2 + 5e^x \\ y_2' = y_1 + 4y_2 - 2e^{-x} \end{cases}$	✓
14252	$\begin{cases} y_1' = y_2 - 2y_1 + \sin(2x) \\ y_2' = -3y_1 + y_2 - 2\cos(3x) \end{cases}$	✓
14253	$\begin{cases} y_1' = 2y_2 \\ y_2' = 3y_1 \\ y_3' = 2y_3 - y_1 \end{cases}$	✓
14254	$\begin{cases} y_1' = 2xy_1 - x^2y_2 + 4x \\ y_2' = e^x y_1 + 3e^{-x}y_2 - \cos(3x) \end{cases}$	✗
14255	$\begin{cases} y_1' = 2y_1 - 3y_2 \\ y_2' = y_1 - 2y_2 \end{cases}$	✓
14256	$\begin{cases} y_1' = 2y_1 - 3y_2 + 4x - 2 \\ y_2' = y_1 - 2y_2 + 3x \end{cases}$	✓
14257	$\begin{cases} y_1' = \frac{5y_1}{x} + \frac{4y_2}{x} \\ y_2' = -\frac{6y_1}{x} - \frac{5y_2}{x} \end{cases}$	✗
14258	$\begin{cases} y_1' = \frac{5y_1}{x} + \frac{4y_2}{x} - 2x \\ y_2' = -\frac{6y_1}{x} - \frac{5y_2}{x} + 5x \end{cases}$	✗

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#	ODE	Solved?
14259	$\begin{bmatrix} y_1' = 2y_1 + y_2 - 2y_3 \\ y_2' = 3y_2 - 2y_3 \\ y_3' = 3y_1 + y_2 - 3y_3 \end{bmatrix}$	✓
14260	$\begin{bmatrix} y_1' = 5y_1 - 5y_2 - 5y_3 \\ y_2' = -y_1 + 4y_2 + 2y_3 \\ y_3' = 3y_1 - 5y_2 - 3y_3 \end{bmatrix}$	✓
14261	$\begin{bmatrix} y_1' = 4y_1 + 6y_2 + 6y_3 \\ y_2' = y_1 + 3y_2 + 2y_3 \\ y_3' = -y_1 - 4y_2 - 3y_3 \end{bmatrix}$	✓
14262	$\begin{bmatrix} y_1' = y_1 + 2y_2 - 3y_3 \\ y_2' = -3y_1 + 4y_2 - 2y_3 \\ y_3' = 2y_1 + y_3 \end{bmatrix}$	✓
14263	$\begin{bmatrix} y_1' = -2y_1 - y_2 + y_3 \\ y_2' = -y_1 - 2y_2 - y_3 \\ y_3' = y_1 - y_2 - 2y_3 \end{bmatrix}$	✓
14264	$\begin{bmatrix} y_1' = y_1 + y_2 + 2y_3 \\ y_2' = y_1 + y_2 + 2y_3 \\ y_3' = 2y_1 + 2y_2 + 4y_3 \end{bmatrix}$	✓
14265	$\begin{bmatrix} y_1' = 2y_1 + y_2 \\ y_2' = -y_1 + 2y_2 \\ y_3' = 3y_3 - 4y_4 \\ y_4' = 4y_3 + 3y_4 \end{bmatrix}$	✓
14266	$\begin{bmatrix} y_1' = y_2 \\ y_2' = -3y_1 + 2y_3 \\ y_3' = y_4 \\ y_4' = 2y_1 - 5y_3 \end{bmatrix}$	✓
14267	$\begin{bmatrix} y_1' = 3y_1 + 2y_2 \\ y_2' = 3y_2 - 2y_1 \\ y_3' = y_3 \\ y_4' = 2y_4 \end{bmatrix}$	✓
14268	$\begin{bmatrix} y_1' = y_2 + y_4 \\ y_2' = y_1 - y_3 \\ y_3' = y_4 \\ y_4' = y_3 \end{bmatrix}$	✓
14269	$\begin{bmatrix} x' = -2x + 3y \\ y' = -x + 2y \end{bmatrix}$	✓

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#	ODE	Solved?
14270	$\begin{cases} x' = -x + 2y \\ y' = -2x + 3y \end{cases}$	✓
14271	$\begin{cases} x' = -x - 2y \\ y' = 2x - 3y \end{cases}$	✓
14272	$\begin{cases} x' = -x - 2y \\ y' = 5x + y \end{cases}$	✓
14273	$\begin{cases} x' = -x + 2y \\ y' = -2x - y \end{cases}$	✓
14274	$\begin{cases} x' = x - 2y \\ y' = 2x + y \end{cases}$	✓
14275	$\begin{cases} x' = -5x - y + 2 \\ y' = 3x - y - 3 \end{cases}$	✓
14276	$\begin{cases} x' = 3x - 2y - 6 \\ y' = 4x - y + 2 \end{cases}$	✓
14473	$\begin{cases} x' = x - y \\ y' = x - y \end{cases}$	✓
14474	$\begin{cases} x' = 2x - y \\ y' = 0 \end{cases}$	✓
14475	$\begin{cases} x' = x \\ y' = 2x + y \end{cases}$	✓
14476	$\begin{cases} x' = -x + 2y \\ y' = 2x - y \end{cases}$	✓
14477	$\begin{cases} x' = 2x + y \\ y' = x + y \end{cases}$	✓
14478	$\begin{cases} x' = 3y \\ y' = 3\pi y - \frac{x}{3} \end{cases}$	✓
14479	$\begin{cases} p' = 3p - 2q - 7r \\ q' = -2p + 6r \\ r' = \frac{73q}{100} + 2r \end{cases}$	✓
14480	$\begin{cases} x' = -3x + 2\pi y \\ y' = 4x - y \end{cases}$	✓
14481	$\begin{cases} x' = \beta y \\ y' = \gamma x - y \end{cases}$	✓

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#	ODE	Solved?
14482	$\begin{cases} x' = 2y \\ y' = x + y \end{cases}$	✓
	<i>i.c.</i>	
14483	$\begin{cases} x' = x - y \\ y' = x + 3y \end{cases}$	✓
	<i>i.c.</i>	
14484	$\begin{cases} x' = -2x - y \\ y' = 2x - 5y \end{cases}$	✓
	<i>i.c.</i>	
14485	$\begin{cases} x' = -2x - 3y \\ y' = 3x - 2y \end{cases}$	✓
	<i>i.c.</i>	
14486	$\begin{cases} x' = 2x + 3y \\ y' = x \end{cases}$	✓
	<i>i.c.</i>	
14487	$\begin{cases} x' = 1 \\ y' = x \end{cases}$	✓
14488	$\begin{cases} x' = 3x \\ y' = -2y \end{cases}$	✓
14489	$\begin{cases} x' = -4x - 2y \\ y' = -x - 3y \end{cases}$	✓
14490	$\begin{cases} x' = -5x - 2y \\ y' = -x - 4y \end{cases}$	✓
14491	$\begin{cases} x' = 2x + y \\ y' = -x + 4y \end{cases}$	✓
14492	$\begin{cases} x' = -\frac{x}{2} \\ y' = x - \frac{y}{2} \end{cases}$	✓
14493	$\begin{cases} x' = 5x + 4y \\ y' = 9x \end{cases}$	✓
14494	$\begin{cases} x' = 3x + 4y \\ y' = x \end{cases}$	✓
14495	$\begin{cases} x' = 2x - y \\ y' = y - x \end{cases}$	✓
14496	$\begin{cases} x' = 2x + y \\ y' = x + y \end{cases}$	✓

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#	ODE	Solved?
14497	$\begin{cases} x' = -x - 2y \\ y' = x - 4y \end{cases}$	✓
14498	$\begin{cases} x' = -2x - 2y \\ y' = -2x + y \end{cases}$	✓
14499	$\begin{cases} x' = -2x - 2y \\ y' = -2x + y \end{cases}$	✓
14500	$\begin{cases} x' = -2x - 2y \\ y' = -2x + y \end{cases}$	✓
14501	$\begin{cases} x' = 3x \\ y' = x - 2y \end{cases}$	✓
14502	$\begin{cases} x' = 3x \\ y' = x - 2y \end{cases}$	✓
14503	$\begin{cases} x' = 3x \\ y' = x - 2y \end{cases}$	✓
14504	$\begin{cases} x' = -4x + y \\ y' = 2x - 3y \end{cases}$	✓
14505	$\begin{cases} x' = -4x + y \\ y' = 2x - 3y \end{cases}$	✓
14506	$\begin{cases} x' = -4x + y \\ y' = 2x - 3y \end{cases}$	✓
14507	$\begin{cases} x' = 4x - 2y \\ y' = x + y \end{cases}$	✓
14508	$\begin{cases} x' = 4x - 2y \\ y' = x + y \end{cases}$	✓
14509	$\begin{cases} x' = 4x - 2y \\ y' = x + y \end{cases}$	✓

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#	ODE	Solved?
14510	$\begin{cases} x' = 2y \\ y' = -2x \end{cases}$	✓
i.c.		
14511	$\begin{cases} x' = 2x + 2y \\ y' = -4x + 6y \end{cases}$	✓
i.c.		
14512	$\begin{cases} x' = -3x - 5y \\ y' = 3x + y \end{cases}$	✓
i.c.		
14513	$\begin{cases} x' = 2y \\ y' = -2x - y \end{cases}$	✓
i.c.		
14514	$\begin{cases} x' = 2x - 6y \\ y' = 2x + y \end{cases}$	✓
i.c.		
14515	$\begin{cases} x' = x + 4y \\ y' = -3x + 2y \end{cases}$	✓
i.c.		
14516	$\begin{cases} x' = 2y \\ y' = -2x \end{cases}$	✓
i.c.		
14517	$\begin{cases} x' = 2x + 2y \\ y' = -4x + 6y \end{cases}$	✓
i.c.		
14518	$\begin{cases} x' = -3x - 5y \\ y' = 3x + y \end{cases}$	✓
i.c.		
14519	$\begin{cases} x' = 2y \\ y' = -2x - y \end{cases}$	✓
i.c.		
14520	$\begin{cases} x' = 2x - 6y \\ y' = 2x + y \end{cases}$	✓
i.c.		
14521	$\begin{cases} x' = x + 4y \\ y' = -3x + 2y \end{cases}$	✓
i.c.		
14522	$\begin{cases} x' = -\frac{9x}{10} - 2y \\ y' = x + \frac{11y}{10} \end{cases}$	✓
i.c.		

