Kamke differential equations. Mathematica 10.0 and Maple 18.01 and Sage 6.2

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1 Introduction and summary of results

This report gives the result of solving the 1,940 Kamke differential equations in Mathematica 10.0.2 and Maple 18.02 on windows 7, 64 bit OS. The PC used is an Intel i7-3930k running at 3.20 GHz with 16 GB memory. Sage 6.2 is currently work in progress and is being added. Currently only the first 70 Kamke differential equations are implemented in Sage.

The command `AboluteTiming[]` was used in Mathematica to obtain the CPU time. In Sage the command `cputime()` was used. In Maple the following command was used for this purpose

```
cpu_time := Usage(assign ('result_of_solve',dsolve(ode,y(x))),output='cputime');
```

When Mathematica returned `DifferentialRoot` as a solution to an ODE this was counted as not solved. Similarly, when Maple returned `DESol` this was also counted as not solved.

Table 1 below summarizes the performance of each CAS system

system	% solved	mean CPU time (sec)	mean leaf size of result	total CPU (minutes)	to
Mathematica	79.7423	23.6369	2770.78	609	
Maple	92.2165	0.876531	327.822	26	
Sage	56.5217	2.3	0.	89.7 (sec)	

Table 1: Summary of final results

A number of problems were not solved due to the program hanging. When a program took more than 20 minutes of real time or more (sometimes, the wait was over one hour before terminating the process), only then it was considered as hanged process. Also, when it causes the PC to run of memory while running forcing the termination of the current process, this was counted as hanged process as well. Table 2 shows the percentage that hanged out of all the unsolved problems.

system	% hanged
Mathematica	27.9898
Maple	15.2318
Sage	16.6667

Table 2: Showing how many solution failed due to hanged process

Table 3 summarizes the Kamke equations used

book chapter	kamke book numbering of equations	Numbering in t
Chapter 1, linear first order	1.1—1.576	1—576
Additional non-linear first order	N/A	577—1000
Chapter 2, linear second order	2.1—2.448	1001—1448
Chapter 3, linear third order	3.1—3.85	1449—1533
Chapter 4, linear fourth order	4.1—4.44	1534—1577
Chapter 5, linear fifth and higher order	5.1—5.13	1578—1590
Chapter 6, non-linear second order	6.1—6.246	1591—1836
Chapter 7, non-linear third and higher order	7.1—7.19	1837—1855
Chapter 8, system of ode, first order	8.1—8.57	1856—1912
Chapter 9, system of ode, higher order	9.1—9.28	1913–1940

Table 3: Kamke equation numbering

The following summarizes which equations are solved by each system

Not solved by Sage 14, 23, 24, 31, 35, 36, 37, 38, 40, 41, 42, 43, 45, 46, 47, 48, 49, 50, 52, 55, 56, 58, 59, 62, 63, 64, 65, 67, 68, 69

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Solved by Mathematica but not by Maple 286, 484, 507, 790, 920, 1015, 1019, 1028, 1031, 1038, 1072, 1075, 1076, 1077, 1081, 1158, 1582, 1698, 1835

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1919, 1920, 1925, 1926, 1929, 1932, 1933, 1934, 1935, 1936, 1937, 1939

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Final conclusion table for each equation is given by table 4 below.

Table 4: Breakdown of results for each Kamke differential equation

		Mathematica			Maple			
#	Kamke	solved	cpu	leaf	solved	cpu	leaf	solved
1	K 1.1	✓	2.002	1117	✓	0.062	30	✓
2	K 1.2	✓	0.015	34	✓	0.047	25	✓
3	K 1.3	✓	0.059	40	✓	0.015	37	✓
4	K 1.4	✓	0.009	30	✓	0.015	18	✓
5	K 1.5	✓	3.135	38	✓	0.171	27	✓
6	K 1.6	✓	0.022	18	✓	0.078	15	✓
7	K 1.7	✓	0.023	23	✓	0.0	19	✓
8	K 1.8	✓	0.024	17	✓	0.0	15	✓
9	K 1.9	✓	0.016	19	✓	0.015	16	✓
10	K 1.10	✓	0.008	18	✓	0.015	15	✓
11	K 1.11	✓	0.473	62	✓	0.0	24	✓
12	K 1.12	✓	0.063	34	✓	0.062	8	✓
13	K 1.13	✓	0.052	79	✓	0.125	79	✓
14	K 1.14	✓	0.011	254	✓	0.093	189	✗
15	K 1.15	✓	0.02	25	✓	0.156	38	✓
16	K 1.16	✗	21.387	24	✓	0.093	50	✓
17	K 1.17	✓	0.023	34	✓	0.093	25	✓
18	K 1.18	✓	0.021	50	✓	0.062	47	✓
19	K 1.19	✓	0.009	30	✓	0.047	16	✓
20	K 1.20	✓	0.79	48	✓	0.062	34	✓
21	K 1.21	✓	7.447	69	✓	0.093	25	✓
22	K 1.22	✗	241.061	31	✓	0.468	198	✓
23	K 1.23	✓	0.041	43	✓	0.031	29	✗
24	K 1.24	✓	0.012	277	✓	0.046	214	✗
25	K 1.25	✓	0.237	1835	✓	0.249	378	✓
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Table 4 – continued from previous page

#	Kamke	Mathematica			Maple			
		solved	cpu	leaf	solved	cpu	leaf	solved
26	K 1.26	✓	0.076	68	✓	0.047	59	✓
27	K 1.27	✓	0.044	120	✓	0.156	71	✓
28	K 1.28	✓	0.047	96	✓	0.078	67	✓
29	K 1.29	✓	0.022	39	✓	0.031	19	✓
30	K 1.30	✓	0.065	230	✓	0.078	81	✓
31	K 1.31	✓	0.06	21	✓	0.031	26	✗
32	K 1.32	✓	0.237	34	✓	0.218	28	✓
33	K 1.33	✓	26.354	157	✓	0.343	57	✓
34	K 1.34	✓	0.507	51	✓	0.031	28	✓
35	K 1.35	✓	0.058	60	✓	0.031	45	✗
36	K 1.36	✓	0.227	195	✓	0.062	62	✗
37	K 1.37	✓	0.679	78	✓	0.062	50	✗
38	K 1.38	✗	8.692	26	✗	0.655	0	✗
39	K 1.39	✓	0.051	54	✓	0.016	30	✓
40	K 1.40	✓	0.242	185	✓	0.062	48	✗
41	K 1.41	✓	0.076	103	✓	0.172	103	✗
42	K 1.42	✓	0.936	485	✓	0.016	40	✗
43	K 1.43	✓	8.686	490	✓	1.263	384	✗
44	K 1.44	✓	0.015	72	✓	0.016	53	✓
45	K 1.45	✓	0.523	133	✓	0.094	123	✗
46	K 1.46	✓	0.228	258	✓	0.062	1052	✗
47	K 1.47	✗	33.169	31	✗	1.248	0	✗
48	K 1.48	✗	36.628	33	✗	1.232	0	✗
49	K 1.49	✗	28.632	52	✗	0.702	0	✗
50	K 1.50	✗	125.836	37	✗	0.265	0	✗
51	K 1.51	✓	0.753	354	✓	0.156	2348	✓
52	K 1.52	✓	116.892	115	✓	0.156	61	✗

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Table 4 – continued from previous page

#	Kamke	Mathematica			Maple			
		solved	cpu	leaf	solved	cpu	leaf	solved
53	K 1.53	✓	57.745	95	✓	0.062	281	✓
54	K 1.54	✓	0.117	74	✓	0.124	42	✓
55	K 1.55	✗	6.593	29	✗	0.218	0	✗
56	K 1.56	✗	2.268	27	✗	0.202	0	✗
57	K 1.57	✓	101.289	283	✓	0.078	31	✓
58	K 1.58	✓	0.153	119	✓	0.078	68	✗
59	K 1.59	✓	0.177	96	✓	0.032	26	✗
60	K 1.60	✓	0.05	55	✓	0.016	29	✓
61	K 1.61	✓	0.177	75	✓	0.016	50	✓
62	K 1.62	✓	3.808	40	✓	0.297	34	✗(hange
63	K 1.63	✓	558.948	47	✓	0.094	35	✗
64	K 1.64	✓	0.188	269	✓	0.078	124	✗
65	K 1.65	✓	1.551	312	✓	0.063	47	✗(hange
66	K 1.66	✓	877.252	65	✓	0.062	40	✓
67	K 1.67	✓	0.08	14	✓	0.015	32	✗(hange
68	K 1.68	✓	1.109	373	✓	0.047	77	✗(hange
69	K 1.69	✓	53.802	12750	✓	0.109	111	✗(hange
70	K 1.70	✓	159.017	23353	✓	0.110	113	
71	K 1.71	✓	2.352	2237	✓	0.078	113	
72	K 1.72	✓	0.818	87	✓	0.016	64	
73	K 1.73	✓	1.033	733	✓	0.187	91	
74	K 1.74	✗	2.973	39	✗	0.484	0	
75	K 1.75	✓	0.191	20	✓	0.109	20	
76	K 1.76	✓	0.14	116	✓	0.031	54	
77	K 1.77	✓	0.318	124	✓	0.062	65	
78	K 1.78	✓	0.861	1317	✓	0.655	118	

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Table 4 – continued from previous page

#	Kamke	Mathematica			Maple			
		solved	cpu	leaf	solved	cpu	leaf	solved
79	K 1.79	✗	32.093	29	✗	0.748	0	
80	K 1.80	✗	23.832	36	✓	0.811	41	
81	K 1.81	✗	43.305	19	✓	0.827	78	
82	K 1.82	✗	49.921	27	✗	8.471	0	
83	K 1.83	✗	40.401	18	✓	0.297	44	
84	K 1.84	✓	8.757	244	✓	0.031	37	
85	K 1.85	✓	155.677	235	✓	0.359	153	
86	K 1.86	✗(hanged)	0	0	✓	0.312	52	
87	K 1.87	✗	28.157	56	✗	1.154	0	
88	K 1.88	✓	0.287	2831	✓	0.156	420	
89	K 1.89	✓	0.031	48	✓	0.016	56	
90	K 1.90	✓	0.013	24	✓	0.016	17	
91	K 1.91	✓	0.006	15	✓	0.015	11	
92	K 1.92	✓	0.012	15	✓	0.0	13	
93	K 1.93	✓	0.025	16	✓	0.0	14	
94	K 1.94	✓	0.014	25	✓	0.0	23	
95	K 1.95	✓	0.015	32	✓	0.062	40	
96	K 1.96	✓	0.022	33	✓	0.031	11	
97	K 1.97	✓	0.025	46	✓	0.031	31	
98	K 1.98	✓	0.023	442	✓	0.046	38	
99	K 1.99	✓	0.017	244	✓	0.078	237	
100	K 1.100	✓	0.008	157	✓	0.062	59	
101	K 1.101	✓	0.008	18	✓	0.016	16	
102	K 1.102	✓	0.019	36	✓	0.031	24	
103	K 1.103	✓	0.097	90	✓	0.031	29	
104	K 1.104	✓	0.016	43	✓	0.047	63	
105	K 1.105	✓	0.187	473	✓	0.202	844	

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#	Kamke	Mathematica			Maple			
		solved	cpu	leaf	solved	cpu	leaf	solved
106	K 1.106	✓	0.037	40	✓	0.046	42	
107	K 1.107	✓	0.258	1415	✓	0.156	176	
108	K 1.108	✓	0.011	15	✓	0.0	13	
109	K 1.109	✓	0.011	17	✓	0.015	15	
110	K 1.110	✗	20.764	26	✗	0.093	0	
111	K 1.111	✓	0.273	55	✓	0.125	54	
112	K 1.112	✓	0.022	13	✓	0.031	27	
113	K 1.113	✓	0.023	16	✓	0.015	33	
114	K 1.114	✓	0.02	12	✓	0.936	28	
115	K 1.115	✓	0.123	99	✓	0.156	49	
116	K 1.116	✓	0.411	143	✓	0.156	144	
117	K 1.117	✓	0.025	21	✓	0.078	20	
118	K 1.118	✓	0.011	13	✓	0.047	8	
119	K 1.119	✓	0.03	17	✓	0.047	14	
120	K 1.120	✓	0.049	20	✓	0.125	17	
121	K 1.121	✗	3.055	22	✗	0.982	0	
122	K 1.122	✓	0.072	21	✓	0.297	16	
123	K 1.123	✓	0.059	19	✓	0.047	44	
124	K 1.124	✓	0.027	16	✓	0.015	12	
125	K 1.125	✓	0.039	16	✓	0.047	14	
126	K 1.126	✓	15.029	112	✓	0.016	29	
127	K 1.127	✗(hanged)	0	0	✓	0.078	39	
128	K 1.128	✓	5.143	39	✓	0.203	33	
129	K 1.129	✓	0.028	44	✓	0.032	41	
130	K 1.130	✓	0.006	21	✓	0.0	15	
131	K 1.131	✓	0.018	21	✓	0.141	34	
132	K 1.132	✓	0.011	115	✓	0.031	234	

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#	Kamke	Mathematica			Maple			
		solved	cpu	leaf	solved	cpu	leaf	solved
133	K 1.133	✓	0.007	27	✓	0.015	16	
134	K 1.134	✓	0.011	27	✓	0.0	17	
135	K 1.135	✓	0.007	14	✓	0.016	11	
136	K 1.136	✓	0.013	28	✓	0.015	18	
137	K 1.137	✓	0.009	16	✓	0.0	15	
138	K 1.138	✓	0.014	13	✓	0.031	11	
139	K 1.139	✓	0.131	821	✓	0.094	296	
140	K 1.140	✓	0.01	17	✓	0.032	23	
141	K 1.141	✓	0.026	67	✓	0.031	64	
142	K 1.142	✓	0.182	113	✓	0.078	61	
143	K 1.143	✓	0.009	51	✓	0.032	49	
144	K 1.144	✓	0.169	1712	✓	0.078	244	
145	K 1.145	✓	0.39	267	✓	0.078	117	
146	K 1.146	✓	0.508	78	✓	0.141	82	
147	K 1.147	✓	0.523	343	✓	0.156	178	
148	K 1.148	✓	0.012	30	✓	0.0	16	
149	K 1.149	✓	0.011	27	✓	0.0	20	
150	K 1.150	✓	0.008	30	✓	0.0	19	
151	K 1.151	✓	0.421	203	✓	0.047	85	
152	K 1.152	✓	0.242	40	✓	0.530	25	
153	K 1.153	✓	0.017	21	✓	0.015	20	
154	K 1.154	✓	0.013	26	✓	0.015	16	
155	K 1.155	✓	0.017	46	✓	0.094	14	
156	K 1.156	✓	0.016	21	✓	0.016	20	
157	K 1.157	✓	0.086	158	✓	0.188	231	
158	K 1.158	✓	0.034	31	✓	0.0	22	
159	K 1.159	✓	0.018	22	✓	0.078	13	

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Table 4 – continued from previous page

#	Kamke	Mathematica			Maple			
		solved	cpu	leaf	solved	cpu	leaf	solved
160	K 1.160	✓	0.02	27	✓	0.015	29	
161	K 1.161	✓	0.013	53	✓	0.016	27	
162	K 1.162	✓	0.261	133	✓	0.125	128	
163	K 1.163	✓	0.011	43	✓	0.031	26	
164	K 1.164	✓	0.082	131	✓	0.156	102	
165	K 1.165	✓	0.017	22	✓	0.015	17	
166	K 1.166	✓	0.083	71	✓	0.109	97	
167	K 1.167	✓	0.022	35	✓	0.031	20	
168	K 1.168	✓	0.093	234	✓	0.140	140	
169	K 1.169	✓	2.096	149	✓	0.141	153	
170	K 1.170	✓	0.022	43	✓	0.016	23	
171	K 1.171	✓	0.01	17	✓	0.0	15	
172	K 1.172	✓	0.041	35	✓	0.203	26	
173	K 1.173	✓	0.016	29	✓	0.031	27	
174	K 1.174	✓	0.006	17	✓	0.0	13	
175	K 1.175	✓	0.02	24	✓	0.031	21	
176	K 1.176	✓	0.124	82	✓	0.078	45	
177	K 1.177	✓	0.016	22	✓	0.015	18	
178	K 1.178	✓	0.068	62	✓	0.110	63	
179	K 1.179	✓	1.567	2816	✓	0.109	145	
180	K 1.180	✓	0.123	132	✓	0.047	58	
181	K 1.181	✓	0.012	347	✓	0.063	30	
182	K 1.182	✓	0.175	96	✓	0.093	18	
183	K 1.183	✓	0.014	22	✓	0.0	18	
184	K 1.184	✓	1.468	704	✓	0.234	846	
185	K 1.185	✓	0.376	123	✓	0.031	63	
186	K 1.186	✓	0.029	19	✓	0.031	17	

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Table 4 – continued from previous page

#	Kamke	Mathematica			Maple			
		solved	cpu	leaf	solved	cpu	leaf	solved
187	K 1.187	✓	0.07	328	✓	0.047	88	
188	K 1.188	✗	21.064	33	✓	0.031	32	
189	K 1.189	✓	59.179	90	✓	0.187	61	
190	K 1.190	✓	0.052	55	✓	0.0	29	
191	K 1.191	✓	0.03	52	✓	0.015	16	
192	K 1.192	✓	0.028	57	✓	0.016	36	
193	K 1.193	✓	0.008	16	✓	0.0	14	
194	K 1.194	✓	0.076	98	✓	0.015	23	
195	K 1.195	✓	0.058	27	✓	0.093	28	
196	K 1.196	✓	0.054	53	✓	0.062	29	
197	K 1.197	✓	0.041	98	✓	0.031	364	
198	K 1.198	✓	0.025	15	✓	0.0	15	
199	K 1.199	✓	0.185	15	✓	0.125	100	
200	K 1.200	✓	0.051	77	✓	0.032	56	
201	K 1.201	✓	0.078	38	✓	0.031	23	
202	K 1.202	✗	20.513	22	✗	0.172	0	
203	K 1.203	✗	3.319	19	✗	1.779	0	
204	K 1.204	✓	0.097	70	✓	0.218	88	
205	K 1.205	✗	24.751	33	✗	0.967	0	
206	K 1.206	✗	30.06	26	✗	0.780	0	
207	K 1.207	✓	0.011	47	✓	0.016	37	
208	K 1.208	✓	0.065	118	✓	0.047	116	
209	K 1.209	✓	0.021	84	✓	0.016	21	
210	K 1.210	✓	0.016	47	✓	0.016	33	
211	K 1.211	✓	38.749	40	✓	0.016	31	
212	K 1.212	✓	22.411	92	✓	0.094	30	
213	K 1.213	✓	0.101	71	✓	0.624	73	

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Table 4 – continued from previous page

#	Kamke	Mathematica			Maple			
		solved	cpu	leaf	solved	cpu	leaf	solved
214	K 1.214	✓	0.109	78	✓	0.125	65	
215	K 1.215	✓	0.119	80	✓	0.125	68	
216	K 1.216	✓	0.102	82	✓	0.125	68	
217	K 1.217	✓	0.019	29	✓	0.047	23	
218	K 1.218	✓	0.103	257	✓	0.140	53	
219	K 1.219	✗(hanged)	0	0	✗	0.873	0	
220	K 1.220	✓	0.012	57	✓	0.016	43	
221	K 1.221	✓	0.018	35	✓	0.047	21	
222	K 1.222	✓	0.057	65	✓	0.047	31	
223	K 1.223	✓	0.025	55	✓	0.109	53	
224	K 1.224	✓	0.018	29	✓	0.047	35	
225	K 1.225	✓	0.016	33	✓	0.031	20	
226	K 1.226	✓	0.016	35	✓	0.047	21	
227	K 1.227	✓	0.011	107	✓	0.109	38	
228	K 1.228	✓	0.196	3357	✓	0.280	377	
229	K 1.229	✓	0.011	121	✓	0.125	33	
230	K 1.230	✓	0.122	96	✓	0.047	104	
231	K 1.231	✓	2.446	252	✓	0.156	206	
232	K 1.232	✓	0.009	56	✓	0.015	39	
233	K 1.233	✓	0.025	38	✓	0.031	30	
234	K 1.234	✗	29.157	33	✗	1.731	0	
235	K 1.235	✓	0.043	40	✓	0.047	30	
236	K 1.236	✓	0.016	114	✓	0.047	147	
237	K 1.237	✗	7.597	24	✗	2.293	0	
238	K 1.238	✓	0.042	192	✓	0.062	146	
239	K 1.239	✓	0.029	54	✓	0.125	59	
240	K 1.240	✓	0.009	41	✓	0.016	33	

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#	Kamke	Mathematica			Maple			
		solved	cpu	leaf	solved	cpu	leaf	solved
241	K 1.241	✓	0.009	41	✓	0.015	33	
242	K 1.242	✓	0.014	60	✓	0.015	39	
243	K 1.243	✓	8.05	487	✓	0.093	493	
244	K 1.244	✓	7.973	484	✓	0.078	499	
245	K 1.245	✓	0.409	1453	✓	0.218	31	
246	K 1.246	✓	0.032	80	✓	0.047	63	
247	K 1.247	✓	7.982	693	✓	0.156	517	
248	K 1.248	✓	0.013	106	✓	0.016	71	
249	K 1.249	✓	4.955	115	✓	0.156	202	
250	K 1.250	✗(hanged)	0	0	✗	5.741	0	
251	K 1.251	✓	0.012	60	✓	0.032	50	
252	K 1.252	✓	7.836	819	✓	0.562	1623	
253	K 1.253	✗	19.448	28	✗	1.810	0	
254	K 1.254	✓	0.03	99	✓	0.016	59	
255	K 1.255	✓	5.161	31	✓	0.156	74	
256	K 1.256	✓	0.02	21	✓	0.047	31	
257	K 1.257	✓	0.358	38	✓	0.078	98	
258	K 1.258	✓	0.013	43	✓	0.016	33	
259	K 1.259	✓	0.019	50	✓	0.032	51	
260	K 1.260	✓	0.013	80	✓	0.031	59	
261	K 1.261	✓	0.864	33	✓	0.094	18	
262	K 1.262	✓	0.082	101	✓	0.218	74	
263	K 1.263	✓	0.037	121	✓	0.109	207	
264	K 1.264	✓	0.341	680	✓	0.390	574	
265	K 1.265	✗	407.591	48	✗	4.680	0	
266	K 1.266	✗(hanged)	0	0	✓	1.045	59	
267	K 1.267	✓	0.033	36	✓	0.015	32	

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Table 4 – continued from previous page

#	Kamke	Mathematica			Maple			
		solved	cpu	leaf	solved	cpu	leaf	solved
268	K 1.268	✓	1.005	140	✓	0.063	124	
269	K 1.269	✗(hanged)	0	0	✗	2.652	0	
270	K 1.270	✓	0.015	327	✓	0.031	402	
271	K 1.271	✓	0.1	370	✓	0.125	417	
272	K 1.272	✓	0.045	42	✓	0.109	43	
273	K 1.273	✓	0.014	297	✓	0.015	470	
274	K 1.274	✓	0.019	411	✓	0.015	810	
275	K 1.275	✓	0.024	18	✓	0.078	30	
276	K 1.276	✓	0.036	61	✓	0.047	45	
277	K 1.277	✓	0.015	53	✓	0.234	67	
278	K 1.278	✓	0.065	39	✓	0.047	33	
279	K 1.279	✓	0.624	107	✓	0.140	120	
280	K 1.280	✓	0.036	21	✓	0.047	24	
281	K 1.281	✓	0.063	75	✓	0.047	53	
282	K 1.282	✓	0.087	2129	✓	0.156	72	
283	K 1.283	✓	0.046	477	✓	0.047	622	
284	K 1.284	✓	0.033	59	✓	0.094	21	
285	K 1.285	✓	0.029	402	✓	0.047	431	
286	K 1.286	✓	0.184	3501	✗(hanged)	0	0	
287	K 1.287	✓	0.913	77	✓	0.063	56	
288	K 1.288	✓	0.018	534	✓	0.031	587	
289	K 1.289	✓	0.017	115	✓	0.031	115	
290	K 1.290	✓	0.056	831	✓	0.062	1666	
291	K 1.291	✓	0.461	39	✓	0.109	50	
292	K 1.292	✓	54.667	760	✓	0.031	124	
293	K 1.293	✓	0.106	661	✓	0.234	36	
294	K 1.294	✓	0.04	71	✓	0.078	112	

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Table 4 – continued from previous page

#	Kamke	Mathematica			Maple			
		solved	cpu	leaf	solved	cpu	leaf	solved
295	K 1.295	✓	0.037	31	✓	0.141	29	
296	K 1.296	✓	0.571	102	✓	0.562	165	
297	K 1.297	✓	0.058	216	✓	0.219	29	
298	K 1.298	✓	0.009	72	✓	0.015	99	
299	K 1.299	✓	0.017	371	✓	0.125	327	
300	K 1.300	✓	0.01	99	✓	0.015	120	
301	K 1.301	✓	0.039	64	✓	0.156	25	
302	K 1.302	✓	0.016	70	✓	0.109	137	
303	K 1.303	✓	0.044	25	✓	0.125	34	
304	K 1.304	✓	45.176	59	✓	0.156	44	
305	K 1.305	✓	0.018	1277	✓	0.015	21	
306	K 1.306	✓	0.051	201	✓	0.250	391	
307	K 1.307	✓	0.024	149	✓	0.046	125	
308	K 1.308	✓	0.007	55	✓	0.015	37	
309	K 1.309	✓	0.011	151	✓	0.047	113	
310	K 1.310	✓	0.044	159	✓	0.109	125	
311	K 1.311	✓	0.052	2201	✓	0.062	50	
312	K 1.312	✓	0.246	204	✓	1.061	236	
313	K 1.313	✓	0.069	537	✓	0.156	912	
314	K 1.314	✓	0.043	188	✓	0.047	170	
315	K 1.315	✓	0.115	368	✓	0.062	447	
316	K 1.316	✓	0.039	48	✓	0.047	53	
317	K 1.317	✓	0.321	23	✓	0.093	29	
318	K 1.318	✓	0.06	4284	✓	0.016	28	
319	K 1.319	✓	0.024	302	✓	0.031	33	
320	K 1.320	✓	0.057	76	✓	0.078	70	
321	K 1.321	✓	0.181	47	✓	0.125	42	

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Table 4 – continued from previous page

#	Kamke	Mathematica			Maple			
		solved	cpu	leaf	solved	cpu	leaf	solved
322	K 1.322	✓	0.025	2077	✓	0.031	28	
323	K 1.323	✓	0.032	463	✓	0.093	761	
324	K 1.324	✓	0.026	723	✓	0.109	770	
325	K 1.325	✓	0.049	139	✓	0.296	1192	
326	K 1.326	✓	0.272	13289	✓	0.343	160	
327	K 1.327	✓	0.385	669	✓	0.156	583	
328	K 1.328	✓	0.095	42	✓	0.140	33	
329	K 1.329	✓	0.314	102	✓	0.249	78	
330	K 1.330	✓	32.94	49	✓	0.031	22	
331	K 1.331	✗(hanged)	0	0	✗(hanged)	0	0	
332	K 1.332	✓	0.081	24	✓	0.015	31	
333	K 1.333	✓	0.173	72	✓	0.062	32	
334	K 1.334	✓	0.036	39	✓	0.031	19	
335	K 1.335	✓	0.181	75	✓	0.0	50	
336	K 1.336	✓	0.063	53	✓	0.031	41	
337	K 1.337	✓	0.059	52	✓	0.031	28	
338	K 1.338	✓	77.787	17681	✓	0.530	136	
339	K 1.339	✓	0.11	27	✓	0.140	27	
340	K 1.340	✗(hanged)	0	0	✗(hanged)	0	0	
341	K 1.341	✓	0.05	33	✓	0.047	30	
342	K 1.342	✓	0.261	163	✓	0.031	17	
343	K 1.343	✓	0.038	35	✓	0.046	27	
344	K 1.344	✓	0.019	23	✓	0.016	19	
345	K 1.345	✓	0.041	35	✓	0.063	36	
346	K 1.346	✓	0.054	24	✓	0.202	19	
347	K 1.347	✓	0.118	32	✓	0.094	16	
348	K 1.348	✓	0.048	17	✓	0.078	15	

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Table 4 – continued from previous page

#	Kamke	Mathematica			Maple			
		solved	cpu	leaf	solved	cpu	leaf	solved
349	K 1.349	✓	0.039	15	✓	0.031	15	
350	K 1.350	✓	0.544	53	✓	0.718	270	
351	K 1.351	✓	0.367	61	✓	0.343	55	
352	K 1.352	✓	0.132	43	✓	0.188	35	
353	K 1.353	✓	0.02	14	✓	0.047	12	
354	K 1.354	✓	0.064	145	✓	0.047	115	
355	K 1.355	✓	0.048	17	✓	0.062	15	
356	K 1.356	✓	0.062	21	✓	0.078	19	
357	K 1.357	✓	0.318	35	✓	0.406	13	
358	K 1.358	✓	0.044	29	✓	0.062	11	
359	K 1.359	✓	0.056	45	✓	0.047	28	
360	K 1.360	✓	4.99	369	✓	0.124	48	
361	K 1.361	✓	0.213	31	✓	0.172	22	
362	K 1.362	✓	0.07	23	✓	0.110	23	
363	K 1.363	✓	0.035	33	✓	0.062	35	
364	K 1.364	✓	0.064	31	✓	0.078	23	
365	K 1.365	✗(hanged)	0	0	✓	0.218	42	
366	K 1.366	✓	264.973	88	✓	0.046	45	
367	K 1.367	✗	22.563	46	✗	0.874	0	
368	K 1.368	✗(hanged)	0	0	✗(hanged)	0	0	
369	K 1.369	✓	0.047	107	✓	0.514	68	
370	K 1.370	✗	22.439	23	✗	1.404	0	
371	K 1.371	✓	0.026	37	✓	0.468	20	
372	K 1.372	✓	0.004	27	✓	0.499	271	
373	K 1.373	✓	0.109	71	✓	0.187	47	
374	K 1.374	✓	0.062	73	✓	0.406	85	
375	K 1.375	✓	0.063	71	✓	0.468	49	

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Table 4 – continued from previous page

#	Kamke	Mathematica			Maple			
		solved	cpu	leaf	solved	cpu	leaf	solved
376	K 1.376	✓	0.313	110	✓	0.796	215	
377	K 1.377	✓	0.006	19	✓	0.390	25	
378	K 1.378	✓	0.005	18	✓	0.452	32	
379	K 1.379	✓	0.004	18	✓	0.422	27	
380	K 1.380	✓	0.411	1757	✓	0.437	690	
381	K 1.381	✓	0.421	1757	✓	0.405	656	
382	K 1.382	✓	0.255	201	✓	0.390	146	
383	K 1.383	✗(hanged)	0	0	✗(hanged)	0	0	
384	K 1.384	✓	2.056	183	✓	0.468	50	
385	K 1.385	✗(hanged)	0	0	✓	0.562	169	
386	K 1.386	✓	0.205	56	✓	0.655	27	
387	K 1.387	✓	0.536	134	✓	1.202	115	
388	K 1.388	✓	0.67	53	✓	0.499	217	
389	K 1.389	✓	0.074	109	✓	0.811	193	
390	K 1.390	✓	1.796	142	✓	0.655	416	
391	K 1.391	✓	0.006	29	✓	0.0	22	
392	K 1.392	✓	0.255	27	✓	0.312	50	
393	K 1.393	✓	0.073	31	✓	0.858	85	
394	K 1.394	✗	58.133	52	✓	3.822	310	
395	K 1.395	✗	38.766	32	✗	0.968	0	
396	K 1.396	✓	0.014	29	✓	0.016	20	
397	K 1.397	✓	0.432	143	✓	0.671	131	
398	K 1.398	✓	0.737	258	✓	2.402	137	
399	K 1.399	✓	0.004	20	✓	0.515	29	
400	K 1.400	✗(hanged)	0	0	✓	0.624	123	
401	K 1.401	✓	0.354	1093	✓	0.452	656	

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#	Kamke	Mathematica			Maple			
		solved	cpu	leaf	solved	cpu	leaf	solved
402	K 1.402	✗(hanged)	0	0	✓	0.577	121	
403	K 1.403	✓	0.303	116	✓	0.858	197	
404	K 1.404	✗(hanged)	0	0	✓	0.686	499	
405	K 1.405	✓	1.014	53	✓	0.593	380	
406	K 1.406	✓	0.864	49	✓	0.577	266	
407	K 1.407	✓	0.021	51	✓	0.499	39	
408	K 1.408	✓	0.532	166	✓	0.514	73	
409	K 1.409	✓	30.78	66	✓	0.468	63	
410	K 1.410	✓	31.056	80	✓	0.546	64	
411	K 1.411	✓	0.559	181	✓	0.531	69	
412	K 1.412	✓	5.287	16145	✓	0.546	146	
413	K 1.413	✗(hanged)	0	0	✓	0.640	337	
414	K 1.414	✗(hanged)	0	0	✓	0.639	337	
415	K 1.415	✓	0.21	133	✓	0.655	95	
416	K 1.416	✗(hanged)	0	0	✓	0.546	136	
417	K 1.417	✓	0.374	430	✓	0.484	33	
418	K 1.418	✓	0.446	165	✓	0.515	55	
419	K 1.419	✓	0.68	9073	✓	0.531	110	
420	K 1.420	✓	1.329	11757	✓	0.546	897	
421	K 1.421	✓	0.032	27	✓	0.437	31	
422	K 1.422	✓	0.047	49	✓	0.515	29	
423	K 1.423	✓	0.079	59	✓	0.515	52	
424	K 1.424	✓	0.378	223	✓	0.546	224	
425	K 1.425	✓	0.27	59	✓	0.562	59	
426	K 1.426	✓	0.392	310	✓	0.546	49	
427	K 1.427	✓	0.635	479	✓	0.452	67	

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Table 4 – continued from previous page

#	Kamke	Mathematica			Maple			
		solved	cpu	leaf	solved	cpu	leaf	solved
428	K 1.428	✗(hanged)	0	0	✓	0.546	85	
429	K 1.429	✗(hanged)	0	0	✓	0.437	96	
430	K 1.430	✗(hanged)	0	0	✓	1.201	9885	
431	K 1.431	✓	0.037	111	✓	0.561	62	
432	K 1.432	✓	1.714	64	✓	7.551	615	
433	K 1.433	✓	0.51	22	✓	0.640	32	
434	K 1.434	✓	0.032	27	✓	0.015	7	
435	K 1.435	✓	0.037	61	✓	0.671	22	
436	K 1.436	✓	0.035	26	✓	1.809	59	
437	K 1.437	✓	0.274	47	✓	0.515	36	
438	K 1.438	✓	0.011	21	✓	0.0	17	
439	K 1.439	✓	0.035	49	✓	0.546	33	
440	K 1.440	✓	0.009	19	✓	0.0	15	
441	K 1.441	✓	0.065	65	✓	1.311	265	
442	K 1.442	✓	0.008	28	✓	0.0	21	
443	K 1.443	✓	0.553	1921	✓	1.638	221	
444	K 1.444	✓	0.144	103	✓	1.045	121	
445	K 1.445	✓	0.009	49	✓	0.016	35	
446	K 1.446	✓	0.491	201	✓	0.577	57	
447	K 1.447	✓	0.016	41	✓	0.468	33	
448	K 1.448	✓	0.092	109	✓	10.858	166	
449	K 1.449	✓	0.01	27	✓	0.0	23	
450	K 1.450	✓	0.453	26	✓	0.795	51	
451	K 1.451	✗(hanged)	0	0	✓	0.561	78	
452	K 1.452	✗(hanged)	0	0	✗	1.779	37	
453	K 1.453	✓	0.573	395	✓	1.170	229	

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Table 4 – continued from previous page

#	Kamke	Mathematica			Maple			
		solved	cpu	leaf	solved	cpu	leaf	solved
454	K 1.454	✓	0.155	118	✓	0.593	138	
455	K 1.455	✓	0.401	123	✓	0.686	66	
456	K 1.456	✓	0.123	79	✓	0.874	33	
457	K 1.457	✓	0.948	410	✓	1.186	135	
458	K 1.458	✓	0.06	139	✓	0.593	90	
459	K 1.459	✓	2.603	271	✓	0.422	65	
460	K 1.460	✗	56.015	28	✗	5.163	0	
461	K 1.461	✗	108.142	49	✗	19.953	0	
462	K 1.462	✓	0.015	43	✓	0.577	27	
463	K 1.463	✓	0.017	47	✓	1.092	50	
464	K 1.464	✓	0.061	52	✓	0.983	71	
465	K 1.465	✗(hanged)	0	0	✓	0.640	209	
466	K 1.466	✓	0.249	145	✓	0.811	71	
467	K 1.467	✗(hanged)	0	0	✓	0.655	148	
468	K 1.468	✗(hanged)	0	0	✓	0.577	181	
469	K 1.469	✓	0.945	317	✓	0.639	242	
470	K 1.470	✓	0.883	454	✓	0.780	87	
471	K 1.471	✓	0.007	47	✓	0.015	33	
472	K 1.472	✓	0.186	127	✓	0.936	119	
473	K 1.473	✓	0.407	165	✓	0.936	78	
474	K 1.474	✓	0.232	135	✓	1.295	154	
475	K 1.475	✓	0.098	205	✓	0.936	69	
476	K 1.476	✓	0.843	454	✓	0.874	87	
477	K 1.477	✓	0.305	146	✓	0.858	929	
478	K 1.478	✓	0.167	141	✓	0.609	88	
479	K 1.479	✗(hanged)	0	0	✓	0.811	929	

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#	Kamke	Mathematica			Maple			
		solved	cpu	leaf	solved	cpu	leaf	solved
480	K 1.480	✗	30.55	41	✗	2.044	0	
481	K 1.481	✓	0.009	49	✓	0.016	35	
482	K 1.482	✗	65.128	38	✗	1.264	0	
483	K 1.483	✓	0.157	71	✓	0.624	109	
484	K 1.484	✓	0.171	81	✗(hanged)	0	0	
485	K 1.485	✗(hanged)	0	0	✗(hanged)	0	0	
486	K 1.486	✓	0.024	117	✓	0.608	59	
487	K 1.487	✗(hanged)	0	0	✓	0.858	114	
488	K 1.488	✓	0.367	85	✓	0.905	113	
489	K 1.489	✗(hanged)	0	0	✓	2.621	5525	
490	K 1.490	✓	0.601	70	✓	0.920	145	
491	K 1.491	✓	1.033	79	✓	1.107	251	
492	K 1.492	✓	0.283	111	✓	0.905	122	
493	K 1.493	✓	8.601	553	✓	1.341	124	
494	K 1.494	✗(hanged)	0	0	✓	0.764	173	
495	K 1.495	✓	0.11	83	✓	0.905	61	
496	K 1.496	✓	95.092	65	✓	0.718	130	
497	K 1.497	✓	0.174	203	✓	0.889	203	
498	K 1.498	✓	0.104	107	✓	0.749	99	
499	K 1.499	✓	0.334	212	✓	0.702	201	
500	K 1.500	✓	1.323	100	✓	1.232	260	
501	K 1.501	✓	33.601	913	✓	4.259	287	
502	K 1.502	✓	1.718	100	✓	0.890	195	
503	K 1.503	✗(hanged)	0	0	✗	33.103	0	
504	K 1.504	✗(hanged)	0	0	✓	1.201	303	
505	K 1.505	✓	0.013	73	✓	0.032	52	