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#	ODE	Solved?
14523	$\begin{cases} x' = -3x + 10y \\ y' = -x + 3y \end{cases}$	✓
14524	$\begin{cases} x' = -3x \\ y' = x - 3y \end{cases}$ i.c.	✓
14525	$\begin{cases} x' = 2x + y \\ y' = -x - 2y \end{cases}$ i.c.	✓
14526	$\begin{cases} x' = -2x - y \\ y' = x - 4y \end{cases}$ i.c.	✓
14527	$\begin{cases} x' = y \\ y' = -x - 2y \end{cases}$ i.c.	✓
14528	$\begin{cases} x' = -3x \\ y' = x - 3y \end{cases}$ i.c.	✓
14529	$\begin{cases} x' = 2x + y \\ y' = -x + 4y \end{cases}$ i.c.	✓
14530	$\begin{cases} x' = -2x - y \\ y' = x - 4y \end{cases}$ i.c.	✓
14531	$\begin{cases} x' = y \\ y' = -x - 2y \end{cases}$ i.c.	✓
14532	$\begin{cases} x' = 2y \\ y' = -y \end{cases}$ i.c.	✓
14533	$\begin{cases} x' = 2x + 4y \\ y' = 3x + 6y \end{cases}$ i.c.	✓
14534	$\begin{cases} x' = 4x + 2y \\ y' = 2x + y \end{cases}$ i.c.	✓
14535	$\begin{cases} x' = 2y \\ y' = 0 \end{cases}$	✓

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#	ODE	Solved?
14536	$\begin{bmatrix} x' = -2y \\ y' = 0 \end{bmatrix}$	✓
14537	$\begin{bmatrix} x' = -3x - y \\ y' = 4x + y \end{bmatrix}$ i.c.	✓
14540	$\begin{bmatrix} x' = \frac{y}{10} \\ y' = \frac{z}{5} \\ z' = \frac{2x}{5} \end{bmatrix}$	✓
14541	$\begin{bmatrix} x' = y \\ y' = -x \\ z' = 2z \end{bmatrix}$	✓
14542	$\begin{bmatrix} x' = -2x + 3y \\ y' = 3x - 2y \\ z' = -z \end{bmatrix}$	✓
14543	$\begin{bmatrix} x' = x + 3z \\ y' = -y \\ z' = -3x + z \end{bmatrix}$	✓
14544	$\begin{bmatrix} x' = x \\ y' = 2y - z \\ z' = -y + 2z \end{bmatrix}$	✓
14545	$\begin{bmatrix} x' = -2x + y \\ y' = -2y \\ z' = -z \end{bmatrix}$	✓
14546	$\begin{bmatrix} x' = -2x + y \\ y' = -2y \\ z' = z \end{bmatrix}$	✓
14547	$\begin{bmatrix} x' = -x + 2y \\ y' = 2x - 4y \\ z' = -z \end{bmatrix}$	✓
14548	$\begin{bmatrix} x' = -x + 2y \\ y' = 2x - 4y \\ z' = 0 \end{bmatrix}$	✓
14549	$\begin{bmatrix} x' = -2x + y \\ y' = -2y + z \\ z' = -2z \end{bmatrix}$	✓
14550	$\begin{bmatrix} x' = y \\ y' = z \\ z' = 0 \end{bmatrix}$	✓

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#	ODE	Solved?
14551	$\begin{bmatrix} x' = 2x - y \\ y' = -2y + 3z \\ z' = -x + 3y - z \end{bmatrix}$	✓
14552	$\begin{bmatrix} x' = -4x + 3y \\ y' = z - y \\ z' = 5x - 5y \end{bmatrix}$	✓
14553	$\begin{bmatrix} x' = -10x + 10y \\ y' = 28x - y \\ z' = -\frac{8z}{3} \end{bmatrix}$	✓
14554	$\begin{bmatrix} x' = z - y \\ y' = z - x \\ z' = z \end{bmatrix}$	✓
14557	$\begin{bmatrix} x' = 3x \\ y' = -2y \end{bmatrix}$	✓
14559	$\begin{bmatrix} x' = 0 \\ y' = x - y \end{bmatrix}$	✓
14560	$\begin{bmatrix} x' = \pi^2 x + \frac{187y}{5} \\ y' = \sqrt{555} x + \frac{400617y}{5000} \end{bmatrix}$ i.c.	✓
14561	$\begin{bmatrix} x' = x + y \\ y' = -2x - y \end{bmatrix}$	✓
14562	$\begin{bmatrix} x' = -3x + y \\ y' = y - x \end{bmatrix}$	✓
14563	$\begin{bmatrix} x' = -3x + y \\ y' = -x \end{bmatrix}$	✓
14564	$\begin{bmatrix} x' = y - x \\ y' = -2x + y \end{bmatrix}$	✓
14565	$\begin{bmatrix} x' = 2x \\ y' = x - y \end{bmatrix}$	✓
14566	$\begin{bmatrix} x' = 3x + y \\ y' = -x \end{bmatrix}$	✓
14567	$\begin{bmatrix} x' = y \\ y' = -4x - 4y \end{bmatrix}$	✓
14568	$\begin{bmatrix} x' = -3x - 3y \\ y' = 2x + y \end{bmatrix}$	✓

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#	ODE	Solved?
15433	$\begin{cases} x' = 2y \\ y' = 1 - 2x \end{cases}$	✓
15434	$\begin{cases} x' = 4x - 3y \\ y' = 6x - 7y \end{cases}$	✓
15435	$\begin{cases} tx' + 2x = 15y \\ ty' = x \end{cases}$	✗
15436	$\begin{cases} x' = x + 2y \\ y' = 5x - 2y \end{cases}$ i.c.	✓
15437	$\begin{cases} x' = 5x + 4y \\ y' = 8x + y \end{cases}$ i.c.	✓
15438	$\begin{cases} x' = 4x + 2y \\ y' = 3x - y \end{cases}$ i.c.	✓
15439	$\begin{cases} x' = x + 2y \\ y' = 5x - 2y \end{cases}$ i.c.	✓
15440	$\begin{cases} x' = 2y \\ y' = 2x \end{cases}$	✓
15441	$\begin{cases} x' = 2y \\ y' = -2x \end{cases}$	✓
15442	$\begin{cases} x' = -2y \\ y' = 8x \end{cases}$	✓
15443	$\begin{cases} x' = 4x - 13y \\ y' = x \end{cases}$ i.c.	✓
15444	$\begin{cases} x' = 3x + 2y \\ y' = -2x + 3y \end{cases}$ i.c.	✓
15445	$\begin{cases} x' = 8x + 2y - 17 \\ y' = 4x + y - 13 \end{cases}$ i.c.	✓
15446	$\begin{cases} x' = 8x + 2y + 7e^{2t} \\ y' = 4x + y - 7e^{2t} \end{cases}$ i.c.	✓

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#	ODE	Solved?
15447	$\begin{cases} x' = 4x + 3y - 6e^{3t} \\ y' = x + 6y + 2e^{3t} \end{cases}$	✓
	<i>i.c.</i>	
15448	$\begin{cases} x' = -y \\ y' = 4x + 24t \end{cases}$	✓
	<i>i.c.</i>	
15449	$\begin{cases} x' = 4x - 13y \\ y' = x + 19 \cos(4t) - 13 \sin(4t) \end{cases}$	✓
	<i>i.c.</i>	
15450	$\begin{cases} x' = 4x + 3y + 5 \text{Heaviside}(t - 2) \\ y' = x + 6y + 17 \text{Heaviside}(t - 2) \end{cases}$	✓
	<i>i.c.</i>	
15451	$\begin{cases} x' = 5x + 4y \\ y' = 8x + y \end{cases}$	✓
15452	$\begin{cases} x' = 2x - 5y \\ y' = 3x - 7y \end{cases}$	✓
15453	$\begin{cases} x' = 2x - 5y + 4 \\ y' = 3x - 7y + 5 \end{cases}$	✓
15454	$\begin{cases} x' = 3x + y \\ y' = 6x + 2y \end{cases}$	✓
15455	$\begin{cases} x' = xy - 6y \\ y' = x - y - 5 \end{cases}$	✗
15456	$\begin{cases} x' = -x + 2y \\ y' = 2x - y \end{cases}$	✓
15512	$\begin{cases} x' = 4y \\ y' = -x - 2y \end{cases}$	✓
15516	$\begin{cases} x' = 4y \\ y' = -4x \end{cases}$	✓
	<i>i.c.</i>	
15517	$\begin{cases} x' = -5x + 4y \\ y' = 2x + 2y \end{cases}$	✓
	<i>i.c.</i>	
16324	$\begin{cases} x' = 6 \\ y' = \cos(t) \end{cases}$	✓
16325	$\begin{cases} x' = x \\ y' = 1 \end{cases}$	✓

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#	ODE	Solved?
16326	$\begin{cases} x' = 0 \\ y' = -2y \end{cases}$	✓
16327	$\begin{cases} x' = x^2 \\ y' = e^t \end{cases}$	✗
16328	$\begin{cases} x'_1 = -3x_1 \\ x'_2 = 1 \end{cases}$ i.c.	✓
16329	$\begin{cases} x'_1 = -x_1 + 1 \\ x'_2 = x_2 \end{cases}$ i.c.	✓
16330	$\begin{cases} x' = -3x + 6y \\ y' = 4x - y \end{cases}$	✓
16331	$\begin{cases} x' = 8x - y \\ y' = x + 6y \end{cases}$	✓
16332	$\begin{cases} x' = -x - 2y \\ y' = x + y \end{cases}$	✓
16333	$\begin{cases} x' = 4x + 2y \\ y' = -x + 2y \end{cases}$	✓
16334	$\begin{cases} x' = y \\ y' = -x + 1 \end{cases}$	✓
16335	$\begin{cases} x' = y \\ y' = -x + \sin(2t) \end{cases}$	✓
16905	$\begin{cases} x'_1 = -2tx_1^2 \\ x'_2 = \frac{x_2+t}{t} \end{cases}$	✗
16906	$\begin{cases} x'_1 = e^{t-x_1} \\ x'_2 = 2e^{x_1} \end{cases}$	✗
16907	$\begin{cases} x' = y \\ y' = \frac{y^2}{x} \end{cases}$	✗
16908	$\begin{cases} x'_1 = \frac{x_1^2}{x_2} \\ x'_2 = x_2 - x_1 \end{cases}$	✗
16909	$\begin{cases} x' = \frac{e^{-x}}{t} \\ y' = \frac{xe^{-y}}{t} \end{cases}$	✗

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#	ODE	Solved?
16910	$\begin{cases} x' = \frac{y+t}{x+y} \\ y' = \frac{x-t}{x+y} \end{cases}$	X
16911	$\begin{cases} x' = \frac{t-y}{y-x} \\ y' = \frac{x-t}{y-x} \end{cases}$	X
16912	$\begin{cases} x' = \frac{y+t}{x+y} \\ y' = \frac{t+x}{x+y} \end{cases}$	X
16913	$\begin{cases} x' = -9y \\ y' = x \end{cases}$	✓
16914	$\begin{cases} x' = y + t \\ y' = x - t \end{cases}$	✓
16915	$\begin{cases} x' + 3x + 4y = 0 \\ y' + 2x + 5y = 0 \end{cases}$ i.c.	✓
16916	$\begin{cases} x' = x + 5y \\ y' = -x - 3y \end{cases}$ i.c.	✓
16917	$\begin{cases} 4x' - y' + 3x = \sin(t) \\ x' + y = \cos(t) \end{cases}$	✓
16918	$\begin{cases} x' = z - y \\ y' = z \\ z' = z - x \end{cases}$	✓
16919	$\begin{cases} x' = y + z \\ y' = x + z \\ z' = x + y \end{cases}$	✓
16920	$\begin{cases} x'' = y \\ y'' = x \end{cases}$	X
16921	$\begin{cases} x'' + y' + x = 0 \\ x' + y'' = 0 \end{cases}$	X
16922	$\begin{cases} x'' = 3x + y \\ y' = -2x \end{cases}$	X
16923	$\begin{cases} x'' = x^2 + y \\ y' = -2xx' + x \end{cases}$ i.c.	X

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#	ODE	Solved?
16924	$\begin{cases} x' = x^2 + y^2 \\ y' = 2xy \end{cases}$	X
16925	$\begin{cases} x' = -\frac{1}{y} \\ y' = \frac{1}{x} \end{cases}$	X
16926	$\begin{cases} x' = \frac{x}{y} \\ y' = \frac{y}{x} \end{cases}$	X
16927	$\begin{cases} x' = \frac{y}{x-y} \\ y' = \frac{x}{x-y} \end{cases}$	X
16928	$\begin{cases} x' = \sin(x) \cos(y) \\ y' = \cos(x) \sin(y) \end{cases}$	X
16929	$\begin{cases} e^t x' = \frac{1}{y} \\ e^t y' = \frac{1}{x} \end{cases}$	X
16930	$\begin{cases} x' = \cos(x)^2 \cos(y)^2 + \sin(x)^2 \cos(y)^2 \\ y' = -\frac{\sin(2x) \sin(2y)}{2} \end{cases}$	X
	<i>i.c.</i>	
16931	$\begin{cases} x' = 8y - x \\ y' = x + y \end{cases}$	✓
16932	$\begin{cases} x' = x - y \\ y' = y - x \end{cases}$	✓
16933	$\begin{cases} x' = 2x + y \\ y' = x - 3y \end{cases}$	✓
	<i>i.c.</i>	
16934	$\begin{cases} x' = x + y \\ y' = -2x + 4y \end{cases}$	✓
	<i>i.c.</i>	
16935	$\begin{cases} x' = 4x - 5y \\ y' = x \end{cases}$	✓
	<i>i.c.</i>	
16936	$\begin{cases} x' = y + z - x \\ y' = x - y + z \\ z' = x + y - z \end{cases}$	✓
16937	$\begin{cases} x' = 2x - y + z \\ y' = x + 2y - z \\ z' = x - y + 2z \end{cases}$	✓

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#	ODE	Solved?
16938	$\begin{cases} x' = 2x - y + z \\ y' = x + z \\ z' = y - 2z - 3x \end{cases}$	✓
	<i>i.c.</i>	
16939	$\begin{cases} x' + 2x - y = -e^{2t} \\ y' + 3x - 2y = 6e^{2t} \end{cases}$	✓
16940	$\begin{cases} x' = x + y - \cos(t) \\ y' = -y - 2x + \cos(t) + \sin(t) \end{cases}$	✓
	<i>i.c.</i>	
16941	$\begin{cases} x' = y + \tan(t)^2 - 1 \\ y' = \tan(t) - x \end{cases}$	✓
16942	$\begin{cases} x' = -4x - 2y + \frac{2}{e^t - 1} \\ y' = 6x + 3y - \frac{3}{e^t - 1} \end{cases}$	✗
16943	$\begin{cases} x' = y \\ y' = -x + \frac{1}{\cos(t)} \end{cases}$	✓
16944	$\begin{cases} x' = y \\ y' = -x + 1 \end{cases}$	✓
16945	$\begin{cases} x' = 3 - 2y \\ y' = 2x - 2t \end{cases}$	✓
16946	$\begin{cases} x' = -y + \sin(t) \\ y' = x + \cos(t) \end{cases}$	✓
16947	$\begin{cases} x' = x + y + e^t \\ y' = x + y - e^t \end{cases}$	✓
16948	$\begin{cases} x' = 4x - 5y + 4t - 1 \\ y' = x - 2y + t \end{cases}$	✓
	<i>i.c.</i>	
16949	$\begin{cases} x' = y - x + e^t \\ y' = x - y + e^t \end{cases}$	✓
	<i>i.c.</i>	
16950	$\begin{cases} x' + y = t^2 \\ -x + y' = t \end{cases}$	✓
16951	$\begin{cases} x' + y' + y = e^{-t} \\ 2x' + y' + 2y = \sin(t) \end{cases}$	✓

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#	ODE	Solved?
16952	$\begin{bmatrix} x' = 2x + y - 2z + 2 - t \\ y' = -x + 1 \\ z' = x + y - z + 1 - t \end{bmatrix}$	✓
16953	$\begin{bmatrix} x' + x + 2y = 2e^{-t} \\ y' + y + z = 1 \\ z' + z = 1 \end{bmatrix}$ i.c.	✓
16954	$\begin{bmatrix} x' = 5x + 4y \\ y' = x + 2y \end{bmatrix}$	✓
16955	$\begin{bmatrix} x' = 6x + y \\ y' = 4x + 3y \end{bmatrix}$	✓
16956	$\begin{bmatrix} x' = 2x - 4y + 1 \\ y' = -x + 5y \end{bmatrix}$	✓
16957	$\begin{bmatrix} x' = 3x + y + e^t \\ y' = x + 3y - e^t \end{bmatrix}$	✓
16958	$\begin{bmatrix} x' = 2x + 4y + \cos(t) \\ y' = -x - 2y + \sin(t) \end{bmatrix}$	✓
17132	$\begin{bmatrix} x' = y \\ y' = x + 4 \end{bmatrix}$	✓
17133	$\begin{bmatrix} x' = x + 2y + \sin(t) \\ y' = -x + y - \cos(t) \end{bmatrix}$	✓
17134	$\begin{bmatrix} x' = -2xt + y \\ y' = 3x - y \end{bmatrix}$	✗
17135	$\begin{bmatrix} x' = x + 2y + 4 \\ y' = -2x + y - 3 \end{bmatrix}$	✓
17136	$\begin{bmatrix} x' = 3x - y \\ y' = x + 2y \end{bmatrix}$	✓
17137	$\begin{bmatrix} x' = -x + ty \\ y' = xt - y \end{bmatrix}$	✗
17138	$\begin{bmatrix} x' = x + y + 4 \\ y' = -2x + \sin(t)y \end{bmatrix}$	✗
17139	$\begin{bmatrix} x' = 3x - 4y \\ y' = x + 3y \end{bmatrix}$	✓

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#	ODE	Solved?
17140	$\begin{cases} x' = 2x - y \\ y' = 3x - 2y \end{cases}$	✓
17141	$\begin{cases} x' = -x + 2y \\ y' = -2x - y \end{cases}$	✓
17142	$\begin{cases} x' = y \\ y' = -x + 2 \sin(t) \end{cases}$	✓
	<i>i.c.</i>	
17143	$\begin{cases} x' = x - 4y + 2t \\ y' = x - 3y - 3 \end{cases}$	✓
	<i>i.c.</i>	
17144	$\begin{cases} x' = -x + y + 1 \\ y' = x + y - 3 \end{cases}$	✓
17145	$\begin{cases} x' = -x - 4y - 4 \\ y' = x - y - 6 \end{cases}$	✓
17146	$\begin{cases} x' = -\frac{x}{4} - \frac{3y}{4} + 8 \\ y' = \frac{x}{2} + y - \frac{23}{2} \end{cases}$	✓
17147	$\begin{cases} x' = -2x + y - 11 \\ y' = -5x + 4y - 35 \end{cases}$	✓
17148	$\begin{cases} x' = x + y - 3 \\ y' = -x + y + 1 \end{cases}$	✓
17149	$\begin{cases} x' = -5x + 4y - 35 \\ y' = -2x + y - 11 \end{cases}$	✓
17150	$\begin{cases} x' = 3x - 2y \\ y' = 2x - 2y \end{cases}$	✓
17151	$\begin{cases} x' = x - 2y \\ y' = 3x - 4y \end{cases}$	✓
17152	$\begin{cases} x' = 2x - y \\ y' = 3x - 2y \end{cases}$	✓
17153	$\begin{cases} x' = x + y \\ y' = 4x - 2y \end{cases}$	✓
17154	$\begin{cases} x' = 4x - 3y \\ y' = 8x - 6y \end{cases}$	✓
17155	$\begin{cases} x' = -2x + y \\ y' = x - 2y \end{cases}$	✓