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Table 4 – continued from previous page

#	Kamke	Mathematica			Maple			
		solved	cpu	leaf	solved	cpu	leaf	solved
506	K 1.506	✗	47.848	58	✗	1.310	0	
507	K 1.507	✓	29.711	443	✗(hanged)	0	0	
508	K 1.508	✓	55.172	47	✓	2.122	60	
509	K 1.509	✗(hanged)	0	0	✓	1.622	245	
510	K 1.510	✗	60.566	66	✗	2.730	0	
511	K 1.511	✓	1.556	229	✓	8.112	199	
512	K 1.512	✓	4.686	725	✓	40.935	135	
513	K 1.513	✗(hanged)	0	0	✓	1.748	2402	
514	K 1.514	✓	15.435	605	✓	0.140	87	
515	K 1.515	✗(hanged)	0	0	✓	1.888	113	
516	K 1.516	✓	2.612	251	✓	0.827	141	
517	K 1.517	✓	2.739	281	✓	0.812	78	
518	K 1.518	✓	0.801	236	✓	0.156	126	
519	K 1.519	✓	1.828	473	✓	0.250	197	
520	K 1.520	✓	151.473	3323	✓	0.062	245	
521	K 1.521	✓	0.004	14	✓	0.031	33	
522	K 1.522	✓	0.004	20	✓	0.047	46	
523	K 1.523	✗(hanged)	0	0	✓	0.046	299	
524	K 1.524	✗(hanged)	0	0	✓	0.047	295	
525	K 1.525	✓	0.063	135	✓	0.062	125	
526	K 1.526	✓	0.01	45	✓	0.016	32	
527	K 1.527	✗(hanged)	0	0	✓	0.671	43	
528	K 1.528	✗(hanged)	0	0	✓	0.078	95	
529	K 1.529	✓	52.152	1758	✓	0.031	1473	
530	K 1.530	✗(hanged)	0	0	✓	0.094	421	
531	K 1.531	✗	73.501	72	✗	1.935	0	

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Table 4 – continued from previous page

#	Kamke	Mathematica			Maple			
		solved	cpu	leaf	solved	cpu	leaf	solved
532	K 1.532	✓	3505.56	1258	✓	0.125	1211	
533	K 1.533	✗(hanged)	0	0	✓	0.032	92	
534	K 1.534	✗(hanged)	0	0	✓	0.062	102	
535	K 1.535	✗(hanged)	0	0	✓	0.046	80	
536	K 1.536	✓	0.024	86	✓	0.016	52	
537	K 1.537	✗(hanged)	0	0	✗(hanged)	0	0	
538	K 1.538	✗(hanged)	0	0	✓	0.608	3181	
539	K 1.539	✓	0.027	45	✓	0.031	32	
540	K 1.540	✓	0.02	69	✓	0.047	109	
541	K 1.541	✗(hanged)	0	0	✓	0.499	103	
542	K 1.542	✗(hanged)	0	0	✓	0.500	107	
543	K 1.543	✗(hanged)	0	0	✗	1.060	325	
544	K 1.544	✗(hanged)	0	0	✓	0.686	7860	
545	K 1.545	✓	0.702	383	✓	0.140	141	
546	K 1.546	✗(hanged)	0	0	✓	0.125	245	
547	K 1.547	✓	1.233	490	✓	0.171	118	
548	K 1.548	✓	1.006	569	✓	0.234	241	
549	K 1.549	✓	0.246	406	✓	0.140	552	
550	K 1.550	✗(hanged)	0	0	✓	0.203	61	
551	K 1.551	✓	0.381	84	✓	0.297	127	
552	K 1.552	✓	0.164	39	✓	0.062	43	
553	K 1.553	✓	0.12	51	✓	0.031	36	
554	K 1.554	✓	0.075	49	✓	0.266	29	
555	K 1.555	✗(hanged)	0	0	✓	0.015	15	
556	K 1.556	✓	6.601	60	✓	0.156	581	
557	K 1.557	✓	0.016	39	✓	0.093	78	

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Table 4 – continued from previous page

#	Kamke	Mathematica			Maple			
		solved	cpu	leaf	solved	cpu	leaf	solved
558	K 1.558	✓	0.587	395	✓	0.140	223	
559	K 1.559	✓	0.351	212	✓	0.234	223	
560	K 1.560	✓	21.647	110	✓	0.671	1512	
561	K 1.561	✗(hanged)	0	0	✓	1.919	50	
562	K 1.562	✓	264.371	119	✓	0.094	3961	
563	K 1.563	✓	0.109	59	✓	0.125	66	
564	K 1.564	✓	0.042	28	✓	0.031	36	
565	K 1.565	✓	0.012	25	✓	0.093	17	
566	K 1.566	✗	0.01	19	✓	0.031	16	
567	K 1.567	✗	0.011	21	✓	0.031	18	
568	K 1.568	✓	0.037	28	✓	0.047	32	
569	K 1.569	✓	0.041	59	✓	0.358	147	
570	K 1.570	✗	0.109	29	✓	0.047	30	
571	K 1.571	✓	0.102	114	✓	0.203	199	
572	K 1.572	✗	0.031	41	✗	0.905	0	
573	K 1.573	✓	0.012	42	✓	0.109	16	
574	K 1.574	✓	0.015	102	✓	0.109	67	
575	K 1.575	✗	0.017	41	✗	0.452	0	
576	K 1.576	✗	0.007	23	✗	0.016	0	
577	K 1.577	✓	12.112	240	✓	0.031	28	
578	K 1.578	✓	16.413	97	✓	0.031	22	
579	K 1.579	✓	13.258	510	✓	0.031	35	
580	K 1.580	✓	24.434	200	✓	0.047	31	
581	K 1.581	✓	40.987	141	✓	0.093	32	
582	K 1.582	✓	16.7	139	✓	0.156	30	
583	K 1.583	✓	41.456	123	✓	0.125	31	
584	K 1.584	✓	18.982	112	✓	0.047	35	

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#	Kamke	Mathematica			Maple			
		solved	cpu	leaf	solved	cpu	leaf	solved
585	K 1.585	✓	123.304	202	✓	0.406	163	
586	K 1.586	✓	143.313	972	✓	0.203	39	
587	K 1.587	✓	44.026	120	✓	0.109	29	
588	K 1.588	✓	31.941	106	✓	0.109	53	
589	K 1.589	✓	19.556	242	✓	0.124	38	
590	K 1.590	✓	30.944	91	✓	0.125	28	
591	K 1.591	✓	18.189	250	✓	0.140	108	
592	K 1.592	✓	248.172	238	✓	0.156	33	
593	K 1.593	✓	62.104	218	✓	0.265	35	
594	K 1.594	✓	17.878	233	✓	0.140	67	
595	K 1.595	✓	19.349	201	✓	0.124	72	
596	K 1.596	✓	49.763	153	✓	0.093	26	
597	K 1.597	✓	27.164	127	✓	0.296	37	
598	K 1.598	✓	0.077	36	✓	0.032	29	
599	K 1.599	✓	22.629	92	✓	0.093	57	
600	K 1.600	✓	24.087	243	✓	0.141	38	
601	K 1.601	✓	32.152	179	✓	0.125	61	
602	K 1.602	✓	46.097	164	✓	0.125	33	
603	K 1.603	✓	17.469	114	✓	0.124	27	
604	K 1.604	✓	26.277	140	✓	0.141	30	
605	K 1.605	✓	28.542	142	✓	0.125	29	
606	K 1.606	✓	64.107	358	✓	0.655	34	
607	K 1.607	✓	739.416	118	✓	0.078	22	
608	K 1.608	✓	284.31	271	✓	0.125	40	
609	K 1.609	✓	51.408	114	✓	0.140	22	
610	K 1.610	✓	0.063	24	✓	0.016	20	
611	K 1.611	✓	39.069	188	✓	0.078	28	

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Table 4 – continued from previous page

#	Kamke	Mathematica			Maple			
		solved	cpu	leaf	solved	cpu	leaf	solved
612	K 1.612	✓	49.253	196	✓	0.110	27	
613	K 1.613	✓	818.937	223	✓	0.093	23	
614	K 1.614	✓	72.938	171	✓	0.328	59	
615	K 1.615	✓	17.029	74	✓	0.109	26	
616	K 1.616	✓	52.213	174	✓	0.093	26	
617	K 1.617	✓	67.611	612	✓	0.234	47	
618	K 1.618	✓	0.104	25	✓	0.312	34	
619	K 1.619	✓	60.581	327	✓	0.359	81	
620	K 1.620	✗(hanged)	0	0	✓	0.156	37	
621	K 1.621	✓	0.099	445	✓	0.234	59	
622	K 1.622	✓	0.449	134	✓	0.172	83	
623	K 1.623	✓	0.177	77	✓	0.172	51	
624	K 1.624	✓	0.952	9837	✓	0.858	46	
625	K 1.625	✓	0.21	76	✓	0.156	53	
626	K 1.626	✓	0.196	104	✓	0.359	112	
627	K 1.627	✓	0.754	25	✓	0.141	39	
628	K 1.628	✓	0.086	33	✓	0.156	23	
629	K 1.629	✓	0.781	47	✓	0.172	72	
630	K 1.630	✓	0.567	101	✓	0.249	98	
631	K 1.631	✓	0.097	31	✓	0.172	23	
632	K 1.632	✓	0.169	65	✓	0.203	52	
633	K 1.633	✓	0.191	85	✓	0.686	52	
634	K 1.634	✓	0.185	33	✓	0.187	26	
635	K 1.635	✓	0.125	33	✓	0.156	22	
636	K 1.636	✓	0.055	24	✓	0.140	19	
637	K 1.637	✓	9.663	59	✓	1.482	84	
638	K 1.638	✗	2.786	21	✓	0.124	35	

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Table 4 – continued from previous page

#	Kamke	Mathematica			Maple			
		solved	cpu	leaf	solved	cpu	leaf	solved
639	K 1.639	✗	0.364	23	✓	0.172	50	
640	K 1.640	✗	3.866	24	✓	0.203	45	
641	K 1.641	✓	0.177	35	✓	0.172	26	
642	K 1.642	✓	0.145	105	✓	0.187	286	
643	K 1.643	✓	0.119	31	✓	0.172	22	
644	K 1.644	✓	0.275	34	✓	0.265	27	
645	K 1.645	✓	0.039	20	✓	0.110	14	
646	K 1.646	✓	0.181	35	✓	0.202	23	
647	K 1.647	✓	0.423	115	✓	0.218	460	
648	K 1.648	✓	0.351	128	✓	0.437	41	
649	K 1.649	✓	0.181	37	✓	0.187	27	
650	K 1.650	✓	0.246	40	✓	0.187	28	
651	K 1.651	✓	0.038	16	✓	0.047	13	
652	K 1.652	✓	1.924	101	✓	0.124	27	
653	K 1.653	✓	0.182	34	✓	0.172	24	
654	K 1.654	✓	0.165	37	✓	0.203	23	
655	K 1.655	✓	11.359	82	✓	0.920	64	
656	K 1.656	✓	0.043	20	✓	0.062	15	
657	K 1.657	✓	0.19	37	✓	0.171	26	
658	K 1.658	✓	0.248	45	✓	0.218	28	
659	K 1.659	✓	0.441	60	✓	0.187	41	
660	K 1.660	✓	0.265	42	✓	0.188	29	
661	K 1.661	✓	0.421	61	✓	0.218	39	
662	K 1.662	✓	0.197	37	✓	0.188	26	
663	K 1.663	✓	2.294	101	✓	0.125	27	
664	K 1.664	✓	0.191	36	✓	0.171	25	
665	K 1.665	✓	0.272	41	✓	0.343	28	

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Table 4 – continued from previous page

#	Kamke	Mathematica			Maple			
		solved	cpu	leaf	solved	cpu	leaf	solved
666	K 1.666	✓	0.076	29	✓	0.156	24	
667	K 1.667	✓	1.022	90	✓	0.172	83	
668	K 1.668	✓	0.537	78	✓	0.546	58	
669	K 1.669	✓	0.884	264	✓	0.203	72	
670	K 1.670	✓	0.37	99	✓	0.250	70	
671	K 1.671	✓	0.426	192	✓	0.156	237	
672	K 1.672	✗(hanged)	0	0	✓	0.156	36	
673	K 1.673	✓	0.084	23	✓	0.359	17	
674	K 1.674	✓	0.234	40	✓	0.234	27	
675	K 1.675	✓	0.057	48	✓	0.031	46	
676	K 1.676	✓	0.324	144	✓	0.374	43	
677	K 1.677	✓	0.038	80	✓	0.047	64	
678	K 1.678	✓	0.251	101	✓	0.234	37	
679	K 1.679	✓	0.036	59	✓	0.031	37	
680	K 1.680	✓	0.236	39	✓	0.218	28	
681	K 1.681	✓	0.045	84	✓	0.031	57	
682	K 1.682	✓	0.091	39	✓	0.218	28	
683	K 1.683	✓	0.361	84	✓	0.109	166	
684	K 1.684	✓	0.027	20	✓	0.920	30	
685	K 1.685	✓	0.039	87	✓	0.047	48	
686	K 1.686	✓	9.257	68	✓	1.482	85	
687	K 1.687	✓	0.064	130	✓	0.063	39	
688	K 1.688	✓	0.117	78	✓	0.062	61	
689	K 1.689	✓	0.075	60	✓	0.047	25	
690	K 1.690	✓	0.319	127	✓	0.265	40	
691	K 1.691	✓	0.08	21	✓	0.499	17	
692	K 1.692	✓	0.027	20	✓	1.186	30	

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#	Kamke	Mathematica			Maple			
		solved	cpu	leaf	solved	cpu	leaf	solved
693	K 1.693	✓	0.173	146	✓	0.078	40	
694	K 1.694	✓	0.3	66	✓	0.234	30	
695	K 1.695	✓	0.052	34	✓	0.047	39	
696	K 1.696	✓	121.91	50	✓	0.047	32	
697	K 1.697	✓	0.129	114	✓	0.078	40	
698	K 1.698	✓	0.133	108	✓	0.062	34	
699	K 1.699	✓	0.244	101	✓	0.265	36	
700	K 1.700	✓	0.071	76	✓	0.094	62	
701	K 1.701	✗(hanged)	0	0	✓	4.727	100	
702	K 1.702	✓	197.341	36	✓	0.063	35	
703	K 1.703	✗(hanged)	0	0	✓	0.172	68	
704	K 1.704	✓	240.336	65	✓	0.047	45	
705	K 1.705	✓	0.062	30	✓	0.172	24	
706	K 1.706	✗(hanged)	0	0	✓	0.405	65	
707	K 1.707	✓	480.133	334	✓	0.468	105	
708	K 1.708	✓	0.299	89	✓	0.656	308	
709	K 1.709	✓	5.564	217	✓	0.203	39	
710	K 1.710	✓	1910.258	37	✓	1.685	35	
711	K 1.711	✓	0.074	28	✓	0.109	31	
712	K 1.712	✓	0.296	115	✓	0.265	38	
713	K 1.713	✓	0.135	649	✓	0.297	86	
714	K 1.714	✗(hanged)	0	0	✓	0.327	104	
715	K 1.715	✓	0.273	104	✓	0.249	39	
716	K 1.716	✓	5.77	133	✓	0.249	37	
717	K 1.717	✓	0.338	46	✓	0.281	33	
718	K 1.718	✓	0.13	127	✓	0.063	44	

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Table 4 – continued from previous page

#	Kamke	Mathematica			Maple			
		solved	cpu	leaf	solved	cpu	leaf	solved
719	K 1.719	✓	0.1	49	✓	0.110	57	
720	K 1.720	✓	6.128	314	✓	0.171	48	
721	K 1.721	✓	0.021	27	✓	0.062	19	
722	K 1.722	✓	63.894	491	✓	0.281	96	
723	K 1.723	✓	0.065	663	✓	0.046	864	
724	K 1.724	✓	64.507	420	✓	0.047	18	
725	K 1.725	✓	0.265	19	✓	0.561	25	
726	K 1.726	✓	0.082	625	✓	0.202	83	
727	K 1.727	✓	0.495	29	✓	0.187	25	
728	K 1.728	✓	0.435	72	✓	0.234	50	
729	K 1.729	✓	0.355	327	✓	0.093	497	
730	K 1.730	✗	33.979	55	✓	1.342	49	
731	K 1.731	✓	0.198	47	✓	0.125	42	
732	K 1.732	✓	0.498	110	✓	0.281	43	
733	K 1.733	✗(hanged)	0	0	✗(hanged)	0	0	
734	K 1.734	✓	0.122	37	✓	0.125	39	
735	K 1.735	✗(hanged)	0	0	✓	0.062	104	
736	K 1.736	✓	0.107	31	✓	0.140	47	
737	K 1.737	✓	0.034	36	✓	0.062	29	
738	K 1.738	✓	0.516	1347	✓	0.561	1096	
739	K 1.739	✓	0.132	39	✓	0.140	35	
740	K 1.740	✓	0.068	74	✓	0.093	72	
741	K 1.741	✓	3.706	175	✓	0.749	400	
742	K 1.742	✓	5.755	3913	✓	1.185	259	
743	K 1.743	✗	32.841	43	✓	0.328	269	
744	K 1.744	✓	0.043	510	✓	0.156	621	

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Table 4 – continued from previous page

#	Kamke	Mathematica			Maple			
		solved	cpu	leaf	solved	cpu	leaf	solved
745	K 1.745	✗(hanged)	0	0	✓	0.063	104	
746	K 1.746	✗	31.24	39	✓	0.312	243	
747	K 1.747	✗(hanged)	0	0	✓	0.281	69	
748	K 1.748	✓	0.383	285	✓	0.078	497	
749	K 1.749	✓	0.106	126	✓	0.109	192	
750	K 1.750	✓	0.423	72	✓	0.234	49	
751	K 1.751	✓	0.078	30	✓	0.093	26	
752	K 1.752	✗	19.954	39	✓	1.060	874	
753	K 1.753	✓	0.109	41	✓	0.125	38	
754	K 1.754	✓	0.027	47	✓	0.016	26	
755	K 1.755	✓	0.178	2633	✓	0.094	44	
756	K 1.756	✓	0.08	95	✓	0.031	37	
757	K 1.757	✓	0.03	36	✓	0.062	26	
758	K 1.758	✓	1.094	459	✓	0.187	41	
759	K 1.759	✗	40.967	46	✓	0.452	315	
760	K 1.760	✓	1.559	112	✓	1.685	475	
761	K 1.761	✓	0.028	33	✓	0.062	18	
762	K 1.762	✓	0.061	26	✓	0.093	22	
763	K 1.763	✓	0.064	22	✓	0.093	14	
764	K 1.764	✓	0.104	50	✓	0.093	36	
765	K 1.765	✓	135.603	128	✓	0.110	106	
766	K 1.766	✗(hanged)	0	0	✓	0.234	85	
767	K 1.767	✓	0.753	38	✓	0.062	26	
768	K 1.768	✓	0.977	70	✓	0.062	26	
769	K 1.769	✗	42.445	46	✓	0.359	251	
770	K 1.770	✓	0.106	705	✓	0.094	1345	

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Table 4 – continued from previous page

#	Kamke	Mathematica			Maple			
		solved	cpu	leaf	solved	cpu	leaf	solved
771	K 1.771	✓	0.053	46	✓	0.078	84	
772	K 1.772	✓	0.109	21	✓	0.093	18	
773	K 1.773	✓	0.053	61	✓	0.218	48	
774	K 1.774	✓	0.027	45	✓	0.078	50	
775	K 1.775	✓	0.095	943	✓	0.078	60	
776	K 1.776	✗(hanged)	0	0	✓	0.234	92	
777	K 1.777	✓	0.086	39	✓	0.125	51	
778	K 1.778	✓	0.063	95	✓	0.031	37	
779	K 1.779	✓	0.029	57	✓	0.078	50	
780	K 1.780	✓	0.023	15	✓	0.280	27	
781	K 1.781	✓	0.496	82	✓	0.249	61	
782	K 1.782	✗(hanged)	0	0	✓	0.530	92	
783	K 1.783	✗(hanged)	0	0	✓	0.203	69	
784	K 1.784	✗(hanged)	0	0	✓	26.208	24	
785	K 1.785	✗(hanged)	0	0	✓	96.767	24	
786	K 1.786	✗(hanged)	0	0	✓	0.047	39	
787	K 1.787	✓	19.683	487	✓	0.437	191	
788	K 1.788	✗(hanged)	0	0	✗(hanged)	0	0	
789	K 1.789	✗(hanged)	0	0	✗(hanged)	0	0	
790	K 1.790	✓	1267.681	95	✗(hanged)	0	0	
791	K 1.791	✓	1670.398	87	✓	12.699	634	
792	K 1.792	✓	0.	0	✓	0.312	114	
793	K 1.793	✓	13.842	397	✓	0.078	32	
794	K 1.794	✓	0.092	67	✓	0.390	32	
795	K 1.795	✓	0.157	111	✓	0.032	37	
796	K 1.796	✓	9.404	102	✓	1.155	143	

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Table 4 – continued from previous page

#	Kamke	Mathematica			Maple			
		solved	cpu	leaf	solved	cpu	leaf	solved
797	K 1.797	✓	2.028	349	✓	0.141	281	
798	K 1.798	✓	0.552	27	✓	0.109	30	
799	K 1.799	✓	0.301	70	✓	0.234	147	
800	K 1.800	✓	0.176	128	✓	0.015	41	
801	K 1.801	✓	0.101	126	✓	0.047	63	
802	K 1.802	✓	0.076	98	✓	0.125	27	
803	K 1.803	✓	0.08	386	✓	0.327	65	
804	K 1.804	✓	0.493	43	✓	0.827	38	
805	K 1.805	✓	0.056	37	✓	0.422	42	
806	K 1.806	✓	0.27	23	✓	0.468	22	
807	K 1.807	✗	1.853	34	✓	0.468	43	
808	K 1.808	✓	1.138	127	✓	0.062	44	
809	K 1.809	✓	0.153	128	✓	0.015	41	
810	K 1.810	✓	0.015	40	✓	0.062	16	
811	K 1.811	✓	2.217	33	✓	1.544	32	
812	K 1.812	✓	0.327	70	✓	0.312	32	
813	K 1.813	✓	0.493	66	✓	0.327	38	
814	K 1.814	✓	0.014	72	✓	0.016	38	
815	K 1.815	✓	10.173	103	✓	1.326	202	
816	K 1.816	✓	0.141	74	✓	0.624	307	
817	K 1.817	✓	0.384	63	✓	0.500	27	
818	K 1.818	✓	0.047	34	✓	0.109	34	
819	K 1.819	✓	0.23	65	✓	0.265	32	
820	K 1.820	✓	0.341	63	✓	0.530	27	
821	K 1.821	✓	0.034	2093	✓	0.124	27	
822	K 1.822	✓	0.042	32	✓	0.109	25	
823	K 1.823	✓	0.383	39	✓	0.109	38	

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Table 4 – continued from previous page

#	Kamke	Mathematica			Maple			
		solved	cpu	leaf	solved	cpu	leaf	solved
824	K 1.824	✓	0.055	68	✓	0.280	61	
825	K 1.825	✓	0.183	148	✓	0.062	89	
826	K 1.826	✓	0.57	70	✓	0.234	51	
827	K 1.827	✓	0.125	111	✓	0.156	49	
828	K 1.828	✓	0.208	56	✓	0.202	54	
829	K 1.829	✓	0.389	74	✓	0.297	40	
830	K 1.830	✓	0.434	37	✓	0.109	38	
831	K 1.831	✓	4.434	145	✓	0.234	35	
832	K 1.832	✓	0.581	2497	✓	0.125	31	
833	K 1.833	✓	0.119	105	✓	0.125	49	
834	K 1.834	✓	0.696	90	✓	0.234	60	
835	K 1.835	✗	2.56	47	✗	1.638	0	
836	K 1.836	✓	12.339	386	✓	0.156	102	
837	K 1.837	✗	3.086	52	✗	1.700	0	
838	K 1.838	✓	0.027	31	✓	0.078	27	
839	K 1.839	✓	0.068	28	✓	0.062	19	
840	K 1.840	✓	0.096	30	✓	0.063	19	
841	K 1.841	✓	1.256	236	✓	0.234	97	
842	K 1.842	✓	0.122	186	✓	0.047	43	
843	K 1.843	✓	0.124	198	✓	0.015	43	
844	K 1.844	✓	16.574	386	✓	0.140	97	
845	K 1.845	✓	4.914	227	✓	0.187	44	
846	K 1.846	✓	1.357	362	✓	0.141	40	
847	K 1.847	✓	0.365	69	✓	0.265	36	
848	K 1.848	✓	0.109	154	✓	0.405	27	
849	K 1.849	✓	0.324	68	✓	0.265	35	
850	K 1.850	✓	0.197	1478	✓	0.795	32	

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Table 4 – continued from previous page

#	Kamke	Mathematica			Maple			
		solved	cpu	leaf	solved	cpu	leaf	solved
851	K 1.851	✓	0.156	145	✓	0.047	42	
852	K 1.852	✓	0.149	145	✓	0.047	42	
853	K 1.853	✓	0.017	76	✓	0.031	65	
854	K 1.854	✗	0.624	49	✓	0.156	51	
855	K 1.855	✗	0.672	49	✓	0.156	51	
856	K 1.856	✓	0.894	100	✓	0.218	65	
857	K 1.857	✓	0.342	69	✓	0.265	36	
858	K 1.858	✓	0.161	145	✓	0.047	42	
859	K 1.859	✓	1.298	102	✓	0.218	63	
860	K 1.860	✓	0.151	33	✓	1.669	29	
861	K 1.861	✓	1.815	155	✓	0.125	26	
862	K 1.862	✗	1.114	32	✓	0.172	27	
863	K 1.863	✓	0.035	30	✓	2.355	38	
864	K 1.864	✓	0.041	137	✓	0.062	186	
865	K 1.865	✓	150.793	84	✓	0.156	23	
866	K 1.866	✓	0.5	74	✓	0.437	39	
867	K 1.867	✓	0.06	77	✓	0.046	30	
868	K 1.868	✓	0.042	79	✓	0.047	28	
869	K 1.869	✓	0.035	42	✓	0.047	37	
870	K 1.870	✓	1.681	35	✓	0.702	30	
871	K 1.871	✓	0.023	22	✓	0.062	66	
872	K 1.872	✓	0.046	215	✓	0.047	49	
873	K 1.873	✓	0.345	53	✓	0.187	50	
874	K 1.874	✓	0.068	101	✓	0.047	40	
875	K 1.875	✓	0.294	285	✓	0.187	79	
876	K 1.876	✓	0.017	135	✓	0.031	41	
877	K 1.877	✓	0.017	49	✓	0.031	71	

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Table 4 – continued from previous page

#	Kamke	Mathematica			Maple			
		solved	cpu	leaf	solved	cpu	leaf	solved
878	K 1.878	✓	0.263	130	✓	0.359	75	
879	K 1.879	✓	0.153	135	✓	0.172	55	
880	K 1.880	✓	0.128	131	✓	0.063	41	
881	K 1.881	✓	0.018	75	✓	0.047	75	
882	K 1.882	✓	0.068	119	✓	0.047	41	
883	K 1.883	✓	1.403	164	✓	0.592	595	
884	K 1.884	✓	0.365	71	✓	0.265	107	
885	K 1.885	✗	40.742	73	✗	0.858	0	
886	K 1.886	✓	0.055	82	✓	0.016	42	
887	K 1.887	✓	0.049	106	✓	0.046	70	
888	K 1.888	✓	0.02	78	✓	0.031	79	
889	K 1.889	✗(hanged)	0	0	✓	0.858	47	
890	K 1.890	✓	0.141	103	✓	0.686	34	
891	K 1.891	✓	0.021	135	✓	0.047	56	
892	K 1.892	✗(hanged)	0	0	✓	0.452	40	
893	K 1.893	✓	0.048	80	✓	0.031	41	
894	K 1.894	✗	40.655	65	✗	0.734	0	
895	K 1.895	✓	0.023	81	✓	0.047	80	
896	K 1.896	✓	0.201	106	✓	0.296	63	
897	K 1.897	✓	0.027	79	✓	0.062	85	
898	K 1.898	✓	0.022	106	✓	0.031	83	
899	K 1.899	✓	0.062	106	✓	0.015	47	
900	K 1.900	✓	0.091	381	✓	0.063	46	
901	K 1.901	✓	0.09	33	✓	0.343	30	
902	K 1.902	✓	0.11	295	✓	0.171	175	
903	K 1.903	✓	0.05	19	✓	0.047	48	
904	K 1.904	✓	0.052	23	✓	0.031	64	

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Table 4 – continued from previous page

#	Kamke	Mathematica			Maple			
		solved	cpu	leaf	solved	cpu	leaf	solved
905	K 1.905	✓	0.061	85	✓	0.031	46	
906	K 1.906	✓	0.055	326	✓	0.249	33	
907	K 1.907	✓	0.053	22	✓	0.109	22	
908	K 1.908	✓	1.365	1278	✓	0.312	1742	
909	K 1.909	✗	40.684	64	✓	0.390	84	
910	K 1.910	✓	0.058	98	✓	0.016	42	
911	K 1.911	✓	4.338	56	✓	0.374	30	
912	K 1.912	✓	1.4	205	✓	3.026	43	
913	K 1.913	✗(hanged)	0	0	✓	0.047	43	
914	K 1.914	✓	1.504	401	✓	2.247	77	
915	K 1.915	✗(hanged)	0	0	✓	0.046	43	
916	K 1.916	✗	2.07	66	✓	0.219	80	
917	K 1.917	✗	1.227	60	✓	0.172	38	
918	K 1.918	✗(hanged)	0	0	✓	0.858	41	
919	K 1.919	✗(hanged)	0	0	✓	0.140	120	
920	K 1.920	✓	0.245	301	✗(hanged)	0	0	
921	K 1.921	✓	2.719	52	✓	0.093	30	
922	K 1.922	✗(hanged)	0	0	✓	0.110	47	
923	K 1.923	✗(hanged)	0	0	✓	0.156	36	
924	K 1.924	✓	0.801	55	✓	0.094	47	
925	K 1.925	✗(hanged)	0	0	✓	0.188	38	
926	K 1.926	✗(hanged)	0	0	✓	0.032	65	
927	K 1.927	✓	0.14	112	✓	0.078	72	
928	K 1.928	✓	1.366	23	✓	0.265	21	
929	K 1.929	✗(hanged)	0	0	✓	0.031	42	
930	K 1.930	✓	1.568	39	✓	0.436	36	

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Table 4 – continued from previous page

#	Kamke	Mathematica			Maple			
		solved	cpu	leaf	solved	cpu	leaf	solved
931	K 1.931	✓	0.027	80	✓	0.032	73	
932	K 1.932	✗(hanged)	0	0	✓	0.109	54	
933	K 1.933	✓	0.061	99	✓	0.031	39	
934	K 1.934	✓	0.1	102	✓	0.063	39	
935	K 1.935	✓	49.448	246	✓	0.156	55	
936	K 1.936	✓	0.094	99	✓	0.046	39	
937	K 1.937	✓	0.054	124	✓	0.046	79	
938	K 1.938	✓	0.063	108	✓	0.031	39	
939	K 1.939	✓	0.381	136	✓	0.094	70	
940	K 1.940	✓	0.022	80	✓	0.031	63	
941	K 1.941	✓	0.372	53	✓	0.047	35	
942	K 1.942	✗(hanged)	0	0	✓	0.390	43	
943	K 1.943	✓	0.395	53	✓	0.047	40	
944	K 1.944	✓	1.613	233	✓	0.062	47	
945	K 1.945	✓	1.213	213	✓	0.047	41	
946	K 1.946	✓	0.082	150	✓	0.125	100	
947	K 1.947	✓	0.108	30	✓	0.171	36	
948	K 1.948	✓	0.259	39	✓	0.140	68	
949	K 1.949	✓	0.021	76	✓	0.031	97	
950	K 1.950	✓	0.168	141	✓	0.078	42	
951	K 1.951	✓	0.144	140	✓	0.062	41	
952	K 1.952	✓	0.139	189	✓	0.202	65	
953	K 1.953	✗	1.521	97	✓	0.281	145	
954	K 1.954	✓	0.088	115	✓	0.031	53	
955	K 1.955	✓	0.043	112	✓	0.078	111	
956	K 1.956	✓	0.211	28	✓	0.062	197	

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Table 4 – continued from previous page

#	Kamke	Mathematica			Maple			
		solved	cpu	leaf	solved	cpu	leaf	solved
957	K 1.957	✓	0.199	28	✓	0.031	197	
958	K 1.958	✓	0.061	82	✓	0.047	40	
959	K 1.959	✓	0.046	20	✓	0.047	16	
960	K 1.960	✓	0.036	14	✓	0.031	16	
961	K 1.961	✗(hanged)	0	0	✓	0.312	45	
962	K 1.962	✓	5.355	1191	✓	1.092	79	
963	K 1.963	✓	0.112	108	✓	0.156	39	
964	K 1.964	✓	4.81	264	✓	2.012	80	
965	K 1.965	✓	0.056	29	✓	0.093	25	
966	K 1.966	✓	0.44	292	✓	0.484	50	
967	K 1.967	✓	0.129	151	✓	0.062	90	
968	K 1.968	✓	0.085	30	✓	0.109	45	
969	K 1.969	✓	0.059	19	✓	0.125	27	
970	K 1.970	✓	0.475	66	✓	0.562	183	
971	K 1.971	✓	0.101	157	✓	0.187	88	
972	K 1.972	✓	0.032	32	✓	0.062	27	
973	K 1.973	✓	0.164	146	✓	0.234	136	
974	K 1.974	✓	0.01	39	✓	0.031	57	
975	K 1.975	✓	0.012	47	✓	0.032	59	
976	K 1.976	✓	0.076	101	✓	0.172	57	
977	K 1.977	✓	0.172	139	✓	0.141	122	
978	K 1.978	✓	0.048	60	✓	0.125	71	
979	K 1.979	✓	0.011	37	✓	0.047	57	
980	K 1.980	✓	0.012	43	✓	0.016	35	
981	K 1.981	✓	0.018	49	✓	0.016	41	
982	K 1.982	✓	0.105	132	✓	0.312	187	
983	K 1.983	✓	0.255	238	✓	0.203	469	

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Table 4 – continued from previous page

#	Kamke	Mathematica			Maple			
		solved	cpu	leaf	solved	cpu	leaf	solved
984	K 1.984	✓	3.039	426	✓	0.203	40	
985	K 1.985	✓	0.158	103	✓	0.031	43	
986	K 1.986	✓	0.015	44	✓	0.031	36	
987	K 1.987	✓	0.1	40	✓	0.047	26	
988	K 1.988	✓	0.366	104	✓	0.031	29	
989	K 1.989	✓	0.104	55	✓	0.031	35	
990	K 1.990	✓	0.474	49	✓	0.359	46	
991	K 1.991	✓	0.307	101	✓	0.031	31	
992	K 1.992	✓	0.107	42	✓	0.031	25	
993	K 1.993	✓	5232.496	71	✓	0.016	35	
994	K 1.994	✓	0.123	198	✓	0.031	43	
995	K 1.995	✓	0.017	17	✓	0.094	14	
996	K 1.996	✗	56.731	25	✓	0.047	15	
997	K 1.997	✓	0.029	18	✓	0.047	16	
998	K 1.998	✓	0.473	27	✓	0.281	27	
999	K 1.999	✓	0.024	24	✓	0.047	39	
1000	K 1.1000	✗(hanged)	0	0	✓	0.109	19	
1001	K 2.1	✓	0.003	12	✓	0.0	9	
1002	K 2.2	✓	0.004	16	✓	0.031	13	
1003	K 2.3	✓	0.116	45	✓	0.032	26	
1004	K 2.4	✓	0.097	47	✓	0.031	27	
1005	K 2.5	✓	0.532	1163	✓	0.047	82	
1006	K 2.6	✓	0.004	20	✓	0.016	15	
1007	K 2.7	✓	0.057	135	✓	0.016	26	
1008	K 2.8	✗(hanged)	0	0	✓	0.032	39	
1009	K 2.9	✓	0.004	28	✓	0.016	21	

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Table 4 – continued from previous page

#	Kamke	Mathematica			Maple			
		solved	cpu	leaf	solved	cpu	leaf	solved
1010	K 2.10	✓	0.006	46	✓	0.062	31	
1011	K 2.11	✓	0.006	33	✓	0.031	23	
1012	K 2.12	✓	0.008	47	✓	0.062	31	
1013	K 2.13	✓	0.02	43	✓	0.031	29	
1014	K 2.14	✓	0.029	170	✓	0.078	65	
1015	K 2.15	✓	0.345	26	✗	0.156	31	
1016	K 2.16	✓	0.126	312	✓	0.141	95	
1017	K 2.17	✓	0.028	46	✓	0.063	17	
1018	K 2.18	✓	0.022	55	✓	0.047	39	
1019	K 2.19	✓	0.78	35	✗	0.531	39	
1020	K 2.20	✓	0.681	180	✓	0.141	61	
1021	K 2.21	✓	0.054	44	✓	0.140	39	
1022	K 2.22	✓	0.027	28	✓	0.156	21	
1023	K 2.23	✓	0.015	44	✓	0.141	29	
1024	K 2.24	✓	0.162	84	✓	0.109	34	
1025	K 2.25	✓	0.954	615	✓	0.140	105	
1026	K 2.26	✗	0.184	27	✗	0.280	33	
1027	K 2.27	✓	0.995	23	✓	0.265	69	
1028	K 2.28	✓	0.258	37	✗	0.172	48	
1029	K 2.29	✓	0.177	24	✓	0.125	22	
1030	K 2.30	✓	0.157	18	✓	0.0	23	
1031	K 2.31	✓	0.127	17	✗	0.0	22	
1032	K 2.32	✓	0.478	71	✓	0.156	53	
1033	K 2.33	✓	0.017	37	✓	0.032	27	
1034	K 2.34	✓	0.011	20	✓	0.015	15	
1035	K 2.35	✓	0.005	58	✓	0.0	45	
1036	K 2.36	✗(hanged)	0	0	✓	0.078	128	

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Table 4 – continued from previous page

#	Kamke	Mathematica			Maple			
		solved	cpu	leaf	solved	cpu	leaf	solved
1037	K 2.37	✓	0.03	101	✓	0.078	73	
1038	K 2.38	✓	0.33	23	✗	0.0	28	
1039	K 2.39	✓	0.012	47	✓	0.015	33	
1040	K 2.40	✓	0.03	53	✓	0.031	34	
1041	K 2.41	✓	0.009	55	✓	0.062	47	
1042	K 2.42	✓	0.008	61	✓	0.046	47	
1043	K 2.43	✓	0.045	69	✓	0.140	44	
1044	K 2.44	✓	0.008	39	✓	0.062	35	
1045	K 2.45	✓	0.021	39	✓	0.016	28	
1046	K 2.46	✓	0.007	31	✓	0.063	31	
1047	K 2.47	✓	0.014	27	✓	0.031	22	
1048	K 2.48	✓	0.01	45	✓	0.063	43	
1049	K 2.49	✗(hanged)	0	0	✓	0.125	70	
1050	K 2.50	✓	0.012	23	✓	0.016	18	
1051	K 2.51	✓	0.03	44	✓	0.032	27	
1052	K 2.52	✓	0.021	78	✓	0.063	65	
1053	K 2.53	✓	0.029	57	✓	0.047	35	
1054	K 2.54	✓	0.048	172	✓	0.047	105	
1055	K 2.55	✓	0.155	421	✓	0.172	317	
1056	K 2.56	✓	0.036	66	✓	0.078	48	
1057	K 2.57	✓	0.88	55	✓	0.110	50	
1058	K 2.58	✓	0.9	55	✓	0.093	35	
1059	K 2.59	✓	0.052	72	✓	0.062	55	
1060	K 2.60	✓	0.037	83	✓	0.125	91	
1061	K 2.61	✓	0.076	70	✓	0.062	38	
1062	K 2.62	✓	0.028	35	✓	0.015	23	
1063	K 2.63	✓	0.041	28	✓	0.125	66	

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Table 4 – continued from previous page

#	Kamke	Mathematica			Maple			
		solved	cpu	leaf	solved	cpu	leaf	solved
1064	K 2.64	✓	0.564	1400	✓	0.203	129	
1065	K 2.65	✓	0.163	114	✓	0.171	67	
1066	K 2.66	✓	0.035	18	✓	0.063	15	
1067	K 2.67	✓	0.033	21	✓	0.032	17	
1068	K 2.68	✗(hanged)	0	0	✓	0.141	45	
1069	K 2.69	✓	0.036	19	✓	0.063	15	
1070	K 2.70	✓	0.318	143	✓	0.141	67	
1071	K 2.71	✓	0.107	59	✓	0.046	37	
1072	K 2.72	✓	0.282	38	✗	0.250	45	
1073	K 2.73	✗	1.365	129	✗	2.511	109	
1074	K 2.74	✓	26.456	41	✓	0.016	21	
1075	K 2.75	✓	0.179	23	✗	0.0	28	
1076	K 2.76	✓	0.203	31	✗	0.171	36	
1077	K 2.77	✓	0.32	31	✗	0.172	36	
1078	K 2.78	✓	0.073	73	✓	0.031	39	
1079	K 2.79	✓	0.238	135	✓	0.016	37	
1080	K 2.80	✓	0.303	56	✓	0.219	74	
1081	K 2.81	✓	0.81	55	✗	0.561	64	
1082	K 2.82	✓	0.548	73	✓	0.094	85	
1083	K 2.83	✓	0.824	111	✓	0.078	43	
1084	K 2.84	✓	0.86	125	✓	0.078	21	
1085	K 2.85	✓	0.923	118	✓	0.062	29	
1086	K 2.86	✓	0.005	42	✓	0.016	29	
1087	K 2.87	✓	0.008	36	✓	0.062	35	
1088	K 2.88	✓	0.103	180	✓	0.094	36	
1089	K 2.89	✓	0.045	99	✓	0.047	61	
1090	K 2.90	✗(hanged)	0	0	✓	0.032	59	

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Table 4 – continued from previous page

#	Kamke	Mathematica			Maple			
		solved	cpu	leaf	solved	cpu	leaf	solved
1091	K 2.91	✓	0.023	41	✓	0.031	35	
1092	K 2.92	✓	0.096	72	✓	0.109	29	
1093	K 2.93	✓	0.005	13	✓	0.016	10	
1094	K 2.94	✓	0.022	41	✓	0.016	29	
1095	K 2.95	✓	0.009	30	✓	0.031	23	
1096	K 2.96	✓	0.012	61	✓	0.109	43	
1097	K 2.97	✓	0.026	46	✓	0.016	31	
1098	K 2.98	✓	0.009	41	✓	0.0	27	
1099	K 2.99	✓	1.066	36	✓	0.031	25	
1100	K 2.100	✓	0.022	44	✓	0.032	23	
1101	K 2.101	✓	0.026	51	✓	0.031	31	
1102	K 2.102	✓	0.006	42	✓	0.031	35	
1103	K 2.103	✓	0.026	64	✓	0.016	35	
1104	K 2.104	✓	0.036	104	✓	0.016	47	
1105	K 2.105	✓	0.021	64	✓	0.031	45	
1106	K 2.106	✓	0.055	447	✓	0.062	77	
1107	K 2.107	✓	0.031	40	✓	0.062	33	
1108	K 2.108	✓	0.035	37	✓	0.062	29	
1109	K 2.109	✓	0.053	45	✓	0.031	40	
1110	K 2.110	✓	0.041	36	✓	0.094	23	
1111	K 2.111	✓	0.018	20	✓	0.031	14	
1112	K 2.112	✓	0.025	30	✓	0.031	22	
1113	K 2.113	✓	0.022	24	✓	0.063	17	
1114	K 2.114	✓	0.05	39	✓	0.031	35	
1115	K 2.115	✓	0.069	76	✓	0.140	55	
1116	K 2.116	✓	0.054	43	✓	0.078	35	
1117	K 2.117	✓	0.098	107	✓	0.094	91	

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Table 4 – continued from previous page

#	Kamke	Mathematica			Maple			
		solved	cpu	leaf	solved	cpu	leaf	solved
1118	K 2.118	✓	0.093	51	✓	0.063	43	
1119	K 2.119	✓	0.175	77	✓	0.047	24	
1120	K 2.120	✓	0.065	166	✓	0.140	123	
1121	K 2.121	✓	10.522	40	✓	0.016	26	
1122	K 2.122	✓	10.079	56	✓	0.125	34	
1123	K 2.123	✓	0.012	91	✓	0.047	45	
1124	K 2.124	✓	0.063	65	✓	0.062	29	
1125	K 2.125	✓	0.129	84	✓	0.062	36	
1126	K 2.126	✓	1.204	58	✓	0.047	26	
1127	K 2.127	✓	0.039	36	✓	0.016	31	
1128	K 2.128	✓	0.244	29	✓	0.156	35	
1129	K 2.129	✓	0.038	42	✓	0.047	30	
1130	K 2.130	✓	0.012	46	✓	0.016	31	
1131	K 2.131	✓	0.01	58	✓	0.062	35	
1132	K 2.132	✓	0.011	48	✓	0.063	31	
1133	K 2.133	✓	0.091	92	✓	0.078	47	
1134	K 2.134	✓	0.095	78	✓	0.094	21	
1135	K 2.135	✓	0.01	27	✓	0.0	17	
1136	K 2.136	✓	0.021	30	✓	0.031	20	
1137	K 2.137	✓	0.096	74	✓	0.109	25	
1138	K 2.138	✓	0.031	38	✓	0.062	29	
1139	K 2.139	✓	0.013	74	✓	0.063	43	
1140	K 2.140	✓	0.049	190	✓	0.015	77	
1141	K 2.141	✓	0.108	70	✓	0.047	49	
1142	K 2.142	✓	0.047	108	✓	0.078	59	
1143	K 2.143	✓	0.045	93	✓	0.078	67	
1144	K 2.144	✓	0.04	88	✓	0.063	67	

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Table 4 – continued from previous page

#	Kamke	Mathematica			Maple			
		solved	cpu	leaf	solved	cpu	leaf	solved
1145	K 2.145	✓	0.387	398	✓	0.141	287	
1146	K 2.146	✓	0.023	18	✓	0.0	15	
1147	K 2.147	✓	0.016	18	✓	0.015	15	
1148	K 2.148	✓	0.01	77	✓	0.016	35	
1149	K 2.149	✓	0.076	212	✓	0.015	47	
1150	K 2.150	✓	0.009	53	✓	0.063	31	
1151	K 2.151	✓	0.018	129	✓	0.062	43	
1152	K 2.152	✓	0.019	114	✓	0.171	67	
1153	K 2.153	✓	0.034	56	✓	0.031	33	
1154	K 2.154	✓	0.02	88	✓	0.094	57	
1155	K 2.155	✓	0.053	225	✓	0.031	69	
1156	K 2.156	✗	0.207	34	✓	0.093	73	
1157	K 2.157	✓	0.502	46	✓	0.140	32	
1158	K 2.158	✓	8.381	42	✗	0.172	180	
1159	K 2.159	✓	0.015	44	✓	0.016	19	
1160	K 2.160	✓	0.009	30	✓	0.016	23	
1161	K 2.161	✓	0.048	78	✓	0.0	31	
1162	K 2.162	✓	0.057	18	✓	0.0	15	
1163	K 2.163	✓	0.353	70	✓	0.015	50	
1164	K 2.164	✓	0.028	30	✓	0.031	23	
1165	K 2.165	✓	0.055	37	✓	0.016	19	
1166	K 2.166	✓	0.013	23	✓	0.015	18	
1167	K 2.167	✓	0.082	326	✓	0.031	63	
1168	K 2.168	✓	0.005	15	✓	0.016	11	
1169	K 2.169	✓	0.07	236	✓	0.016	51	
1170	K 2.170	✓	0.023	58	✓	0.031	45	
1171	K 2.171	✓	0.054	142	✓	0.093	51	

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Table 4 – continued from previous page

#	Kamke	Mathematica			Maple			
		solved	cpu	leaf	solved	cpu	leaf	solved
1172	K 2.172	✓	0.055	158	✓	0.031	57	
1173	K 2.173	✓	0.061	74	✓	0.062	45	
1174	K 2.174	✓	0.018	33	✓	0.031	24	
1175	K 2.175	✓	0.157	38	✓	0.032	33	
1176	K 2.176	✓	0.018	33	✓	0.016	15	
1177	K 2.177	✓	174.646	136	✓	0.062	39	
1178	K 2.178	✓	0.053	74	✓	0.016	28	
1179	K 2.179	✓	0.04	53	✓	0.016	19	
1180	K 2.180	✓	0.231	73	✓	0.047	53	
1181	K 2.181	✓	0.028	37	✓	0.016	25	
1182	K 2.182	✓	0.016	24	✓	0.015	20	
1183	K 2.183	✓	0.024	27	✓	0.0	22	
1184	K 2.184	✓	0.019	38	✓	0.015	29	
1185	K 2.185	✓	0.036	67	✓	0.016	35	
1186	K 2.186	✓	0.03	42	✓	0.015	34	
1187	K 2.187	✓	0.011	99	✓	0.015	53	
1188	K 2.188	✓	0.083	266	✓	0.125	135	
1189	K 2.189	✓	0.07	445	✓	0.031	85	
1190	K 2.190	✓	0.03	122	✓	0.062	41	
1191	K 2.191	✓	0.009	110	✓	0.016	25	
1192	K 2.192	✓	10.168	39	✓	0.109	53	
1193	K 2.193	✓	0.049	44	✓	0.032	40	
1194	K 2.194	✓	0.05	65	✓	0.047	44	
1195	K 2.195	✓	0.028	80	✓	0.078	94	
1196	K 2.196	✓	0.025	37	✓	0.031	27	
1197	K 2.197	✓	0.018	78	✓	0.032	49	
1198	K 2.198	✓	0.03	41	✓	0.031	33	

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Table 4 – continued from previous page

#	Kamke	Mathematica			Maple			
		solved	cpu	leaf	solved	cpu	leaf	solved
1199	K 2.199	✓	0.013	41	✓	0.016	32	
1200	K 2.200	✓	0.022	62	✓	0.015	33	
1201	K 2.201	✓	0.054	44	✓	0.015	34	
1202	K 2.202	✓	0.015	22	✓	0.031	15	
1203	K 2.203	✓	0.021	124	✓	0.015	30	
1204	K 2.204	✓	0.019	132	✓	0.031	37	
1205	K 2.205	✓	0.213	29	✓	0.0	30	
1206	K 2.206	✓	0.115	120	✓	0.062	87	
1207	K 2.207	✓	0.124	294	✓	0.156	119	
1208	K 2.208	✓	0.037	59	✓	0.047	40	
1209	K 2.209	✓	0.02	67	✓	0.047	48	
1210	K 2.210	✓	0.266	252	✓	0.421	93	
1211	K 2.211	✓	0.055	68	✓	0.046	41	
1212	K 2.212	✗	0.376	33	✗	0.016	39	
1213	K 2.213	✓	0.072	54	✓	0.047	59	
1214	K 2.214	✓	0.289	260	✓	0.390	73	
1215	K 2.215	✓	0.158	664	✓	0.140	167	
1216	K 2.216	✗	1.452	50	✗	0.546	56	
1217	K 2.217	✓	0.144	30	✓	0.031	27	
1218	K 2.218	✓	0.144	38	✓	0.031	33	
1219	K 2.219	✓	23.117	216	✓	0.062	79	
1220	K 2.220	✓	11.805	96	✓	0.015	51	
1221	K 2.221	✓	0.062	40	✓	0.016	53	
1222	K 2.222	✓	0.02	30	✓	0.015	23	
1223	K 2.223	✓	0.02	25	✓	0.016	39	
1224	K 2.224	✓	0.018	30	✓	0.016	23	
1225	K 2.225	✓	0.032	29	✓	0.016	24	

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Table 4 – continued from previous page

#	Kamke	Mathematica			Maple			
		solved	cpu	leaf	solved	cpu	leaf	solved
1226	K 2.226	✓	0.019	30	✓	0.031	25	
1227	K 2.227	✓	0.036	21	✓	0.016	15	
1228	K 2.228	✓	0.015	82	✓	0.047	59	
1229	K 2.229	✓	0.041	48	✓	0.016	41	
1230	K 2.230	✓	0.026	82	✓	0.062	36	
1231	K 2.231	✓	0.075	58	✓	0.047	57	
1232	K 2.232	✗(hanged)	0	0	✓	0.141	418	
1233	K 2.233	✗(hanged)	0	0	✓	0.109	418	
1234	K 2.234	✓	0.028	38	✓	0.125	57	
1235	K 2.235	✓	0.027	50	✓	0.015	43	
1236	K 2.236	✗	0.365	28	✗	0.0	41	
1237	K 2.237	✓	0.01	30	✓	0.031	21	
1238	K 2.238	✓	0.018	36	✓	0.015	34	
1239	K 2.239	✓	0.014	46	✓	0.031	35	
1240	K 2.240	✓	0.017	18	✓	0.031	15	
1241	K 2.241	✓	0.015	30	✓	0.031	29	
1242	K 2.242	✓	0.075	68	✓	0.063	42	
1243	K 2.243	✓	0.029	45	✓	0.031	27	
1244	K 2.244	✓	0.026	42	✓	0.062	35	
1245	K 2.245	✓	0.021	42	✓	0.031	35	
1246	K 2.246	✓	0.021	42	✓	0.094	35	
1247	K 2.247	✓	0.225	97	✓	0.031	27	
1248	K 2.248	✓	2.122	57	✓	0.172	150	
1249	K 2.249	✓	0.175	193	✓	0.062	134	
1250	K 2.250	✓	0.048	41	✓	0.016	52	
1251	K 2.251	✓	0.035	25	✓	0.031	20	
1252	K 2.252	✓	0.162	151	✓	0.032	124	

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Table 4 – continued from previous page

#	Kamke	Mathematica			Maple			
		solved	cpu	leaf	solved	cpu	leaf	solved
1253	K 2.253	✓	0.025	34	✓	0.0	16	
1254	K 2.254	✓	0.089	69	✓	0.062	44	
1255	K 2.255	✓	0.205	118	✓	0.031	42	
1256	K 2.256	✓	0.023	26	✓	0.078	51	
1257	K 2.257	✓	0.046	33	✓	0.172	27	
1258	K 2.258	✓	0.162	146	✓	0.031	110	
1259	K 2.259	✓	0.142	120	✓	0.047	92	
1260	K 2.260	✓	0.16	65	✓	0.296	76	
1261	K 2.261	✓	2.667	82	✓	0.171	124	
1262	K 2.262	✓	38.899	87	✓	0.171	55	
1263	K 2.263	✗(hanged)	0	0	✓	0.047	52	
1264	K 2.264	✓	0.064	23	✓	0.031	19	
1265	K 2.265	✓	0.043	64	✓	0.093	97	
1266	K 2.266	✓	0.03	22	✓	0.0	19	
1267	K 2.267	✓	34.197	205	✓	0.046	41	
1268	K 2.268	✓	1.378	55	✓	0.078	39	
1269	K 2.269	✓	0.085	60	✓	0.062	40	
1270	K 2.270	✓	162.566	57	✓	0.125	54	
1271	K 2.271	✓	0.011	27	✓	0.0	17	
1272	K 2.272	✓	0.012	32	✓	0.031	25	
1273	K 2.273	✓	0.017	20	✓	0.062	17	
1274	K 2.274	✓	0.044	38	✓	0.0	19	
1275	K 2.275	✓	0.037	120	✓	0.110	55	
1276	K 2.276	✓	0.047	55	✓	0.063	31	
1277	K 2.277	✓	0.029	51	✓	0.047	29	
1278	K 2.278	✗	0.268	28	✗	0.0	33	
1279	K 2.279	✓	0.163	74	✓	0.094	32	

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Table 4 – continued from previous page

#	Kamke	Mathematica			Maple			
		solved	cpu	leaf	solved	cpu	leaf	solved
1280	K 2.280	✓	0.039	52	✓	0.047	41	
1281	K 2.281	✓	0.021	28	✓	0.047	19	
1282	K 2.282	✓	0.024	39	✓	0.047	27	
1283	K 2.283	✓	0.099	90	✓	0.093	52	
1284	K 2.284	✓	0.045	47	✓	0.016	42	
1285	K 2.285	✓	0.336	134	✓	0.079	52	
1286	K 2.286	✓	0.103	101	✓	0.015	32	
1287	K 2.287	✓	0.019	83	✓	0.016	27	
1288	K 2.288	✓	0.039	47	✓	0.016	23	
1289	K 2.289	✓	0.08	53	✓	0.062	35	
1290	K 2.290	✓	0.175	103	✓	0.015	47	
1291	K 2.291	✓	0.078	92	✓	0.031	62	
1292	K 2.292	✓	0.042	53	✓	0.047	31	
1293	K 2.293	✓	0.342	44	✓	0.046	35	
1294	K 2.294	✓	0.07	44	✓	0.047	35	
1295	K 2.295	✓	0.287	310	✓	0.218	113	
1296	K 2.296	✓	0.572	356	✓	0.218	165	
1297	K 2.297	✓	0.034	52	✓	0.016	61	
1298	K 2.298	✓	0.08	162	✓	0.078	143	
1299	K 2.299	✓	0.014	19	✓	0.016	31	
1300	K 2.300	✓	0.016	41	✓	0.046	32	
1301	K 2.301	✓	0.033	31	✓	0.016	22	
1302	K 2.302	✓	0.084	243	✓	0.046	117	
1303	K 2.303	✓	14.511	56	✓	0.140	501	
1304	K 2.304	✓	0.034	50	✓	0.016	41	
1305	K 2.305	✓	0.071	47	✓	0.046	47	
1306	K 2.306	✓	1.002	56	✓	0.109	95	

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Table 4 – continued from previous page

#	Kamke	Mathematica			Maple			
		solved	cpu	leaf	solved	cpu	leaf	solved
1307	K 2.307	✓	0.085	54	✓	0.047	38	
1308	K 2.308	✓	0.019	41	✓	0.016	36	
1309	K 2.309	✓	0.081	84	✓	0.078	73	
1310	K 2.310	✓	0.01	31	✓	0.031	20	
1311	K 2.311	✓	0.135	63	✓	0.109	52	
1312	K 2.312	✓	0.026	32	✓	0.015	26	
1313	K 2.313	✓	0.212	87	✓	0.062	39	
1314	K 2.314	✓	0.185	87	✓	0.062	35	
1315	K 2.315	✓	0.028	44	✓	0.015	45	
1316	K 2.316	✓	0.092	38	✓	0.032	18	
1317	K 2.317	✓	0.115	38	✓	0.032	13	
1318	K 2.318	✓	0.294	172	✓	0.094	122	
1319	K 2.319	✓	0.1	118	✓	0.078	37	
1320	K 2.320	✓	0.07	21	✓	0.031	17	
1321	K 2.321	✓	0.026	18	✓	0.015	15	
1322	K 2.322	✓	0.029	44	✓	0.015	44	
1323	K 2.323	✓	0.744	54	✓	0.016	20	
1324	K 2.324	✓	0.029	25	✓	0.047	21	
1325	K 2.325	✓	0.265	52	✓	0.093	103	
1326	K 2.326	✓	0.029	29	✓	0.031	26	
1327	K 2.327	✓	0.168	104	✓	0.094	85	
1328	K 2.328	✓	0.022	36	✓	0.015	32	
1329	K 2.329	✓	6.41	99	✓	0.234	64	
1330	K 2.330	✓	135.163	71	✓	0.780	1147	
1331	K 2.331	✓	0.043	55	✓	0.031	19	
1332	K 2.332	✓	0.024	26	✓	0.015	19	
1333	K 2.333	✓	0.109	70	✓	0.047	45	

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Table 4 – continued from previous page

#	Kamke	Mathematica			Maple			
		solved	cpu	leaf	solved	cpu	leaf	solved
1334	K 2.334	✓	0.199	114	✓	0.062	97	
1335	K 2.335	✓	0.305	893	✓	0.031	57	
1336	K 2.336	✓	0.051	70	✓	0.031	50	
1337	K 2.337	✓	0.081	62	✓	0.015	44	
1338	K 2.338	✓	0.067	40	✓	0.016	31	
1339	K 2.339	✓	0.264	66	✓	0.094	89	
1340	K 2.340	✓	0.035	32	✓	0.015	29	
1341	K 2.341	✗(hanged)	0	0	✓	0.125	195	
1342	K 2.342	✓	0.042	51	✓	0.031	31	
1343	K 2.343	✓	0.666	61	✓	0.094	62	
1344	K 2.344	✓	0.56	173	✓	0.031	23	
1345	K 2.345	✓	0.029	52	✓	0.047	32	
1346	K 2.346	✓	0.327	87	✓	0.047	25	
1347	K 2.347	✓	0.077	31	✓	0.031	19	
1348	K 2.348	✓	1.313	58	✓	0.156	101	
1349	K 2.349	✓	0.087	76	✓	0.063	73	
1350	K 2.350	✓	0.01	25	✓	0.0	21	
1351	K 2.351	✓	0.024	50	✓	0.031	30	
1352	K 2.352	✓	0.013	89	✓	0.047	43	
1353	K 2.353	✓	0.108	119	✓	0.141	68	
1354	K 2.354	✓	0.071	108	✓	0.156	32	
1355	K 2.355	✓	0.132	59	✓	0.110	37	
1356	K 2.356	✓	0.288	90	✓	0.063	29	
1357	K 2.357	✓	0.666	288	✓	0.094	103	
1358	K 2.358	✓	0.065	66	✓	0.031	21	
1359	K 2.359	✓	0.102	86	✓	0.063	57	
1360	K 2.360	✓	0.092	68	✓	0.046	47	

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Table 4 – continued from previous page

#	Kamke	Mathematica			Maple			
		solved	cpu	leaf	solved	cpu	leaf	solved
1361	K 2.361	✓	0.472	38	✓	0.015	33	
1362	K 2.362	✓	14.233	115	✓	0.172	109	
1363	K 2.363	✓	0.803	236	✓	0.109	171	
1364	K 2.364	✓	0.172	42	✓	0.078	33	
1365	K 2.365	✓	0.094	72	✓	0.031	65	
1366	K 2.366	✓	0.023	31	✓	0.016	24	
1367	K 2.367	✓	2.3	98	✓	0.187	96	
1368	K 2.368	✓	0.027	106	✓	0.062	81	
1369	K 2.369	✓	0.103	75	✓	0.031	61	
1370	K 2.370	✓	0.029	53	✓	0.016	19	
1371	K 2.371	✓	0.022	48	✓	0.047	37	
1372	K 2.372	✓	4.813	93	✓	0.187	120	
1373	K 2.373	✓	2.321	104	✓	0.156	92	
1374	K 2.374	✓	0.036	32	✓	0.032	29	
1375	K 2.375	✓	0.052	54	✓	0.047	39	
1376	K 2.376	✓	0.097	82	✓	0.016	71	
1377	K 2.377	✓	0.236	109	✓	0.078	91	
1378	K 2.378	✓	0.05	65	✓	0.031	50	
1379	K 2.379	✓	0.078	99	✓	0.047	66	
1380	K 2.380	✓	0.297	132	✓	0.047	75	
1381	K 2.381	✓	0.626	589	✓	0.109	219	
1382	K 2.382	✓	0.699	154	✓	0.078	116	
1383	K 2.383	✓	0.138	50	✓	0.047	39	
1384	K 2.384	✓	0.034	110	✓	0.187	73	
1385	K 2.385	✓	0.019	78	✓	0.047	61	
1386	K 2.386	✓	0.089	108	✓	0.046	68	
1387	K 2.387	✓	0.039	50	✓	0.015	36	

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Table 4 – continued from previous page

#	Kamke	Mathematica			Maple			
		solved	cpu	leaf	solved	cpu	leaf	solved
1388	K 2.388	✓	0.291	235	✓	0.047	82	
1389	K 2.389	✓	0.379	217	✓	0.047	74	
1390	K 2.390	✓	0.041	51	✓	0.032	25	
1391	K 2.391	✓	0.058	27	✓	0.032	20	
1392	K 2.392	✓	83.233	1763961	✓	0.157	613	
1393	K 2.393	✓	17.23	413606	✓	0.110	299	
1394	K 2.394	✓	0.051	115	✓	0.078	89	
1395	K 2.395	✓	0.161	78	✓	0.063	43	
1396	K 2.396	✓	1.41	211	✓	0.109	189	
1397	K 2.397	✓	0.027	38	✓	0.063	28	
1398	K 2.398	✓	1.453	88	✓	0.124	69	
1399	K 2.399	✓	0.054	72	✓	0.062	46	
1400	K 2.400	✓	0.051	60	✓	0.047	37	
1401	K 2.401	✓	0.013	93	✓	0.047	45	
1402	K 2.402	✓	4.464	127	✓	0.218	69	
1403	K 2.403	✓	97.102	611	✓	0.639	311	
1404	K 2.404	✓	0.023	33	✓	0.031	24	
1405	K 2.405	✓	0.076	77	✓	0.062	47	
1406	K 2.406	✓	276.982	257	✓	0.109	53	
1407	K 2.407	✓	491.009	842	✓	2.074	2907	
1408	K 2.408	✓	59.616	98	✓	7.301	165	
1409	K 2.409	✓	0.023	43	✓	0.016	39	
1410	K 2.410	✓	0.132	481	✓	0.187	253	
1411	K 2.411	✓	0.334	42	✓	0.016	27	
1412	K 2.412	✓	0.016	29	✓	0.0	27	
1413	K 2.413	✗	0.347	37	✓	0.047	12	
1414	K 2.414	✓	1.132	231	✓	0.187	97	

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Table 4 – continued from previous page

#	Kamke	Mathematica			Maple			
		solved	cpu	leaf	solved	cpu	leaf	solved
1415	K 2.415	✓	0.841	273	✓	0.109	43	
1416	K 2.416	✓	0.215	46	✓	0.141	31	
1417	K 2.417	✓	0.142	52	✓	0.094	35	
1418	K 2.418	✗	1.249	46	✓	13.588	60	
1419	K 2.419	✓	1.178	53	✓	0.219	13	
1420	K 2.420	✓	0.435	134	✓	0.218	123	
1421	K 2.421	✓	0.248	67	✓	0.063	27	
1422	K 2.422	✓	0.086	64	✓	0.156	57	
1423	K 2.423	✓	0.072	70	✓	0.203	165	
1424	K 2.424	✓	0.171	90	✓	0.203	125	
1425	K 2.425	✓	0.726	232	✓	0.312	99	
1426	K 2.426	✓	6.105	4128	✓	0.390	599	
1427	K 2.427	✗	200.592	57	✓	1.107	262	
1428	K 2.428	✓	0.392	104	✓	0.218	219	
1429	K 2.429	✓	0.057	51	✓	0.031	25	
1430	K 2.430	✓	0.453	22	✓	0.250	122	
1431	K 2.431	✓	0.203	80	✓	0.156	35	
1432	K 2.432	✓	0.091	37	✓	0.046	25	
1433	K 2.433	✓	0.201	46	✓	0.078	32	
1434	K 2.434	✓	99.286	1596424	✓	0.936	559	
1435	K 2.435	✓	0.138	70	✓	0.109	41	
1436	K 2.436	✓	0.54	42	✓	0.203	140	
1437	K 2.437	✓	0.241	44	✓	0.125	29	
1438	K 2.438	✓	0.94	615	✓	0.141	105	
1439	K 2.439	✗	0.765	61	✓	0.671	69	
1440	K 2.440	✓	0.891	86	✓	0.0	94	
1441	K 2.441	✗	1.467	105	✓	340.784	85	

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Table 4 – continued from previous page

#	Kamke	Mathematica			Maple			
		solved	cpu	leaf	solved	cpu	leaf	solved
1442	K 2.442	✗	0.213	28	✓	0.063	31	
1443	K 2.443	✗	0.267	36	✓	0.016	39	
1444	K 2.444	✗	1.511	36	✓	0.016	37	
1445	K 2.445	✗	1.327	169	✓	0.203	21	
1446	K 2.446	✓	0.022	33	✓	0.047	28	
1447	K 2.447	✓	0.02	29	✓	0.047	24	
1448	K 2.448	✓	0.323	149	✓	0.063	87	
1449	K 3.1	✓	0.017	53	✓	0.015	53	
1450	K 3.2	✗(hanged)	0	0	✓	0.171	2294	
1451	K 3.3	✓	0.02	168	✓	0.093	114	
1452	K 3.4	✓	0.006	54	✓	0.016	35	
1453	K 3.5	✓	0.593	128	✓	0.094	230	
1454	K 3.6	✓	0.009	79	✓	0.047	55	
1455	K 3.7	✓	0.028	127	✓	0.110	71	
1456	K 3.8	✓	0.034	183	✓	0.047	74	
1457	K 3.9	✗	0.02	30	✗	0.203	37	
1458	K 3.10	✗	0.019	51	✗	0.218	59	
1459	K 3.11	✗	0.018	43	✗	0.297	41	
1460	K 3.12	✗	0.013	34	✗	0.219	39	
1461	K 3.13	✗	0.03	55	✗	1.154	63	
1462	K 3.14	✗	0.022	32	✗	1.264	40	
1463	K 3.15	✗	0.073	26	✗	0.063	24	
1464	K 3.16	✓	0.006	34	✓	0.0	27	
1465	K 3.17	✓	0.081	95	✓	0.031	467	
1466	K 3.18	✓	0.018	46	✓	0.031	36	
1467	K 3.19	✓	0.005	84	✓	0.015	644	
1468	K 3.20	✓	0.087	57	✓	0.062	64	

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Table 4 – continued from previous page

#	Kamke	Mathematica			Maple			
		solved	cpu	leaf	solved	cpu	leaf	solved
1469	K 3.21	✓	0.027	72	✓	0.031	37	
1470	K 3.22	✓	75.668	63	✓	0.062	36	
1471	K 3.23	✗	0.08	27	✓	0.156	36	
1472	K 3.24	✗	0.081	34	✓	0.141	33	
1473	K 3.25	✗	0.012	38	✗	0.046	47	
1474	K 3.26	✗	0.015	55	✗	0.110	30	
1475	K 3.27	✓	0.022	38	✓	0.015	26	
1476	K 3.28	✗	0.129	44	✗	0.234	62	
1477	K 3.29	✓	0.171	48	✓	0.031	41	
1478	K 3.30	✓	0.032	104	✓	0.094	48	
1479	K 3.31	✓	0.143	153	✓	0.187	92	
1480	K 3.32	✓	0.21	93	✓	0.219	35	
1481	K 3.33	✓	0.985	431	✓	0.031	44	
1482	K 3.34	✗(hanged)	0	0	✓	0.219	2292	
1483	K 3.35	✓	0.149	112	✓	0.218	37	
1484	K 3.36	✗	63.308	80	✗	0.296	62	
1485	K 3.37	✓	0.119	66	✓	0.297	47	
1486	K 3.38	✓	0.168	65	✓	0.187	50	
1487	K 3.39	✓	114.052	86	✓	0.078	38	
1488	K 3.40	✓	0.546	102	✓	0.390	151	
1489	K 3.41	✗	0.799	54	✗	0.218	36	
1490	K 3.42	✓	0.019	33	✓	0.063	18	
1491	K 3.43	✓	0.046	102	✓	0.063	88	
1492	K 3.44	✓	0.404	43	✓	0.094	39	
1493	K 3.45	✓	7.185	2582	✓	0.265	1849	
1494	K 3.46	✓	0.027	43	✓	0.016	25	
1495	K 3.47	✓	0.018	24	✓	0.015	16	

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#	Kamke	Mathematica			Maple			
		solved	cpu	leaf	solved	cpu	leaf	solved
1496	K 3.48	✓	0.274	63	✓	0.031	67	
1497	K 3.49	✓	0.499	135	✓	0.203	77	
1498	K 3.50	✓	8.482	584	✓	0.234	53	
1499	K 3.51	✓	0.233	97	✓	0.218	25	
1500	K 3.52	✗	47.362	71	✓	0.172	55	
1501	K 3.53	✓	0.187	86	✓	0.203	37	
1502	K 3.54	✓	0.055	98	✓	0.328	109	
1503	K 3.55	✓	0.106	62	✓	0.031	86	
1504	K 3.56	✓	0.108	43	✓	0.171	18	
1505	K 3.57	✗	62.085	69	✓	0.125	79	
1506	K 3.58	✓	30.884	208	✓	0.031	43	
1507	K 3.59	✗	2.447	40	✓	0.468	1421	
1508	K 3.60	✓	0.777	143	✓	0.125	81	
1509	K 3.61	✓	0.011	34	✓	0.047	30	
1510	K 3.62	✗	0.052	60	✗	0.078	74	
1511	K 3.63	✓	0.036	51	✓	0.031	37	
1512	K 3.64	✓	0.038	29	✓	0.016	18	
1513	K 3.65	✓	0.075	25	✓	0.171	20	
1514	K 3.66	✓	0.717	102	✓	0.390	151	
1515	K 3.67	✗	0.121	104	✗(hanged)	0	0	
1516	K 3.68	✗	434.677	71	✓	0.359	263	
1517	K 3.69	✓	0.409	30686	✓	0.327	1770	
1518	K 3.70	✓	0.242	106	✓	0.374	56	
1519	K 3.71	✓	0.03	65	✓	0.124	20	
1520	K 3.72	✗	72.774	167	✓	0.374	279	
1521	K 3.73	✓	0.065	35	✓	0.358	31	
1522	K 3.74	✓	0.02	44	✓	0.032	31	

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Table 4 – continued from previous page

#	Kamke	Mathematica			Maple			
		solved	cpu	leaf	solved	cpu	leaf	solved
1523	K 3.75	✓	0.119	74	✓	0.359	26	
1524	K 3.76	✓	0.144	96	✓	0.390	104	
1525	K 3.77	✓	0.44	102	✓	0.437	291	
1526	K 3.78	✗(hanged)	0	0	✓	0.203	20	
1527	K 3.79	✗	135.355	58	✓	0.421	500	
1528	K 3.80	✓	0.495	72	✓	0.078	68	
1529	K 3.81	✗	0.077	42	✓	0.047	43	
1530	K 3.82	✗	0.113	58	✓	0.187	113	
1531	K 3.83	✗	0.034	76	✗	0.125	70	
1532	K 3.84	✓	0.019	103	✓	0.078	58	
1533	K 3.85	✓	0.017	113	✓	0.078	58	
1534	K 4.1	✓	0.003	24	✓	0.141	21	
1535	K 4.2	✓	1.374	265	✓	0.156	36	
1536	K 4.3	✓	0.004	76	✓	0.109	50	
1537	K 4.4	✓	0.829	1722	✓	0.141	67	
1538	K 4.5	✓	0.248	66	✓	0.250	46	
1539	K 4.6	✓	0.007	44	✓	0.015	35	
1540	K 4.7	✗	0.43	67	✗	0.094	44	
1541	K 4.8	✗	80.218	73	✗	0.062	50	
1542	K 4.9	✗	0.029	55	✗	0.561	60	
1543	K 4.10	✗	0.1	47	✗	5.319	59	
1544	K 4.11	✗	0.015	45	✓	0.0	41	
1545	K 4.12	✓	0.165	40	✓	0.046	31	
1546	K 4.13	✓	0.649	301	✓	0.047	81	
1547	K 4.14	✗	0.035	116	✓	0.015	87	
1548	K 4.15	✓	0.099	50	✓	0.047	32	
1549	K 4.16	✓	0.012	34	✓	0.047	26	

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#	Kamke	Mathematica			Maple			
		solved	cpu	leaf	solved	cpu	leaf	solved
1550	K 4.17	✓	7.687	262	✓	0.390	159	
1551	K 4.18	✓	0.444	110	✓	0.110	63	
1552	K 4.19	✗(hanged)	0	0	✓	0.047	89	
1553	K 4.20	✓	0.022	29	✓	0.031	18	
1554	K 4.21	✓	0.022	29	✓	0.0	18	
1555	K 4.22	✓	0.06	156	✓	0.062	69	
1556	K 4.23	✓	0.02	30	✓	0.015	19	
1557	K 4.24	✓	0.063	146	✓	0.047	69	
1558	K 4.25	✓	0.161	319	✓	0.062	93	
1559	K 4.26	✓	0.265	100	✓	0.078	33	
1560	K 4.27	✓	0.02	29	✓	0.016	18	
1561	K 4.28	✓	3.737	400	✓	0.140	77	
1562	K 4.29	✓	1.108	140	✓	0.187	93	
1563	K 4.30	✓	1.852	232	✓	0.110	83	
1564	K 4.31	✓	1.386	230	✓	0.156	156	
1565	K 4.32	✓	0.518	242	✓	0.171	85	
1566	K 4.33	✓	0.62	238	✓	0.156	37	
1567	K 4.34	✓	0.021	30	✓	0.016	19	
1568	K 4.35	✓	0.157	378	✓	0.015	89	
1569	K 4.36	✓	0.152	378	✓	0.218	81	
1570	K 4.37	✓	0.154	470	✓	0.047	57	
1571	K 4.38	✓	0.094	390	✓	0.093	151	
1572	K 4.39	✗	93.273	174	✓	0.203	37	
1573	K 4.40	✗	0.055	59	✓	0.016	65	
1574	K 5.1	✗	0.207	73	✓	0.639	345	
1575	K 5.2	✗	0.067	61	✓	0.265	1277	
1576	K 5.3	✗	0.246	50	✓	0.016	67	

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#	Kamke	Mathematica			Maple			
		solved	cpu	leaf	solved	cpu	leaf	solved
1577	K 5.4	✓	1.266	44	✓	0.016	21	
1578	K 5.5	✓	438.074	139	✓	0.764	92	
1579	K 5.6	✓	0.621	104	✓	0.156	78	
1580	K 5.7	✓	0.839	234	✓	0.375	164	
1581	K 5.8	✗	0.153	61	✗(hanged)	0	0	
1582	K 5.9	✓	0.338	787	✗	0.047	41	
1583	K 5.10	✓	1218.104	117	✓	0.015	40	
1584	K 5.11	✓	2.838	216	✓	0.124	118	
1585	K 5.12	✓	0.247	214	✓	0.016	806	
1586	K 5.13	✗	84.451	148	✗	0.124	119	
1587	K 5.14	✓	0.312	492	✓	0.265	200	
1588	K 5.15	✓	6.345	114	✓	0.078	90	
1589	K 5.16	✓	0.041	670	✓	6.380	27500	
1590	K 5.17	✗	343.291	72	✓(ODESolStruct)	1.794	1258	
1591	K 6.1	✓	0.039	26	✓	0.031	12	
1592	K 6.2	✓	0.03	14	✓	0.016	10	
1593	K 6.3	✗	0.162	20	✗	0.094	0	
1594	K 6.4	✓	0.367	373	✓	0.110	59	
1595	K 6.5	✗	0.336	21	✗	0.124	0	
1596	K 6.6	✗	0.968	23	✗	0.187	0	
1597	K 6.7	✓	2.337	242	✓	0.031	21	
1598	K 6.8	✗	3.346	30	✗	0.234	0	
1599	K 6.9	✗	2.856	27	✗	0.250	0	
1600	K 6.10	✓	2.225	1017	✓	0.063	89	
1601	K 6.11	✗	0.038	20	✓(ODESolStruct)	3.479	184	
1602	K 6.12	✓	81.622	46	✓	0.125	73	
1603	K 6.13	✗	60.656	42	✓	59.530	13291	