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#	ODE	Solved?
17156	$\begin{cases} x' = \frac{5x}{4} + \frac{3y}{4} \\ y' = \frac{3x}{4} + \frac{5y}{4} \end{cases}$	✓
17157	$\begin{cases} x' = -\frac{3x}{4} - \frac{7y}{4} \\ y' = \frac{x}{4} + \frac{5y}{4} \end{cases}$	✓
17158	$\begin{cases} x' = -\frac{x}{4} - \frac{3y}{4} \\ y' = \frac{x}{2} + y \end{cases}$	✓
17159	$\begin{cases} x' = 5x - y \\ y' = 3x + y \end{cases}$	✓
17160	$\begin{cases} x' = -2x + y \\ y' = -5x + 4y \end{cases}$	✓
17161	$\begin{cases} x' = 3x + 6y \\ y' = -x - 2y \end{cases}$	✓
17162	$\begin{cases} x' = x - 2y \\ y' = 3x - 4y \end{cases}$ i.c.	✓
17163	$\begin{cases} x' = 2x - y \\ y' = 3x - 2y \end{cases}$ i.c.	✓
17164	$\begin{cases} x' = 5x - y \\ y' = 3x + y \end{cases}$ i.c.	✓
17165	$\begin{cases} x' = -2x + y \\ y' = -5x + 4y \end{cases}$ i.c.	✓
17166	$\begin{cases} x' = 3x - 2y \\ y' = 4x - y \end{cases}$	✓
17167	$\begin{cases} x' = -x - 4y \\ y' = x - y \end{cases}$	✓
17168	$\begin{cases} x' = 2x - 5y \\ y' = x - 2y \end{cases}$	✓
17169	$\begin{cases} x' = 2x - \frac{5y}{2} \\ y' = \frac{9x}{5} - y \end{cases}$	✓
17170	$\begin{cases} x' = x - y \\ y' = 5x - 3y \end{cases}$	✓

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#	ODE	Solved?
17171	$\begin{cases} x' = x + 2y \\ y' = -5x - y \end{cases}$	✓
17172	$\begin{cases} x' = -x - 4y \\ y' = x - y \end{cases}$	✓
17173	$\begin{cases} x' = 2x - 5y \\ y' = x - 2y \end{cases}$	✓
17174	$\begin{cases} x' = x - 5y \\ y' = x - 3y \end{cases}$	✓
17175	$\begin{cases} x' = -3x + 2y \\ y' = -x - y \end{cases}$	✓
17176	$\begin{cases} x' = \frac{3x}{4} - 2y \\ y' = x - \frac{5y}{4} \end{cases}$	✓
17177	$\begin{cases} x' = -\frac{4x}{5} + 2y \\ y' = -x + \frac{6y}{5} \end{cases}$	✓
17178	$\begin{cases} x' = ax + y \\ y' = -x + ay \end{cases}$	✓
17179	$\begin{cases} x' = -5y \\ y' = x + ay \end{cases}$	✓
17180	$\begin{cases} x' = 2x - 5y \\ y' = ax - 2y \end{cases}$	✓
17181	$\begin{cases} x' = \frac{5x}{4} + \frac{3y}{4} \\ y' = ax + \frac{5y}{4} \end{cases}$	✓
17182	$\begin{cases} x' = -x + ay \\ y' = -x - y \end{cases}$	✓
17183	$\begin{cases} x' = 3x + ay \\ y' = -6x - 4y \end{cases}$	✓
17184	$\begin{cases} x' = ax + 10y \\ y' = -x - 4y \end{cases}$	✓
17185	$\begin{cases} x' = 4x + ay \\ y' = 8x - 6y \end{cases}$	✓

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#	ODE	Solved?
17186	$\begin{cases} i' = \frac{i}{2} - \frac{v}{8} \\ v' = 2i - \frac{v}{2} \end{cases}$	✓
17187	$\begin{cases} x' = 3x - 4y \\ y' = x - y \end{cases}$	✓
17188	$\begin{cases} x' = \frac{5x}{4} + \frac{3y}{4} \\ y' = -\frac{3x}{4} - \frac{y}{4} \end{cases}$	✓
17189	$\begin{cases} x' = -\frac{3x}{2} + y \\ y' = -\frac{x}{4} - \frac{y}{2} \end{cases}$	✓
17190	$\begin{cases} x' = -3x + \frac{5y}{2} \\ y' = -\frac{5x}{2} + 2y \end{cases}$	✓
17191	$\begin{cases} x' = -x - \frac{y}{2} \\ y' = 2x - 3y \end{cases}$	✓
17192	$\begin{cases} x' = 2x + \frac{y}{2} \\ y' = -\frac{x}{2} + y \end{cases}$	✓
17193	$\begin{cases} x' = x - 4y \\ y' = 4x - 7y \end{cases}$	✓
	i.c.	
17194	$\begin{cases} x' = -\frac{5x}{2} + \frac{3y}{2} \\ y' = -\frac{3x}{2} + \frac{y}{2} \end{cases}$	✓
	i.c.	
17195	$\begin{cases} x' = 2x + \frac{3y}{2} \\ y' = -\frac{3x}{2} - y \end{cases}$	✓
	i.c.	
17196	$\begin{cases} x' = \frac{5x}{4} + \frac{3y}{4} \\ y' = -\frac{3x}{4} - \frac{y}{4} \end{cases}$	✓
	i.c.	
17197	$\begin{cases} x' = -3x + \frac{5y}{2} \\ y' = -\frac{5x}{2} + 2y \end{cases}$	✓
	i.c.	
17198	$\begin{cases} x' = 2x + \frac{y}{2} \\ y' = -\frac{x}{2} + y \end{cases}$	✓
	i.c.	

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#	ODE	Solved?
17199	$\begin{cases} x' = -x \\ y' = -2y \end{cases}$	✓
	i.c.	
17200	$\begin{cases} x' = -x \\ y' = 2y \end{cases}$	✓
	i.c.	
17201	$\begin{cases} x' = -x \\ y' = -2y \end{cases}$	✓
	i.c.	
17202	$\begin{cases} x' = 2y \\ y' = 8x \end{cases}$	✓
	i.c.	
17203	$\begin{cases} x' = 2y \\ y' = 8x \end{cases}$	✓
	i.c.	
17204	$\begin{cases} x' = 2y \\ y' = -8x \end{cases}$	✓
	i.c.	
17205	$\begin{cases} x' = 2x - y \\ y' = x - 2y \end{cases}$	✓
17206	$\begin{cases} x' = y - x \\ y' = x + y \end{cases}$	✓
17207	$\begin{cases} x' = 2x - 4y \\ y' = 2x - 2y \end{cases}$	✓
17208	$\begin{cases} x' = -x + y + x^2 \\ y' = y - 2xy \end{cases}$	✗
17209	$\begin{cases} x' = 2y x^2 - 3x^2 - 4y \\ y' = -2x y^2 + 6xy \end{cases}$	✗
17210	$\begin{cases} x' = 3x - x^2 \\ y' = 2xy - 3y + 2 \end{cases}$	✗
17211	$\begin{cases} x' = x - xy \\ y' = y + 2xy \end{cases}$	✗
17212	$\begin{cases} x' = 2 - y \\ y' = y - x^2 \end{cases}$	✗
17213	$\begin{cases} x' = x - x^2 - xy \\ y' = \frac{y}{2} - \frac{y^2}{4} - \frac{3xy}{4} \end{cases}$	✗

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#	ODE	Solved?
17214	$\begin{bmatrix} x' = -(x-y)(1-x-y) \\ y' = x(2+y) \end{bmatrix}$	X
17215	$\begin{bmatrix} x' = y(2-x-y) \\ y' = -x-y-2xy \end{bmatrix}$	X
17216	$\begin{bmatrix} x' = (x+2)(y-x) \\ y' = y-x^2-y^2 \end{bmatrix}$	X
17217	$\begin{bmatrix} x' = -x+2xy \\ y' = y-x^2-y^2 \end{bmatrix}$	X
17218	$\begin{bmatrix} x' = y \\ y' = x - \frac{x^3}{5} - \frac{y}{5} \end{bmatrix}$	X
17220	$\begin{bmatrix} x' = x(1-x-y) \\ y' = y(\frac{3}{4}-y-\frac{x}{2}) \end{bmatrix}$	X
17414	$\begin{bmatrix} y_1' = -5y_1 + y_2 \\ y_2' = -9y_1 + 5y_2 \end{bmatrix}$	✓
i.c.		
17415	$\begin{bmatrix} y_1' = 5y_1 - 2y_2 \\ y_2' = 6y_1 - 2y_2 \end{bmatrix}$	✓
i.c.		
17416	$\begin{bmatrix} y_1' = 4y_1 - 4y_2 \\ y_2' = 5y_1 - 4y_2 \end{bmatrix}$	✓
i.c.		
17417	$\begin{bmatrix} y_1' = 6y_2 \\ y_2' = -6y_1 \end{bmatrix}$	✓
i.c.		
17418	$\begin{bmatrix} y_1' = -4y_1 - y_2 \\ y_2' = y_1 - 2y_2 \end{bmatrix}$	✓
i.c.		
17419	$\begin{bmatrix} y_1' = 2y_1 - 64y_2 \\ y_2' = y_1 - 14y_2 \end{bmatrix}$	✓
i.c.		
17420	$\begin{bmatrix} y_1' = -4y_1 - y_2 + 2e^t \\ y_2' = y_1 - 2y_2 + \sin(2t) \end{bmatrix}$	✓
i.c.		
17421	$\begin{bmatrix} y_1' = 5y_1 - y_2 + e^{-t} \\ y_2' = y_1 + 3y_2 + 2e^t \end{bmatrix}$	✓
i.c.		