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#	Kamke	Mathematica			Maple			
		solved	cpu	leaf	solved	cpu	leaf	solved
1604	K 6.14	✓	0.061	34	✓	0.281	23	
1605	K 6.15	✗	0.52	22	✓(ODESolStruct)	0.811	109	
1606	K 6.16	✗	1.086	18	✗	0.733	0	
1607	K 6.17	✓	0.108	79	✓	0.078	49	
1608	K 6.18	✗	0.05	23	✗	1.248	0	
1609	K 6.19	✗	0.035	23	✗	0.624	0	
1610	K 6.20	✗(hanged)	0	0	✓	0.203	92	
1611	K 6.21	✗	5.239	27	✓(ODESolStruct)	0.359	57	
1612	K 6.22	✗	22.519	29	✓(ODESolStruct)	0.811	57	
1613	K 6.23	✗	2.183	31	✓	0.016	27	
1614	K 6.24	✗	1.49	31	✓	0.047	33	
1615	K 6.25	✗	118.098	50	✓(ODESolStruct)	3.526	116	
1616	K 6.26	✗	25.262	34	✗	0.889	63	
1617	K 6.27	✗	0.045	26	✓(ODESolStruct)	0.359	0	
1618	K 6.28	✗	30.684	26	✓(ODESolStruct)	1.107	56	
1619	K 6.29	✗	0.056	23	✗	0.593	0	
1620	K 6.30	✗	122.323	24	✓	0.078	253	
1621	K 6.31	✗	100.138	28	✓	0.967	8191	
1622	K 6.32	✗	26.601	41	✓	0.219	775	
1623	K 6.33	✗	0.446	50	✗	2.340	0	
1624	K 6.34	✗	1.426	93	✓(ODESolStruct)	1.263	135	
1625	K 6.35	✗	0.963	82	✗	0.343	0	
1626	K 6.36	✗	52.088	33	✓(ODESolStruct)	0.156	48	
1627	K 6.37	✗	0.326	35	✓(ODESolStruct)	0.609	63	
1628	K 6.38	✗	7.278	32	✗	0.0	63	
1629	K 6.39	✗	0.037	34	✓	0.015	38	

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#	Kamke	Mathematica			Maple			
		solved	cpu	leaf	solved	cpu	leaf	solved
1630	K 6.40	✓	11.895	3227	✓	0.405	803	
1631	K 6.41	✗	0.032	35	✓	0.031	38	
1632	K 6.42	✓	0.065	46	✓	0.062	29	
1633	K 6.43	✗	35.438	25	✓	0.188	97	
1634	K 6.44	✗	0.163	24	✗	0.0	0	
1635	K 6.45	✗	101.518	23	✓	0.109	79	
1636	K 6.46	✗	36.576	32	✓(ODESolStruct)	0.531	59	
1637	K 6.47	✗	30.478	29	✓(ODESolStruct)	0.359	58	
1638	K 6.48	✗	100.155	24	✓	0.125	126	
1639	K 6.49	✗	41.17	27	✓(ODESolStruct)	2.246	56	
1640	K 6.50	✗	200.468	25	✓	0.109	70	
1641	K 6.51	✓	2.379	57	✓	0.032	29	
1642	K 6.52	✗	1.082	40	✗	0.203	0	
1643	K 6.53	✗	0.41	34	✗	0.265	0	
1644	K 6.54	✗	62.319	32	✓(ODESolStruct)	0.374	59	
1645	K 6.55	✗	0.173	34	✗	0.0	0	
1646	K 6.56	✓	10.814	262	✓	0.187	94	
1647	K 6.57	✓	48.123	59	✓	0.312	123	
1648	K 6.58	✗	0.086	27	✓(ODESolStruct)	1.404	413	
1649	K 6.59	✗	2.647	30	✗	0.0	0	
1650	K 6.60	✓	0.024	30	✓	0.125	18	
1651	K 6.61	✓	0.284	414	✓	0.109	31	
1652	K 6.62	✗	0.834	31	✓	0.203	36	
1653	K 6.63	✓	0.072	75	✓	0.078	55	
1654	K 6.64	✓	0.312	308	✓	0.125	49	
1655	K 6.65	✓	0.887	350	✓	0.140	106	
1656	K 6.66	✗	100.341	33	✓	0.499	771	

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Table 4 – continued from previous page

#	Kamke	Mathematica			Maple			
		solved	cpu	leaf	solved	cpu	leaf	solved
1657	K 6.67	✓	0.152	33	✓	0.187	47	
1658	K 6.68	✗	0.131	26	✓(ODESolStruct)	0.094	117	
1659	K 6.69	✗	12.591	26	✓(ODESolStruct)	0.063	60	
1660	K 6.70	✗	3.899	39	✓(ODESolStruct)	0.640	132	
1661	K 6.71	✓	0.034	92	✓	0.062	51	
1662	K 6.72	✗	1.537	22	✓(ODESolStruct)	0.266	56	
1663	K 6.73	✗	0.037	26	✓(ODESolStruct)	0.593	151	
1664	K 6.74	✗	0.538	28	✓(ODESolStruct)	2.355	185	
1665	K 6.75	✗	0.4	25	✓(ODESolStruct)	0.405	84	
1666	K 6.76	✗	0.594	26	✓(ODESolStruct)	0.608	93	
1667	K 6.77	✗	0.641	32	✓(ODESolStruct)	0.983	124	
1668	K 6.78	✓	0.082	60	✓	0.109	24	
1669	K 6.79	✓	103.487	126	✓	0.094	32	
1670	K 6.80	✓	90.651	50	✓	0.281	35	
1671	K 6.81	✓	0.043	59	✓	0.063	35	
1672	K 6.82	✗	19.524	27	✓(ODESolStruct)	0.702	67	
1673	K 6.83	✗	35.89	23	✓(ODESolStruct)	0.514	65	
1674	K 6.84	✓	0.066	106	✓	0.047	27	
1675	K 6.85	✗	3.448	47	✗	1.638	0	
1676	K 6.86	✓	54.699	133	✓	0.920	110	
1677	K 6.87	✗	46.987	28	✓(ODESolStruct)	2.309	101	
1678	K 6.88	✗	1.837	39	✓	1.622	60	
1679	K 6.89	✓	0.042	33	✓	0.826	27	
1680	K 6.90	✗	10.874	31	✓(ODESolStruct)	1.092	103	
1681	K 6.91	✗	3.482	26	✓	0.780	31	
1682	K 6.92	✗	22.595	35	✓(ODESolStruct)	1.186	102	

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#	Kamke	Mathematica			Maple			
		solved	cpu	leaf	solved	cpu	leaf	solved
1683	K 6.93	✓	0.069	26	✓	0.796	23	
1684	K 6.94	✗	53.614	52	✓(ODESolStruct)	1.810	108	
1685	K 6.95	✗	4.994	70	✗	3.650	0	
1686	K 6.96	✗	0.033	23	✓(ODESolStruct)	0.764	160	
1687	K 6.97	✓	0.07	262	✓	1.544	23	
1688	K 6.98	✓	283.32	166	✓	1.638	32	
1689	K 6.99	✓	0.643	329	✓	1.623	37	
1690	K 6.100	✗	22.744	25	✓(ODESolStruct)	3.479	97	
1691	K 6.101	✗	61.997	46	✓	0.795	254	
1692	K 6.102	✗	0.083	37	✓(ODESolStruct)	3.370	165	
1693	K 6.103	✗	0.952	39	✓(ODESolStruct)	0.218	68	
1694	K 6.104	✓	0.196	115	✓	1.669	55	
1695	K 6.105	✗	25.611	18	✓(ODESolStruct)	2.090	103	
1696	K 6.106	✗	24.305	20	✓(ODESolStruct)	1.856	102	
1697	K 6.107	✓	0.063	94	✓	1.669	39	
1698	K 6.108	✓	0.04	72	✗	1.669	0	
1699	K 6.109	✓	0.038	40	✓	1.622	33	
1700	K 6.110	✓	0.073	44	✓	1.669	79	
1701	K 6.111	✓	0.181	97	✓	1.654	79	
1702	K 6.112	✗	5.336	50	✗	3.448	0	
1703	K 6.113	✓	0.095	63	✓	0.047	25	
1704	K 6.114	✗	41.261	62	✗	0.390	0	
1705	K 6.115	✗	0.245	43	✗	0.375	0	
1706	K 6.116	✗	0.483	52	✗	0.390	0	
1707	K 6.117	✓	0.073	31	✓	1.545	39	
1708	K 6.118	✗	46.195	43	✓(ODESolStruct)	2.106	73	

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#	Kamke	Mathematica			Maple			
		solved	cpu	leaf	solved	cpu	leaf	solved
1709	K 6.119	✗	61.278	56	✓(ODESolStruct)	2.792	84	
1710	K 6.120	✗	104.391	55	✓(ODESolStruct)	4.383	91	
1711	K 6.121	✓	635.572	915	✓	0.390	81	
1712	K 6.122	✓	10.804	70	✓	0.063	61	
1713	K 6.123	✗	21.003	56	✓(ODESolStruct)	0.234	60	
1714	K 6.124	✓	0.061	25	✓	1.513	67	
1715	K 6.125	✓	0.035	26	✓	1.638	25	
1716	K 6.126	✓	0.645	172	✓	1.622	68	
1717	K 6.127	✓	1.554	290	✓	1.716	108	
1718	K 6.128	✓	1.508	744	✓	0.187	158	
1719	K 6.129	✗	41.86	38	✓(ODESolStruct)	0.374	70	
1720	K 6.130	✗	89.227	38	✓	1.747	174	
1721	K 6.131	✗	0.928	71	✗	1.856	0	
1722	K 6.132	✓	1.927	797	✓	3.339	98	
1723	K 6.133	✓	1.972	1033	✓	1.591	16	
1724	K 6.134	✓	0.199	38	✓	1.919	21	
1725	K 6.135	✓	0.327	75	✓	1.997	105	
1726	K 6.136	✓	0.754	75	✓	0.078	39	
1727	K 6.137	✓	0.173	129	✓	1.716	95	
1728	K 6.138	✓	0.006	31	✓	1.622	24	
1729	K 6.139	✗	0.023	31	✗	0.359	0	
1730	K 6.140	✓	0.483	127	✓	1.669	53	
1731	K 6.141	✓	1.403	359	✓	1.653	63	
1732	K 6.142	✗	1.658	35	✗	1.825	0	
1733	K 6.143	✓	2.552	437	✓	1.560	71	
1734	K 6.144	✗	1.482	37	✗	1.841	0	
1735	K 6.145	✗	1.244	36	✗	1.638	0	

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#	Kamke	Mathematica			Maple			
		solved	cpu	leaf	solved	cpu	leaf	solved
1736	K 6.146	✓	8.596	285	✓	1.654	49	
1737	K 6.147	✗	1.183	48	✗	1.779	0	
1738	K 6.148	✗	0.55	54	✗	1.217	0	
1739	K 6.149	✗	0.051	45	✗	0.265	0	
1740	K 6.150	✓	0.027	16	✓	1.513	13	
1741	K 6.151	✓	0.092	17	✓	1.638	37	
1742	K 6.152	✗	11.134	30	✓(ODESolStruct)	0.140	60	
1743	K 6.153	✓	18.186	2761	✓	1.638	71	
1744	K 6.154	✓	0.975	173	✓	1.670	95	
1745	K 6.155	✓	0.295	204	✓	1.763	293	
1746	K 6.156	✗	0.041	36	✓	1.903	207	
1747	K 6.157	✓	0.028	20	✓	1.576	17	
1748	K 6.158	✓	0.094	43	✓	1.654	67	
1749	K 6.159	✓	0.547	181	✓	1.684	57	
1750	K 6.160	✓	3.891	2281	✓	1.716	87	
1751	K 6.161	✗	0.743	73	✗	0.483	0	
1752	K 6.162	✓	0.129	26	✓	1.575	33	
1753	K 6.163	✓	0.321	43	✓	1.575	147	
1754	K 6.164	✓	0.034	17	✓	1.544	15	
1755	K 6.165	✗	104.001	46	✓	1.810	1028	
1756	K 6.166	✓	0.662	126	✓	3.074	79	
1757	K 6.167	✗	0.827	59	✗	1.123	0	
1758	K 6.168	✓	0.062	36	✓	1.529	88	
1759	K 6.169	✓	0.037	18	✓	1.498	31	
1760	K 6.170	✓	11.967	104	✓	0.063	114	
1761	K 6.171	✗	1.734	52	✗	2.184	0	
1762	K 6.172	✗	52.686	39	✓(ODESolStruct)	2.215	106	

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#	Kamke	Mathematica			Maple			
		solved	cpu	leaf	solved	cpu	leaf	solved
1763	K 6.173	✓	0.139	35	✓	1.560	234	
1764	K 6.174	✓	0.065	52	✓	1.638	18	
1765	K 6.175	✓	0.128	24	✓	1.513	31	
1766	K 6.176	✓	0.047	21	✓	1.529	84	
1767	K 6.177	✓	0.076	55	✓	3.182	50	
1768	K 6.178	✓	0.113	87	✓	1.544	43	
1769	K 6.179	✓	0.046	18	✓	1.575	21	
1770	K 6.180	✓	0.792	28	✓	1.560	26	
1771	K 6.181	✓	0.082	21	✓	1.685	21	
1772	K 6.182	✓	0.866	37	✓	1.670	47	
1773	K 6.183	✓	0.19	44	✓	1.638	28	
1774	K 6.184	✓	1.34	93	✓	1.653	155	
1775	K 6.185	✓	0.135	29	✓	1.544	31	
1776	K 6.186	✗(hanged)	0	0	✓	1.825	88	
1777	K 6.187	✗	49.431	41	✓(ODESolStruct)	0.530	83	
1778	K 6.188	✓	0.538	75	✓	1.950	369	
1779	K 6.189	✗	3.996	28	✓	1.872	130	
1780	K 6.190	✗	0.489	32	✓	2.012	172	
1781	K 6.191	✓	0.085	19	✓	1.528	11	
1782	K 6.192	✓	0.088	93	✓	1.638	56	
1783	K 6.193	✓	1.423	26	✓	1.670	23	
1784	K 6.194	✓	0.264	74	✓	2.324	52	
1785	K 6.195	✓	0.364	95	✓	1.810	83	
1786	K 6.196	✓	1.029	95	✓	0.094	59	
1787	K 6.197	✓	36.216	166	✓	0.187	84	
1788	K 6.198	✗	1.565	85	✗	0.219	113	
1789	K 6.199	✗	8.823	110	✗	11.169	0	

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#	Kamke	Mathematica			Maple			
		solved	cpu	leaf	solved	cpu	leaf	solved
1790	K 6.200	✓	21.362	182	✓	0.171	219	
1791	K 6.201	✓	20.225	164	✓	0.249	90	
1792	K 6.202	✓	25.014	222	✓	0.562	192	
1793	K 6.203	✓	1.372	113	✓	1.747	40	
1794	K 6.204	✓	1.296	98	✓	1.669	46	
1795	K 6.205	✓	0.26	116	✓	2.262	793	
1796	K 6.206	✓	0.34	66	✓	1.732	51	
1797	K 6.207	✗	23.56	91	✗	5.881	0	
1798	K 6.208	✗	38.093	37	✓	1.716	166	
1799	K 6.209	✓	1.945	88	✓	1.762	70	
1800	K 6.210	✓	0.521	84	✓	1.607	67	
1801	K 6.211	✗	20.022	32	✗	1.794	0	
1802	K 6.212	✗	0.358	41	✗	1.903	0	
1803	K 6.213	✓	18.332	10387	✓	5.288	230971	
1804	K 6.214	✓	2.998	415	✓	0.031	31	
1805	K 6.215	✓	1.882	436	✓	0.031	34	
1806	K 6.216	✗	18.425	123	✓	3.073	916	
1807	K 6.217	✗	33.962	185	✗	136.267	0	
1808	K 6.218	✓	103.725	172	✓	0.110	72	
1809	K 6.219	✗	43.117	33	✓	0.437	382	
1810	K 6.220	✓	0.06	1677	✓	0.109	55	
1811	K 6.221	✗(hanged)	0	0	✓	3.026	1864	
1812	K 6.222	✓	0.027	29	✓	0.031	19	
1813	K 6.223	✗	100.861	48	✓	0.265	146	
1814	K 6.224	✓	13.254	116	✓	0.125	90	
1815	K 6.225	✗	1.17	45	✓(ODESolStruct)	0.780	74	
1816	K 6.226	✗	63.61	34	✓(ODESolStruct)	0.874	46	

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#	Kamke	Mathematica			Maple			
		solved	cpu	leaf	solved	cpu	leaf	solved
1817	K 6.227	✗	14.421	31	✓	0.156	40	
1818	K 6.228	✗	1.403	35	✓	0.265	66	
1819	K 6.229	✗	90.745	26	✓	0.047	42	
1820	K 6.230	✗(hanged)	0	0	✓(ODESolStruct)	0.780	81	
1821	K 6.231	✗	42.478	45	✓(ODESolStruct)	1.529	54	
1822	K 6.232	✓	1.083	371	✓	0.842	295	
1823	K 6.233	✗	0.17	35	✓	0.281	423	
1824	K 6.234	✓	0.353	347	✓	0.717	99	
1825	K 6.235	✗	0.041	27	✓(ODESolStruct)	0.702	50	
1826	K 6.236	✓	0.773	233	✓	0.203	201	
1827	K 6.237	✗	0.768	29	✓	2.169	81	
1828	K 6.238	✓	0.013	32	✓	1.045	20	
1829	K 6.239	✓	0.006	24	✓	0.234	32	
1830	K 6.240	✓	0.029	24	✓	0.390	312	
1831	K 6.241	✗	230.454	90	✓(ODESolStruct)	1.731	191	
1832	K 6.242	✗	0.682	24	✓(ODESolStruct)	0.608	117	
1833	K 6.243	✗(hanged)	0	0	✓	2.465	145	
1834	K 6.244	✗	16.501	53	✓(ODESolStruct)	0.343	86	
1835	K 6.245	✓	0.114	143	✗(hanged)	0	0	
1836	K 6.246	✗	14.719	44	✓(ODESolStruct)	0.297	94	
1837	K 7.1	✗	10.857	35	✓	0.265	95	
1838	K 7.2	✗	0.033	27	✓(ODESolStruct)	0.453	73	
1839	K 7.3	✗	0.03	25	✓(ODESolStruct)	0.655	127	
1840	K 7.4	✗	0.027	19	✓(ODESolStruct)	0.655	129	
1841	K 7.5	✗	0.088	41	✓(ODESolStruct)	0.406	60	
1842	K 7.6	✓	0.167	286	✓	0.421	190	

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#	Kamke	Mathematica			Maple			
		solved	cpu	leaf	solved	cpu	leaf	solved
1843	K 7.7	✓	2.97	409	✓	0.234	77	
1844	K 7.8	✗	0.075	37	✓	0.203	26	
1845	K 7.9	✗	0.074	37	✓	0.187	22	
1846	K 7.10	✓	0.041	51	✓	0.0	28	
1847	K 7.11	✓	0.124	95	✓	0.171	49	
1848	K 7.12	✗	594.053	37	✓	0.843	789	
1849	K 7.13	✓	0.592	426	✓	0.125	337	
1850	K 7.14	✗	0.084	37	✓ (ODESolStruct)	1.092	165	
1851	K 7.15	✗	0.806	141	✗	2.589	0	
1852	K 7.16	✓	0.037	28	✓	0.203	30	
1853	K 7.17	✗	0.074	41	✓	0.515	110	
1854	K 7.18	✗	0.	1	✗	0.515	0	
1855	K 7.19	✗	0.	1	✗	0.515	0	
1856	K 8.1	✓	0.005	22	✓	0.015	19	
1857	K 8.2	✓	0.04	39	✓	0.047	35	
1858	K 8.3	✓	0.011	182	✓	0.047	64	
1859	K 8.4	✓	0.005	51	✓	0.031	37	
1860	K 8.5	✓	0.046	696	✓	0.046	237	
1861	K 8.6	✓	0.011	183	✓	0.062	144	
1862	K 8.7	✓	0.042	52	✓	0.032	42	
1863	K 8.8	✓	0.007	84	✓	0.031	35	
1864	K 8.9	✓	0.013	59	✓	0.031	46	
1865	K 8.10	✓	1.202	2062	✓	0.172	334	
1866	K 8.11	✓	0.027	132	✓	0.032	39	
1867	K 8.12	✓	0.076	124	✓	0.031	42	
1868	K 8.13	✓	0.046	162	✓	0.047	64	
1869	K 8.14	✓	0.088	118	✓	0.031	51	

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#	Kamke	Mathematica			Maple			
		solved	cpu	leaf	solved	cpu	leaf	solved
1870	K 8.15	✓	0.127	122	✓	0.078	47	
1871	K 8.16	✓	0.162	180	✓	0.047	71	
1872	K 8.17	✓	0.06	162	✓	0.047	65	
1873	K 8.18	✓	0.045	322	✓	0.047	52	
1874	K 8.19	✓	0.063	107	✓	0.296	57	
1875	K 8.20	✗	0.007	48	✓	0.670	1633	
1876	K 8.21	✓	0.075	38	✓	0.093	18	
1877	K 8.22	✓	0.005	31	✓	0.032	31	
1878	K 8.23	✓	0.013	39	✓	0.047	39	
1879	K 8.24	✓	0.058	58	✓	0.046	54	
1880	K 8.25	✗	0.022	79	✗(hanged)	0	0	
1881	K 8.26	✓	0.059	44	✓	0.015	48	
1882	K 8.27	✓	0.42	928	✓	0.047	118	
1883	K 8.28	✓	0.59	614	✓	0.094	80	
1884	K 8.29	✓	0.181	226	✓	0.078	69	
1885	K 8.30	✗	0.023	47	✓	0.078	47	
1886	K 8.31	✓	0.021	115	✓	0.062	50	
1887	K 8.32	✓	0.48	5748	✓	0.094	418	
1888	K 8.33	✓	25.511	37858	✓	0.171	634	
1889	K 8.34	✓	0.104	554	✓	0.032	72	
1890	K 8.35	✗	0.01	86	✗	13.666	1445	
1891	K 8.36	✓	0.446	766	✓	0.047	64	
1892	K 8.37	✓	0.371	4815	✓	0.094	868	
1893	K 8.38	✓	369.475	5538	✓	0.858	4516	
1894	K 8.39	✗(hanged)	0	0	✓	0.671	2511	
1895	K 8.40	✓	0.45	7517	✓	0.156	1187	
1896	K 8.41	✓	0.198	1132	✓	0.031	75	

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#	Kamke	Mathematica			Maple			
		solved	cpu	leaf	solved	cpu	leaf	solved
1897	K 8.42	✓	0.114	284	✓	0.110	98	
1898	K 8.43	✓	0.038	420	✓	0.063	73	
1899	K 8.44	✓	0.011	112	✓	0.078	52	
1900	K 8.45	✓	0.01	94	✓	0.062	50	
1901	K 8.46	✓	0.01	105	✓	0.047	48	
1902	K 8.47	✓	0.014	226	✓	0.047	56	
1903	K 8.48	✓	0.09	1304	✓	0.109	312	
1904	K 8.49	✓	0.065	1445	✓	0.062	312	
1905	K 8.50	✗	0.007	61	✗	0.530	2014	
1906	K 8.51	✓	0.052	278	✓	0.063	128	
1907	K 8.52	✓	0.01	179	✓	0.046	66	
1908	K 8.53	✓	0.02	551	✓	0.468	3207	
1909	K 8.54	✓	0.06	1630	✓	23.774	33085	
1910	K 8.55	✓	0.01	39	✓	0.063	37	
1911	K 8.56	✗	0.038	64	✓	0.110	322	
1912	K 8.57	✗	0.011	122	✓	1.716	11399	
1913	K 9.1	✓	0.032	64	✓	0.109	54	
1914	K 9.2	✓	0.508	201	✓	0.250	92	
1915	K 9.3	✗(hanged)	0	0	✓(ODESolStruct)	13.791	181	
1916	K 9.4	✗(hanged)	0	0	✓	0.359	237	
1917	K 9.5	✗	250.097	35	✓	0.593	109	
1918	K 9.6	✗	0.091	47	✓(ODESolStruct)	1.373	245	
1919	K 9.7	✗	0.107	56	✓(ODESolStruct)	2.278	249	
1920	K 9.8	✗	0.082	52	✓(ODESolStruct)	2.294	250	
1921	K 9.9	✗	2.354	86	✗(hanged)	0	0	
1922	K 9.10	✗	11.113	106	✗(hanged)	0	0	

Continu

Table 4 – continued from previous page

#	Kamke	Mathematica			Maple			
		solved	cpu	leaf	solved	cpu	leaf	solved
1923	K 9.11	✓	0.686	53	✓	0.062	35	
1924	K 9.12	✓	0.071	191	✓	0.234	186	
1925	K 9.13	✗	8.4	55	✓	0.219	226	
1926	K 9.14	✗	0.006	46	✓	0.078	96	
1927	K 9.15	✗(hanged)	0	0	✗(hanged)	0	0	
1928	K 9.16	✗	0.007	52	✗(hanged)	0	0	
1929	K 9.17	✗	0.008	110	✓(ODESolStruct)	2.247	116	
1930	K 9.18	✓	0.053	308	✓	0.047	45	
1931	K 9.19	✓	6.038	10101	✓	0.514	1356	
1932	K 9.20	✗	2.252	55	✓	0.686	393	
1933	K 9.21	✗	126.589	55	✓	1.529	17743	
1934	K 9.22	✗	72.632	66	✓	0.904	376	
1935	K 9.23	✗	0.051	67	✓	1.357	741	
1936	K 9.24	✗	0.048	64	✓	0.531	704	
1937	K 9.25	✗	0.267	65	✓(ODESolStruct)	0.608	304	
1938	K 9.26	✓	0.011	137	✓	0.078	101	
1939	K 9.27	✗	0.012	76	✓	1.030	1121	
1940	K 9.28	✗	0.007	118	✗(hanged)	0	0	

2 Kamke chapter one. Linear first order

2.1 ODE No. 1

$$\frac{\mathrm{d}}{\mathrm{d}x}y(x) - \frac{1}{\sqrt{a4\,x^4 + a3\,x^3 + a2\,x^2 + a1\,x + a0}} = 0$$

Mathematica: cpu = 2.001754 (sec), leaf count = 1117

$$\left\{\left\{y(x) \to c_1 - \frac{2F\left(\sin^{-1}\left(\sqrt{\frac{(x-\text{Root}[a4\#1^4+a3\#1^3+a2\#1^2+a1\#1+a0\&,1])(\text{Root}[a4\#1^4+a3\#1^3+a2\#1^2+a1\#1+a0\&,2]-\text{R}}{(x-\text{Root}[a4\#1^4+a3\#1^3+a2\#1^2+a1\#1+a0\&,2])(\text{Root}[a4\#1^4+a3\#1^3+a2\#1^2+a1\#1+a0\&,1]-\text{R}}}\right.\right.}{}\right.\right.$$

Maple: cpu = 0.062 (sec), leaf count = 30

$$\left\{y(x) = \int \frac{1}{\sqrt{a4\,x^4 + a3\,x^3 + a2\,x^2 + a1\,x + a0}}\,\mathrm{d}x + \_C1\right\}$$

Sage: cpu = 1.012 (sec), leaf count = 0

$$\left[c + \int \frac{1}{\sqrt{a_4x^4 + a_3x^3 + a_2x^2 + a_1x + a_0}}\,dx, \texttt{linear}\right]$$

2.2 ODE No. 2

$$\frac{\mathrm{d}}{\mathrm{d}x}y(x) + ay(x) - ce^{bx} = 0$$

Mathematica: cpu = 0.014502 (sec), leaf count = 34

$$\left\{\left\{y(x) \to \frac{ce^{x(a+b)-ax}}{a+b} + c_1e^{-ax}\right\}\right\}$$

Maple: cpu = 0.047 (sec), leaf count = 25

$$\left\{y(x) = \left(\frac{c\mathrm{e}^{(a+b)x}}{a+b} + \_C1\right)\mathrm{e}^{-ax}\right\}$$

Sage: cpu = 0.008 (sec), leaf count = 0

$$\left[\left(c + \frac{ce^{(ax+bx)}}{a+b}\right)e^{(-ax)}, \texttt{linear}\right]$$

2.3 ODE No. 3

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) + ay(x) - b\sin(cx) = 0}$$

Mathematica: cpu = 0.058507 (sec), leaf count = 40

$$\left\{\left\{y(x) \to \frac{b(a\sin(cx) - c\cos(cx))}{a^2 + c^2} + c_1 e^{-ax}\right\}\right\}$$

Maple: cpu = 0.015 (sec), leaf count = 37

$$\left\{y(x) = \mathrm{e}^{-ax}\_C1 + \frac{b(\sin(cx)\,a - c\cos(cx))}{a^2 + c^2}\right\}$$

Sage: cpu = 0.008 (sec), leaf count = 0

$$\left[-\left(\frac{(c\cos(cx) - a\sin(cx))be^{(ax)}}{a^2 + c^2} - c\right)e^{(-ax)}, \texttt{linear}\right]$$

2.4 ODE No. 4

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) + 2\,xy(x) - x\mathrm{e}^{-x^2} = 0}$$

Mathematica: cpu = 0.009001 (sec), leaf count = 30

$$\left\{\left\{y(x) \to c_1 e^{-x^2} + \frac{1}{2}e^{-x^2}x^2\right\}\right\}$$

Maple: cpu = 0.015 (sec), leaf count = 18

$$\left\{y(x) = \left(\frac{x^2}{2} + \_C1\right)\mathrm{e}^{-x^2}\right\}$$

Sage: cpu = 0.008 (sec), leaf count = 0

$$\left[\frac{1}{2}\left(x^2 + 2\,c\right)e^{(-x^2)}, \texttt{linear}\right]$$

2.5 ODE No. 5

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x)+y(x)\cos\left(x\right)-\mathrm{e}^{2\,x}=0}$$

Mathematica: cpu = 3.134898 (sec), leaf count = 38

$$\left\{\left\{y(x)\to e^{-\sin(x)}\int_1^x e^{2K[1]+\sin(K[1])}\,dK[1]+c_1e^{-\sin(x)}\right\}\right\}$$

Maple: cpu = 0.171 (sec), leaf count = 27

$$\left\{y(x)=\mathrm{e}^{-\sin(x)}\int\mathrm{e}^{2\,x+\sin(x)}\,\mathrm{d}x+\mathrm{e}^{-\sin(x)}\_C1\right\}$$

Sage: cpu = 2.088 (sec), leaf count = 0

$$\left[\left(c+\int e^{(2\,x+\sin(x))}\,dx\right)e^{(-\sin(x))},\texttt{linear}\right]$$

2.6 ODE No. 6

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x)+y(x)\cos\left(x\right)-\frac{1}{2}\,\sin\left(2\,x\right)=0}$$

Mathematica: cpu = 0.022003 (sec), leaf count = 18

$$\left\{\left\{y(x)\to c_1e^{-\sin(x)}+\sin(x)-1\right\}\right\}$$

Maple: cpu = 0.078 (sec), leaf count = 15

$$\left\{y(x)=\sin\left(x\right)-1+\mathrm{e}^{-\sin(x)}\_C1\right\}$$

Sage: cpu = 0.008 (sec), leaf count = 0

$$\left[\left((\sin\left(x\right)-1)e^{\sin(x)}+c\right)e^{(-\sin(x))},\texttt{linear}\right]$$

2.7 ODE No. 7

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x)+y(x)\cos\left(x\right)-\mathrm{e}^{-\sin(x)}=0}$$

Mathematica: cpu = 0.022503 (sec), leaf count = 23

$$\left\{\left\{y(x)\to c_1 e^{-\sin(x)}+x e^{-\sin(x)}\right\}\right\}$$

Maple: cpu = 0.0 (sec), leaf count = 19

$$\left\{y(x)=\mathrm{e}^{-\sin(x)}\_C1+\mathrm{e}^{-\sin(x)}x\right\}$$

Sage: cpu = 0.004 (sec), leaf count = 0

$$\left[(c+x)e^{(-\sin(x))},\texttt{linear}\right]$$

2.8 ODE No. 8

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x)+y(x)\tan\left(x\right)-\sin\left(2\,x\right)=0}$$

Mathematica: cpu = 0.024003 (sec), leaf count = 17

$$\left\{\left\{y(x)\to c_1\cos(x)-2\cos^2(x)\right\}\right\}$$

Maple: cpu = 0.0 (sec), leaf count = 15

$$\left\{y(x)=-2\left(\cos\left(x\right)\right)^2+\cos\left(x\right)\_C1\right\}$$

Sage: cpu = 0.004 (sec), leaf count = 0

$$\left[\frac{c-2\,\cos\left(x\right)}{\sec\left(x\right)},\texttt{linear}\right]$$

2.9 ODE No. 9

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x)-\left(\sin\left(\ln\left(x\right)\right)+\cos\left(\ln\left(x\right)\right)+a\right)y(x)=0}$$

Mathematica: cpu = 0.015502 (sec), leaf count = 19

$$\left\{\left\{y(x)\to c_1 e^{a x+x\sin(\log(x))}\right\}\right\}$$

Maple: cpu = 0.015 (sec), leaf count = 16

$$\left\{y(x) = \_C1 \, \mathrm{e}^{\sin(\ln(x))x+ax}\right\}$$

Sage: cpu = 0.004 (sec), leaf count = 0

$$\left[ce^{\left(ax+\frac{1}{2}\,x(\cos(\log(x))+\sin(\log(x)))-\frac{1}{2}\,x(\cos(\log(x))-\sin(\log(x)))\right)}, \texttt{linear}\right]$$

2.10 ODE No. 10

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) + \left(\frac{\mathrm{d}}{\mathrm{d}x}f(x)\right)y(x) - f(x)\,\frac{\mathrm{d}}{\mathrm{d}x}f(x) = 0}$$

Mathematica: cpu = 0.007501 (sec), leaf count = 18

$$\left\{\left\{y(x) \to c_1 e^{-f(x)} + f(x) - 1\right\}\right\}$$

Maple: cpu = 0.015 (sec), leaf count = 15

$$\left\{y(x) = f(x) - 1 + \mathrm{e}^{-f(x)}\_C1\right\}$$

Sage: cpu = 0.06 (sec), leaf count = 0

$$\left[\left(c + \int e^{f(x)} f(x)\, D[0]\left(f\right)\left(x\right)\, dx\right)e^{(-f(x))}, \texttt{linear}\right]$$

2.11 ODE No. 11

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) + f(x)\,y(x) - g(x) = 0}$$

Mathematica: cpu = 0.472560 (sec), leaf count = 62

$$\left\{\left\{y(x) \to c_1 e^{\int_1^x -f(K[1])\,dK[1]} + e^{\int_1^x -f(K[1])\,dK[1]} \int_1^x g(K[2]) e^{-\int_1^{K[2]} -f(K[1])\,dK[1]}\,dK[2]\right\}\right\}$$

Maple: cpu = 0.0 (sec), leaf count = 24

$$\left\{y(x) = \left(\int g(x)\,\mathrm{e}^{\int f(x)\,\mathrm{d}x}\,\mathrm{d}x + \_C1\right)\mathrm{e}^{\int -f(x)\,\mathrm{d}x}\right\}$$

Sage: cpu = 0.096 (sec), leaf count = 0

$$\left[\left(c + \int e^{(\int f(x)\,dx)} g(x)\, dx\right)e^{(-\int f(x)\,dx)}, \texttt{linear}\right]$$

2.12 ODE No. 12

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) + (y(x))^2 - 1 = 0}$$

Mathematica: cpu = 0.063008 (sec), leaf count = 34

$$\left\{\left\{y(x) \to \frac{e^{2x} - e^{2c_1}}{e^{2c_1} + e^{2x}}\right\}\right\}$$

Maple: cpu = 0.062 (sec), leaf count = 8

$$\{y(x) = \tanh(x + \_C1)\}$$

Sage: cpu = 0.06 (sec), leaf count = 0

$$\left[\frac{1}{2}\log(y(x)+1) - \frac{1}{2}\log(y(x)-1) = c + x, \texttt{separable}\right]$$

2.13 ODE No. 13

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) + (y(x))^2 - ax - b = 0}$$

Mathematica: cpu = 0.051507 (sec), leaf count = 79

$$\left\{\left\{y(x) \to -\frac{\sqrt[3]{a}c_1 \mathrm{Ai}'\left(\frac{b+ax}{a^{2/3}}\right) + \sqrt[3]{a}\mathrm{Bi}'\left(\frac{b+ax}{a^{2/3}}\right)}{-c_1 \mathrm{Ai}\left(\frac{b+ax}{a^{2/3}}\right) - \mathrm{Bi}\left(\frac{b+ax}{a^{2/3}}\right)}\right\}\right\}$$

Maple: cpu = 0.125 (sec), leaf count = 79

$$\left\{y(x) = -i\sqrt[3]{-ia}\left(\mathrm{Ai}^{(1)}\left(-(ax+b)(-ia)^{-\frac{2}{3}}\right)\_C1 + \mathrm{Bi}^{(1)}\left(-(ax+b)(-ia)^{-\frac{2}{3}}\right)\right)\left(\mathrm{Ai}\left(-(ax+b)(-ia)^{-\right.\right.$$

Sage: cpu = 2.744 (sec), leaf count = 0

$$\left[\left[\left[y(x) = \frac{3a^5cx^5\left(4i\ \mathrm{I}_{\frac{4}{3}}\left(\frac{2(ax+b)^{\frac{3}{2}}}{3a}\right) + 4i\ \mathrm{I}_{-\frac{2}{3}}\left(\frac{2(ax+b)^{\frac{3}{2}}}{3a}\right)\right) + 3a^4bcx^4\left(20i\ \mathrm{I}_{\frac{4}{3}}\left(\frac{2(ax+b)^{\frac{3}{2}}}{3a}\right) + 20i\ \mathrm{I}_{-\frac{2}{3}}\left(\frac{2(ax+b)^{\frac{3}{2}}}{3a}\right)\right)\right.\right.\right.$$

2.14 ODE No. 14

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x)+(y(x))^2+ax^m=0}$$

Mathematica: cpu = 0.010501 (sec), leaf count = 254

$$y(x)=-\frac{i\sqrt{-a}x^{\frac{m+2}{2}}\left(c_1 J_{\frac{m+1}{m+2}}(z)-c_1 J_{-\frac{m+3}{m+2}}(z)-2J_{\frac{1}{m+2}-1}(z)\right)-c_1 J_{-\frac{1}{m+2}}(z)}{2x\left(c_1 J_{-\frac{1}{m+2}}(z)+J_{\frac{1}{m+2}}(z)\right)}$$

Where

$$z=\left(\frac{2i\sqrt{-a}x^{\frac{m}{2}+1}}{m+2}\right)$$

Maple: cpu = 0.093 (sec), leaf count = 189

$$\left\{y(x)=-\frac{1}{x}\left(\sqrt{a}x^{\frac{m}{2}+1}J_{\frac{3+m}{m+2}}\left(2\,\frac{\sqrt{a}x^{m/2+1}}{m+2}\right)\_C1+Y_{\frac{3+m}{m+2}}\left(2\,\frac{\sqrt{a}x^{m/2+1}}{m+2}\right)\sqrt{a}x^{\frac{m}{2}+1}-\_C1\,J_{(m+2)^{-1}}\left(2\,\frac{\sqrt{a}x^{m/2+1}}{m}\right.\right.\right.$$

Sage: cpu = 0 (sec), leaf count = 0

Maxima was unable to solve this ODE

2.15 ODE No. 15

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x)+(y(x))^2-2\,x^2y(x)+x^4-2\,x-1=0}$$

Mathematica: cpu = 0.019502 (sec), leaf count = 25

$$\left\{\left\{y(x)\to\frac{1}{c_1\left(-e^{2x}\right)-\frac{1}{2}}+x^2+1\right\}\right\}$$

Maple: cpu = 0.156 (sec), leaf count = 38

$$\left\{y(x)=1\left(\frac{x^2\_C1}{\left(\mathrm{e}^x\right)^2}-x^2-\frac{\_C1}{\left(\mathrm{e}^x\right)^2}-1\right)\left(-1+\frac{\_C1}{\left(\mathrm{e}^x\right)^2}\right)^{-1}\right\}$$

Sage: cpu = 0.064 (sec), leaf count = 0

$$\left[\left[y(x)=\frac{\left(ce^{(2\,x)}+1\right)x^2+ce^{(2\,x)}-1}{ce^{(2\,x)}+1}\right],\texttt{riccati}\right]$$

2.16 ODE No. 16

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x)+(y(x))^2+(xy(x)-1)\,f(x)=0}$$

Mathematica: cpu = 21.387216 (sec), leaf count = 24

$$\text{DSolve}\left[f(x)(xy(x)-1)+y'(x)+y(x)^2=0,y(x),x\right]$$

Maple: cpu = 0.093 (sec), leaf count = 50

$$\left\{y(x)=-1\mathrm{e}^{\int -\frac{x^2f(x)+2}{x}\,\mathrm{d}x}\left(\_C1-\int \mathrm{e}^{\int -\frac{x^2f(x)+2}{x}\,\mathrm{d}x}\,\mathrm{d}x\right)^{-1}+x^{-1}\right\}$$

Sage: cpu = 0.068 (sec), leaf count = 0

$$\left[\left[\left[y(x)=0,uf(x)=0\right]\right],\texttt{riccati}\right]$$

2.17 ODE No. 17

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x)-(y(x))^2-3\,y(x)+4=0}$$

Mathematica: cpu = 0.022503 (sec), leaf count = 34

$$\left\{\left\{y(x)\to \frac{-4e^{5c_1+5x}-1}{e^{5c_1+5x}-1}\right\}\right\}$$

Maple: cpu = 0.093 (sec), leaf count = 25

$$\left\{y(x)=-\frac{4\,\mathrm{e}^{5\,x}\_C1+1}{-1+\mathrm{e}^{5\,x}\_C1}\right\}$$

Sage: cpu = 0.052 (sec), leaf count = 0

$$\left[-\frac{1}{5}\,\log\left(y(x)+4\right)+\frac{1}{5}\,\log\left(y(x)-1\right)=c+x,\texttt{separable}\right]$$

2.18 ODE No. 18

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x)-(y(x))^2-xy(x)-x+1=0}$$

Mathematica: cpu = 0.020503 (sec), leaf count = 50

$$\left\{\left\{y(x)\to \frac{e^{\frac{x^2}{2}-2x}}{c_1-\frac{\sqrt{\frac{\pi}{2}}\text{erfi}\left(\frac{x-2}{\sqrt{2}}\right)}{e^2}}-1\right\}\right\}$$

Maple: cpu = 0.062 (sec), leaf count = 47

$$\left\{y(x)=-1+\frac{1}{\_C1+\frac{i}{2}\sqrt{\pi}\mathrm{e}^{-2}\sqrt{2}Erf\left(\frac{i}{2}\sqrt{2}x-i\sqrt{2}\right)}\mathrm{e}^{\frac{x^2}{2}-2x}\right\}$$

Sage: cpu = 0.076 (sec), leaf count = 0

$$\left[\left[y(x)=-\frac{\sqrt{\pi}ce^2+\sqrt{\pi}\text{erf}\left(\frac{1}{2}\sqrt{2}(i\,x-2i)\right)+i\sqrt{2}e^{\left(\frac{1}{2}(x-2)^2\right)}}{\sqrt{\pi}ce^2+\sqrt{\pi}\text{erf}\left(\frac{1}{2}\sqrt{2}(i\,x-2i)\right)}\right],\texttt{riccati}\right]$$

2.19 ODE No. 19

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x)-(y(x)+x)^2=0}$$

Mathematica: cpu = 0.009001 (sec), leaf count = 30

$$\left\{\left\{y(x)\to \frac{1}{c_1e^{2ix}-\frac{i}{2}}-x-i\right\}\right\}$$

Maple: cpu = 0.047 (sec), leaf count = 16

$$\{y(x)=-x-\tan\left(-x+\_C1\right)\}$$

Sage: cpu = 0.052 (sec), leaf count = 0

$$\left[\left[\left[x=c-\arctan\left(\sqrt{t}\right),y(x)=-x-\sqrt{t}\right],\left[x=c+\arctan\left(\sqrt{t}\right),y(x)=-x+\sqrt{t}\right]\right],\texttt{lagrange}\right]$$

2.20 ODE No. 20

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) - (y(x))^2 + \left(x^2+1\right)y(x) - 2\,x = 0}$$

Mathematica: cpu = 0.789600 (sec), leaf count = 48

$$\left\{\left\{y(x) \to \frac{e^{\frac{x^3}{3}+x}}{c_1 - \int_1^x e^{\frac{K[1]^3}{3}+K[1]}\,dK[1]} + x^2 + 1\right\}\right\}$$

Maple: cpu = 0.062 (sec), leaf count = 34

$$\left\{y(x) = x^2 + 1 + 1\mathrm{e}^{\frac{x^3}{3}+x}\left(\_C1 - \int \mathrm{e}^{\frac{x^3}{3}+x}\,\mathrm{d}x\right)^{-1}\right\}$$

Sage: cpu = 0.244 (sec), leaf count = 0

$$\left[\left[y(x) = \frac{cx^2 + (x^2+1)\int e^{\left(\frac{1}{3}x^3+x\right)}\,dx + c - e^{\left(\frac{1}{3}x^3+x\right)}}{c + \int e^{\left(\frac{1}{3}x^3+x\right)}\,dx}\right], \texttt{riccati}\right]$$

2.21 ODE No. 21

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) - (y(x))^2 + y(x)\sin(x) - \cos(x) = 0}$$

Mathematica: cpu = 7.447446 (sec), leaf count = 69

$$\left\{\left\{y(x) \to -\frac{c_1\left(1 - \sin(x)e^{\cos(x)}\left(\int_1^x e^{-\cos(K[1])}\,dK[1]\right)\right) - \sin(x)e^{\cos(x)}}{c_1 e^{\cos(x)}\int_1^x e^{-\cos(K[1])}\,dK[1] + e^{\cos(x)}}\right\}\right\}$$

Maple: cpu = 0.093 (sec), leaf count = 25

$$\left\{y(x) = -\frac{\mathrm{e}^{-\cos(x)}}{\_C1 + \int \mathrm{e}^{-\cos(x)}\,\mathrm{d}x} + \sin(x)\right\}$$

Sage: cpu = 3.404 (sec), leaf count = 0

$$\left[\left[y(x) = \frac{ce^{\cos(x)}\sin(x) + e^{\cos(x)}\int e^{(-\cos(x))}\,dx\sin(x) - 1}{ce^{\cos(x)} + e^{\cos(x)}\int e^{(-\cos(x))}\,dx}\right], \texttt{riccati}\right]$$

2.22 ODE No. 22

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) - (y(x))^2 - y(x)\sin(2\,x) - \cos(2\,x) = 0}$$

Mathematica: cpu = 241.061111 (sec), leaf count = 31

$$\text{DSolve}\left[y'(x) - y(x)^2 - y(x)\sin(2x) - \cos(2x) = 0, y(x), x\right]$$

Maple: cpu = 0.468 (sec), leaf count = 198

$$\left\{y(x) = \left(2\,\frac{\_C1\,\cos(2\,x)}{\sqrt{2\,\cos(2\,x)+2}}\mathit{HeunCPrime}\left(1, 1/2, -1/2, -1, \frac{7}{8}, 1/2\,\cos(2\,x)+1/2\right)\left(\_C1\,\mathit{HeunC}\left(1,\right.\right.\right.$$

Sage: cpu = 0.06 (sec), leaf count = 0

$$\left[\left[\left[y(x) = 0, u\cos(2\,x) = 0\right]\right], \texttt{riccati}\right]$$

2.23 ODE No. 23

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) + a(y(x))^2 - b = 0}$$

Mathematica: cpu = 0.040505 (sec), leaf count = 43

$$\left\{\left\{y(x) \to \frac{\sqrt{b}\tanh\left(\sqrt{a}\sqrt{b}c_1 + \sqrt{a}\sqrt{b}x\right)}{\sqrt{a}}\right\}\right\}$$

Maple: cpu = 0.031 (sec), leaf count = 29

$$\left\{y(x) = \frac{1}{a}\tanh\left(\_C1\,\sqrt{ab} + x\sqrt{ab}\right)\sqrt{ab}\right\}$$

Sage: cpu = 0 (sec), leaf count = 0

Maxima was unable to solve this ODE

2.24 ODE No. 24

$$\frac{\mathrm{d}}{\mathrm{d}x}y(x)+a(y(x))^2-bx^{\nu}=0$$

Mathematica: cpu = 0.011501 (sec), leaf count = 277

$$\left\{\left\{y(x)\to-\frac{\sqrt{-a}\sqrt{b}x^{\frac{\nu+2}{2}}\left(c_1J_{\frac{\nu+1}{\nu+2}}\left(\frac{2\sqrt{-a}\sqrt{b}x^{\frac{\nu}{2}+1}}{\nu+2}\right)-c_1J_{-\frac{\nu+3}{\nu+2}}\left(\frac{2\sqrt{-a}\sqrt{b}x^{\frac{\nu+2}{2}}}{\nu+2}\right)-2J_{\frac{1}{\nu+2}-1}\left(\frac{2\sqrt{-a}\sqrt{b}x^{\frac{\nu+2}{2}}}{\nu+2}\right)\right)-}{2ax\left(c_1J_{-\frac{1}{\nu+2}}\left(\frac{2\sqrt{-a}\sqrt{b}x^{\frac{\nu+2}{2}}}{\nu+2}\right)+J_{\frac{1}{\nu+2}}\left(\frac{2\sqrt{-a}\sqrt{b}x^{\frac{\nu+2}{2}}}{\nu+2}\right)\right)}\right.\right.$$

Maple: cpu = 0.046 (sec), leaf count = 214

$$\left\{y(x)=\frac{1}{ax}\left(-J_{\frac{3+\nu}{\nu+2}}\left(2\,\frac{\sqrt{-ab}x^{\nu/2+1}}{\nu+2}\right)\sqrt{-ab}x^{\frac{\nu}{2}+1}\_C1-Y_{\frac{3+\nu}{\nu+2}}\left(2\,\frac{\sqrt{-ab}x^{\nu/2+1}}{\nu+2}\right)\sqrt{-ab}x^{\frac{\nu}{2}+1}+\_C1\,J_{(\nu+2)}\right.\right.$$

Sage: cpu = 0 (sec), leaf count = 0

Maxima was unable to solve this ODE

2.25 ODE No. 25

$$\frac{\mathrm{d}}{\mathrm{d}x}y(x)+a(y(x))^2-bx^{2\,\nu}-cx^{\nu-1}=0$$

Mathematica: cpu = 0.237030 (sec), leaf count = 1835

$$\left\{\left\{y(x)\to\frac{-2^{\frac{\nu}{2(\nu+1)}-1}e^{-\frac{\sqrt{a}\sqrt{b}x^{\nu+1}}{\sqrt{\nu^2+2\nu+1}}}\nu(x^{\nu+1})^{\frac{\nu}{2(\nu+1)}}L^{\frac{\nu}{\nu+1}-1}_{-\frac{\frac{\sqrt{a}\sqrt{b}\nu c}{\sqrt{(\nu+1)^2}}+\frac{\sqrt{a}\sqrt{b}c}{\sqrt{(\nu+1)^2}}+b\nu}{2(\nu b+b)}}\left(\frac{2\sqrt{a}\sqrt{b}x^{\nu+1}}{\sqrt{\nu^2+2\nu+1}}\right)x^{-\frac{\nu}{2}-1}-\frac{2^{\frac{\nu}{2(\nu+1)}}\sqrt{a}\sqrt{b}e^{-\frac{\sqrt{a}\sqrt{b}}{\sqrt{\nu^2+}}}}{}}{}\right.\right.$$

Maple: cpu = 0.249 (sec), leaf count = 378

$$\left\{ y(x) = \frac{1}{2\,ax} \left(\left(2\,\sqrt{a} x^{\nu+1} \_C1\, b^2 - b^{\frac{3}{2}} \_C1\, \nu + \sqrt{a} \_C1\, bc \right) W_{-\frac{c}{2\,\nu+2}\sqrt{a}\frac{1}{\sqrt{b}}, \frac{1}{2\,\nu+2}} \left(2\,\frac{\sqrt{a}\sqrt{b} x^{\nu+1}}{\nu+1} \right) + (-2\,b^{3/} \right.$$

Sage: cpu = 0.084 (sec), leaf count = 0

$$\left[\left[\left[y(x) = 0, \left(b x^{2\,\nu} + c x^{\nu-1} \right) a^2 u = 0 \right] \right], \texttt{riccati} \right]$$

2.26 ODE No. 26

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x} y(x) - (Ay(x) - a)\,(By(x) - b) = 0}$$

Mathematica: cpu = 0.076010 (sec), leaf count = 68

$$\left\{ \left\{ y(x) \to \frac{a e^{Abc_1 + Abx} - b e^{aBc_1 + aBx}}{A e^{Abc_1 + Abx} - B e^{aBc_1 + aBx}} \right\} \right\}$$

Maple: cpu = 0.047 (sec), leaf count = 59

$$\left\{ y(x) = \frac{\mathrm{e}^{A\_C1\, b + Abx - B\_C1\, a - Bax} a - b}{A \mathrm{e}^{A\_C1\, b + Abx - B\_C1\, a - Bax} - B} \right\}$$

Sage: cpu = 0.152 (sec), leaf count = 0

$$\left[\frac{\log\left(Ay(x) - a\right) - \log\left(By(x) - b\right)}{Ba - Ab} = c + x, \texttt{separable} \right]$$

2.27 ODE No. 27

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x} y(x) + a y(x)\,(y(x) - x) - 1 = 0}$$

Mathematica: cpu = 0.044006 (sec), leaf count = 120

$$\left\{ \left\{ y(x) \to \frac{c_1 \left(\sqrt{\frac{\pi}{2}} \sqrt{a} x e^{\frac{a x^2}{2}} \operatorname{erf}\left(\frac{\sqrt{a} x}{\sqrt{2}} \right) + 1 \right) + a x e^{\frac{a x^2}{2}}}{a \left(\frac{\sqrt{\frac{\pi}{2}} c_1 e^{\frac{a x^2}{2}} \operatorname{erf}\left(\frac{\sqrt{a} x}{\sqrt{2}} \right)}{\sqrt{a}} + e^{\frac{a x^2}{2}} \right)} \right\} \right\}$$

Maple: cpu = 0.156 (sec), leaf count = 71

$$\left\{ y(x) = 1\left(\sqrt{\pi}\mathit{Erf}\left(\frac{\sqrt{2}x}{2}\sqrt{a} \right) \sqrt{2}ax + 2\,a^{3/2}\_C1\ x + 2\,\sqrt{a}\mathrm{e}^{-1/2\,ax^2} \right) \left(\sqrt{\pi}\mathit{Erf}\left(\frac{\sqrt{2}x}{2}\sqrt{a} \right) \sqrt{2}a + 2\,a^{3/2}\right.\right.$$

Sage: cpu = 0.068 (sec), leaf count = 0

$$\left[\left[y(x) = \frac{2\sqrt{\frac{1}{2}}a^{\frac{3}{2}}cxe^{(\frac{1}{2}ax^2)} + \sqrt{\pi}ax\mathrm{erf}\left(\sqrt{\frac{1}{2}}\sqrt{a}x\right)e^{(\frac{1}{2}ax^2)} + 2\sqrt{\frac{1}{2}}\sqrt{a}}{2\sqrt{\frac{1}{2}}a^{\frac{3}{2}}ce^{(\frac{1}{2}ax^2)} + \sqrt{\pi}a\mathrm{erf}\left(\sqrt{\frac{1}{2}}\sqrt{a}x\right)e^{(\frac{1}{2}ax^2)}} \right], \texttt{riccati} \right]$$

2.28 ODE No. 28

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) + x(y(x))^2 - x^3y(x) - 2\,x = 0}$$

Mathematica: cpu = 0.047006 (sec), leaf count = 96

$$\left\{ \left\{ y(x) \to \frac{c_1 e^{\frac{x^4}{4}}x^3 + \frac{1}{2}\sqrt{\pi}e^{\frac{x^4}{4}}x^3\mathrm{erf}\left(\frac{x^2}{2}\right) + x}{x\left(c_1 e^{\frac{x^4}{4}} + \frac{1}{2}\sqrt{\pi}e^{\frac{x^4}{4}}\mathrm{erf}\left(\frac{x^2}{2}\right)\right)} \right\} \right\}$$

Maple: cpu = 0.078 (sec), leaf count = 67

$$\left\{ y(x) = 2\,\frac{\mathrm{e}^{-1/4\,x^4}\_C1}{\sqrt{\pi}\left(\mathit{Erf}\left(1/2\,x^2\right)\_C1 + 1\right)} + \frac{1}{\sqrt{\pi}}\left(\mathit{Erf}\left(\frac{x^2}{2} \right)\sqrt{\pi}\_C1\ x^2 + x^2\sqrt{\pi} \right) \left(\mathit{Erf}\left(\frac{x^2}{2} \right)\_C1 + 1 \right)^{-1}\right.$$

Sage: cpu = 0.096 (sec), leaf count = 0

$$\left[\left[y(x) = \frac{\left(\left(\sqrt{\pi}c\mathrm{erf}\left(\frac{1}{2}x^2\right) + \sqrt{\pi}\right)x^2e^{(\frac{1}{4}x^4)} + 2\,c\right)e^{(-\frac{1}{4}x^4)}}{\sqrt{\pi}c\mathrm{erf}\left(\frac{1}{2}x^2\right) + \sqrt{\pi}} \right], \texttt{riccati} \right]$$

2.29 ODE No. 29

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) - x(y(x))^2 - 3\,xy(x) = 0}$$

Mathematica: cpu = 0.022003 (sec), leaf count = 39

$$\left\{ \left\{ y(x) \to -\frac{3e^{3c_1 + \frac{3x^2}{2}}}{e^{3c_1 + \frac{3x^2}{2}} - 1} \right\} \right\}$$

Maple: cpu = 0.031 (sec), leaf count = 19

$$\left\{y(x) = 3\left(-1 + 3\,\mathrm{e}^{-3/2\,x^2}\_C1\right)^{-1}\right\}$$

Sage: cpu = 0.056 (sec), leaf count = 0

$$\left[-\frac{1}{3}\log\left(y(x)+3\right) + \frac{1}{3}\log\left(y(x)\right) = \frac{1}{2}\,x^2 + c, \texttt{separable}\right]$$

2.30 ODE No. 30

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) + x^{-a-1}(y(x))^2 - x^a = 0}$$

Mathematica: cpu = 0.065008 (sec), leaf count = 230

$$\left\{\left\{y(x) \to \frac{x^{a+1}\left(c_1\left(\frac{1}{2}x^{-\frac{a}{2}-\frac{1}{2}}\Gamma(a+1)\left(I_{a-1}\left(2\sqrt{x}\right) + I_{a+1}\left(2\sqrt{x}\right)\right) - \frac{1}{2}ax^{-\frac{a}{2}-1}\Gamma(a+1)I_a\left(2\sqrt{x}\right)\right) - \frac{1}{2}(-1)\right.\right.\right.}{c_1 x^{-a/2}\Gamma(a+1)I_a\left(2\sqrt{x}\right) + (-1)^-}$$

Maple: cpu = 0.078 (sec), leaf count = 81

$$\left\{y(x) = -\_C1\,x^{a+1}K_{a+1}\left(2\sqrt{x}\right)\frac{1}{\sqrt{x}}\left(K_a\left(2\sqrt{x}\right)\_C1 + I_a\left(2\sqrt{x}\right)\right)^{-1} + x^{a+1}I_{a+1}\left(2\sqrt{x}\right)\frac{1}{\sqrt{x}}\left(K_a\left(2\sqrt{x}\right)\_C\right.\right.$$

Sage: cpu = 0.236 (sec), leaf count = 0

$$\left[\left[y(x) = -\frac{\left(\left(c\,\mathrm{Y_a}(2\sqrt{-x}) + \mathrm{J_a}(2\sqrt{-x})\right)a + \left(c\,\mathrm{Y_{a+1}}(2\sqrt{-x}) - c\,\mathrm{Y_{a-1}}(2\sqrt{-x}) + \mathrm{J_{a+1}}(2\sqrt{-x}) - \mathrm{J_{a-1}}(2\sqrt{\right.\right.\right.}{2\left(c\,\mathrm{Y_a}(2\sqrt{-x}) + \mathrm{J_a}(2\sqrt{-x})\right)}$$

2.31 ODE No. 31

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) - ax^n\left((y(x))^2 + 1\right) = 0}$$

Mathematica: cpu = 0.060008 (sec), leaf count = 21

$$\left\{\left\{y(x) \to \tan\left(\frac{ax^{n+1}}{n+1} + c_1\right)\right\}\right\}$$

Maple: cpu = 0.031 (sec), leaf count = 26

$$\left\{y(x) = \tan\left(\frac{\_C1\,an + x^{n+1}a + \_C1\,a}{n+1}\right)\right\}$$

Sage: cpu = 0 (sec), leaf count = 0

Maxima was unable to solve this ODE

2.32 ODE No. 32

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x)+(y(x))^2\sin(x)-2\frac{\sin(x)}{(\cos(x))^2}=0}$$

Mathematica: cpu = 0.237030 (sec), leaf count = 34

$$\left\{\left\{y(x)\to\frac{\csc(x)\left(c_1\tan(x)\sec(x)-2\sin(x)\cos(x)\right)}{c_1\sec(x)+\cos^2(x)}\right\}\right\}$$

Maple: cpu = 0.218 (sec), leaf count = 28

$$\left\{y(x)=-2\frac{(\cos(x))^3\_C1+1}{\left((\cos(x))^3\_C1-2\right)\cos(x)}\right\}$$

Sage: cpu = 0.064 (sec), leaf count = 0

$$\left[\left[y(x)=-\frac{(c-3i)\cosh\left(\frac{3}{2}\log(\cos(x))\right)+(3c-i)\sinh\left(\frac{3}{2}\log(\cos(x))\right)}{2c\cos(x)\cosh\left(\frac{3}{2}\log(\cos(x))\right)-2i\cos(x)\sinh\left(\frac{3}{2}\log(\cos(x))\right)}\right],\texttt{riccati}\right]$$

2.33 ODE No. 33

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x)-\frac{\left(\frac{\mathrm{d}}{\mathrm{d}x}f(x)\right)(y(x))^2}{g(x)}+\frac{\frac{\mathrm{d}}{\mathrm{d}x}g(x)}{f(x)}=0}$$

Mathematica: cpu = 26.354347 (sec), leaf count = 157

$$\text{Solve}\left[\int_1^{y(x)}\left(\frac{1}{(f(x)K[2]+g(x))^2}-\int_1^x\left(\frac{2(K[2]^2f(K[1])f'(K[1])-g(K[1])g'(K[1]))}{g(K[1])(K[2]f(K[1])+g(K[1]))^3}-\frac{2K[2]}{g(K[1])(K[2]f(\right.\right.\right.$$

Maple: cpu = 0.343 (sec), leaf count = 57

$$\left\{y(x)=-\frac{1}{(f(x))^2}\left(g(x)f(x)\int\frac{\frac{\mathrm{d}}{\mathrm{d}x}f(x)}{g(x)(f(x))^2}\,\mathrm{d}x+g(x)f(x)\_C1+1\right)\left(\_C1+\int\frac{\frac{\mathrm{d}}{\mathrm{d}x}f(x)}{g(x)(f(x))^2}\,\mathrm{d}x\right)^{-}\right.$$

Sage: cpu = 0.1 (sec), leaf count = 0

$$\left[\left[\left[y(x)=0,-\frac{uD[0](f)(x)^2D[0](g)(x)}{f(x)g(x)^2}=0\right]\right],\texttt{riccati}\right]$$

2.34 ODE No. 34

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x)+f(x)\left(y(x)\right)^2+g(x)\,y(x)=0}$$

Mathematica: cpu = 0.507064 (sec), leaf count = 51

$$\left\{\left\{y(x)\to \frac{e^{\int_1^x -g(K[1])\,dK[1]}}{c_1-\int_1^x f(K[2])\left(-e^{\int_1^{K[2]} -g(K[1])\,dK[1]}\right)\,dK[2]}\right\}\right\}$$

Maple: cpu = 0.031 (sec), leaf count = 28

$$\left\{y(x)=\frac{\mathrm{e}^{\int -g(x)\,\mathrm{d}x}}{\int \mathrm{e}^{\int -g(x)\,\mathrm{d}x}f\left(x\right)\,\mathrm{d}x+\_C1}\right\}$$

Sage: cpu = 0.112 (sec), leaf count = 0

$$\left[\frac{e^{(-\int g(x)\,dx)}}{c+\int e^{(-\int g(x)\,dx)}f\left(x\right)\,dx},\texttt{bernoulli}\right]$$

2.35 ODE No. 35

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x)+f(x)\left(\left(y(x)\right)^2+2\,a y(x)+b\right)=0}$$

Mathematica: cpu = 0.057507 (sec), leaf count = 60

$$\left\{\left\{y(x)\to \sqrt{b-a^2}\tan\left(\sqrt{b-a^2}\int_1^x -f(K[1])\,dK[1]+c_1\sqrt{b-a^2}\right)-a\right\}\right\}$$

Maple: cpu = 0.031 (sec), leaf count = 45

$$\left\{y(x)=\tanh\left(\int f(x)\,\mathrm{d}x\sqrt{a^2-b}+\_C1\,\sqrt{a^2-b}\right)\sqrt{a^2-b}-a\right\}$$

Sage: cpu = 0 (sec), leaf count = 0

Maxima was unable to solve this ODE

2.36 ODE No. 36

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x)+(y(x))^3+ax(y(x))^2=0}$$

Mathematica: cpu = 0.227029 (sec), leaf count = 195

$$\text{Solve}\left[\frac{\text{Ai}'\left(\frac{\sqrt[3]{-\frac{1}{2}}\sqrt[3]{a}}{y(x)}-\frac{1}{2}\sqrt[3]{-\frac{1}{2}}a^{4/3}x^2\right)-\left(-\frac{1}{2}\right)^{2/3}a^{2/3}x\text{Ai}\left(\frac{\sqrt[3]{-\frac{1}{2}}\sqrt[3]{a}}{y(x)}-\frac{1}{2}\sqrt[3]{-\frac{1}{2}}a^{4/3}x^2\right)}{\text{Bi}'\left(\frac{\sqrt[3]{-\frac{1}{2}}\sqrt[3]{a}}{y(x)}-\frac{1}{2}\sqrt[3]{-\frac{1}{2}}a^{4/3}x^2\right)-\left(-\frac{1}{2}\right)^{2/3}a^{2/3}x\text{Bi}\left(\frac{\sqrt[3]{-\frac{1}{2}}\sqrt[3]{a}}{y(x)}-\frac{1}{2}\sqrt[3]{-\frac{1}{2}}a^{4/3}x^2\right)}+c_1=0,y(x)\right]$$

Maple: cpu = 0.062 (sec), leaf count = 62

$$\left\{y(x)=2\frac{a}{a^2x^2+2\,RootOf\left(\sqrt[3]{-2\,a^2}\text{Bi}\left(\_Z\right)\_C1\,x+\sqrt[3]{-2\,a^2}x\text{Ai}\left(\_Z\right)+2\,\text{Bi}^{(1)}\left(\_Z\right)\_C1+2\,\text{Ai}^{(1)}\left(\_Z\right.\right.\right.\right.$$

Sage: cpu = 0 (sec), leaf count = 0

Maxima was unable to solve this ODE

2.37 ODE No. 37

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x)-(y(x))^3-a\mathrm{e}^x(y(x))^2=0}$$

Mathematica: cpu = 0.679086 (sec), leaf count = 78

$$\text{Solve}\left[-iae^x=\frac{2e^{\frac{1}{2}\left(-iae^x-\frac{i}{y(x)}\right)^2}}{2c_1+\sqrt{2\pi}\text{erfi}\left(\frac{-iae^x-\frac{i}{y(x)}}{\sqrt{2}}\right)},y(x)\right]$$

Maple: cpu = 0.062 (sec), leaf count = 50

$$\left\{\_C1+\frac{1}{a\mathrm{e}^x}\mathrm{e}^{-\frac{\left(a\mathrm{e}^x+(y(x))^{-1}\right)^2}{2}}+\frac{\sqrt{2}\sqrt{\pi}}{2}Erf\left(\frac{\left(a\mathrm{e}^x+(y(x))^{-1}\right)\sqrt{2}}{2}\right)=0\right\}$$

Sage: cpu = 0 (sec), leaf count = 0

Maxima was unable to solve this ODE

2.38 ODE No. 38

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) - a(y(x))^3 - bx^{3/2} = 0}$$

Mathematica: cpu = 8.692104 (sec), leaf count = 26

$$\text{DSolve}\left[-ay(x)^3 - bx^{3/2} + y'(x) = 0, y(x), x\right]$$

Maple: cpu = 0.655 (sec), leaf count = 0

could not solve

Sage: cpu = 0 (sec), leaf count = 0

Maxima was unable to solve this ODE

2.39 ODE No. 39

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) - a3\,(y(x))^3 - a2\,(y(x))^2 - a1\,y(x) - a0 = 0}$$

Mathematica: cpu = 0.051007 (sec), leaf count = 54

$$\text{Solve}\left[\text{RootSum}\left[\#1^3\text{a3} + \#1^2\text{a2} + \#1\text{a1} + \text{a0}\&, \frac{\log(y(x) - \#1)}{3\#1^2\text{a3} + 2\#1\text{a2} + \text{a1}}\&\right] = c_1 + x, y(x)\right]$$

Maple: cpu = 0.016 (sec), leaf count = 30

$$\left\{x - \int^{y(x)} \left(\_a^3 a3 + \_a^2 a2 + \_a\,a1 + a0\right)^{-1} d\_a + \_C1 = 0\right\}$$

Sage: cpu = 0.228 (sec), leaf count = 0

$$\left[\int \frac{1}{a_3 y\left(x\right)^3 + a_2 y\left(x\right)^2 + a_1 y\left(x\right) + a_0}\, d(y(x)) = c + x, \texttt{separable}\right]$$

2.40 ODE No. 40

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x)+3\,a(y(x))^3+6\,ax(y(x))^2=0}$$

Mathematica: cpu = 0.241531 (sec), leaf count = 185

$$\text{Solve}\left[\frac{\sqrt[3]{-3}\sqrt[3]{a}x\text{Ai}\left((-3)^{2/3}a^{2/3}x^2-\frac{(-1)^{2/3}}{\sqrt[3]{3}\sqrt[3]{a}y(x)}\right)+\text{Ai}'\left((-3)^{2/3}a^{2/3}x^2-\frac{(-1)^{2/3}}{\sqrt[3]{3}\sqrt[3]{a}y(x)}\right)}{\sqrt[3]{-3}\sqrt[3]{a}x\text{Bi}\left((-3)^{2/3}a^{2/3}x^2-\frac{(-1)^{2/3}}{\sqrt[3]{3}\sqrt[3]{a}y(x)}\right)+\text{Bi}'\left((-3)^{2/3}a^{2/3}x^2-\frac{(-1)^{2/3}}{\sqrt[3]{3}\sqrt[3]{a}y(x)}\right)}+c_1=0,y(x)\right]$$

Maple: cpu = 0.062 (sec), leaf count = 48

$$\left\{y(x)=\left(3\,ax^2+RootOf\left(\sqrt[3]{-3\,a}\text{Bi}(\_Z)\_C1\,x+\sqrt[3]{-3\,a}ax\text{Ai}(\_Z)+\text{Bi}^{(1)}(\_Z)\_C1+\text{Ai}^{(1)}(\_Z)\right)\sqrt[3]{-3\right.}$$

Sage: cpu = 0 (sec), leaf count = 0

Maxima was unable to solve this ODE

2.41 ODE No. 41

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x)+ax(y(x))^3+b(y(x))^2=0}$$

Mathematica: cpu = 0.076010 (sec), leaf count = 103

$$\text{Solve}\left[-\frac{b^2\left(\frac{2\tan^{-1}\left(\frac{-2axy(x)-b}{b\sqrt{-\frac{4a}{b^2}-1}}\right)}{\sqrt{-\frac{4a}{b^2}-1}}-\log\left(\frac{a(-x)y(x)(-axy(x)-b)-a}{a^2x^2y(x)^2}\right)\right)}{2a}=c_1-\frac{b^2\log(x)}{a},y(x)\right]$$

Maple: cpu = 0.172 (sec), leaf count = 103

$$\left\{y(x)=\frac{1}{x}\mathrm{e}^{RootOf\left(2\sqrt{b^2+4\,a}abArtanh\left(\frac{2\,a\mathrm{e}^{-Z}+b}{\sqrt{b^2+4\,a}}\right)-\ln\left(x^2\left(a\mathrm{e}^{2\,-Z}+b\mathrm{e}^{-Z}-1\right)\right)b^2+2\_C1\,b^2+2\_Z\,b^2-4\,\ln\left(x^2\left(a\mathrm{e}^{2\,-Z}+b\mathrm{e}^{-Z}-1\right)\right)a+8\_C1\right.}$$

Sage: cpu = 0 (sec), leaf count = 0

Maxima was unable to solve this ODE

2.42 ODE No. 42

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) - x(x+2)\left(y(x)\right)^3 - (x+3)\left(y(x)\right)^2 = 0}$$

Mathematica: cpu = 0.936119 (sec), leaf count = 485

$$\text{Solve}\left[c_1 = -\frac{\frac{i\sqrt{\frac{2}{\pi}}\sqrt{\frac{1}{2y(x)}+\frac{1}{4}(x+1)^2-\frac{1}{4}}\left(\frac{\sinh\left(\sqrt{\frac{1}{2y(x)}+\frac{1}{4}(x+1)^2-\frac{1}{4}}\right)}{\sqrt{\frac{1}{2y(x)}+\frac{1}{4}(x+1)^2-\frac{1}{4}}}-\cosh\left(\sqrt{\frac{1}{2y(x)}+\frac{1}{4}(x+1)^2-\frac{1}{4}}\right)\right)}{\sqrt{-i\sqrt{\frac{1}{2y(x)}+\frac{1}{4}(x+1)^2-\frac{1}{4}}}} - \frac{i\sqrt{\frac{2}{\pi}}\left(\frac{x+1}{2}+\frac{1}{2}\right)\sinh\left(\sqrt{\frac{1}{2y(x)}+\right.}}{\sqrt{-i\sqrt{\frac{1}{2y(x)}+\frac{1}{4}(x+1}}}}{\frac{i\sqrt{\frac{2}{\pi}}\sqrt{\frac{1}{2y(x)}+\frac{1}{4}(x+1)^2-\frac{1}{4}}\left(i\sinh\left(\sqrt{\frac{1}{2y(x)}+\frac{1}{4}(x+1)^2-\frac{1}{4}}\right)-\frac{i\cosh\left(\sqrt{\frac{1}{2y(x)}+\frac{1}{4}(x+1)^2-\frac{1}{4}}\right)}{\sqrt{\frac{1}{2y(x)}+\frac{1}{4}(x+1)^2-\frac{1}{4}}}\right)}{\sqrt{-i\sqrt{\frac{1}{2y(x)}+\frac{1}{4}(x+1)^2-\frac{1}{4}}}} - \frac{\sqrt{\frac{2}{\pi}}\left(\frac{x+1}{2}+\frac{1}{2}\right)\cosh\left(\sqrt{\frac{1}{2y(x)}\right.}}{\sqrt{-i\sqrt{\frac{1}{2y(x)}+\frac{1}{4}(x+}}}\right]$$

Maple: cpu = 0.016 (sec), leaf count = 40

$$\left\{\_C1 + \mathit{Artanh}\left(x\sqrt{y(x)}\frac{1}{\sqrt{x(x+2)y(x)+2}}\right) + \frac{1}{2}\sqrt{x(x+2)y(x)+2}\frac{1}{\sqrt{y(x)}} = 0\right\}$$

Sage: cpu = 0 (sec), leaf count = 0

Maxima was unable to solve this ODE

2.43 ODE No. 43

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) + \left(4a^2x + 3ax^2 + b\right)\left(y(x)\right)^3 + 3x\left(y(x)\right)^2 = 0}$$

Mathematica: cpu = 8.685603 (sec), leaf count = 490

$$\text{Solve}\left[c_1 = -\frac{i\sqrt{-\frac{4a^3-3b}{4a^3}-\frac{3}{2a^2y(x)}+\frac{(-2a-3x)^2}{4a^2}}J_{\frac{1}{2}\sqrt{\frac{4a^3-3b}{a^3}}+1}\left(-i\sqrt{\frac{(-2a-3x)^2}{4a^2}-\frac{4a^3-3b}{4a^3}-\frac{3}{2a^2y(x)}}\right)+\left(\frac{1}{2}\sqrt{\frac{4a^3-}{a^3}}\right.}{i\sqrt{-\frac{4a^3-3b}{4a^3}-\frac{3}{2a^2y(x)}+\frac{(-2a-3x)^2}{4a^2}}Y_{\frac{1}{2}\sqrt{\frac{4a^3-3b}{a^3}}+1}\left(-i\sqrt{\frac{(-2a-3x)^2}{4a^2}-\frac{4a^3-3b}{4a^3}-\frac{3}{2a^2y(x)}}\right)+\left(\frac{1}{2}\sqrt{\frac{4a^3-}{a^3}}\right.}\right]$$