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#	ODE	Solved?
17422	$\begin{cases} y_1' = -y_1 - 5y_2 + 3 \\ y_2' = y_1 + 3y_2 + 5 \cos(t) \end{cases}$	✓
	<i>i.c.</i>	
17423	$\begin{cases} y_1' = -2y_1 + y_2 \\ y_2' = y_1 - 2y_2 + \sin(t) \end{cases}$	✓
	<i>i.c.</i>	
17424	$\begin{cases} y_1' = y_2 - y_3 \\ y_2' = y_1 + y_3 - e^{-t} \\ y_3' = y_1 + y_2 + e^t \end{cases}$	✓
	<i>i.c.</i>	
17468	$\begin{cases} x_1' = x_1 + x_2 + x_3 \\ x_2' = 2x_1 + x_2 - x_3 \\ x_3' = -x_2 + x_3 \end{cases}$	✓
17469	$\begin{cases} x_1' = x_1 - x_2 + 4x_3 \\ x_2' = 3x_1 + 2x_2 - x_3 \\ x_3' = 2x_1 + x_2 - x_3 \end{cases}$	✓
17482	$\begin{cases} x_1' = x_2 + x_3 \\ x_2' = x_1 + x_3 \\ x_3' = x_1 + x_2 \end{cases}$	✓
17483	$\begin{cases} x_1' = 3x_1 + 2x_2 + 4x_3 \\ x_2' = 2x_1 + 2x_3 \\ x_3' = 4x_1 + 2x_2 + 3x_3 \end{cases}$	✓
17490	$\begin{cases} x_1' = -4x_1 + x_2 \\ x_2' = x_1 - 5x_2 + x_3 \\ x_3' = x_2 - 4x_3 \end{cases}$	✓
17491	$\begin{cases} x_1' = x_1 + 4x_2 + 4x_3 \\ x_2' = 3x_2 + 2x_3 \\ x_3' = 2x_2 + 3x_3 \end{cases}$	✓
17492	$\begin{cases} x_1' = 2x_1 - 4x_2 + 2x_3 \\ x_2' = -4x_1 + 2x_2 - 2x_3 \\ x_3' = 2x_1 - 2x_2 - x_3 \end{cases}$	✓
17493	$\begin{cases} x_1' = -2x_1 + 2x_2 - x_3 \\ x_2' = -2x_1 + 3x_2 - 2x_3 \\ x_3' = -2x_1 + 4x_2 - 3x_3 \end{cases}$	✓
17494	$\begin{cases} x_1' = x_1 + x_2 + 6x_3 \\ x_2' = x_1 + 6x_2 + x_3 \\ x_3' = 6x_1 + x_2 + x_3 \end{cases}$	✓

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#	ODE	Solved?
17495	$\begin{bmatrix} x'_1 = 3x_1 + 2x_2 + 4x_3 \\ x'_2 = 2x_1 + 2x_3 \\ x'_3 = 4x_1 + 2x_2 + 3x_3 \end{bmatrix}$	✓
17496	$\begin{bmatrix} x'_1 = x_1 + x_2 + x_3 \\ x'_2 = 2x_1 + x_2 - x_3 \\ x'_3 = -8x_1 - 5x_2 - 3x_3 \end{bmatrix}$	✓
17497	$\begin{bmatrix} x'_1 = x_1 - x_2 + 4x_3 \\ x'_2 = 3x_1 + 2x_2 - x_3 \\ x'_3 = 2x_1 + x_2 - x_3 \end{bmatrix}$	✓
17498	$\begin{bmatrix} x'_1 = x_1 + x_2 + 2x_3 \\ x'_2 = 2x_2 + 2x_3 \\ x'_3 = -x_1 + x_2 + 3x_3 \end{bmatrix}$ i.c.	✓
17499	$\begin{bmatrix} x'_1 = -x_3 \\ x'_2 = 2x_1 \\ x'_3 = -x_1 + 2x_2 + 4x_3 \end{bmatrix}$ i.c.	✓
17500	$\begin{bmatrix} x'_1 = x_1 + 3x_3 \\ x'_2 = -2x_2 \\ x'_3 = 3x_1 - x_3 \end{bmatrix}$ i.c.	✓
17501	$\begin{bmatrix} x'_1 = \frac{x_1}{2} - x_2 - \frac{3x_3}{2} \\ x'_2 = \frac{3x_1}{2} - 2x_2 - \frac{3x_3}{2} \\ x'_3 = -2x_1 + 2x_2 + x_3 \end{bmatrix}$ i.c.	✓
17502	$\begin{bmatrix} x'_1 = x_1 + 5x_2 + 3x_3 - 5x_4 \\ x'_2 = 2x_1 + 3x_2 + 2x_3 - 4x_4 \\ x'_3 = -x_2 - 2x_3 + x_4 \\ x'_4 = 2x_1 + 4x_2 + 2x_3 - 5x_4 \end{bmatrix}$	✓
17503	$\begin{bmatrix} x'_1 = -5x_1 + x_2 - 4x_3 - x_4 \\ x'_2 = -3x_2 \\ x'_3 = x_1 - x_2 + x_4 \\ x'_4 = 2x_1 - x_2 + 2x_3 - 2x_4 \end{bmatrix}$	✓
17504	$\begin{bmatrix} x'_1 = 2x_1 + 2x_2 - x_4 \\ x'_2 = 2x_1 - x_2 + 2x_4 \\ x'_3 = 3x_3 \\ x'_4 = -x_1 + 2x_2 + 2x_4 \end{bmatrix}$	✓

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Table 2.57 System of differential equations

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#	ODE	Solved?
17505	$\begin{cases} x'_1 = x_1 + 8x_2 + 5x_3 + 3x_4 \\ x'_2 = 2x_1 + 16x_2 + 10x_3 + 6x_4 \\ x'_3 = 5x_1 - 14x_2 - 11x_3 - 3x_4 \\ x'_4 = -x_1 - 8x_2 - 5x_3 - 3x_4 \end{cases}$	✓
17506	$\begin{cases} x'_1 = -2x_1 + 2x_2 - 2x_4 \\ x'_2 = -x_1 + 3x_2 - x_3 + x_4 \\ x'_3 = -2x_1 - 2x_2 - 4x_3 + 2x_4 \\ x'_4 = -7x_1 + x_2 - 7x_3 + 3x_4 \end{cases}$	✓
17507	$\begin{cases} x'_1 = -5x_1 - 2x_2 - x_3 + 2x_4 + 3x_5 \\ x'_2 = -3x_2 \\ x'_3 = x_1 - x_3 - x_5 \\ x'_4 = 2x_1 + x_2 - 4x_4 - 2x_5 \\ x'_5 = -3x_1 - 2x_2 - x_3 + 2x_4 + x_5 \end{cases}$	✓
17508	$\begin{cases} x'_1 = -3x_2 - 2x_3 + 3x_4 + 2x_5 \\ x'_2 = 8x_1 + 6x_2 + 4x_3 - 8x_4 - 16x_5 \\ x'_3 = -8x_1 - 8x_2 - 6x_3 + 8x_4 - 16x_5 \\ x'_4 = 8x_1 + 7x_2 + 4x_3 - 9x_4 - 16x_5 \\ x'_5 = -3x_1 - 5x_2 - 3x_3 + 5x_4 + 7x_5 \end{cases}$	✓
17509	$\begin{cases} x'_1 = -2x_1 + 2x_2 + x_3 \\ x'_2 = -2x_1 + 2x_2 + 2x_3 \\ x'_3 = 2x_1 - 3x_2 - 3x_3 \end{cases}$	✓
17510	$\begin{cases} x'_1 = 2x_1 - 4x_2 - x_3 \\ x'_2 = x_1 + x_2 + 3x_3 \\ x'_3 = 3x_1 - 4x_2 - 2x_3 \end{cases}$	✓
17511	$\begin{cases} x'_1 = -2x_2 - x_3 \\ x'_2 = x_1 - x_2 + x_3 \\ x'_3 = x_1 - 2x_2 - 2x_3 \end{cases}$	✓
17512	$\begin{cases} x'_1 = -4x_1 + 2x_2 - x_3 \\ x'_2 = -6x_1 - 3x_3 \\ x'_3 = \frac{8x_2}{3} - 2x_3 \end{cases}$	✓
17513	$\begin{cases} x'_1 = -7x_1 + 6x_2 - 6x_3 \\ x'_2 = -9x_1 + 5x_2 - 9x_3 \\ x'_3 = -x_2 - x_3 \end{cases}$	✓
17514	$\begin{cases} x'_1 = \frac{4x_1}{3} + \frac{4x_2}{3} - \frac{11x_3}{3} \\ x'_2 = -\frac{16x_1}{3} - \frac{x_2}{3} + \frac{14x_3}{3} \\ x'_3 = 3x_1 - 2x_2 - 2x_3 \end{cases}$	✓

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#	ODE	Solved?
17515	$\begin{bmatrix} x'_1 = x_1 + x_2 + x_3 \\ x'_2 = 2x_1 + x_2 - x_3 \\ x'_3 = -8x_1 - 5x_2 - 3x_3 \end{bmatrix}$	✓
17516	$\begin{bmatrix} x'_1 = x_1 - x_2 + 4x_3 \\ x'_2 = 3x_1 + 2x_2 - x_3 \\ x'_3 = 2x_1 + x_2 - x_3 \end{bmatrix}$	✓
17517	$\begin{bmatrix} x'_1 = \frac{3x_1}{4} + \frac{29x_2}{4} - \frac{11x_3}{2} \\ x'_2 = -\frac{3x_1}{4} + \frac{3x_2}{4} - \frac{5x_3}{2} \\ x'_3 = \frac{5x_1}{4} + \frac{11x_2}{4} - \frac{5x_3}{2} \end{bmatrix}$	✓
17518	$\begin{bmatrix} x'_1 = -2x_1 - x_2 + 4x_3 + 2x_4 \\ x'_2 = -19x_1 - 6x_2 + 6x_3 + 16x_4 \\ x'_3 = -9x_1 - x_2 + x_3 + 6x_4 \\ x'_4 = -5x_1 - 3x_2 + 6x_3 + 5x_4 \end{bmatrix}$	✓
17519	$\begin{bmatrix} x'_1 = -3x_1 + 6x_2 + 2x_3 - 2x_4 \\ x'_2 = 2x_1 - 3x_2 - 6x_3 + 2x_4 \\ x'_3 = -4x_1 + 8x_2 + 3x_3 - 4x_4 \\ x'_4 = 2x_1 - 2x_2 - 6x_3 + x_4 \end{bmatrix}$	✓
17520	$\begin{bmatrix} x'_1 = -3x_1 - 4x_2 + 5x_3 + 9x_4 \\ x'_2 = -2x_1 - 5x_2 + 4x_3 + 12x_4 \\ x'_3 = -2x_1 - x_3 + 2x_4 \\ x'_4 = -2x_2 + 2x_3 + 3x_4 \end{bmatrix}$	✓
17521	$\begin{bmatrix} x'_1 = -3x_1 - 5x_2 + 8x_3 + 14x_4 \\ x'_2 = -6x_1 - 8x_2 + 11x_3 + 27x_4 \\ x'_3 = -6x_1 - 4x_2 + 7x_3 + 17x_4 \\ x'_4 = -2x_2 + 2x_3 + 4x_4 \end{bmatrix}$	✓
17522	$\begin{bmatrix} x'_1 = 3x_2 - 2x_4 \\ x'_2 = -\frac{x_1}{2} + x_2 - 3x_3 - \frac{5x_4}{2} \\ x'_3 = 3x_2 - 5x_3 - 3x_4 \\ x'_4 = x_1 + 3x_2 - 3x_4 \end{bmatrix}$	✓
17523	$\begin{bmatrix} x'_1 = 3x_1 - 2x_2 \\ x'_2 = 2x_1 - 2x_2 \end{bmatrix}$	✓
17524	$\begin{bmatrix} x'_1 = -3x_1 + 2x_2 \\ x'_2 = \frac{x_1}{2} - 3x_2 \end{bmatrix}$	✓
17525	$\begin{bmatrix} x'_1 = 3x_1 - 4x_2 \\ x'_2 = x_1 - x_2 \end{bmatrix}$	✓