Maple: cpu = 1.263 (sec), leaf count = 384

$$\left\{\_C1 + 1\left(-\left(\frac{1}{2}\sqrt{\frac{4a^3-3b}{a^3}}-\frac{2a+3x}{2a}\right)K_{\frac{1}{2}\sqrt{\frac{4a^3-3b}{a^3}}}\left(-\frac{\sqrt{3}}{2}\sqrt{\frac{4y(x)a^2x+3ax^2y(x)+by(x)-2a}{a^3y(x)}}\right)\right.\right.$$

Sage: cpu = 0 (sec), leaf count = 0

Maxima was unable to solve this ODE

2.44 ODE No. 44

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x)+2\,ax^{3}(y(x))^{3}+2\,xy(x)=0}$$

Mathematica: cpu = 0.014502 (sec), leaf count = 72

$$\left\{\left\{y(x)\to -\frac{\sqrt{2}}{\sqrt{-2ax^2-a+2c_1e^{2x^2}}}\right\},\left\{y(x)\to \frac{\sqrt{2}}{\sqrt{-2ax^2-a+2c_1e^{2x^2}}}\right\}\right\}$$

Maple: cpu = 0.016 (sec), leaf count = 53

$$\left\{y(x)=-2\,\frac{1}{\sqrt{-4\,ax^{2}+4\,\mathrm{e}^{2\,x^{2}}\_C1-2\,a}},y(x)=2\,\frac{1}{\sqrt{-4\,ax^{2}+4\,\mathrm{e}^{2\,x^{2}}\_C1-2\,a}}\right\}$$

Sage: cpu = 0.9 (sec), leaf count = 0

$$\left[\frac{e^{(-x^2)}}{\sqrt{-\frac{1}{2}\,(2\,x^2+1)ae^{(-2\,x^2)}+c}},\texttt{bernoulli}\right]$$

2.45 ODE No. 45

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x)+2\left(a^{2}x^{3}-b^{2}x\right)(y(x))^{3}+3\,b(y(x))^{2}=0}$$

Mathematica: cpu = 0.522566 (sec), leaf count = 133

$$\text{Solve}\left[c_1=\sqrt[4]{\left(\frac{b}{ax}-\frac{1}{ax^2y(x)}\right)^2-1}\left(-\frac{\left(\frac{b}{ax}-\frac{1}{ax^2y(x)}\right)\,{}_2F_1\left(\frac{1}{2},\frac{3}{4};\frac{3}{2};\left(\frac{b}{ax}-\frac{1}{ax^2y(x)}\right)^2\right)}{2\sqrt[4]{1-\left(\frac{b}{ax}-\frac{1}{ax^2y(x)}\right)^2}}-\frac{ax}{b}\right),y(x)\right]$$

Maple: cpu = 0.094 (sec), leaf count = 123

$$\left\{\_C1+1\sqrt[4]{\left(\frac{ax}{b}+\left(\frac{b^2y\left(x\right)}{a}-\frac{b}{ax}\right)^{-1}\right)^2-1}\left(\frac{b^2y(x)}{a}-\frac{b}{ax}\right)^{-1}\frac{1}{\sqrt{\frac{ax}{b}+\left(\frac{b^2y(x)}{a}-\frac{b}{ax}\right)^{-1}}}-\int^{\frac{ax^2y(x)}{bxy(x)-1}}1\sqrt[4]{\right.$$

Sage: cpu = 0 (sec), leaf count = 0

Maxima was unable to solve this ODE

2.46 ODE No. 46

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x)-x^{a}(y(x))^{3}+3\left(y(x)\right)^{2}-x^{-a}y(x)-x^{-2\,a}+ax^{-a-1}=0}$$

Mathematica: cpu = 0.227529 (sec), leaf count = 258

$$\left\{\left\{y(x)\to x^{-a}-\frac{e^{-\frac{2x^{1-a}}{1-a}}}{\sqrt{c_1-\frac{2x\left(\frac{4^{\frac{a+1}{a-1}}x\left(\frac{x^{1-a}}{1-a}\right)^{\frac{2}{a-1}}\Gamma\left(-\frac{2}{a-1},-\frac{4x^{1-a}}{a-1}\right)}{a-1}+e^{\frac{4x^{1-a}}{a-1}}x^{a}\right)}{a+1}}}\right\},\left\{y(x)\to\frac{e}{\sqrt{c_1-\frac{2x\left(\frac{4^{\frac{a+1}{a-1}}x\left(\frac{x^{1-a}}{1-a}\right)\right.}{}\right.}}}\right.$$

Maple: cpu = 0.062 (sec), leaf count = 1052

$$\left\{y(x)=-1\mathrm{e}^{2\,\frac{x}{(a-1)x^{a}}}\frac{}{\sqrt{-C1-2\,\frac{1}{1-a}2^{-2\,\frac{a}{1-a}-2\,(1-a)^{-1}}\left((1-a)^{-1}\right)^{-\frac{a}{1-a}-(1-a)^{-1}}\left(\frac{1-a}{-3+a}2^{-3+2\,\frac{a}{1-a}+2\,(1-a)^{-1}+2\,(a}\right.}}\right.$$

Sage: cpu = 0 (sec), leaf count = 0

Maxima was unable to solve this ODE

2.47 ODE No. 47

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x)-a(x^{n}-x)\left(y(x)\right)^{3}-\left(y(x)\right)^{2}=0}$$

Mathematica: cpu = 33.168712 (sec), leaf count = 31

$$\text{DSolve}\left[-a(x^{n}-x)\,y(x)^{3}+y'(x)-y(x)^{2}=0,y(x),x\right]$$

Maple: cpu = 1.248 (sec), leaf count = 0

could not solve

Sage: cpu = 0 (sec), leaf count = 0

Maxima was unable to solve this ODE

2.48 ODE No. 48

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) - (ax^n + bx)\left(y(x)\right)^3 - c(y(x))^2 = 0}$$

Mathematica: cpu = 36.628151 (sec), leaf count = 33

$$\text{DSolve}\left[y(x)^3\left(-(ax^n + bx)\right) - cy(x)^2 + y'(x) = 0, y(x), x\right]$$

Maple: cpu = 1.232 (sec), leaf count = 0

could not solve

Sage: cpu = 0 (sec), leaf count = 0

Maxima was unable to solve this ODE

2.49 ODE No. 49

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) + a\left(\frac{\mathrm{d}}{\mathrm{d}x}\phi(x)\right)\left(y(x)\right)^3 + 6\,a\phi(x)\left(y(x)\right)^2 + \frac{(2\,a+1)\,y(x)\,\frac{\mathrm{d}^2}{\mathrm{d}x^2}\phi(x)}{\frac{\mathrm{d}}{\mathrm{d}x}\phi\left(x\right)} + 2\,a + 2 = 0}$$

Mathematica: cpu = 28.631636 (sec), leaf count = 52

$$\text{DSolve}\left[ay(x)^3\phi'(x) + \frac{(2a+1)y(x)\phi''(x)}{\phi'(x)} + 6a\phi(x)y(x)^2 + 2a + y'(x) + 2 = 0, y(x), x\right]$$

Maple: cpu = 0.702 (sec), leaf count = 0

could not solve

Sage: cpu = 0 (sec), leaf count = 0

Maxima was unable to solve this ODE

2.50 ODE No. 50

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) - f3(x)\left(y(x)\right)^3 - f2(x)\left(y(x)\right)^2 - f1(x)\,y(x) - f0(x) = 0}$$

Mathematica: cpu = 125.836479 (sec), leaf count = 37

$$\text{DSolve}\left[-\text{f0}(x)-\text{f1}(x)y(x)-\text{f2}(x)y(x)^2-\text{f3}(x)y(x)^3+y'(x)=0,y(x),x\right]$$

Maple: cpu = 0.265 (sec), leaf count = 0

could not solve

Sage: cpu = 0 (sec), leaf count = 0

Maxima was unable to solve this ODE

2.51 ODE No. 51

$$\frac{\mathrm{d}}{\mathrm{d}x}y(x)-(y(x)-f(x))\,(y(x)-g(x))\left(y(x)-\frac{af(x)+bg(x)}{a+b}\right)h(x)-\frac{\left(\frac{\mathrm{d}}{\mathrm{d}x}f(x)\right)(y(x)-g(x))}{f\,(x)-g\,(x)}-\frac{\left(\frac{\mathrm{d}}{\mathrm{d}x}g(\right.}{g}$$

Mathematica: cpu = 0.753096 (sec), leaf count = 354

$$\text{Solve}\left[-\frac{1}{3}(a-b)^{2/3}(2a+b)^{2/3}(a+2b)^{2/3}\text{RootSum}\left[\#1^3(a-b)^{2/3}(2a+b)^{2/3}(a+2b)^{2/3}-3\#1a^2-3\#1a\right.\right.$$

Maple: cpu = 0.156 (sec), leaf count = 2348

$$\left\{y(x)=-\frac{1}{9\,a^3+18\,a^2b+18\,ab^2+9\,b^3}\left(2\,g(x)\,RootOf\left(-27\int^{\_Z}\frac{}{4\_a^3a^6+12\_a^3a^5b-3\_a^3a^4b^2-26\right.\right.\right.$$

Sage: cpu = 2.588 (sec), leaf count = 0

$$\left[\left[\frac{(a^2+ab+b^2)\log\left(3\,a^2+3\,ab+3\,b^2-\frac{3\left(a^3+3\,a^2b+3\,ab^2+b^3\right)\left(a^2+ab-2\,b^2\right)\left(\frac{(2\,a+b)f(x)+(a+2\,b)g(x)}{a+b}-3\,y(x)\right)\left(\frac{\left(\left(a^2+ab+b^2\right.\right.}{}\right.}{}\right.}{}\right.\right.$$

2.52 ODE No. 52

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x)-a(y(x))^{n}-bx^{\frac{n}{1-n}}=0}$$

Mathematica: cpu = 116.892343 (sec), leaf count = 115

$$\text{Solve}\left[\int_{1}^{y(x)\left(\frac{ax^{-\frac{n}{1-n}}}{b}\right)^{\frac{1}{n}}}\frac{1}{-K[1]\left(\frac{(-1)^{n}(n-1)^{-n}b^{1-n}}{a}\right)^{\frac{1}{n}}+K[1]^{n}+1}\,dK[1]=\int_{1}^{x}bK[2]^{\frac{n}{1-n}}\left(\frac{aK[2]^{-\frac{n}{1-n}}}{b}\right)^{\frac{1}{n}}dI\right.$$

Maple: cpu = 0.156 (sec), leaf count = 61

$$\left\{-\int_{\_b}^{y(x)}1x^{\frac{n}{n-1}}\left(\left(ax(n-1)\,\_a^{n}+\_a\right)x^{\frac{n}{n-1}}+b(n-1)\,x\right)^{-1}\mathrm{d}\_a(n-1)+\ln\left(x\right)-\_C1=0\right\}$$

Sage: cpu = 0 (sec), leaf count = 0

Maxima was unable to solve this ODE

2.53 ODE No. 53

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x)-\frac{\left(f(x)\right)^{1-n}\left(\frac{\mathrm{d}}{\mathrm{d}x}g(x)\right)\left(y(x)\right)^{n}}{\left(ag\left(x\right)+b\right)^{n}}-\frac{\left(\frac{\mathrm{d}}{\mathrm{d}x}f(x)\right)y(x)}{f\left(x\right)}-f(x)\,\frac{\mathrm{d}}{\mathrm{d}x}g(x)=0}$$

Mathematica: cpu = 57.744833 (sec), leaf count = 95

$$\text{Solve}\left[\int_{1}^{y(x)\left(f(x)^{-n}(ag(x)+b)^{-n}\right)^{\frac{1}{n}}}\frac{1}{-\left(a^{n}\right)^{\frac{1}{n}}K[1]+K[1]^{n}+1}\,dK[1]=\frac{f(x)(ag(x)+b)\log(ag(x)+b)\left(f(x)^{-n}\right.}{a}\right.$$

Maple: cpu = 0.062 (sec), leaf count = 281

$$\left\{y(x)=\frac{\left(ag(x)+b\right)f(x)}{a}RootOf\left(-\int^{-Z}\frac{}{\_a\left(\left(\frac{\mathrm{d}}{\mathrm{d}x}g\left(x\right)\right)\left(ag\left(x\right)+b\right)^{-n}\left(f\left(x\right)\right)^{1-n}\right)^{-n-1}\left(f\left(x\right)\frac{\mathrm{d}}{\mathrm{d}x}g\left(x\right)\right)^{-}\right.\right.$$

Sage: cpu = 69.46 (sec), leaf count = 0

$$\left[\left[\int-\frac{(ag(x)+b)^{n}f(x)^{n}\,y(x)\,D[0]\left(f\right)(x)+y(x)^{n}\,f(x)^{2}\,D[0]\left(g\right)(x)+(ag(x)+b)^{n}f(x)^{n+2}\,D[0]\left(g\right)}{\left(ag\left(x\right)+b\right)^{n}af\left(x\right)^{n+1}y\left(x\right)-\left(af\left(x\right)^{n+2}g\left(x\right)+bf\left(x\right)^{n+2}\right)\left(ag\left(x\right)+b\right)^{n}-\left(af\left(x\right)^{2}g\left(x\right)+bf\left(x\right)\right.}\right.\right.$$

2.54 ODE No. 54

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x)-a^n(f(x))^{1-n}\left(\frac{\mathrm{d}}{\mathrm{d}x}g(x)\right)(y(x))^n-\frac{\left(\frac{\mathrm{d}}{\mathrm{d}x}f(x)\right)y(x)}{f(x)}-f(x)\frac{\mathrm{d}}{\mathrm{d}x}g(x)=0}$$

Mathematica: cpu = 0.116515 (sec), leaf count = 74

$$\text{Solve}\left[y(x)\left(a^nf(x)^{-n}\right)^{\frac{1}{n}}{}_2F_1\left(1,\frac{1}{n};1+\frac{1}{n};-\left(\left(a^nf(x)^{-n}\right)^{\frac{1}{n}}y(x)\right)^n\right)=f(x)g(x)\left(a^nf(x)^{-n}\right)^{\frac{1}{n}}+c_1,y(x)\right]$$

Maple: cpu = 0.124 (sec), leaf count = 42

$$\left\{\_C1+\frac{y(x)}{f(x)}{}_2\mathrm{F}_1(1,n^{-1};\,\frac{n+1}{n};\,-\left(\frac{ay(x)}{f(x)}\right)^n)-g(x)=0\right\}$$

Sage: cpu = 1.384 (sec), leaf count = 0

$$\left[\left[\int\frac{a^ny(x)^n\,f(x)^2\,D[0]\left(g\right)(x)+f(x)^n\,y(x)\,D[0]\left(f\right)(x)+f(x)^{n+2}\,D[0]\left(g\right)(x)}{a^ny\left(x\right)^n\,f\left(x\right)^2+f\left(x\right)^{n+2}}\,dx+\int\frac{(a^ny(x)^n\,f(x)+}{}\right.\right.$$

2.55 ODE No. 55

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x)-f(x)\left(y(x)\right)^n-g(x)\,y(x)-h(x)=0}$$

Mathematica: cpu = 6.593337 (sec), leaf count = 29

$$\text{DSolve}[-f(x)y(x)^n-g(x)y(x)-h(x)+y'(x)=0,y(x),x]$$

Maple: cpu = 0.218 (sec), leaf count = 0

could not solve

Sage: cpu = 0 (sec), leaf count = 0

Maxima was unable to solve this ODE

2.56 ODE No. 56

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) - f(x)\left(y(x)\right)^{a} - g(x)\left(y(x)\right)^{b} = 0}$$

Mathematica: cpu = 2.267788 (sec), leaf count = 27

$$\text{DSolve}\left[-f(x)y(x)^{a} - g(x)y(x)^{b} + y'(x) = 0, y(x), x\right]$$

Maple: cpu = 0.202 (sec), leaf count = 0

could not solve

Sage: cpu = 0 (sec), leaf count = 0

Maxima was unable to solve this ODE

2.57 ODE No. 57

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) - \sqrt{|y\left(x\right)|} = 0}$$

Mathematica: cpu = 101.289362 (sec), leaf count = 283

$$\left\{\left\{y(x) \to \text{InverseFunction}\left[-\frac{2\ 2^{3/4}(1-\#1)\sqrt[4]{|\Im(\#1)| + i(1-\Re(\#1))}(i|\Im(\#1)| - \Re(\#1)+1)\,{}_2F_1\left(\frac{1}{4},\right.}{3\sqrt[4]{|\Im(\#1)|}\,(\Im(\#1)^2 + (1-\Re(\#1))^2)}\right.\right.$$

Maple: cpu = 0.078 (sec), leaf count = 31

$$\left\{x - \begin{cases} -2\sqrt{-y\left(x\right)} & y(x) \le 0 \\ 2\sqrt{y\left(x\right)} & 0 < y(x) \end{cases} + \_C1 = 0\right\}$$

Sage: cpu = 1.08 (sec), leaf count = 0

$$[c + x, \texttt{separable}]$$

2.58 ODE No. 58

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) - a\sqrt{y\left(x\right)} - bx = 0}$$

Mathematica: cpu = 0.153020 (sec), leaf count = 119

$$\text{Solve}\left[\frac{a^2\left(-\log\left(a^2\left(\sqrt{\frac{a^2y(x)}{b^2x^2}}+1\right)-\frac{2a^2y(x)}{bx^2}\right)-\frac{2a\tanh^{-1}\left(\frac{a^2-4b\sqrt{\frac{a^2y(x)}{b^2x^2}}}{a\sqrt{a^2+8b}}\right)}{\sqrt{a^2+8b}}\right)}{2b} = \frac{a^2\log(x)}{b}+c_1, y(x)\right]$$

Maple: cpu = 0.078 (sec), leaf count = 68

$$\left\{-\frac{1}{2}\ln\left(\sqrt{y\left(x\right)}ax+bx^2-2\,y(x)\right)+a\sqrt{y\left(x\right)}Artanh\left(1\left(a\sqrt{y\left(x\right)}+2\,bx\right)\frac{1}{\sqrt{y\left(x\right)\left(a^2+8\,b\right)}}\right)\frac{1}{\sqrt{y\left(x\right)(a}}\right.$$

Sage: cpu = 0 (sec), leaf count = 0

Maxima was unable to solve this ODE

2.59 ODE No. 59

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) - a\sqrt{\left(y\left(x\right)\right)^2+1} - b = 0}$$

Mathematica: cpu = 0.176522 (sec), leaf count = 96

$$\left\{\left\{y(x)\to \text{InverseFunction}\left[\frac{\frac{b\tan^{-1}\left(\frac{\#1b}{\sqrt{\#1^2+1\sqrt{a^2-b^2}}}\right)}{\sqrt{a^2-b^2}}-\frac{b\tan^{-1}\left(\frac{\#1a}{\sqrt{a^2-b^2}}\right)}{\sqrt{a^2-b^2}}+\sinh^{-1}(\#1)}{a}\&\right][c_1+x]\right\}\right\}$$

Maple: cpu = 0.032 (sec), leaf count = 26

$$\left\{x-\int^{y(x)}\left(a\sqrt{\_a^2+1}+b\right)^{-1}d\_a+\_C1=0\right\}$$

Sage: cpu = 0 (sec), leaf count = 0

Maxima was unable to solve this ODE

2.60 ODE No. 60

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) - \frac{\sqrt{(y(x))^2 - 1}}{\sqrt{x^2 - 1}} = 0}$$

Mathematica: cpu = 0.049506 (sec), leaf count = 55

$$\left\{\left\{y(x) \to \frac{1}{2}\left(-e^{-c_1}\sqrt{x^2-1} + e^{c_1}\sqrt{x^2-1} + e^{-c_1}x + e^{c_1}x\right)\right\}\right\}$$

Maple: cpu = 0.016 (sec), leaf count = 29

$$\left\{\ln\left(x + \sqrt{x^2-1}\right) - \ln\left(y(x) + \sqrt{(y(x))^2 - 1}\right) + \_C1 = 0\right\}$$

Sage: cpu = 1.22 (sec), leaf count = 0

$$\left[\log\left(2\sqrt{y(x)^2-1} + 2\,y(x)\right) = c + \log\left(2\,x + 2\sqrt{x^2-1}\right), \texttt{separable}\right]$$

2.61 ODE No. 61

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) - \frac{\sqrt{x^2-1}}{\sqrt{(y(x))^2 - 1}} = 0}$$

Mathematica: cpu = 0.176522 (sec), leaf count = 75

$$\left\{\left\{y(x) \to \text{InverseFunction}\left[\frac{1}{2}\#1\sqrt{\#1^2-1} - \frac{1}{2}\log\left(\sqrt{\#1^2-1} + \#1\right)\&\right]\left[c_1 + \frac{1}{2}\sqrt{x^2-1}x - \frac{1}{2}\log\left(\sqrt{}\right.\right.\right.$$

Maple: cpu = 0.016 (sec), leaf count = 50

$$\left\{\_C1 + x\sqrt{x^2-1} - \ln\left(x + \sqrt{x^2-1}\right) - y(x)\sqrt{(y(x))^2-1} + \ln\left(y(x) + \sqrt{(y(x))^2-1}\right) = 0\right\}$$

Sage: cpu = 0.176 (sec), leaf count = 0

$$\left[\frac{1}{2}\sqrt{y(x)^2-1}y(x) - \frac{1}{2}\log\left(2\sqrt{y(x)^2-1} + 2\,y(x)\right) = \frac{1}{2}\sqrt{x^2-1}x + c - \frac{1}{2}\log\left(2\,x + 2\sqrt{x^2-1}\right), \texttt{se}\right.$$

2.62 ODE No. 62

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) - \frac{y(x) - x^2\sqrt{x^2 - (y\left(x\right))^2}}{xy\left(x\right)\sqrt{x^2 - (y\left(x\right))^2} + x} = 0}$$

Mathematica: cpu = 3.807984 (sec), leaf count = 40

$$\text{Solve}\left[\tan^{-1}\left(\frac{y(x)}{\sqrt{x^2 - y(x)^2}}\right) + \frac{x^2}{2} + \frac{y(x)^2}{2} = c_1, y(x)\right]$$

Maple: cpu = 0.297 (sec), leaf count = 34

$$\left\{\frac{(y(x))^2}{2} + \arctan\left(y(x)\frac{1}{\sqrt{x^2 - (y\left(x\right))^2}}\right) + \frac{x^2}{2} - \_C1 = 0\right\}$$

Sage: cpu = 0 (sec), leaf count = 0

Maxima was unable to solve this ODE

2.63 ODE No. 63

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) - \frac{(y(x))^2 + 1}{\left|y\left(x\right) + \sqrt{1 + y\left(x\right)}\right|\left(1 + x\right)^{3/2}} = 0}$$

Mathematica: cpu = 558.947977 (sec), leaf count = 47

$$\left\{\left\{y(x) \to \text{InverseFunction}\left[\int_1^{\#1} \frac{\left|K[1] + \sqrt{K[1] + 1}\right|}{K[1]^2 + 1}\, dK[1]\&\right]\left[c_1 - \frac{2}{\sqrt{x + 1}}\right]\right\}\right\}$$

Maple: cpu = 0.094 (sec), leaf count = 35

$$\left\{-2\frac{1}{\sqrt{1 + x}} - \int^{y(x)} \frac{1}{\_a^2 + 1}\left|\_a + \sqrt{\_a + 1}\right| d\_a + \_C1 = 0\right\}$$

Sage: cpu = 0 (sec), leaf count = 0

Maxima was unable to solve this ODE

2.64 ODE No. 64

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x)-\sqrt{\frac{a\left(y\left(x\right)\right)^{2}+by\left(x\right)+c}{ax^{2}+bx+c}}=0}$$

Mathematica: cpu = 0.187524 (sec), leaf count = 269

$$\left\{\left\{y(x)\to \frac{e^{-\sqrt{a}c_1}\left(8a^{3/2}ce^{2\sqrt{a}c_1}\sqrt{ax^2+bx+c}-8a^{3/2}c\sqrt{ax^2+bx+c}+8a^2cxe^{2\sqrt{a}c_1}+8a^2cx+2b^3e^{\sqrt{a}c_1}-\right.\right.\right.$$

Maple: cpu = 0.078 (sec), leaf count = 124

$$\left\{-1\sqrt{\frac{a\left(y\left(x\right)\right)^{2}+by\left(x\right)+c}{ax^{2}+bx+c}}\sqrt{ax^{2}+bx+c}\ln\left(\frac{1}{2}\left(2\sqrt{ax^{2}+bx+c}\sqrt{a}+2ax+b\right)\frac{1}{\sqrt{a}}\right)\frac{1}{\sqrt{a\left(y\left(x\right)\right)^{2}+b}}\right.$$

Sage: cpu = 0 (sec), leaf count = 0

Maxima was unable to solve this ODE

2.65 ODE No. 65

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x)-\sqrt{\frac{\left(y\left(x\right)\right)^{3}+1}{x^{3}+1}}=0}$$

Mathematica: cpu = 1.550697 (sec), leaf count = 312

$$\left\{\left\{y(x)\to \text{InverseFunction}\left[\frac{i(\#1+1)\sqrt{1+\frac{6i}{\left(\sqrt{3}-3i\right)(\#1+1)}}\sqrt{\frac{2}{3}-\frac{4i}{\left(\sqrt{3}+3i\right)(\#1+1)}}F\left(i\sinh^{-1}\left(\frac{\sqrt{-\frac{6i}{3i+\sqrt{3}}}}{\sqrt{\#1+1}}\right)|\frac{3}{3}\right.\right.\right.\right.$$

Maple: cpu = 0.063 (sec), leaf count = 47

$$\left\{\int^{y(x)}\frac{1}{\sqrt{\_a^{3}+1}}d\_a+\int^{x}-1\sqrt{\frac{\left(y\left(x\right)\right)^{3}+1}{\_a^{3}+1}}\frac{1}{\sqrt{\left(y\left(x\right)\right)^{3}+1}}d\_a+\_C1=0\right\}$$

Sage: cpu = 0 (sec), leaf count = 0

Maxima was unable to solve this ODE

2.66 ODE No. 66

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) - \frac{\sqrt{|y\left(x\right)\left(1-y\left(x\right)\right)\left(1-ay\left(x\right)\right)|}}{\sqrt{|x\left(1-x\right)\left(-ax+1\right)|}} = 0}$$

Mathematica: cpu = 877.251897 (sec), leaf count = 65

$$\left\{\left\{y(x) \to \text{InverseFunction}\left[\int_1^{\#1} \frac{1}{\sqrt{|(1-K[1])K[1](1-aK[1])|}}\,dK[1]\&\right]\left[\int_1^{x} \frac{1}{\sqrt{|(1-K[2])K[2](1-a\right.\right.$$

Maple: cpu = 0.062 (sec), leaf count = 40

$$\left\{\int \frac{1}{\sqrt{|x\left(x-1\right)\left(ax-1\right)|}}\,\mathrm{d}x - \int^{y(x)} \frac{1}{\sqrt{|\_a\ \left(\_a-1\right)\left(\_a\,a-1\right)|}}d\_a + \_C1 = 0\right\}$$

Sage: cpu = 1.572 (sec), leaf count = 0

$$[(y(x)-1)\mathrm{sgn}(y(x)-1) = (x-1)\mathrm{sgn}(x-1) + c, \texttt{separable}]$$

2.67 ODE No. 67

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) - \frac{\sqrt{1-\left(y\left(x\right)\right)^4}}{\sqrt{-x^4+1}} = 0}$$

Mathematica: cpu = 0.080010 (sec), leaf count = 14

$$\left\{\left\{y(x) \to \mathrm{sn}\left(c_1 + F\left(\sin^{-1}(x)\middle|-1\right)\middle|-1\right)\right\}\right\}$$

Maple: cpu = 0.015 (sec), leaf count = 32

$$\left\{\int \frac{1}{\sqrt{-x^4+1}}\,\mathrm{d}x - \int^{y(x)} \frac{1}{\sqrt{-\_a^4+1}}d\_a + \_C1 = 0\right\}$$

Sage: cpu = 0 (sec), leaf count = 0

Maxima was unable to solve this ODE

2.68 ODE No. 68

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x)-\sqrt{\frac{a\left(y\left(x\right)\right)^{4}+b\left(y\left(x\right)\right)^{2}+1}{ax^{4}+bx^{2}+1}}=0}$$

Mathematica: cpu = 1.108641 (sec), leaf count = 373

$$\left\{\left\{y(x)\to \text{InverseFunction}\left[-\frac{i\sqrt{\frac{2\#1^2a+\sqrt{b^2-4a}+b}{\sqrt{b^2-4a}+b}}\sqrt{\frac{2\#1^2a}{b-\sqrt{b^2-4a}}+1}F\left(i\sinh^{-1}\left(\sqrt{2}\sqrt{\frac{a}{b+\sqrt{b^2-4a}}}\#1\right)|\frac{b+\sqrt{b^2-}\right.\right.\right.}{\sqrt{2}\sqrt{\frac{a}{\sqrt{b^2-4a}+b}}\sqrt{\#1^4a+\#1^2b+1}}\right.\right.$$

Maple: cpu = 0.047 (sec), leaf count = 77

$$\left\{\int^{y(x)}\frac{1}{\sqrt{\_a^4a+\_a^2b+1}}d\_a+\int^{x}-1\sqrt{\frac{a\left(y\left(x\right)\right)^{4}+b\left(y\left(x\right)\right)^{2}+1}{\_a^4a+\_a^2b+1}}\frac{1}{\sqrt{a\left(y\left(x\right)\right)^{4}+b\left(y\left(x\right)\right)^{2}+1}}d\_a+\_\right.$$

Sage: cpu = 0 (sec), leaf count = 0

Maxima was unable to solve this ODE

2.69 ODE No. 69

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x)-\sqrt{\left(b4\ \left(y\left(x\right)\right)^{4}+b3\ \left(y\left(x\right)\right)^{3}+b2\ \left(y\left(x\right)\right)^{2}+b1\ y\left(x\right)+b0\right)\left(a4\ x^{4}+a3\ x^{3}+a2\ x^{2}+a1\ x+a\right.}$$

Mathematica: cpu = 53.802332 (sec), leaf count = 12750

Failed to compile Latex

Maple: cpu = 0.109 (sec), leaf count = 111

$$\left\{\int^{y(x)}\frac{1}{\sqrt{\_a^4b4+\_a^3b3+\_a^2b2+\_a\,b1+b0}}d\_a+\int^{x}-1\sqrt{\left(b4\ \left(y\left(x\right)\right)^{4}+b3\ \left(y\left(x\right)\right)^{3}+b2\ \left(y\left(x\right)\right)^{2}\right.}\right.$$

Sage: cpu = 0 (sec), leaf count = 0

Maxima was unable to solve this ODE

2.70 ODE No. 70

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) - \sqrt{\frac{a4\,x^4 + a3\,x^3 + a2\,x^2 + a1\,x + a0}{b4\,\left(y\left(x\right)\right)^4 + b3\,\left(y\left(x\right)\right)^3 + b2\,\left(y\left(x\right)\right)^2 + b1\,y\left(x\right) + b0}} = 0}$$

Mathematica: cpu = 159.017193 (sec), leaf count = 23353

Unable to compile Latex

Maple: cpu = 0.110 (sec), leaf count = 113

$$\left\{\int^{y(x)} \sqrt{\_a^4 b4 + \_a^3 b3 + \_a^2 b2 + \_a\,b1 + b0}\,d\_a + \int^{x} -\sqrt{\frac{\_a^4 a4 + \_a^3 a3 + \_a^2 a2 + \_a\,a}{b4\,\left(y\left(x\right)\right)^4 + b3\,\left(y\left(x\right)\right)^3 + b2\,\left(y\left(x\right)\right)^2 +}}\right.$$

2.71 ODE No. 71

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) - \sqrt{\frac{b4\,\left(y\left(x\right)\right)^4 + b3\,\left(y\left(x\right)\right)^3 + b2\,\left(y\left(x\right)\right)^2 + b1\,y\left(x\right) + b0}{a4\,x^4 + a3\,x^3 + a2\,x^2 + a1\,x + a0}} = 0}$$

Mathematica: cpu = 2.352299 (sec), leaf count = 2237

$$\text{Solve}\left[-\frac{2F\left(\sin^{-1}\left(\sqrt{\frac{(\text{Root}\left[\text{b4}\#1^4+\text{b3}\#1^3+\text{b2}\#1^2+\text{b1}\#1+\text{b0}\&,2\right]-\text{Root}\left[\text{b4}\#1^4+\text{b3}\#1^3+\text{b2}\#1^2+\text{b1}\#1+\text{b0}\&,4\right])(y(x)-\text{Root}\left[\text{b4}\right.}{(\text{Root}\left[\text{b4}\#1^4+\text{b3}\#1^3+\text{b2}\#1^2+\text{b1}\#1+\text{b0}\&,1\right]-\text{Root}\left[\text{b4}\#1^4+\text{b3}\#1^3+\text{b2}\#1^2+\text{b1}\#1+\text{b0}\&,4\right])(y(x)-\text{Root}\left[\text{b4}\right.}\right)\right.\right.$$

Maple: cpu = 0.078 (sec), leaf count = 113

$$\left\{\int^{y(x)} \frac{1}{\sqrt{\_a^4 b4 + \_a^3 b3 + \_a^2 b2 + \_a\,b1 + b0}}\,d\_a + \int^{x} -1\sqrt{\frac{b4\,\left(y\left(x\right)\right)^4 + b3\,\left(y\left(x\right)\right)^3 + b2\,\left(y\left(x\right)\right)^2}{\_a^4 a4 + \_a^3 a3 + \_a^2 a2 + \_a}}\right.$$

2.72 ODE No. 72

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) - R1\left(x, \sqrt{a4\,x^4 + a3\,x^3 + a2\,x^2 + a1\,x + a0}\right) R2\left(y(x), \sqrt{b4\,\left(y\left(x\right)\right)^4 + b3\,\left(y\left(x\right)\right)^3 + b2\,\left(y\right.}\right.}$$

Mathematica: cpu = 0.818104 (sec), leaf count = 87

$$\left\{\left\{y(x) \to \text{InverseFunction}\left[\int_1^{\#1} \frac{1}{\text{R2}\left(K[1], \sqrt{\text{b1}K[1] + \text{b2}K[1]^2 + \text{b3}K[1]^3 + \text{b4}K[1]^4 + \text{b0}}\right)}\,dK[1]\&\right]\right.\right.$$

Maple: cpu = 0.016 (sec), leaf count = 64

$$\left\{\int R1\left(x,\sqrt{a4\,x^4+a3\,x^3+a2\,x^2+a1\,x+a0}\right)\,\mathrm{d}x-\int^{y(x)}\left(R2\left(\_a,\sqrt{\_a^4b4+\_a^3b3+\_a^2b2+\_\right.\right.\right.$$

2.73 ODE No. 73

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x)-\left(\frac{a3\,x^3+a2\,x^2+a1\,x+a0}{a3\,\left(y\left(x\right)\right)^3+a2\,\left(y\left(x\right)\right)^2+a1\,y\left(x\right)+a0}\right)^{2/3}=0}$$

Mathematica: cpu = 1.032631 (sec), leaf count = 733

$$\text{Solve}\left[\frac{3(\text{a0}+y(x)(\text{a1}+y(x)(\text{a2}+\text{a3}y(x))))^{2/3}\left(y(x)-\text{Root}\left[\#1^3\text{a3}+\#1^2\text{a2}+\#1\text{a1}+\text{a0}\&,1\right]\right)F_1\left(\frac{5}{3};-\right.}{5\left(\frac{y(x)-\text{Root}\left[\#1^3\text{a3}+\#1^2\text{a2}+\#1\text{a1}+\text{a0}\&,2\right]}{\text{Root}\left[\#1^3\text{a3}+\#1^2\text{a2}+\#1\text{a1}+\text{a0}\&,1\right]-\text{Root}\left[\#1^3\text{a3}+\#1^2\text{a2}+\#\right.}\right.}$$

Maple: cpu = 0.187 (sec), leaf count = 91

$$\left\{\int^{y(x)}\left(\_a^3a3+\_a^2a2+\_a\,a1+a0\right)^{\frac{2}{3}}d\_a+\int^{x}-\left(\frac{\_a^3a3+\_a^2a2+\_a\,a1+a0}{a3\,\left(y\left(x\right)\right)^3+a2\,\left(y\left(x\right)\right)^2+a1\,y\left(x\right)+a0}\right)^{\frac{2}{3}}\left(a\right.\right.$$

2.74 ODE No. 74

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x)-f(x)\left(y(x)-g(x)\right)\sqrt{\left(y\left(x\right)-a\right)\left(y\left(x\right)-b\right)}=0}$$

Mathematica: cpu = 2.972878 (sec), leaf count = 39

$$\text{DSolve}\left[y'(x)-f(x)(y(x)-g(x))\sqrt{(y(x)-a)(y(x)-b)}=0,y(x),x\right]$$

Maple: cpu = 0.484 (sec), leaf count = 0

could not solve

2.75 ODE No. 75

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) - \mathrm{e}^{x-y(x)} + \mathrm{e}^{x} = 0}$$

Mathematica: cpu = 0.191024 (sec), leaf count = 20

$$\left\{\left\{y(x) \to \log\left(1 - e^{c_1 - e^x}\right)\right\}\right\}$$

Maple: cpu = 0.109 (sec), leaf count = 20

$$\left\{y(x) = -\mathrm{e}^{x} + \ln\left(-1 + \mathrm{e}^{\mathrm{e}^{x} + \_C1}\right) - \_C1\right\}$$

2.76 ODE No. 76

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) - a\cos\left(y(x)\right) + b = 0}$$

Mathematica: cpu = 0.140018 (sec), leaf count = 116

$$\left\{\left\{y(x) \to 2\tan^{-1}\left(\frac{a\tanh\left(\frac{1}{2}\left(x\sqrt{(a-b)(a+b)} - c_1\sqrt{(a-b)(a+b)}\right)\right)}{\sqrt{(a-b)(a+b)}} - \frac{b\tanh\left(\frac{1}{2}\left(x\sqrt{(a-b)(a+b}\right.\right.\right.\right.$$

Maple: cpu = 0.031 (sec), leaf count = 54

$$\left\{y(x) = 2\arctan\left(\frac{\tanh\left(1/2\,\_C1\,\sqrt{a^2-b^2} + 1/2\,x\sqrt{a^2-b^2}\right)\sqrt{a^2-b^2}}{a+b}\right)\right\}$$

2.77 ODE No. 77

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) - \cos\left(ay(x) + bx\right) = 0}$$

Mathematica: cpu = 0.318040 (sec), leaf count = 124

$$\left\{\left\{y(x) \to \frac{-2\tan^{-1}\left(\frac{a\tanh\left(\frac{1}{2}\left(c_1\sqrt{a^2-b^2} - x\sqrt{a^2-b^2}\right)\right)}{\sqrt{a^2-b^2}} + \frac{b\tanh\left(\frac{1}{2}\left(c_1\sqrt{a^2-b^2} - x\sqrt{a^2-b^2}\right)\right)}{\sqrt{a^2-b^2}}\right) - bx}{a}\right\}\right\}$$

Maple: cpu = 0.062 (sec), leaf count = 65

$$\left\{y(x) = -\frac{1}{a}\left(bx + 2\arctan\left(\frac{\tanh\left(1/2\,\_C1\,\sqrt{a^2-b^2} - 1/2\,x\sqrt{a^2-b^2}\right)\sqrt{a^2-b^2}}{a-b}\right)\right)\right\}$$

2.78 ODE No. 78

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x)+a\sin\left(\alpha\,y(x)+\beta\,x\right)+b=0}$$