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#	ODE	Solved?
17526	$\begin{bmatrix} x'_1 = \frac{x_1}{2} - \frac{x_2}{4} \\ x'_2 = x_1 - \frac{x_2}{2} \end{bmatrix}$	✓
17527	$\begin{bmatrix} x'_1 = x_1 - \frac{5x_2}{2} \\ x'_2 = \frac{x_1}{2} - x_2 \end{bmatrix}$	✓
17528	$\begin{bmatrix} x'_1 = -x_1 - 4x_2 \\ x'_2 = x_1 - x_2 \end{bmatrix}$	✓
17529	$\begin{bmatrix} x'_1 = 5x_1 - x_2 \\ x'_2 = 3x_1 + x_2 \end{bmatrix}$	✓
17530	$\begin{bmatrix} x'_1 = x_1 - x_2 \\ x'_2 = 5x_1 - 3x_2 \end{bmatrix}$	✓
17531	$\begin{bmatrix} x'_1 = 2x_1 - x_2 \\ x'_2 = 3x_1 - 2x_2 \end{bmatrix}$	✓
17532	$\begin{bmatrix} x'_1 = \frac{x_1}{2} + \frac{x_2}{2} \\ x'_2 = 2x_1 - x_2 \end{bmatrix}$	✓
17533	$\begin{bmatrix} x'_1 = -3x_1 + 4x_2 \\ x'_2 = -x_1 - 2x_2 \end{bmatrix}$	✓
17534	$\begin{bmatrix} x'_1 = -3x_1 + \frac{5x_2}{2} \\ x'_2 = -\frac{5x_1}{2} + 2x_2 \end{bmatrix}$	✓
17535	$\begin{bmatrix} x'_1 = x_1 + x_2 + x_3 \\ x'_2 = 2x_1 + x_2 - x_3 \\ x'_3 = -8x_1 - 5x_2 - 3x_3 \end{bmatrix}$	✓
17536	$\begin{bmatrix} x'_1 = x_1 - x_2 + 4x_3 \\ x'_2 = 3x_1 + 2x_2 - x_3 \\ x'_3 = 2x_1 + x_2 - x_3 \end{bmatrix}$	✓
17537	$\begin{bmatrix} x'_1 = -3x_1 - 9x_2 \\ x'_2 = x_1 - 3x_2 \end{bmatrix}$	✓
	<i>i.c.</i>	
17538	$\begin{bmatrix} x'_1 = 2x_1 - x_2 \\ x'_2 = 3x_1 - 2x_2 \end{bmatrix}$	✓
	<i>i.c.</i>	
17539	$\begin{bmatrix} x'_1 = -4x_1 - x_2 \\ x'_2 = x_1 - 2x_2 \end{bmatrix}$	✓

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#	ODE	Solved?
17540	$\begin{bmatrix} x'_1 = 5x_1 - x_2 \\ x'_2 = x_1 + 3x_2 \end{bmatrix}$	✓
17541	$\begin{bmatrix} x'_1 = -x_1 - 5x_2 \\ x'_2 = x_1 + 3x_2 \end{bmatrix}$	✓
17542	$\begin{bmatrix} x'_1 = x_2 - x_3 \\ x'_2 = x_1 + x_3 \\ x'_3 = x_1 + x_2 \end{bmatrix}$	✓
17543	$\begin{bmatrix} x'_1 = -k_1x_1 \\ x'_2 = k_1x_1 - k_2x_2 \\ x'_3 = k_2x_2 \end{bmatrix}$	✓
	<i>i.c.</i>	
17544	$\begin{bmatrix} x'_1 = 2x_1 - x_2 + e^t \\ x'_2 = 3x_1 - 2x_2 + t \end{bmatrix}$	✓
17545	$\begin{bmatrix} x'_1 = x_1 + \sqrt{3}x_2 + e^t \\ x'_2 = \sqrt{3}x_1 - x_2 + \sqrt{3}e^{-t} \end{bmatrix}$	✓
17546	$\begin{bmatrix} x'_1 = 2x_1 - 5x_2 - \cos(t) \\ x'_2 = x_1 - 2x_2 + \sin(t) \end{bmatrix}$	✓
17547	$\begin{bmatrix} x'_1 = x_1 + x_2 + e^{-2t} \\ x'_2 = 4x_1 - 2x_2 - 2e^t \end{bmatrix}$	✓
17548	$\begin{bmatrix} x'_1 = 1 - x_2 + x_3 \\ x'_2 = 2x_2 + t \\ x'_3 = -2x_1 - x_2 + 3x_3 + e^{-t} \end{bmatrix}$	✓
17549	$\begin{bmatrix} x'_1 = -\frac{x_1}{2} + \frac{x_2}{2} - \frac{x_3}{2} + 1 \\ x'_2 = -x_1 - 2x_2 + x_3 + t \\ x'_3 = \frac{x_1}{2} + \frac{x_2}{2} - \frac{3x_3}{2} + 11e^{-3t} \end{bmatrix}$	✓
17550	$\begin{bmatrix} x'_1 = -4x_1 + x_2 + 3x_3 + 3t \\ x'_2 = -2x_2 \\ x'_3 = -2x_1 + x_2 + x_3 + 3\cos(t) \end{bmatrix}$	✓
17551	$\begin{bmatrix} x'_1 = -\frac{x_1}{2} + x_2 + \frac{x_3}{2} \\ x'_2 = x_1 - x_2 + x_3 - \sin(t) \\ x'_3 = \frac{x_1}{2} + x_2 - \frac{x_3}{2} \end{bmatrix}$	✓
17552	$\begin{bmatrix} x'_1 = 2x_1 + x_2 + 1 \\ x'_2 = x_1 - 2x_2 + x_3 \\ x'_3 = x_2 - x_3 \end{bmatrix}$	✓
	<i>i.c.</i>	

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#	ODE	Solved?
17553	$\begin{bmatrix} x'_1 = 4x_1 - 9x_2 \\ x'_2 = x_1 - 2x_2 \end{bmatrix}$	✓
17554	$\begin{bmatrix} x'_1 = 3x_1 - 9x_2 \\ x'_2 = x_1 - 3x_2 \end{bmatrix}$	✓
17555	$\begin{bmatrix} x'_1 = x_1 + x_2 + x_3 \\ x'_2 = 2x_1 + x_2 - x_3 \\ x'_3 = -3x_1 + 2x_2 + 4x_3 \end{bmatrix}$	✓
17556	$\begin{bmatrix} x'_1 = 5x_1 - 3x_2 - 2x_3 \\ x'_2 = 8x_1 - 5x_2 - 4x_3 \\ x'_3 = -4x_1 + 3x_2 + 3x_3 \end{bmatrix}$	✓
17557	$\begin{bmatrix} x'_1 = -7x_1 + 9x_2 - 6x_3 \\ x'_2 = -8x_1 + 11x_2 - 7x_3 \\ x'_3 = -2x_1 + 3x_2 - x_3 \end{bmatrix}$	✓
17558	$\begin{bmatrix} x'_1 = 5x_1 + 6x_2 + 2x_3 \\ x'_2 = -2x_1 - 2x_2 - x_3 \\ x'_3 = -2x_1 - 3x_2 \end{bmatrix}$	✓
17559	$\begin{bmatrix} x'_1 = -8x_1 - 16x_2 - 16x_3 - 17x_4 \\ x'_2 = -2x_1 - 10x_2 - 8x_3 - 7x_4 \\ x'_3 = -2x_1 - 2x_3 - 3x_4 \\ x'_4 = 6x_1 + 14x_2 + 14x_3 + 14x_4 \end{bmatrix}$	✓
17560	$\begin{bmatrix} x'_1 = x_1 - x_2 - 2x_3 + 3x_4 \\ x'_2 = 2x_1 - \frac{3x_2}{2} - x_3 + \frac{7x_4}{2} \\ x'_3 = -x_1 + \frac{x_2}{2} - \frac{3x_4}{2} \\ x'_4 = -2x_1 + \frac{3x_2}{2} + 3x_3 - \frac{7x_4}{2} \end{bmatrix}$	✓
17561	$\begin{bmatrix} x'_1 = x_1 - 4x_2 \\ x'_2 = 4x_1 - 7x_2 \end{bmatrix}$	✓
	<i>i.c.</i>	
17562	$\begin{bmatrix} x'_1 = 3x_1 - 4x_2 \\ x'_2 = x_1 - x_2 \end{bmatrix}$	✓
	<i>i.c.</i>	
17563	$\begin{bmatrix} x'_1 = 4x_1 + x_2 + 3x_3 \\ x'_2 = 6x_1 + 4x_2 + 6x_3 \\ x'_3 = -5x_1 - 2x_2 - 4x_3 \end{bmatrix}$	✓
	<i>i.c.</i>	

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#	ODE	Solved?
17564	$\begin{cases} x'_1 = x_1 + x_2 \\ x'_2 = -14x_1 - 5x_2 + x_3 \\ x'_3 = 15x_1 + 5x_2 - 2x_3 \end{cases}$	✓
	i.c.	
17565	$\begin{cases} x' = -2y + xy \\ y' = x + 4xy \end{cases}$	✗
17566	$\begin{cases} x' = 1 + 5y \\ y' = 1 - 6x^2 \end{cases}$	✗
17714	$\begin{cases} x' = y \\ y' = z \\ z' = x \end{cases}$	✓
17715	$\begin{cases} y' = y + z \\ z' = y + z + x \end{cases}$	✓
17716	$\begin{cases} y' = \frac{y^2}{z} \\ z' = \frac{y}{2} \end{cases}$	✗
17717	$\begin{cases} y' = 1 - \frac{1}{z} \\ z' = \frac{1}{y-x} \end{cases}$	✗
17718	$\begin{cases} y' = -z \\ z' = y \end{cases}$	✓
	i.c.	
17721	$\begin{cases} y' = \frac{z^2}{y} \\ z' = \frac{y^2}{z} \end{cases}$	✗
17722	$\begin{cases} y' = \frac{y^2}{z} \\ z' = \frac{z^2}{y} \end{cases}$	✗
17723	$\begin{cases} x' = y + z - x \\ y' = x - y + z \\ z' = x + y - z \end{cases}$	✓
17724	$\begin{cases} x' + x + y = t^2 \\ y' + y + z = 2t \\ z' + z = t \end{cases}$	✓
17725	$\begin{cases} x' + 5x + y = 7e^t - 27 \\ -2x + y' + 3y = -3e^t + 12 \end{cases}$	✓
17726	$\begin{cases} y'' + z' - 2z = e^{2x} \\ z' + 2y' - 3y = 0 \end{cases}$	✗

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#	ODE	Solved?
17727	$\begin{cases} x' = y \\ y' = x + e^t + e^{-t} \end{cases}$	✓
17728	$\begin{cases} y' + \frac{2z}{x^2} = 1 \\ z' + y = x \end{cases}$	✗
17729	$\begin{cases} tx' - x - 3y = t \\ ty' - x + y = 0 \end{cases}$	✗
17730	$\begin{cases} tx' + 6x - y - 3z = 0 \\ ty' + 23x - 6y - 9z = 0 \\ tz' + x + y - 2z = 0 \end{cases}$	✗
17731	$\begin{cases} x' + 5x + y = e^t \\ y' - x + 3y = e^{2t} \end{cases}$	✓
18142	$\begin{cases} x' = x + 3y \\ y' = 3x + y \end{cases}$ i.c.	✓
18143	$\begin{cases} x' = x + 2y \\ y' = 3x + 2y \end{cases}$	✓
18144	$\begin{cases} x' = x + 2y + t - 1 \\ y' = 3x + 2y - 5t - 2 \end{cases}$	✓
18145	$\begin{cases} x' = x + y \\ y' = y \end{cases}$	✓
18146	$\begin{cases} x' = x \\ y' = y \end{cases}$	✓
18147	$\begin{cases} x' = -3x + 4y \\ y' = -2x + 3y \end{cases}$	✓
18148	$\begin{cases} x' = 4x - 2y \\ y' = 5x + 2y \end{cases}$	✓
18149	$\begin{cases} x' = 5x + 4y \\ y' = y - x \end{cases}$	✓
18150	$\begin{cases} x' = 4x - 3y \\ y' = 8x - 6y \end{cases}$	✓
18151	$\begin{cases} x' = 2x \\ y' = 3y \end{cases}$	✓
18152	$\begin{cases} x' = -4x - y \\ y' = x - 2y \end{cases}$	✓

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#	ODE	Solved?
18153	$\begin{cases} x' = 7x + 6y \\ y' = 2x + 6y \end{cases}$	✓
18154	$\begin{cases} x' = x - 2y \\ y' = 4x + 5y \end{cases}$	✓
18155	$\begin{cases} x' = x + y - 5t + 2 \\ y' = 4x - 2y - 8t - 8 \end{cases}$	✓
18156	$\begin{cases} x' = 2x \\ y' = 3y \end{cases}$	✓
18157	$\begin{cases} x' = -x - 2y \\ y' = 4x - 5y \end{cases}$	✓
18158	$\begin{cases} x' = -3x + 4y \\ y' = -2x + 3y \end{cases}$	✓
18159	$\begin{cases} x' = 5x + 2y \\ y' = -17x - 5y \end{cases}$	✓
18160	$\begin{cases} x' = -4x - y \\ y' = x - 2y \end{cases}$	✓
18161	$\begin{cases} x' = 4x - 3y \\ y' = 8x - 6y \end{cases}$	✓
18162	$\begin{cases} x' = 4x - 2y \\ y' = 5x + 2y \end{cases}$	✓
18191	$\begin{cases} x' = x \\ y' = x + 2y \end{cases}$	✓
18387	$\begin{cases} z' + 7y - 3z = 0 \\ 7y' + 63y - 36z = 0 \end{cases}$	✓
18388	$\begin{cases} z' + 2y' + 3y = 0 \\ y' + 3y - 2z = 0 \end{cases}$	✓
18389	$\begin{cases} y' + 3y + z = 0 \\ z' + 3y + 5z = 0 \end{cases}$	✓
18390	$\begin{cases} y' + 3y + 2z = 0 \\ z' + 2y - 4z = 0 \end{cases}$	✓
18391	$\begin{cases} y' - 3y - 2z = 0 \\ z' + y - 2z = 0 \end{cases}$	✓

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#	ODE	Solved?
18392	$\begin{cases} y' + z' + 6y = 0 \\ z' + 5y + z = 0 \end{cases}$	✓
18393	$\begin{cases} z' + y' + 5y - 3z = x + e^x \\ y' + 2y - z = e^x \end{cases}$	✓
18394	$\begin{cases} z' + y + 3z = e^x \\ y' + 3y + 4z = e^{2x} \end{cases}$	✓
18395	$\begin{cases} z' - 3y + 2z = e^x \\ y' + 2y - z = e^{3x} \end{cases}$	✓
18396	$\begin{cases} z' + 5y - 2z = x \\ y' + 4y + z = x \end{cases}$	✓
18397	$\begin{cases} z' + 7y - 9z = e^x \\ y' - y - 3z = e^{2x} \end{cases}$	✓
18398	$\begin{cases} y' - 2y - 2z = e^{3x} \\ z' + 5y - 2z = e^{4x} \end{cases}$	✓



## 2.8 Table of system of ODEs solved using Laplace method

Table 2.58: System of differential equations using Laplace method

#	ODE	Solved?
2774	$\begin{cases} x_1' = x_1 - 3x_2 \\ x_2' = -2x_1 + 2x_2 \end{cases}$ i.c.	✓
2775	$\begin{cases} x_1' = x_1 - x_2 \\ x_2' = 5x_1 - 3x_2 \end{cases}$ i.c.	✓
2776	$\begin{cases} x_1' = 3x_1 - 2x_2 + t \\ x_2' = 2x_1 - 2x_2 + 3e^t \end{cases}$ i.c.	✓
2777	$\begin{cases} x_1' = x_1 + x_2 + 2e^t \\ x_2' = 4x_1 + x_2 - e^t \end{cases}$ i.c.	✓
2778	$\begin{cases} x_1' = 3x_1 - 4x_2 + e^t \\ x_2' = x_1 - x_2 + e^t \end{cases}$ i.c.	✓
2779	$\begin{cases} x_1' = 2x_1 - 5x_2 + \sin(t) \\ x_2' = x_1 - 2x_2 + \tan(t) \end{cases}$ i.c.	✓
2780	$\begin{cases} x_1' = 4x_1 + 5x_2 + 4e^t \cos(t) \\ x_2' = -2x_1 - 2x_2 \end{cases}$ i.c.	✓
2781	$\begin{cases} x_1' = x_2 + f_1(t) \\ x_2' = -x_1 + f_2(t) \end{cases}$ i.c.	✓
2782	$\begin{cases} x_1' = 2x_1 - 2x_2 \\ x_2' = 4x_1 - 2x_2 + \delta(t - \pi) \end{cases}$ i.c.	✓
2783	$\begin{cases} x_1' = 3x_1 - 2x_2 + 1 - \text{Heaviside}(t - \pi) \\ x_2' = 2x_1 - 2x_2 \end{cases}$ i.c.	✓
2784	$\begin{cases} x_1' = x_1 + 2x_2 - 3x_3 \\ x_2' = x_1 + x_2 + 2x_3 \\ x_3' = x_1 - x_2 + 4x_3 \end{cases}$ i.c.	✓

Continued on next page

Table 2.58 System of differential equations using Laplace method  
Continued from previous page

#	ODE	Solved?
2785	$\begin{bmatrix} x'_1 = 2x_1 + x_3 + e^{2t} \\ x'_2 = 2x_2 \\ x'_3 = 3x_3 + e^{2t} \end{bmatrix}$	✓
	i.c.	
2786	$\begin{bmatrix} x'_1 = -x_1 - x_2 + 2x_3 + e^t \\ x'_2 = x_1 + x_2 + x_3 \\ x'_3 = 2x_1 + x_2 + 3x_3 \end{bmatrix}$	✓
	i.c.	
2787	$\begin{bmatrix} x'_1 = x_1 \\ x'_2 = 2x_1 + x_2 - 2x_3 \\ x'_3 = 3x_1 + 2x_2 + x_3 + e^t \cos(2t) \end{bmatrix}$	✓
	i.c.	
2788	$\begin{bmatrix} x'_1 = 3x_1 \\ x'_2 = x_1 + 3x_2 \\ x'_3 = 3x_3 \\ x'_4 = 2x_3 + 3x_4 \end{bmatrix}$	✓
	i.c.	
4552	$\begin{bmatrix} x' - x - 2y = 16t e^t \\ 2x - y' - 2y = 0 \end{bmatrix}$	✓
	i.c.	
4553	$\begin{bmatrix} x' - 2x + y = 5 e^t \cos(t) \\ x + y' - 2y = 10 e^t \sin(t) \end{bmatrix}$	✓
	i.c.	
4554	$\begin{bmatrix} x' - 4x + 3y = \sin(t) \\ 2x + y' - y = 2 \cos(t) \end{bmatrix}$	✓
	i.c.	
4555	$\begin{bmatrix} x' - 2x - y = 2 e^t \\ x - y' + 2y = 3 e^{4t} \end{bmatrix}$	✓
	i.c.	
4556	$\begin{bmatrix} x'' + x' + y' - 2y = 40 e^{3t} \\ x' + x - y' = 36 e^t \end{bmatrix}$	✗
	i.c.	
4557	$\begin{bmatrix} x' - 2x - y = 2 e^t \\ y' - 2y - 4z = 4 e^{2t} \\ x - z' - z = 0 \end{bmatrix}$	✓
	i.c.	
4558	$\begin{bmatrix} x'' + 2x - 2y' = 0 \\ 3x' + y'' - 8y = 240 e^t \end{bmatrix}$	✗
	i.c.	