Mathematica: cpu = 0.860609 (sec), leaf count = 1317

$$\left\{\left\{y(x)\to 2\tan^{-1}\left(\frac{a^2\sqrt{-(a\alpha+b\alpha-\beta)(a\alpha-b\alpha+\beta)}\tan\left(\frac{1}{2}\left(\frac{a^2x\alpha^2}{\sqrt{-(a\alpha+b\alpha-\beta)(a\alpha-b\alpha+\beta)}}-\frac{b^2x\alpha^2}{\sqrt{-(a\alpha+b\alpha-\beta)(a\alpha-b\alpha+\beta)}}-\frac{a^2c_1\alpha^2}{\sqrt{-(a\alpha+b\alpha-\beta)(a\alpha-b\alpha+\beta)}}\right.\right.\right.\right.$$

Maple: cpu = 0.655 (sec), leaf count = 118

$$\left\{y(x)=\frac{1}{\alpha}\left(-\beta\,x+2\arctan\left(\frac{\tan\left(1/2\_C1\,\sqrt{-a^2\alpha^2+\alpha^2b^2-2\,\alpha\,b\beta+\beta^2}-1/2\,x\sqrt{-a^2\alpha^2+\alpha^2b^2-2\,\alpha\,b\beta+\beta^2}+1/2\,a\alpha-1/2\,b\alpha+1/2\,\beta\right)}{b\alpha-\beta}\right.\right.\right.$$

2.79 ODE No. 79

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x)+f(x)\cos\left(ay(x)\right)+g(x)\sin\left(ay(x)\right)+h(x)=0}$$

Mathematica: cpu = 32.093075 (sec), leaf count = 29

$$\text{DSolve}[f(x)\cos(ay(x))+g(x)\sin(ay(x))+h(x)+y'(x)=0,y(x),x]$$

Maple: cpu = 0.748 (sec), leaf count = 0

could not solve

2.80 ODE No. 80

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x)+f(x)\sin\left(y(x)\right)+\left(1-\frac{\mathrm{d}}{\mathrm{d}x}f(x)\right)\cos\left(y(x)\right)-\frac{\mathrm{d}}{\mathrm{d}x}f(x)-1=0}$$

Mathematica: cpu = 23.831526 (sec), leaf count = 36

$$\text{DSolve}[(1-f'(x))\cos(y(x))-f'(x)+f(x)\sin(y(x))+y'(x)-1=0,y(x),x]$$

Maple: cpu = 0.811 (sec), leaf count = 41

$$\left\{y(x)=2\arctan\left(\frac{-\mathrm{e}^{\int f(x)\,\mathrm{d}x}+\int\mathrm{e}^{\int f(x)\,\mathrm{d}x}\,\mathrm{d}x f(x)+\_C1\,f(x)}{\_C1+\int\mathrm{e}^{\int f(x)\,\mathrm{d}x}\,\mathrm{d}x}\right)\right\}$$

2.81 ODE No. 81

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) + 2\,\tan\left(y(x)\right)\tan\left(x\right) - 1 = 0}$$

Mathematica: cpu = 43.305499 (sec), leaf count = 19

$$\text{DSolve}[y'(x) + 2\tan(x)\tan(y(x)) - 1 = 0, y(x), x]$$

Maple: cpu = 0.827 (sec), leaf count = 78

$$\left\{ \_C1 + \tan\left(x\right)\frac{1}{\sqrt[4]{\frac{\left(1+\left(\tan\left(y(x)\right)\right)^2\right)\left(1+\left(\tan\left(x\right)\right)^2\right)}{\left(\tan\left(y(x)\right)\tan\left(x\right)-1\right)^2}}} + \frac{\tan\left(y(x)\right)+\tan\left(x\right)}{2\,\tan\left(y\left(x\right)\right)\tan\left(x\right)-2}{}_2\mathrm{F}_1(\frac{1}{2},\frac{5}{4};\,\frac{3}{2};\,-\frac{(\tan\left(y(x)\right)+\tan}{(\tan\left(y\left(x\right)\right)\tan\left(x\right)}$$

2.82 ODE No. 82

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) - a\left(1 + \left(\tan\left(y(x)\right)\right)^2\right) + \tan\left(y(x)\right)\tan\left(x\right) = 0}$$

Mathematica: cpu = 49.920839 (sec), leaf count = 27

$$\text{DSolve}\left[-a\left(\tan^2(y(x)) + 1\right) + y'(x) + \tan(x)\tan(y(x)) = 0, y(x), x\right]$$

Maple: cpu = 8.471 (sec), leaf count = 0

could not solve

2.83 ODE No. 83

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) - \tan\left(xy(x)\right) = 0}$$

Mathematica: cpu = 40.401130 (sec), leaf count = 18

$$\text{DSolve}[y'(x) - \tan(xy(x)) = 0, y(x), x]$$

Maple: cpu = 0.297 (sec), leaf count = 44

$$\left\{ y(x) = -iRootOf\left(-Erf\left(\frac{\left(-x+\_Z\right)\sqrt{2}}{2}\right)\sqrt{\pi} - Erf\left(\frac{\sqrt{2}(x+\_Z)}{2}\right)\sqrt{\pi} + \sqrt{2}\_C1\right)\right\}$$

2.84 ODE No. 84

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x)-f(ax+by(x))=0}$$

Mathematica: cpu = 8.757112 (sec), leaf count = 244

$$\text{Solve}\left[\int_1^{y(x)}-\frac{bf(bK[2]+ax)\left(\int_1^x\left(\frac{b^2f'(aK[1]+bK[2])}{bf(aK[1]+bK[2])+a}-\frac{b^3f(aK[1]+bK[2])f'(aK[1]+bK[2])}{(bf(aK[1]+bK[2])+a)^2}\right)dK[1]\right)+a\int_1^x\left(\frac{b^2f'(a}{bf(aK[}\right.$$

Maple: cpu = 0.031 (sec), leaf count = 37

$$\left\{y(x)=\frac{RootOf\left(\int^{-Z}\left(f(\_a\,b)\,b+a\right)^{-1}d\_ab-x+\_C1\right)b-ax}{b}\right\}$$

2.85 ODE No. 85

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x)-x^{a-1}(y(x))^{1-b}f\left(\frac{x^a}{a}+\frac{(y(x))^b}{b}\right)=0}$$

Mathematica: cpu = 155.676769 (sec), leaf count = 235

$$\text{Solve}\left[\int_1^{y(x)}\left(-\int_1^x\left(\frac{K[1]^{a-1}K[2]^{b-1}f'\left(\frac{K[1]^a}{a}+\frac{K[2]^b}{b}\right)}{f\left(\frac{K[1]^a}{a}+\frac{K[2]^b}{b}\right)+1}-\frac{K[1]^{a-1}K[2]^{b-1}f\left(\frac{K[1]^a}{a}+\frac{K[2]^b}{b}\right)f'\left(\frac{K[1]^a}{a}+\frac{K[}{}\right.\right.\right.\right.$$

Maple: cpu = 0.359 (sec), leaf count = 153

$$\left\{y(x)=\sqrt[b]{-\frac{1}{a}\left(-RootOf\left(\int^{-Z}\left(\left(\sqrt[a]{a}\right)^a f\left(\frac{\left(\sqrt[a]{a}\right)^a b+\left(\sqrt[b]{-b+\_a}\right)^b a}{ab}\right)\left(\sqrt[b]{-b+\_a}\right)^{-b}\_a-\left(\sqrt[a]{a}\right)^{}\right.\right.\right.\right.$$

2.86 ODE No. 86

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x)-\frac{y(x)-xf\left(x^2+a(y(x))^2\right)}{x+ay\left(x\right)f\left(x^2+a\left(y\left(x\right)\right)^2\right)}=0}$$

Mathematica: cpu = 0 (sec), leaf count = 0

Hanged

Maple: cpu = 0.312 (sec), leaf count = 52

$$\left\{1\arctan\left(x\sqrt{a}\frac{1}{\sqrt{a^2\left(y\left(x\right)\right)^2}}\right)\frac{1}{\sqrt{a}}-\frac{1}{2}\int^{(y(x))^2+\frac{x^2}{a}}\frac{f(\_a\,a)}{\_a}d\_a-\_C1=0\right\}$$

2.87 ODE No. 87

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x)-\frac{y(x)\,af(x^cy(x))+cx^a(y(x))^b}{xbf\left(x^cy\left(x\right)\right)-x^a\left(y\left(x\right)\right)^b}=0}$$

Mathematica: cpu = 28.157076 (sec), leaf count = 56

$$\text{DSolve}\left[y'(x)-\frac{cx^ay(x)^b+ay(x)f(x^cy(x))}{bxf\left(x^cy(x)\right)-x^ay(x)^b}=0,y(x),x\right]$$

Maple: cpu = 1.154 (sec), leaf count = 0

could not solve

2.88 ODE No. 88

$$\boxed{2\frac{\mathrm{d}}{\mathrm{d}x}y(x)-3\left(y(x)\right)^2-4\,ay(x)-b-c\mathrm{e}^{-2\,ax}=0}$$

Mathematica: cpu = 0.287036 (sec), leaf count = 2831

$$\left\{\left\{y(x)\to-\frac{2\left(-2^{-\frac{a\sqrt{4a^2-3b}-2a^2}{a^2}+\frac{\sqrt{4a^4-3a^2b}}{a^2}+1}3^{\frac{a\sqrt{4a^2-3b}-2a^2}{4a^2}-\frac{\sqrt{4a^4-3a^2b}}{4a^2}}a^{-\frac{a\sqrt{4a^2-3b}-2a^2}{2a^2}+\frac{\sqrt{4a^4-3a^2b}}{2a^2}+1}b^{\frac{a\sqrt{4a^2-3b}-2a^2}{4a^2}}-\right.\right.\right.$$

Maple: cpu = 0.156 (sec), leaf count = 420

$$\left\{y(x)=\left(-\frac{\sqrt{3}\_C1}{3}\sqrt{c}Y_{-\frac{1}{2\,a}\left(\sqrt{4\,a^2-3\,b}-2\,a\right)}\left(\frac{\sqrt{3}\mathrm{e}^{-ax}}{2\,a}\sqrt{c}\right)\left(Y_{-\frac{1}{2\,a}\sqrt{4\,a^2-3\,b}}\left(\frac{\sqrt{3}\mathrm{e}^{-ax}}{2\,a}\sqrt{c}\right)\_C1+J_{-\frac{1}{2\,a}\sqrt{4\,a^2-}}\right.\right.\right.$$

2.89 ODE No. 89

$$\boxed{x\frac{\mathrm{d}}{\mathrm{d}x}y(x)-\sqrt{a^2-x^2}=0}$$

Mathematica: cpu = 0.030504 (sec), leaf count = 48

$$\left\{\left\{y(x)\to \sqrt{a^2-x^2}-a\log\left(a\sqrt{a^2-x^2}+a^2\right)+a\log(x)+c_1\right\}\right\}$$

Maple: cpu = 0.016 (sec), leaf count = 56

$$\left\{y(x)=\sqrt{a^2-x^2}-a^2\ln\left(\frac{1}{x}\left(2\,a^2+2\,\sqrt{a^2}\sqrt{a^2-x^2}\right)\right)\frac{1}{\sqrt{a^2}}+\_C1\right\}$$

2.90 ODE No. 90

$$\boxed{x\frac{\mathrm{d}}{\mathrm{d}x}y(x)+y(x)-x\sin\left(x\right)=0}$$

Mathematica: cpu = 0.012502 (sec), leaf count = 24

$$\left\{\left\{y(x)\to \frac{c_1}{x}+\frac{\sin(x)-x\cos(x)}{x}\right\}\right\}$$

Maple: cpu = 0.016 (sec), leaf count = 17

$$\left\{y(x)=\frac{\sin\left(x\right)-\cos\left(x\right)x+\_C1}{x}\right\}$$

2.91 ODE No. 91

$$\boxed{x\frac{\mathrm{d}}{\mathrm{d}x}y(x)-y(x)-\frac{x}{\ln\left(x\right)}=0}$$

Mathematica: cpu = 0.005501 (sec), leaf count = 15

$$\{\{y(x)\to c_1x+x\log(\log(x))\}\}$$

Maple: cpu = 0.015 (sec), leaf count = 11

$$\{y(x)=\left(\ln\left(\ln\left(x\right)\right)+\_C1\right)x\}$$

2.92 ODE No. 92

$$\boxed{x\frac{\mathrm{d}}{\mathrm{d}x}y(x)-y(x)-x^2\sin\left(x\right)=0}$$

Mathematica: cpu = 0.011501 (sec), leaf count = 15

$$\{\{y(x)\to c_1x-x\cos(x)\}\}$$

Maple: cpu = 0.0 (sec), leaf count = 13

$$\{y(x)=-\cos\left(x\right)x+x\_C1\}$$

2.93 ODE No. 93

$$\boxed{x\frac{\mathrm{d}}{\mathrm{d}x}y(x)-y(x)-\frac{x\cos\left(\ln\left(\ln\left(x\right)\right)\right)}{\ln\left(x\right)}=0}$$

Mathematica: cpu = 0.024503 (sec), leaf count = 16

$$\{\{y(x)\to c_1x+x\sin(\log(\log(x)))\}\}$$

Maple: cpu = 0.0 (sec), leaf count = 14

$$\{y(x)=x\sin\left(\ln\left(\ln\left(x\right)\right)\right)+x\_C1\}$$

2.94 ODE No. 94

$$\boxed{x\frac{\mathrm{d}}{\mathrm{d}x}y(x)+ay(x)+bx^n=0}$$

Mathematica: cpu = 0.013502 (sec), leaf count = 25

$$\left\{\left\{y(x)\to c_1x^{-a}-\frac{bx^n}{a+n}\right\}\right\}$$

Maple: cpu = 0.0 (sec), leaf count = 23

$$\left\{y(x)=-\frac{bx^n}{n+a}+x^{-a}\_C1\right\}$$

2.95 ODE No. 95

$$\boxed{x\frac{\mathrm{d}}{\mathrm{d}x}y(x)+(y(x))^2+x^2=0}$$

Mathematica: cpu = 0.014502 (sec), leaf count = 32

$$\left\{\left\{y(x)\to \frac{x(-c_1 J_1(x)-Y_1(x))}{c_1 J_0(x)+Y_0(x)}\right\}\right\}$$

Maple: cpu = 0.062 (sec), leaf count = 40

$$\left\{y(x)=-\frac{\_C1\ xY_1(x)}{\_C1\ Y_0\left(x\right)+J_0\left(x\right)}-\frac{J_1(x)x}{\_C1\ Y_0\left(x\right)+J_0\left(x\right)}\right\}$$

2.96 ODE No. 96

$$\boxed{x\frac{\mathrm{d}}{\mathrm{d}x}y(x)-(y(x))^2+1=0}$$

Mathematica: cpu = 0.022003 (sec), leaf count = 33

$$\left\{\left\{y(x)\to \frac{1-e^{2c_1}x^2}{e^{2c_1}x^2+1}\right\}\right\}$$

Maple: cpu = 0.031 (sec), leaf count = 11

$$\{y(x)=-\tanh\left(\ln\left(x\right)+\_C1\right)\}$$

2.97 ODE No. 97

$$\boxed{x\frac{\mathrm{d}}{\mathrm{d}x}y(x)+a(y(x))^2-y(x)+bx^2=0}$$

Mathematica: cpu = 0.024503 (sec), leaf count = 46

$$\left\{\left\{y(x)\to -\frac{\sqrt{b}x\tan\left(\sqrt{a}\sqrt{b}x-\sqrt{a}\sqrt{b}c_1\right)}{\sqrt{a}}\right\}\right\}$$

Maple: cpu = 0.031 (sec), leaf count = 31

$$\left\{y(x)=-\frac{x}{a}\tan\left(\_C1\ \sqrt{ab}+x\sqrt{ab}\right)\sqrt{ab}\right\}$$

2.98 ODE No. 98

$$\boxed{x\frac{\mathrm{d}}{\mathrm{d}x}y(x)+a(y(x))^2-by(x)+cx^{2\,b}=0}$$

Mathematica: cpu = 0.022503 (sec), leaf count = 442

$$\left\{\left\{y(x)\to -\frac{\sqrt{-a}\sqrt{-c}x^b\left(\frac{\sqrt{\frac{2}{\pi}}c_1\sin\left(\frac{\sqrt{-a}\sqrt{-c}x^b}{b}\right)}{\sqrt{\frac{\sqrt{-a}\sqrt{-c}x^b}{b}}}-\frac{2\sqrt{\frac{2}{\pi}}\cos\left(\frac{\sqrt{-a}\sqrt{-c}x^b}{b}\right)}{\sqrt{\frac{\sqrt{-a}\sqrt{-c}x^b}{b}}}-\frac{\sqrt{\frac{2}{\pi}}c_1\left(-\sin\left(\frac{\sqrt{-a}\sqrt{-c}x^b}{b}\right)-\frac{\sqrt{-a}b\sqrt{-c}x^{-b}\cos\left(\right.\right.}{ac}\right.}{\sqrt{\frac{\sqrt{-a}\sqrt{-c}x^b}{b}}}\right.}{2a\left(\frac{\sqrt{\frac{2}{\pi}}\sin\left(\frac{\sqrt{-a}\sqrt{-c}x^b}{b}\right)}{\sqrt{\frac{\sqrt{-a}\sqrt{-c}x^b}{b}}}+\frac{\sqrt{\frac{2}{\pi}}c_1\cos\left(\frac{\sqrt{-a}\sqrt{-c}x^b}{b}\right)}{\sqrt{\frac{\sqrt{-a}\sqrt{-c}x^b}{b}}}\right)}\right\}\right\}$$

Maple: cpu = 0.046 (sec), leaf count = 38

$$\left\{y(x)=-\frac{1}{x^{-b}}\tan\left(\frac{1}{b}\left(x^b\sqrt{a}\sqrt{c}+\_C1\,b\right)\right)\sqrt{c}\frac{1}{\sqrt{a}}\right\}$$

2.99 ODE No. 99

$$\boxed{x\frac{\mathrm{d}}{\mathrm{d}x}y(x)+a(y(x))^2-by(x)-cx^{\beta}=0}$$

Mathematica: cpu = 0.017002 (sec), leaf count = 244

$$\left\{\left\{y(x)\to -\frac{\sqrt{-a}\sqrt{c}x^{\beta/2}\left(-2J_{\frac{b}{\beta}-1}\left(\frac{2\sqrt{-a}\sqrt{c}x^{\beta/2}}{\beta}\right)+c_1J_{1-\frac{b}{\beta}}\left(\frac{2\sqrt{-a}\sqrt{c}x^{\beta/2}}{\beta}\right)-c_1J_{-\frac{b+\beta}{\beta}}\left(\frac{2\sqrt{-a}\sqrt{c}x^{\beta/2}}{\beta}\right)\right)-bc_1J}{2a\left(J_{\frac{b}{\beta}}\left(\frac{2\sqrt{-a}\sqrt{c}x^{\beta/2}}{\beta}\right)+c_1J_{-\frac{b}{\beta}}\left(\frac{2\sqrt{-a}\sqrt{c}x^{\beta/2}}{\beta}\right)\right)}\right\}\right\}$$

Maple: cpu = 0.078 (sec), leaf count = 237

$$\left\{y(x)=-\frac{\_C1}{a}\sqrt{-ac}x^{\frac{\beta}{2}}Y_{\frac{b+\beta}{\beta}}\left(2\frac{\sqrt{-ac}x^{\beta/2}}{\beta}\right)\left(Y_{\frac{b}{\beta}}\left(2\frac{\sqrt{-ac}x^{\beta/2}}{\beta}\right)\_C1+J_{\frac{b}{\beta}}\left(2\frac{\sqrt{-ac}x^{\beta/2}}{\beta}\right)\right)^{-1}-\frac{1}{a}\left(J_{\underline{b}}\right.\right.$$

2.100 ODE No. 100

$$\boxed{x\frac{\mathrm{d}}{\mathrm{d}x}y(x)+x(y(x))^2+a=0}$$

Mathematica: cpu = 0.007501 (sec), leaf count = 157

$$\left\{\left\{y(x)\to -\frac{c_1 J_1\left(2i\sqrt{-a}\sqrt{x}\right)+i\sqrt{-a}\sqrt{x}\left(c_1 J_0\left(2i\sqrt{-a}\sqrt{x}\right)-c_1 J_2\left(2i\sqrt{-a}\sqrt{x}\right)-2J_0\left(2i\sqrt{-a}\sqrt{x}\right)\right)}{2x\left(J_1\left(2i\sqrt{-a}\sqrt{x}\right)-c_1 J_1\left(2i\sqrt{-a}\sqrt{x}\right)\right)}\right\}\right\}$$

Maple: cpu = 0.062 (sec), leaf count = 59

$$\left\{y(x)=1\sqrt{a}\left(J_0\left(2\sqrt{a}\sqrt{x}\right)\_C1+Y_0\left(2\sqrt{a}\sqrt{x}\right)\right)\frac{1}{\sqrt{x}}\left(\_C1\,J_1\left(2\sqrt{a}\sqrt{x}\right)+Y_1\left(2\sqrt{a}\sqrt{x}\right)\right)^{-1}\right\}$$

2.101 ODE No. 101

$$\boxed{x\frac{\mathrm{d}}{\mathrm{d}x}y(x)+x(y(x))^2-y(x)=0}$$

Mathematica: cpu = 0.008001 (sec), leaf count = 18

$$\left\{\left\{y(x)\to \frac{2x}{2c_1+x^2}\right\}\right\}$$

Maple: cpu = 0.016 (sec), leaf count = 16

$$\left\{y(x)=2\,\frac{x}{x^2+2\,\_C1}\right\}$$

2.102 ODE No. 102

$$\boxed{x\frac{\mathrm{d}}{\mathrm{d}x}y(x)+x(y(x))^2-y(x)-ax^3=0}$$

Mathematica: cpu = 0.018502 (sec), leaf count = 36

$$\left\{\left\{y(x)\to \sqrt{a}x\tanh\left(\frac{1}{2}\left(2\sqrt{a}c_1+\sqrt{a}x^2\right)\right)\right\}\right\}$$

Maple: cpu = 0.031 (sec), leaf count = 24

$$\left\{y(x)=\tanh\left(\frac{x^2}{2}\sqrt{a}+\_C1\,\sqrt{a}\right)x\sqrt{a}\right\}$$

2.103 ODE No. 103

$$\boxed{x\frac{\mathrm{d}}{\mathrm{d}x}y(x)+x(y(x))^2-\left(2\,x^2+1\right)y(x)-x^3=0}$$

Mathematica: cpu = 0.097012 (sec), leaf count = 90

$$\left\{\left\{y(x)\to \frac{x\left(e^{2\sqrt{2}c_1}-\sqrt{2}e^{2\sqrt{2}c_1}+e^{\sqrt{2}x^2}+\sqrt{2}e^{\sqrt{2}x^2}\right)}{e^{2\sqrt{2}c_1}+e^{\sqrt{2}x^2}}\right\}\right\}$$

Maple: cpu = 0.031 (sec), leaf count = 29

$$\left\{y(x)=\frac{\sqrt{2}x}{2}\left(\sqrt{2}+2\,\tanh\left(1/2\left(x^2+2\_C1\right)\sqrt{2}\right)\right)\right\}$$

2.104 ODE No. 104

$$\boxed{x\frac{\mathrm{d}}{\mathrm{d}x}y(x)+ax(y(x))^2+2\,y(x)+bx=0}$$

Mathematica: cpu = 0.015502 (sec), leaf count = 43

$$\left\{\left\{y(x)\to -\sqrt{\frac{b}{a}}\tan\left(ax\sqrt{\frac{b}{a}}-c_1\right)-\frac{1}{ax}\right\}\right\}$$

Maple: cpu = 0.047 (sec), leaf count = 63

$$\left\{y(x)=-\frac{1}{a}\left(-\frac{1}{x}\left(i\sqrt{a}\sqrt{b}x-1\right)+1\mathrm{e}^{-2\,ix\sqrt{a}\sqrt{b}}\left(\_C1-\frac{i}{2}\mathrm{e}^{-2\,ix\sqrt{a}\sqrt{b}}\frac{1}{\sqrt{a}}\frac{1}{\sqrt{b}}\right)^{-1}\right)\right\}$$

2.105 ODE No. 105

$$\boxed{x\frac{\mathrm{d}}{\mathrm{d}x}y(x)+ax(y(x))^2+by(x)+cx+d=0}$$

Mathematica: cpu = 0.187024 (sec), leaf count = 473

$$\left\{\left\{y(x)\to \frac{c_1\left(i\sqrt{a}e^{-i\sqrt{a}\sqrt{c}x}\left(b\left(-\sqrt{c}\right)-i\sqrt{a}d\right)U\left(1-\frac{-\sqrt{c}b-i\sqrt{a}d}{2\sqrt{c}},b+1,2i\sqrt{a}\sqrt{c}x\right)-i\sqrt{a}\sqrt{c}e^{-i\sqrt{a}\sqrt{c}x}U\left(-\right.\right.\right.}{a\left(c_1e^{-i\sqrt{a}\sqrt{c}x}U\left(-\frac{-\sqrt{c}b-i\sqrt{a}d}{2\sqrt{c}}\right.\right.}\right\}\right\}$$

Maple: cpu = 0.202 (sec), leaf count = 844

$$\left\{y(x) = -4\,c^2\left(-1/4\,\_C1\,\left(a^3c^2d^2 + a^2b^2c^3 - 2\,(-ac)^{3/2}\,abcd - 2\,(-ac)^{5/2}\,bd\right)U\left(1/2\,\frac{(-ac)^{3/2}\,d + (2\,\sqrt{}\right.\right.\right.$$

2.106 ODE No. 106

$$\boxed{x\frac{\mathrm{d}}{\mathrm{d}x}y(x) + x^a(y(x))^2 + 1/2\,(a-b)\,y(x) + x^b = 0}$$

Mathematica: cpu = 0.036505 (sec), leaf count = 40

$$\left\{\left\{y(x) \to -x^{\frac{b-a}{2}}\tan\left(\frac{2x^{\frac{a+b}{2}}}{a+b} - c_1\right)\right\}\right\}$$

Maple: cpu = 0.046 (sec), leaf count = 42

$$\left\{y(x) = -1\tan\left(\frac{1}{a+b}\left(\_C1\,a + \_C1\,b + 2\,x^{a/2+b/2}\right)\right)\left(x^{\frac{a}{2}-\frac{b}{2}}\right)^{-1}\right\}$$

2.107 ODE No. 107

$$\boxed{x\frac{\mathrm{d}}{\mathrm{d}x}y(x) + ax^{\alpha}(y(x))^2 + by(x) - cx^{\beta} = 0}$$

Mathematica: cpu = 0.258033 (sec), leaf count = 1415

$$\left\{\left\{y(x) \to \frac{x^{1-\alpha}\left(\left((-1)^{\frac{\alpha-b}{\alpha+\beta}}a^{\frac{\alpha-b}{\alpha+\beta}+\frac{1}{2}\left(\frac{b}{\alpha+\beta}-\frac{\alpha}{\alpha+\beta}\right)}(\alpha+\beta)^{\frac{\alpha}{\alpha+\beta}-\frac{b}{\alpha+\beta}+1}\left(\alpha^2+2\beta\alpha+\beta^2\right)^{-\frac{\alpha-b}{\alpha+\beta}}\left(\frac{\alpha-b}{\alpha+\beta}+\frac{1}{2}\left(\frac{b}{\alpha+\beta}-\frac{\alpha}{\alpha-}\right.\right.\right.\right.}{}\right.\right.$$

Maple: cpu = 0.156 (sec), leaf count = 176

$$\left\{y(x) = -\frac{x^{1-\alpha}}{ax}\left(Y_{\frac{b+\beta}{\alpha+\beta}}\left(2\,\frac{\sqrt{-ac}x^{\alpha/2+\beta/2}}{\alpha+\beta}\right)\_C1 + J_{\frac{b+\beta}{\alpha+\beta}}\left(2\,\frac{\sqrt{-ac}x^{\alpha/2+\beta/2}}{\alpha+\beta}\right)\right)x^{\frac{\alpha}{2}+\frac{\beta}{2}}\sqrt{-ac}\left(Y_{-\frac{\alpha-b}{\alpha+\beta}}\left(2\,\frac{\sqrt{-}}{}\right.\right.\right.$$

2.108 ODE No. 108

$$\boxed{x\frac{\mathrm{d}}{\mathrm{d}x}y(x)-(y(x))^2\ln(x)+y(x)=0}$$

Mathematica: cpu = 0.010501 (sec), leaf count = 15

$$\left\{\left\{y(x)\to\frac{1}{c_1x+\log(x)+1}\right\}\right\}$$

Maple: cpu = 0.0 (sec), leaf count = 13

$$\left\{y(x)=\left(1+\_C1\,x+\ln(x)\right)^{-1}\right\}$$

2.109 ODE No. 109

$$\boxed{x\frac{\mathrm{d}}{\mathrm{d}x}y(x)-y(x)\left(2\,y(x)\ln(x)-1\right)=0}$$

Mathematica: cpu = 0.011001 (sec), leaf count = 17

$$\left\{\left\{y(x)\to\frac{1}{c_1x+2\log(x)+2}\right\}\right\}$$

Maple: cpu = 0.015 (sec), leaf count = 15

$$\left\{y(x)=\left(2+\_C1\,x+2\,\ln(x)\right)^{-1}\right\}$$

2.110 ODE No. 110

$$\boxed{x\frac{\mathrm{d}}{\mathrm{d}x}y(x)+f(x)\left((y(x))^2-x^2\right)=0}$$

Mathematica: cpu = 20.763637 (sec), leaf count = 26

$$\text{DSolve}\left[f(x)\left(y(x)^2-x^2\right)+xy'(x)=0,y(x),x\right]$$

Maple: cpu = 0.093 (sec), leaf count = 0

could not solve

2.111 ODE No. 111

$$\boxed{x\frac{\mathrm{d}}{\mathrm{d}x}y(x)+(y(x))^3+3\,x(y(x))^2=0}$$

Mathematica: cpu = 0.272535 (sec), leaf count = 55

$$\text{Solve}\left[-3x=\frac{2e^{\frac{1}{2}\left(\frac{1}{y(x)}-3x\right)^2}}{2c_1+\sqrt{2\pi}\text{erfi}\left(\frac{\frac{1}{y(x)}-3x}{\sqrt{2}}\right)},y(x)\right]$$

Maple: cpu = 0.125 (sec), leaf count = 54

$$\left\{\_C1-\frac{\frac{i}{3}}{x}\mathrm{e}^{\frac{(3\,xy(x)-1)^2}{2\,(y(x))^2}}+\frac{\sqrt{\pi}\sqrt{2}}{2}Erf\left(\frac{(-i+3\,iy(x)\,x)\,\sqrt{2}}{2\,y\,(x)}\right)=0\right\}$$

2.112 ODE No. 112

$$\boxed{x\frac{\mathrm{d}}{\mathrm{d}x}y(x)-\sqrt{(y\,(x))^2+x^2}-y(x)=0}$$

Mathematica: cpu = 0.021503 (sec), leaf count = 13

$$\{\{y(x)\to x\sinh\left(c_1+\log(x)\right)\}\}$$

Maple: cpu = 0.031 (sec), leaf count = 27

$$\left\{\frac{1}{x^2}\sqrt{(y\,(x))^2+x^2}+\frac{y(x)}{x^2}-\_C1=0\right\}$$

2.113 ODE No. 113

$$\boxed{x\frac{\mathrm{d}}{\mathrm{d}x}y(x)+a\sqrt{(y\,(x))^2+x^2}-y(x)=0}$$

Mathematica: cpu = 0.022503 (sec), leaf count = 16

$$\{\{y(x)\to x\sinh\left(c_1-a\log(x)\right)\}\}$$

Maple: cpu = 0.015 (sec), leaf count = 33

$$\left\{\frac{x^a}{x}\sqrt{(y\,(x))^2+x^2}+\frac{x^a y(x)}{x}-\_C1=0\right\}$$

2.114 ODE No. 114

$$\boxed{x\frac{\mathrm{d}}{\mathrm{d}x}y(x)-x\sqrt{\left(y\left(x\right)\right)^{2}+x^{2}}-y(x)=0}$$

Mathematica: cpu = 0.019502 (sec), leaf count = 12

$$\{\{y(x)\to x\sinh\left(c_1+x\right)\}\}$$

Maple: cpu = 0.936 (sec), leaf count = 28

$$\left\{\ln\left(\sqrt{\left(y\left(x\right)\right)^{2}+x^{2}}+y(x)\right)-x-\ln\left(x\right)-\_C1=0\right\}$$

2.115 ODE No. 115

$$\boxed{x\frac{\mathrm{d}}{\mathrm{d}x}y(x)-x(y(x)-x)\sqrt{\left(y\left(x\right)\right)^{2}+x^{2}}-y(x)=0}$$

Mathematica: cpu = 0.123016 (sec), leaf count = 99

$$\left\{\left\{y(x)\to\frac{x\left(-2e^{\sqrt{2}c_1+\frac{x^2}{\sqrt{2}}}+e^{2\sqrt{2}c_1+\sqrt{2}x^2}-1\right)}{2e^{\sqrt{2}c_1+\frac{x^2}{\sqrt{2}}}+e^{2\sqrt{2}c_1+\sqrt{2}x^2}-1}\right\}\right\}$$

Maple: cpu = 0.156 (sec), leaf count = 49

$$\left\{\ln\left(2\,\frac{x\left(\sqrt{2\,\left(y\left(x\right)\right)^{2}+2\,x^{2}}+y(x)+x\right)}{y\left(x\right)-x}\right)+\frac{\sqrt{2}x^{2}}{2}-\ln\left(x\right)-\_C1=0\right\}$$

2.116 ODE No. 116

$$\boxed{x\frac{\mathrm{d}}{\mathrm{d}x}y(x)-x\sqrt{\left(\left(y\left(x\right)\right)^{2}-x^{2}\right)\left(\left(y\left(x\right)\right)^{2}-4\,x^{2}\right)}-y(x)=0}$$

Mathematica: cpu = 0.410552 (sec), leaf count = 143

$$\text{Solve}\left[\frac{2\left(\frac{y(x)}{x}-2\right)^{3/2}\sqrt{-\frac{4}{\frac{y(x)}{x}-2}-1}\sqrt{-\frac{3}{\frac{y(x)}{x}-2}-1}\sqrt{\frac{1}{\frac{y(x)}{x}-2}+1}F\left(\sin^{-1}\left(\frac{\sqrt{-1-\frac{3}{\frac{y(x)}{x}-2}}}{\sqrt{2}}\right)\middle|-8\right)}{\sqrt{\frac{y(x)}{x}-1}\sqrt{\frac{y(x)}{x}+1}\sqrt{\frac{y(x)}{x}+2}}=c_1+\frac{x^2}{2}\right.$$

Maple: cpu = 0.156 (sec), leaf count = 144

$$\left\{\int_{\_b}^{x}1\left(\_a\sqrt{4\_a^4-5\_a^2\left(y\left(x\right)\right)^2+\left(y\left(x\right)\right)^4}+y(x)\right)\frac{1}{\sqrt{4\_a^4-5\_a^2\left(y\left(x\right)\right)^2+\left(y\left(x\right)\right)^4}}\mathrm{d}\_a+\int^{y(x)}$$

2.117 ODE No. 117

$$\boxed{x\frac{\mathrm{d}}{\mathrm{d}x}y(x)-x\mathrm{e}^{\frac{y(x)}{x}}-y(x)-x=0}$$

Mathematica: cpu = 0.024503 (sec), leaf count = 21

$$\left\{\left\{y(x)\to -x\log\left(\frac{e^{-c_1}}{x}-1\right)\right\}\right\}$$

Maple: cpu = 0.078 (sec), leaf count = 20

$$\left\{y(x)=\left(\ln\left(-\frac{x}{-1+x\mathrm{e}^{\_C1}}\right)+\_C1\right)x\right\}$$

2.118 ODE No. 118

$$\boxed{x\frac{\mathrm{d}}{\mathrm{d}x}y(x)-y(x)\ln\left(y(x)\right)=0}$$

Mathematica: cpu = 0.010501 (sec), leaf count = 13

$$\left\{\left\{y(x)\to e^{e^{c_1}x}\right\}\right\}$$

Maple: cpu = 0.047 (sec), leaf count = 8

$$\left\{y(x)=\mathrm{e}^{\mathrm{e}^{\_C1}x}\right\}$$

2.119 ODE No. 119

$$\boxed{x\frac{\mathrm{d}}{\mathrm{d}x}y(x)-y(x)\left(\ln\left(xy(x)\right)-1\right)=0}$$

Mathematica: cpu = 0.029504 (sec), leaf count = 17

$$\left\{\left\{y(x)\to\frac{e^{e^{c_1}x}}{x}\right\}\right\}$$

Maple: cpu = 0.047 (sec), leaf count = 14

$$\left\{y(x)=\frac{1}{x}\mathrm{e}^{\frac{x}{\mathrm{e}^{\_C1}}}\right\}$$

2.120 ODE No. 120

$$\boxed{x\frac{\mathrm{d}}{\mathrm{d}x}y(x)-y(x)\left(x\ln\left(\frac{x^2}{y\left(x\right)}\right)+2\right)=0}$$

Mathematica: cpu = 0.048506 (sec), leaf count = 20

$$\left\{\left\{y(x)\to x^2e^{-2c_1e^{-x}}\right\}\right\}$$

Maple: cpu = 0.125 (sec), leaf count = 17

$$\left\{y(x)=x^2\left(\mathrm{e}^{\frac{-C1}{\mathrm{e}^x}}\right)^{-1}\right\}$$

2.121 ODE No. 121

$$\boxed{x\frac{\mathrm{d}}{\mathrm{d}x}y(x)-\sin\left(x-y(x)\right)=0}$$

Mathematica: cpu = 3.054888 (sec), leaf count = 22

$$\text{DSolve}[xy'(x)-\sin(x-y(x))=0,y(x),x]$$

Maple: cpu = 0.982 (sec), leaf count = 0

could not solve

2.122 ODE No. 122

$$\boxed{x\frac{\mathrm{d}}{\mathrm{d}x}y(x)+\left(\sin\left(y(x)\right)-3\,x^2\cos\left(y(x)\right)\right)\cos\left(y(x)\right)=0}$$

Mathematica: cpu = 0.071509 (sec), leaf count = 21

$$\left\{\left\{y(x)\to\tan^{-1}\left(\frac{c_1+2x^3}{2x}\right)\right\}\right\}$$

Maple: cpu = 0.297 (sec), leaf count = 16

$$\left\{y(x)=\arctan\left(\frac{x^3+2\_C1}{x}\right)\right\}$$

2.123 ODE No. 123

$$\boxed{x\frac{\mathrm{d}}{\mathrm{d}x}y(x)-x\sin\left(\frac{y(x)}{x}\right)-y(x)=0}$$

Mathematica: cpu = 0.058507 (sec), leaf count = 19

$$\left\{\left\{y(x)\to 2x\cot^{-1}\left(\frac{e^{-c_1}}{x}\right)\right\}\right\}$$

Maple: cpu = 0.047 (sec), leaf count = 44

$$\left\{y(x)=\arctan\left(2\,\frac{\_C1\,x}{\_C1^{\,2}x^2+1},-\frac{\_C1^{\,2}x^2-1}{\_C1^{\,2}x^2+1}\right)x\right\}$$