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Table 2.58 System of differential equations using Laplace method  
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#	ODE	Solved?
4559	$\begin{cases} x' - x - 2y = 0 \\ x - y' = 15 \cos(t) \text{Heaviside}(t - \pi) \end{cases}$ i.c.	✓
4560	$\begin{cases} x' - x + y = 2 \sin(t) (1 - \text{Heaviside}(t - \pi)) \\ 2x - y' - y = 0 \end{cases}$ i.c.	✓
4561	$\begin{cases} 2x' + x - 5y' - 4y = 28 e^t \text{Heaviside}(t - 2) \\ 3x' - 2x - 4y' + y = 0 \end{cases}$ i.c.	✓
17414	$\begin{cases} y_1' = -5y_1 + y_2 \\ y_2' = -9y_1 + 5y_2 \end{cases}$ i.c.	✓
17415	$\begin{cases} y_1' = 5y_1 - 2y_2 \\ y_2' = 6y_1 - 2y_2 \end{cases}$ i.c.	✓
17416	$\begin{cases} y_1' = 4y_1 - 4y_2 \\ y_2' = 5y_1 - 4y_2 \end{cases}$ i.c.	✓
17417	$\begin{cases} y_1' = 6y_2 \\ y_2' = -6y_1 \end{cases}$ i.c.	✓
17418	$\begin{cases} y_1' = -4y_1 - y_2 \\ y_2' = y_1 - 2y_2 \end{cases}$ i.c.	✓
17419	$\begin{cases} y_1' = 2y_1 - 64y_2 \\ y_2' = y_1 - 14y_2 \end{cases}$ i.c.	✓
17420	$\begin{cases} y_1' = -4y_1 - y_2 + 2 e^t \\ y_2' = y_1 - 2y_2 + \sin(2t) \end{cases}$ i.c.	✓
17421	$\begin{cases} y_1' = 5y_1 - y_2 + e^{-t} \\ y_2' = y_1 + 3y_2 + 2 e^t \end{cases}$ i.c.	✓
17422	$\begin{cases} y_1' = -y_1 - 5y_2 + 3 \\ y_2' = y_1 + 3y_2 + 5 \cos(t) \end{cases}$ i.c.	✓
17423	$\begin{cases} y_1' = -2y_1 + y_2 \\ y_2' = y_1 - 2y_2 + \sin(t) \end{cases}$ i.c.	✓

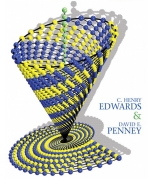
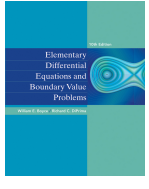
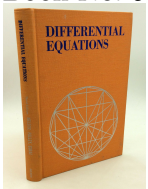
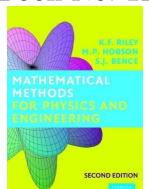
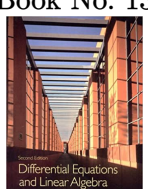
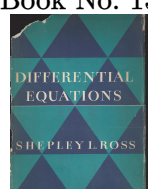
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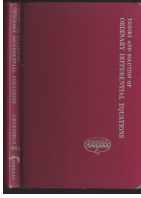
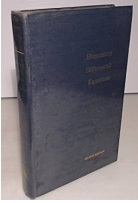
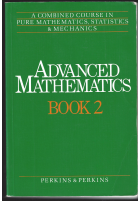


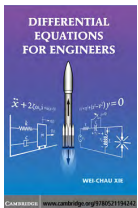
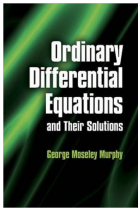
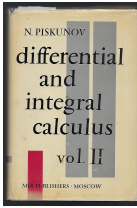
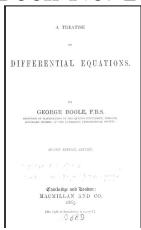
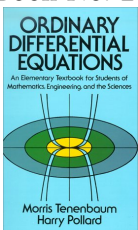
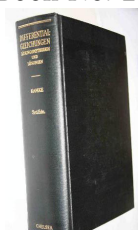
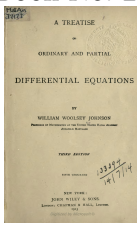
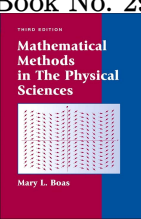
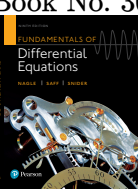
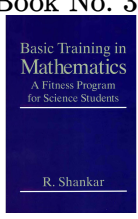
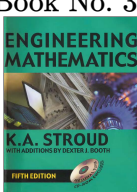
Table 2.58 System of differential equations using Laplace method  
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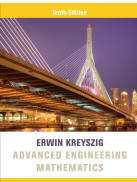

#	ODE	Solved?
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17539	$\begin{cases} x_1' = -4x_1 - x_2 \\ x_2' = x_1 - 2x_2 \end{cases}$	✓
17540	$\begin{cases} x_1' = 5x_1 - x_2 \\ x_2' = x_1 + 3x_2 \end{cases}$	✓
17541	$\begin{cases} x_1' = -x_1 - 5x_2 \\ x_2' = x_1 + 3x_2 \end{cases}$	✓
17542	$\begin{cases} x_1' = x_2 - x_3 \\ x_2' = x_1 + x_3 \\ x_3' = x_1 + x_2 \end{cases}$	✓

## **Part II**

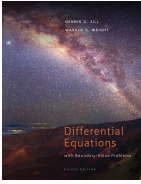
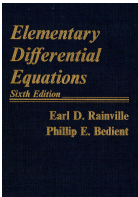
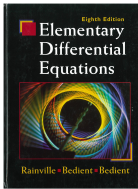
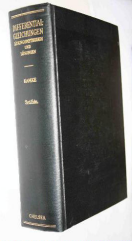
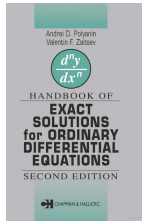
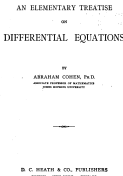
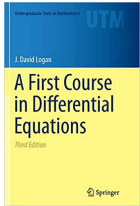
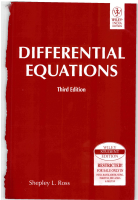
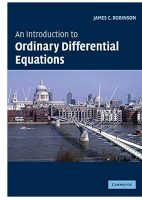
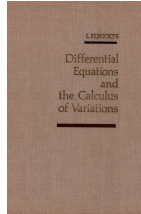
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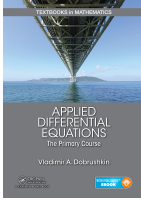
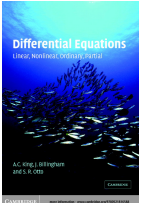
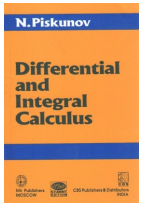
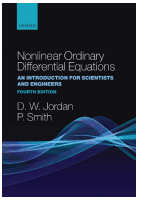
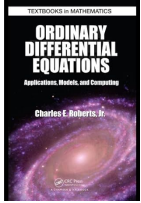
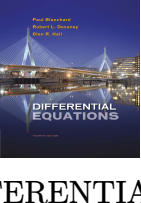
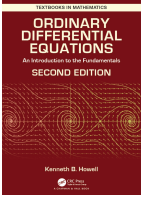
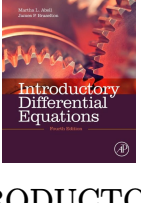
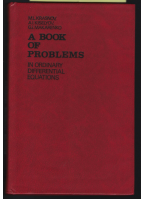
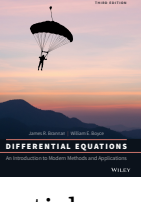

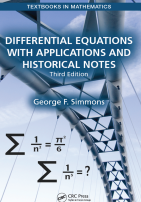
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<p>Book No. 25</p>  <p>Differential Equations, By George Boole F.R.S. 1865</p>	<p>Book No. 26</p>  <p>Ordinary Differential Equations, By Tenenbaum and Pollard. Dover, NY 1963</p>	<p>Book No. 27</p>  <p>Differential Gleichungen, Kamke, 3rd ed, Abel ODEs</p>	<p>Book No. 28</p>  <p>A treatise on ordinary and partial differential equations by William Woolsey Johnson. 1913</p>
<p>Book No. 29</p>  <p>Mathematical Methods in the Physical Sciences. third edition. Mary L. Boas. John Wiley. 2006</p>	<p>Book No. 30</p>  <p>Fundamentals of Differential Equations. By Nagle, Saff and Snider. 9th edition. Boston. Pearson 2018.</p>	<p>Book No. 31</p>  <p>Basic Training in Mathematics. By R. Shankar. Plenum Press. NY. 1995</p>	<p>Book No. 32</p>  <p>Engineering Mathematics. By K. A. Stroud. 5th edition. Industrial press Inc. NY. 2001</p>

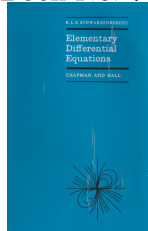
<p>Book No. 33</p>  <p>Schaums Outline Differential Equations, 4th edition. Bronson and Costa. McGraw Hill 2014</p>	<p>Book No. 34</p>  <p>Schaums Outline. Theory and problems of Differential Equations, 1st edition. Frank Ayres. McGraw Hill 1952</p>	<p>Book No. 35</p>  <p>A treatise on Differential Equations by A. R. Forsyth. 6th edition. 1929. Macmillan Co. ltd. New York, reprinted 1956</p>	<p>Book No. 36</p>  <p>Advanced Mathematical Methods for Scientists and Engineers, Bender and Orszag. Springer October 29, 1999</p>
<p>Book No. 37</p>  <p>Notes on Diffy Qs. Differential Equations for Engineers. By Jiri Lebl, 2013.</p>	<p>Book No. 38</p>  <p>A FIRST COURSE IN DIFFERENTIAL EQUATIONS with Modeling Applications. Dennis G. Zill. 9th edition. Brooks/Cole. CA, USA.</p>	<p>Book No. 39</p>  <p>ADVANCED ENGINEERING MATHEMATICS. ERWIN KREYSZIG, HERBERT KREYSZIG, EDWARD J. NORMINTON. 10th edition. John Wiley USA. 2011</p>	<p>Book No. 40</p>  <p>Ordinary differential equations and calculus of variations. Makarets and Reshetnyak. Wold Scientific. Singapore. 1995</p>
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<p>Book No. 49</p> <p>Image will be added Own collection of miscellaneous problems</p>	<p>Book No. 50</p> <p>Image will be added First order enumerated odes</p>	<p>Book No. 51</p> <p>Image will be added Second order enumerated odes</p>	<p>Book No. 52</p> <p>Image will be added Collection of Kovacic problems</p>
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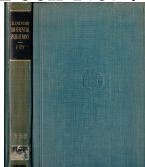
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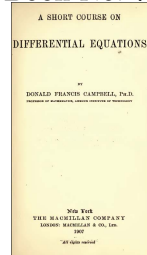
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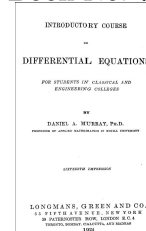
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