2.124 ODE No. 124

$$\boxed{x\frac{\mathrm{d}}{\mathrm{d}x}y(x)+x\cos\left(\frac{y(x)}{x}\right)-y(x)+x=0}$$

Mathematica: cpu = 0.027003 (sec), leaf count = 16

$$\left\{\left\{y(x)\to 2x\tan^{-1}\left(c_1-\log(x)\right)\right\}\right\}$$

Maple: cpu = 0.015 (sec), leaf count = 12

$$\left\{y(x)=-2\arctan\left(\ln\left(x\right)+\_C1\right)x\right\}$$

2.125 ODE No. 125

$$\boxed{x\frac{\mathrm{d}}{\mathrm{d}x}y(x)+x\tan\left(\frac{y(x)}{x}\right)-y(x)=0}$$

Mathematica: cpu = 0.038505 (sec), leaf count = 16

$$\left\{\left\{y(x)\to x\sin^{-1}\left(\frac{e^{c_1}}{x}\right)\right\}\right\}$$

Maple: cpu = 0.047 (sec), leaf count = 14

$$\left\{y(x)=\arcsin\left(\frac{1}{\_C1\,x}\right)x\right\}$$

2.126 ODE No. 126

$$\boxed{x\frac{\mathrm{d}}{\mathrm{d}x}y(x)-y(x)\,f(xy(x))=0}$$

Mathematica: cpu = 15.028909 (sec), leaf count = 112

$$\text{Solve}\left[\int_1^{y(x)}\left(\frac{1}{K[2](-f(xK[2])-1)}-\int_1^{x}\left(\frac{f'(K[1]K[2])}{f(K[1]K[2])+1}-\frac{f(K[1]K[2])f'(K[1]K[2])}{(f(K[1]K[2])+1)^2}\right)dK[1]\right)dK$$

Maple: cpu = 0.016 (sec), leaf count = 29

$$\left\{y(x)=\frac{1}{x}RootOf\left(-\ln\left(x\right)+\_C1+\int^{-Z}\frac{1}{\_a\left(1+f\left(\_a\right)\right)}d\_a\right)\right\}$$

2.127 ODE No. 127

$$\boxed{x\frac{\mathrm{d}}{\mathrm{d}x}y(x)-y(x)\,f\left(x^a(y(x))^b\right)=0}$$

Mathematica: cpu = 0 (sec), leaf count = 0

Hanged

Maple: cpu = 0.078 (sec), leaf count = 39

$$\left\{\int_{\_b}^{y(x)}\frac{1}{\_a\left(f\left(x^a\_a^b\right)b+a\right)}\,\mathrm{d}\_a-\frac{\ln\left(x\right)}{b}-\_C1=0\right\}$$

2.128 ODE No. 128

$$\boxed{x\frac{\mathrm{d}}{\mathrm{d}x}y(x)+ay(x)-f(x)\,g(x^ay(x))=0}$$

Mathematica: cpu = 5.142653 (sec), leaf count = 39

$$\text{Solve}\left[\int_1^{x^ay(x)}\frac{1}{g(K[1])}\,dK[1]=\int_1^{x}K[2]^{a-1}f(K[2])\,dK[2]+c_1,y(x)\right]$$

Maple: cpu = 0.203 (sec), leaf count = 33

$$\left\{y(x)=\frac{RootOf\left(-\int x^{a-1}f(x)\,\mathrm{d}x+\int^{-Z}\left(g(\_a)\right)^{-1}d\_a+\_C1\right)}{x^a}\right\}$$

2.129 ODE No. 129

$$\boxed{(1+x)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+y(x)\left(y(x)-x\right)=0}$$

Mathematica: cpu = 0.027504 (sec), leaf count = 44

$$\left\{\left\{y(x)\to -\frac{e^{x+1}}{-ec_1x-ec_1-x\mathrm{Ei}(x+1)-\mathrm{Ei}(x+1)+e^{x+1}}\right\}\right\}$$

Maple: cpu = 0.032 (sec), leaf count = 41

$$\left\{y(x)=-\frac{\mathrm{e}^{x}}{\mathrm{e}^{-1}Ei\left(1,-1-x\right)x+\mathrm{e}^{-1}Ei\left(1,-1-x\right)-\_C1\,x+\mathrm{e}^{x}-\_C1}\right\}$$

2.130 ODE No. 130

$$\boxed{2\,x\frac{\mathrm{d}}{\mathrm{d}x}y(x)-y(x)-2\,x^{3}=0}$$

Mathematica: cpu = 0.005501 (sec), leaf count = 21

$$\left\{\left\{y(x)\to c_1\sqrt{x}+\frac{2x^3}{5}\right\}\right\}$$

Maple: cpu = 0.0 (sec), leaf count = 15

$$\left\{y(x)=\frac{2\,x^{3}}{5}+\sqrt{x}\_C1\right\}$$

2.131 ODE No. 131

$$\boxed{\left(2\,x+1\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)-4\,\mathrm{e}^{-y(x)}+2=0}$$

Mathematica: cpu = 0.018002 (sec), leaf count = 21

$$\left\{\left\{y(x)\to \log\left(2-\frac{e^{c_1}}{2x+1}\right)\right\}\right\}$$

Maple: cpu = 0.141 (sec), leaf count = 34

$$\left\{y(x)=-\ln\left(\frac{2\,x+1}{-1+4\,x\mathrm{e}^{2\_C1}+2\,\mathrm{e}^{2\_C1}}\right)-2\,\_C1\right\}$$

2.132 ODE No. 132

$$\boxed{3\,x\frac{\mathrm{d}}{\mathrm{d}x}y(x)-3\,x\ln\left(x\right)\left(y(x)\right)^{4}-y(x)=0}$$

Mathematica: cpu = 0.011001 (sec), leaf count = 115

$$\left\{\left\{y(x)\to\frac{(-2)^{2/3}\sqrt[3]{x}}{\sqrt[3]{4c_1+3x^2-6x^2\log(x)}}\right\},\left\{y(x)\to\frac{2^{2/3}\sqrt[3]{x}}{\sqrt[3]{4c_1+3x^2-6x^2\log(x)}}\right\},\left\{y(x)\to-\frac{\sqrt[3]{-1}2^{2/}}{\sqrt[3]{4c_1+3x^2-}}\right.\right.$$

Maple: cpu = 0.031 (sec), leaf count = 234

$$\left\{y(x)=\frac{1}{6\,x^{2}\ln\left(x\right)-3\,x^{2}-4\_C1}\sqrt[3]{-4\,x\left(6\,x^{2}\ln\left(x\right)-3\,x^{2}-4\_C1\right)^{2}},y(x)=-\frac{1}{12\,x^{2}\ln\left(x\right)-6\,x^{2}-8}\right.$$

2.133 ODE No. 133

$$\boxed{x^{2}\frac{\mathrm{d}}{\mathrm{d}x}y(x)+y(x)-x=0}$$

Mathematica: cpu = 0.007001 (sec), leaf count = 27

$$\left\{\left\{y(x)\to c_1e^{\frac{1}{x}}-e^{\frac{1}{x}}\mathrm{Ei}\left(-\frac{1}{x}\right)\right\}\right\}$$

Maple: cpu = 0.015 (sec), leaf count = 16

$$\left\{y(x)=\left(Ei\left(1,x^{-1}\right)+\_C1\right)\mathrm{e}^{x^{-1}}\right\}$$

2.134 ODE No. 134

$$\boxed{x^{2}\frac{\mathrm{d}}{\mathrm{d}x}y(x)-y(x)+x^{2}\mathrm{e}^{x-x^{-1}}=0}$$

Mathematica: cpu = 0.010501 (sec), leaf count = 27

$$\left\{\left\{y(x)\to c_1e^{-1/x}-e^{x-\frac{1}{x}}\right\}\right\}$$

Maple: cpu = 0.0 (sec), leaf count = 17

$$\left\{y(x)=\left(-\mathrm{e}^{x}+\_C1\right)\mathrm{e}^{-x^{-1}}\right\}$$

2.135 ODE No. 135

$$\boxed{x^2 \frac{\mathrm{d}}{\mathrm{d}x} y(x) - (x-1)\, y(x) = 0}$$

Mathematica: cpu = 0.006501 (sec), leaf count = 14

$$\left\{\left\{y(x) \to c_1 e^{\frac{1}{x}} x\right\}\right\}$$

Maple: cpu = 0.016 (sec), leaf count = 11

$$\left\{y(x) = \_C1\ x \mathrm{e}^{x^{-1}}\right\}$$

2.136 ODE No. 136

$$\boxed{x^2 \frac{\mathrm{d}}{\mathrm{d}x} y(x) + (y(x))^2 + x y(x) + x^2 = 0}$$

Mathematica: cpu = 0.012502 (sec), leaf count = 28

$$\left\{\left\{y(x) \to \frac{-c_1 x - x + x \log(x)}{c_1 - \log(x)}\right\}\right\}$$

Maple: cpu = 0.015 (sec), leaf count = 18

$$\left\{y(x) = -\frac{x(\ln(x) + \_C1 - 1)}{\ln(x) + \_C1}\right\}$$

2.137 ODE No. 137

$$\boxed{x^2 \frac{\mathrm{d}}{\mathrm{d}x} y(x) - (y(x))^2 - x y(x) = 0}$$

Mathematica: cpu = 0.008501 (sec), leaf count = 16

$$\left\{\left\{y(x) \to \frac{x}{c_1 - \log(x)}\right\}\right\}$$

Maple: cpu = 0.0 (sec), leaf count = 15

$$\left\{y(x) = -\frac{x}{\ln(x) - \_C1}\right\}$$

2.138 ODE No. 138

$$\boxed{x^2 \frac{\mathrm{d}}{\mathrm{d}x} y(x) - (y(x))^2 - x y(x) - x^2 = 0}$$

Mathematica: cpu = 0.013502 (sec), leaf count = 13

$$\{\{y(x) \to x \tan (c_1 + \log(x))\}\}$$

Maple: cpu = 0.031 (sec), leaf count = 11

$$\{y(x) = \tan (\ln (x) + \_C1)\, x\}$$

2.139 ODE No. 139

$$\boxed{x^2 \left(\frac{\mathrm{d}}{\mathrm{d}x} y(x) + (y(x))^2 \right) + a x^k - b(b-1) = 0}$$

Mathematica: cpu = 0.131017 (sec), leaf count = 821

$$\left\{ \left\{ y(x) \to -\frac{a^{\frac{b}{k}+\frac{1}{2}\left(\frac{1}{k}-\frac{2b}{k}\right)} \left(\frac{b}{k}+\frac{1}{2}\left(\frac{1}{k}-\frac{2b}{k}\right)\right) x^{k-1} \left(x^k\right)^{\frac{b}{k}+\frac{1}{2}\left(\frac{1}{k}-\frac{2b}{k}\right)-1} J_{\frac{2b-1}{k}}\left(\frac{2\sqrt{a}\sqrt{x^k}}{k}\right) \Gamma\left(\frac{2b}{k}-\frac{1}{k}+1\right) k^{1-\frac{1}{k}} + \frac{1}{2}a \right.\right.$$

Maple: cpu = 0.094 (sec), leaf count = 296

$$\left\{ y(x) = -\frac{\_C1}{x} \sqrt{a} x^{\frac{k}{2}} Y_{\frac{1}{k}\left(\sqrt{(-1+2b)^2}+k\right)}\left(2\frac{\sqrt{a}x^{k/2}}{k}\right) \left(Y_{\frac{1}{k}\sqrt{(-1+2b)^2}}\left(2\frac{\sqrt{a}x^{k/2}}{k}\right) \_C1 + J_{\frac{1}{k}\sqrt{(-1+2b)^2}}\left(2\frac{\sqrt{a}}{}\right.\right.\right.$$

2.140 ODE No. 140

$$\boxed{x^2 \left(\frac{\mathrm{d}}{\mathrm{d}x} y(x) + (y(x))^2 \right) + 4\, x y(x) + 2 = 0}$$

Mathematica: cpu = 0.009501 (sec), leaf count = 17

$$\left\{ \left\{ y(x) \to \frac{1}{c_1 + x} - \frac{2}{x} \right\} \right\}$$

Maple: cpu = 0.032 (sec), leaf count = 23

$$\left\{ y(x) = -\frac{2\,\_C1 - x}{x\,(-x + \_C1)} \right\}$$

2.141 ODE No. 141

$$\boxed{x^2\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)+(y(x))^2\right)+axy(x)+b=0}$$

Mathematica: cpu = 0.026003 (sec), leaf count = 67

$$\left\{\left\{y(x)\to -\frac{\sqrt{a^2-2a-4b+1}\left(\frac{2c_1}{x^{\sqrt{a^2-2a-4b+1}}+c_1}-1\right)-1}{2x}-\frac{a}{2x}\right\}\right\}$$

Maple: cpu = 0.031 (sec), leaf count = 64

$$\left\{y(x)=\frac{1}{2\,x}\left(-\tanh\left(-\frac{\ln\left(x\right)}{2}\sqrt{a^2-2\,a-4\,b+1}+\frac{-C1}{2}\sqrt{a^2-2\,a-4\,b+1}\right)\sqrt{a^2-2\,a-4\,b+1}-a\right.\right.$$

2.142 ODE No. 142

$$\boxed{x^2\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)-(y(x))^2\right)-ax^2y(x)+ax+2=0}$$

Mathematica: cpu = 0.181523 (sec), leaf count = 113

$$\left\{\left\{y(x)\to -\frac{\frac{1}{a^3x^2}+c_1\left(\frac{e^{ax}(a^2x+a(ax-2))}{x}-\frac{e^{ax}(ax(ax-2)+2)}{x^2}+\frac{ae^{ax}(ax(ax-2)+2)}{x}\right)}{\frac{c_1e^{ax}(ax(ax-2)+2)}{x}-\frac{1}{a^3x}}\right\}\right\}$$

Maple: cpu = 0.078 (sec), leaf count = 61

$$\left\{y(x)=-\frac{(a^3x^3-a^2x^2+2\,ax-2)\,\mathrm{e}^{ax}-\_C1}{x\left(\left(a^2x^2-2\,ax+2\right)\mathrm{e}^{ax}+\_C1\right)}\right\}$$

2.143 ODE No. 143

$$\boxed{x^2\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)+a(y(x))^2\right)-b=0}$$

Mathematica: cpu = 0.008501 (sec), leaf count = 51

$$\left\{\left\{y(x)\to -\frac{\sqrt{4ab+1}\left(\frac{2c_1}{x^{\sqrt{4ab+1}}+c_1}-1\right)-1}{2ax}\right\}\right\}$$

Maple: cpu = 0.032 (sec), leaf count = 49

$$\left\{y(x)=\frac{1}{2\,ax}\left(-\tanh\left(-\frac{\ln\left(x\right)}{2}\sqrt{4\,ab+1}+\frac{-C1}{2}\sqrt{4\,ab+1}\right)\sqrt{4\,ab+1}+1\right)\right\}$$

2.144 ODE No. 144

$$\boxed{x^2\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)+a(y(x))^2\right)+bx^\alpha+c=0}$$

Mathematica: cpu = 0.168521 (sec), leaf count = 1712

$$\left\{\left\{y(x)\to \frac{a^{\frac{i\sqrt{4ac-1}\alpha+\alpha}{2\alpha^2}-\frac{i\sqrt{4ac-1}}{2\alpha}}\alpha^{-\frac{i\sqrt{4ac-1}\alpha+\alpha}{\alpha^2}+\frac{i\sqrt{4ac-1}}{\alpha}+1}b^{\frac{i\sqrt{4ac-1}\alpha+\alpha}{2\alpha^2}-\frac{i\sqrt{4ac-1}}{2\alpha}}\left(\frac{i\sqrt{4ac-1}\alpha+\alpha}{2\alpha^2}-\frac{i\sqrt{4ac-1}}{2\alpha}\right)(x^\alpha)^{\frac{i\sqrt{4ac-1}}{2\alpha^2}}\right.\right.\right.$$

Maple: cpu = 0.078 (sec), leaf count = 244

$$\left\{y(x)=-\frac{1}{2\,ax}\left(\left(-\sqrt{-4\,ac+1}\_C1-\_C1\right)Y_{\frac{1}{\alpha}\sqrt{-4\,ac+1}}\left(2\,\frac{\sqrt{ab}x^{\alpha/2}}{\alpha}\right)+2\,x^{\alpha/2}Y_{\frac{\sqrt{-4\,ac+1}+\alpha}{\alpha}}\left(2\,\frac{\sqrt{ab}x^{\alpha/2}}{\alpha}\right)\right.\right.$$

2.145 ODE No. 145

$$\boxed{x^2\frac{\mathrm{d}}{\mathrm{d}x}y(x)+a(y(x))^3-ax^2(y(x))^2=0}$$

Mathematica: cpu = 0.390050 (sec), leaf count = 267

$$\text{Solve}\left[\frac{\left(-\frac{1}{2^{2/3}a^{2/3}y(x)}-\frac{\sqrt[3]{a}x}{2^{2/3}}\right)\text{Ai}\left(\left(-\frac{\sqrt[3]{a}x}{2^{2/3}}-\frac{1}{2^{2/3}a^{2/3}y(x)}\right)^2+\frac{1}{\sqrt[3]{2}\sqrt[3]{a}x}\right)+\text{Ai}'\left(\left(-\frac{\sqrt[3]{a}x}{2^{2/3}}-\frac{1}{2^{2/3}a^{2/3}y(x)}\right)^2+\frac{1}{\sqrt[3]{2}\sqrt[3]{}}\right.\right.$$

Maple: cpu = 0.078 (sec), leaf count = 117

$$\left\{y(x)=-\left(ax+(-2\,a)^{\frac{2}{3}}\,RootOf\left(\text{Bi}\left(\frac{1}{x}\left(\_Z^2\sqrt[3]{-2\,a}x-1\right)\frac{1}{\sqrt[3]{-2\,a}}\right)\_C1\,\_Z+\_Z\,\text{Ai}\left(\frac{1}{x}\left(\_Z^2\sqrt[3]{-2\,a}x\right.\right.\right.\right.$$

2.146 ODE No. 146

$$\boxed{x^2 \frac{\mathrm{d}}{\mathrm{d}x} y(x) + x(y(x))^3 + a(y(x))^2 = 0}$$

Mathematica: cpu = 0.507564 (sec), leaf count = 78

$$\text{Solve}\left[-\frac{ia}{x} = \frac{2e^{\frac{1}{2}\left(-\frac{ia}{x}-\frac{i}{y(x)}\right)^2}}{2c_1 + \sqrt{2\pi}\,\text{erfi}\left(\frac{-\frac{ia}{x}-\frac{i}{y(x)}}{\sqrt{2}}\right)}, y(x)\right]$$

Maple: cpu = 0.141 (sec), leaf count = 82

$$\left\{ \_C1 + \left(x + \frac{a\sqrt{\pi}\sqrt{2}}{2} Erf\left(\frac{\sqrt{2}(ay(x)+x)}{2\,xy\,(x)} \right) \mathrm{e}^{\frac{(ay(x)+x)^2}{2\,x^2(y(x))^2}} \right) \mathrm{e}^{-\frac{((a-x)y(x)+x)((x+a)y(x)+x)}{2\,x^2(y(x))^2}} = 0 \right\}$$

2.147 ODE No. 147

$$\boxed{x^2 \frac{\mathrm{d}}{\mathrm{d}x} y(x) + ax^2(y(x))^3 + b(y(x))^2 = 0}$$

Mathematica: cpu = 0.523066 (sec), leaf count = 343

$$\text{Solve}\left[\frac{\left(\frac{b^{2/3}}{2^{2/3}\sqrt[3]{a}x} + \frac{1}{2^{2/3}\sqrt[3]{a}\sqrt[3]{b}y(x)}\right)\text{Ai}\left(\left(\frac{b^{2/3}}{2^{2/3}\sqrt[3]{a}x} + \frac{1}{2^{2/3}\sqrt[3]{a}y(x)\sqrt[3]{b}}\right)^2 - \frac{\sqrt[3]{a}x}{\sqrt[3]{2}b^{2/3}}\right) + \text{Ai}'\left(\left(\frac{b^{2/3}}{2^{2/3}\sqrt[3]{a}x} + \frac{1}{2^{2/3}\sqrt[3]{a}y(x)\sqrt[3]{b}}\right)\right.}{\left(\frac{b^{2/3}}{2^{2/3}\sqrt[3]{a}x} + \frac{1}{2^{2/3}\sqrt[3]{a}\sqrt[3]{b}y(x)}\right)\text{Bi}\left(\left(\frac{b^{2/3}}{2^{2/3}\sqrt[3]{a}x} + \frac{1}{2^{2/3}\sqrt[3]{a}y(x)\sqrt[3]{b}}\right)^2 - \frac{\sqrt[3]{a}x}{\sqrt[3]{2}b^{2/3}}\right) + \text{Bi}'\left(\left(\frac{b^{2/3}}{2^{2/3}\sqrt[3]{a}x} + \frac{1}{2^{2/3}\sqrt[3]{a}y(x)\sqrt[3]{b}}\right)\right.}$$

Maple: cpu = 0.156 (sec), leaf count = 178

$$\left\{ y(x) = -\sqrt[3]{2}abx\left(\sqrt[3]{2}ab^2 - 2\left(a^2b^2\right)^{2/3} RootOf\left(\text{Bi}\left(-1/2\,\frac{a2^{2/3}x - 2\_Z^2\sqrt[3]{a^2b^2}}{\sqrt[3]{a^2b^2}} \right)\_C1\,\_Z + \_Z\,\text{Ai}\left(-\right.\right.\right.\right.$$

2.148 ODE No. 148

$$\boxed{\left(x^2+1\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+xy(x)-1=0}$$

Mathematica: cpu = 0.012002 (sec), leaf count = 30

$$\left\{\left\{y(x)\to \frac{c_1}{\sqrt{x^2+1}}+\frac{\sinh^{-1}(x)}{\sqrt{x^2+1}}\right\}\right\}$$

Maple: cpu = 0.0 (sec), leaf count = 16

$$\left\{y(x)=(Arcsinh(x)+\_C1)\frac{1}{\sqrt{x^2+1}}\right\}$$

2.149 ODE No. 149

$$\boxed{\left(x^2+1\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+xy(x)-x\left(x^2+1\right)=0}$$

Mathematica: cpu = 0.011001 (sec), leaf count = 27

$$\left\{\left\{y(x)\to \frac{c_1}{\sqrt{x^2+1}}+\frac{1}{3}\left(x^2+1\right)\right\}\right\}$$

Maple: cpu = 0.0 (sec), leaf count = 20

$$\left\{y(x)=\frac{x^2}{3}+\frac{1}{3}+\_C1\frac{1}{\sqrt{x^2+1}}\right\}$$

2.150 ODE No. 150

$$\boxed{\left(x^2+1\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+2\,xy(x)-2\,x^2=0}$$

Mathematica: cpu = 0.008001 (sec), leaf count = 30

$$\left\{\left\{y(x)\to \frac{c_1}{x^2+1}+\frac{2x^3}{3\left(x^2+1\right)}\right\}\right\}$$

Maple: cpu = 0.0 (sec), leaf count = 19

$$\left\{y(x)=\frac{1}{x^2+1}\left(\frac{2\,x^3}{3}+\_C1\right)\right\}$$

2.151 ODE No. 151

$$\boxed{\left(x^2+1\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+\left(\left(y(x)\right)^2+1\right)\left(2\,xy(x)-1\right)=0}$$

Mathematica: cpu = 0.420553 (sec), leaf count = 203

$$\text{Solve}\left[c_1=\frac{\frac{1}{2}\left(\frac{1}{\frac{ix}{x^2+1}-\frac{ix^2y(x)}{x^2+1}}+\frac{i}{x}\right)\sqrt[4]{1-\left(\frac{1}{\frac{ix}{x^2+1}-\frac{ix^2y(x)}{x^2+1}}+\frac{i}{x}\right)^2}\,{}_2F_1\left(\frac{1}{2},\frac{5}{4};\frac{3}{2};\left(\frac{1}{\frac{ix}{x^2+1}-\frac{ix^2y(x)}{x^2+1}}+\frac{i}{x}\right)^2\right)+ix}{\sqrt[4]{-1+\left(\frac{1}{\frac{ix}{x^2+1}-\frac{ix^2y(x)}{x^2+1}}+\frac{i}{x}\right)^2}},y(x)\right]$$

Maple: cpu = 0.047 (sec), leaf count = 85

$$\left\{\_C1+x\frac{1}{\sqrt[4]{\left(x^{-1}+x^2\left(\frac{y(x)x^4}{x^2+1}-\frac{x^3}{x^2+1}\right)^{-1}\right)^2+1}}+\frac{y(x)+x}{2\,xy\left(x\right)-2}{}_2\mathrm{F}_1(\frac{1}{2},\frac{5}{4};\,\frac{3}{2};\,-\frac{\left(y(x)+x\right)^2}{\left(xy\left(x\right)-1\right)^2})=0\right\}$$

2.152 ODE No. 152

$$\boxed{\left(x^2+1\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+x\sin\left(y(x)\right)\cos\left(y(x)\right)-x\left(x^2+1\right)\left(\cos\left(y(x)\right)\right)^2=0}$$

Mathematica: cpu = 0.242031 (sec), leaf count = 40

$$\left\{\left\{y(x)\to\tan^{-1}\left(\frac{-6c_1\sqrt{x^2+1}+x^4+2x^2+1}{3\left(x^2+1\right)}\right)\right\}\right\}$$

Maple: cpu = 0.530 (sec), leaf count = 25

$$\left\{y(x)=\arctan\left(\frac{1}{3}\left(\left(x^2+1\right)^{\frac{3}{2}}+3\_C1\right)\frac{1}{\sqrt{x^2+1}}\right)\right\}$$

2.153 ODE No. 153

$$\boxed{(x^2-1)\frac{\mathrm{d}}{\mathrm{d}x}y(x)-xy(x)+a=0}$$

Mathematica: cpu = 0.016502 (sec), leaf count = 21

$$\left\{\left\{y(x)\to ax+c_1\sqrt{x^2-1}\right\}\right\}$$

Maple: cpu = 0.015 (sec), leaf count = 20

$$\left\{y(x)=\sqrt{1+x}\sqrt{x-1}\_C1+ax\right\}$$

2.154 ODE No. 154

$$\boxed{(x^2-1)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+2xy(x)-\cos(x)=0}$$

Mathematica: cpu = 0.013002 (sec), leaf count = 26

$$\left\{\left\{y(x)\to \frac{c_1}{x^2-1}+\frac{\sin(x)}{x^2-1}\right\}\right\}$$

Maple: cpu = 0.015 (sec), leaf count = 16

$$\left\{y(x)=\frac{\sin(x)+\_C1}{x^2-1}\right\}$$

2.155 ODE No. 155

$$\boxed{(x^2-1)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+(y(x))^2-2xy(x)+1=0}$$

Mathematica: cpu = 0.017002 (sec), leaf count = 46

$$\left\{\left\{y(x)\to \frac{1}{c_1+\frac{1}{2}\log(1-x)-\frac{1}{2}\log(x+1)}-\frac{x(1-x^2)}{x^2-1}\right\}\right\}$$

Maple: cpu = 0.094 (sec), leaf count = 14

$$\left\{y(x)=x+(\_C1-Artanh(x))^{-1}\right\}$$

2.156 ODE No. 156

$$\boxed{\left(x^2-1\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)-y(x)\left(y(x)-x\right)=0}$$

Mathematica: cpu = 0.016002 (sec), leaf count = 21

$$\left\{\left\{y(x)\to\frac{1}{c_1\sqrt{x^2-1}+x}\right\}\right\}$$

Maple: cpu = 0.016 (sec), leaf count = 20

$$\left\{y(x)=\left(\sqrt{x-1}\sqrt{1+x}\_C1+x\right)^{-1}\right\}$$

2.157 ODE No. 157

$$\boxed{\left(x^2-1\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+a\left(\left(y(x)\right)^2-2\,xy(x)+1\right)=0}$$

Mathematica: cpu = 0.086011 (sec), leaf count = 158

$$\left\{\left\{y(x)\to\frac{\left(x^2-1\right)\left(c_1\left(ax(x^2-1)^{\frac{a}{2}-1}P_{a-1}(x)+(x^2-1)^{\frac{a}{2}-1}\left(aP_a(x)-axP_{a-1}(x)\right)\right)+ax(x^2-1)^{\frac{a}{2}-1}Q\right.}{a\left(c_1\left(x^2-1\right)^{a/2}P_{a-1}(x)+(x^2-1)^{a/2}Q_{a-1}(x)\right.}\right.$$

Maple: cpu = 0.188 (sec), leaf count = 231

$$\left\{y(x)=\frac{1}{(4+4\,x)\,a}\left(8\left(\left(a-1/2\right)x-a/2+1/2\right)(1+x)\_C1\,HeunC\left(0,-2\,a+1,0,0,a^2-a+1/2,2\,(1\right.\right.\right.$$

2.158 ODE No. 158

$$\boxed{\left(x^2-1\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+ax(y(x))^2+xy(x)=0}$$

Mathematica: cpu = 0.034004 (sec), leaf count = 31

$$\left\{\left\{y(x)\to-\frac{e^{c_1}}{ae^{c_1}-\sqrt{x^2-1}}\right\}\right\}$$

Maple: cpu = 0.0 (sec), leaf count = 22

$$\left\{y(x)=\left(\sqrt{x-1}\sqrt{1+x}\_C1-a\right)^{-1}\right\}$$

2.159 ODE No. 159

$$\boxed{\left(x^2-1\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)-2\,xy(x)\ln\left(y(x)\right)=0}$$

Mathematica: cpu = 0.017502 (sec), leaf count = 22

$$\left\{\left\{y(x)\to e^{e^{c_1}x^2-e^{c_1}}\right\}\right\}$$

Maple: cpu = 0.078 (sec), leaf count = 13

$$\left\{y(x)=\mathrm{e}^{-C1\,(x-1)(1+x)}\right\}$$

2.160 ODE No. 160

$$\boxed{\left(x^2-4\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+(x+2)\left(y(x)\right)^2-4\,y(x)=0}$$

Mathematica: cpu = 0.019502 (sec), leaf count = 27

$$\left\{\left\{y(x)\to\frac{2-x}{(x+2)\left(c_1-\log(x+2)\right)}\right\}\right\}$$

Maple: cpu = 0.015 (sec), leaf count = 29

$$\left\{y(x)=\frac{x-2}{\ln\left(x+2\right)x+\_C1\,x+2\,\ln\left(x+2\right)+2\,\_C1}\right\}$$

2.161 ODE No. 161

$$\boxed{\left(x^2-5\,x+6\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+3\,xy(x)-8\,y(x)+x^2=0}$$

Mathematica: cpu = 0.013002 (sec), leaf count = 53

$$\left\{\left\{y(x)\to\frac{c_1}{(2-x)^2(3-x)}+\frac{\frac{x^4}{4}-\frac{2x^3}{3}}{(2-x)^2(3-x)}\right\}\right\}$$

Maple: cpu = 0.016 (sec), leaf count = 27

$$\left\{y(x)=\frac{1}{\left(x-2\right)^2\left(x-3\right)}\left(-\frac{x^4}{4}+\frac{2\,x^3}{3}+\_C1\right)\right\}$$

2.162 ODE No. 162

$$\boxed{(x-a)(x-b)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+(y(x))^2+k(y(x)+x-a)(y(x)+x-b)=0}$$

Mathematica: cpu = 0.260533 (sec), leaf count = 133

$$\left\{\left\{y(x)\to \frac{1}{2}\sqrt{\frac{-a^2k^2+2abk^2-b^2k^2}{(k+1)^2}}\tan\left(\frac{(k+1)\sqrt{\frac{-a^2k^2+2abk^2-b^2k^2}{(k+1)^2}}(\log(x-b)-\log(x-a))}{2(a-b)}+c_1\right)-\right.\right.$$

Maple: cpu = 0.125 (sec), leaf count = 128

$$\left\{y(x)=\frac{k}{k+1}\left(\frac{\_C1\,(a-x)^k a}{\_C1\,(a-x)^k+(b-x)^k}-\frac{\_C1\,(a-x)^k x}{\_C1\,(a-x)^k+(b-x)^k}+\frac{(b-x)^k b}{\_C1\,(a-x)^k+(b-x)^k}-\frac{}{\_C}\right.\right.$$

2.163 ODE No. 163

$$\boxed{2x^2\frac{\mathrm{d}}{\mathrm{d}x}y(x)-2(y(x))^2-xy(x)+2a^2x=0}$$

Mathematica: cpu = 0.011001 (sec), leaf count = 43

$$\left\{\left\{y(x)\to -\sqrt{-a^2}\sqrt{x}\tan\left(\frac{2\sqrt{-a^2}}{\sqrt{x}}-c_1\right)\right\}\right\}$$

Maple: cpu = 0.031 (sec), leaf count = 26

$$\left\{y(x)=i\tan\left(1\left(\_C1\sqrt{x}-2ia\right)\frac{1}{\sqrt{x}}\right)\sqrt{x}a\right\}$$

2.164 ODE No. 164

$$\boxed{2x^2\frac{\mathrm{d}}{\mathrm{d}x}y(x)-2(y(x))^2-3xy(x)+2a^2x=0}$$

Mathematica: cpu = 0.082010 (sec), leaf count = 131

$$\left\{\left\{y(x)\to -\frac{x^2\left(c_1\left(\frac{ae^{-\frac{2a}{\sqrt{x}}}}{x}+\frac{e^{-\frac{2a}{\sqrt{x}}}}{2\sqrt{x}}\right)-\frac{e^{\frac{2a}{\sqrt{x}}}}{4a\sqrt{x}}+\frac{e^{\frac{2a}{\sqrt{x}}}}{2x}\right)}{c_1\sqrt{x}e^{-\frac{2a}{\sqrt{x}}}-\frac{\sqrt{x}e^{\frac{2a}{\sqrt{x}}}}{2a}}\right\}\right\}$$

Maple: cpu = 0.156 (sec), leaf count = 102

$$\left\{y(x)=1\left(\left(-2\,x\_C1\,\sqrt{-\frac{a^2}{x}}-x\right)\sin\left(2\sqrt{-\frac{a^2}{x}}\right)-x\left(\_C1-2\sqrt{-\frac{a^2}{x}}\right)\cos\left(2\sqrt{-\frac{a^2}{x}}\right)\right)\left(2\cos\right.\right.$$

2.165 ODE No. 165

$$\boxed{x(2\,x-1)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)+(y(x))^2-(4\,x+1)\,y(x)+4\,x=0}$$

Mathematica: cpu = 0.016502 (sec), leaf count = 22

$$\left\{\left\{y(x)\to\frac{(1-2x)x}{c_1-x}+1\right\}\right\}$$

Maple: cpu = 0.015 (sec), leaf count = 17

$$\left\{y(x)=\frac{2\,x^2+\_C1}{x+\_C1}\right\}$$

2.166 ODE No. 166

$$\boxed{2\,x(x-1)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)+(x-1)\,(y(x))^2-x=0}$$

Mathematica: cpu = 0.082511 (sec), leaf count = 71

$$\left\{\left\{y(x)\to\frac{2x\left(\frac{c_1(E(x)-K(x))}{\pi x}-G^{2,0}_{2,2}\left(x\left|\begin{array}{c}-\frac{1}{2},\frac{1}{2}\\-1,0\end{array}\right.\right)\right)}{G^{2,0}_{2,2}\left(x\left|\begin{array}{c}\frac{1}{2},\frac{3}{2}\\0,0\end{array}\right.\right)+\frac{2c_1E(x)}{\pi}}\right\}\right\}$$

Maple: cpu = 0.109 (sec), leaf count = 97

$$\left\{y(x)=\frac{x}{2\,x-2}\left(LegendreQ\left(-\frac{1}{2},1,\frac{2-x}{x}\right)\_C1-LegendreQ\left(\frac{1}{2},1,\frac{2-x}{x}\right)\_C1+LegendreP\left(-\frac{1}{2},1\right.\right.\right.$$

2.167 ODE No. 167

$$\boxed{3\,x^2\frac{\mathrm{d}}{\mathrm{d}x}y(x)-7\left(y(x)\right)^2-3\,xy(x)-x^2=0}$$

Mathematica: cpu = 0.022003 (sec), leaf count = 35

$$\left\{\left\{y(x)\to\frac{x\tan\left(\frac{1}{3}\left(3\sqrt{7}c_1+\sqrt{7}\log(x)\right)\right)}{\sqrt{7}}\right\}\right\}$$

Maple: cpu = 0.031 (sec), leaf count = 20

$$\left\{y(x)=\frac{x\sqrt{7}}{7}\tan\left(\frac{\left(\ln\left(x\right)+\_C1\right)\sqrt{7}}{3}\right)\right\}$$

2.168 ODE No. 168

$$\boxed{3\left(x^2-4\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+\left(y(x)\right)^2-xy(x)-3=0}$$

Mathematica: cpu = 0.093012 (sec), leaf count = 234

$$\left\{\left\{y(x)\to\frac{3(x^2-4)\left(c_1\left(\frac{xP^{\frac{1}{3}}_{-\frac{1}{6}}\left(\frac{x}{2}\right)}{6(x^2-4)^{11/12}}+\frac{\sqrt[12]{x^2-4}\left(\frac{1}{2}P^{\frac{1}{3}}_{\frac{5}{6}}\left(\frac{x}{2}\right)-\frac{5}{12}xP^{\frac{1}{3}}_{-\frac{1}{6}}\left(\frac{x}{2}\right)\right)}{2\left(\frac{x^2}{4}-1\right)}\right)+\frac{xQ^{\frac{1}{3}}_{-\frac{1}{6}}\left(\frac{x}{2}\right)}{6(x^2-4)^{11/12}}+\frac{\sqrt[12]{x^2-4}\left(\frac{1}{2}Q^{\frac{1}{3}}_{\frac{5}{6}}\left(\frac{x}{2}\right)-\frac{5}{12}x\right.}{2\left(\frac{x^2}{4}-1\right)}\right.}{c_1\sqrt[12]{x^2-4}P^{\frac{1}{3}}_{-\frac{1}{6}}\left(\frac{x}{2}\right)+\sqrt[12]{x^2-4}Q^{\frac{1}{3}}_{-\frac{1}{6}}\left(\frac{x}{2}\right)}\right\}\right\}$$

Maple: cpu = 0.140 (sec), leaf count = 140

$$\left\{y(x)=-3\left(x+2\right)\left(HeunC\left(0,4/3,-1/3,0,\frac{25}{36},4\left(x+2\right)^{-1}\right)\_C1-1/3\left(-x/4-1/2\right)^{4/3}HeunC\left(0,-\right.\right.\right.$$

2.169 ODE No. 169

$$\boxed{(ax+b)^2 \frac{\mathrm{d}}{\mathrm{d}x}y(x) + (ax+b)\left(y(x)\right)^3 + c(y(x))^2 = 0}$$

Mathematica: cpu = 2.095766 (sec), leaf count = 149

$$\text{Solve}\left[-\frac{c}{\sqrt{-a(ax+b)^2}} = \frac{2\exp\left(\frac{1}{2}\left(-\frac{c}{\sqrt{-a(ax+b)^2}} - \frac{\sqrt{-a(ax+b)^2}}{y(x)(-ax-b)}\right)^2\right)}{\sqrt{2\pi}\,\text{erfi}\left(\frac{-\frac{c}{\sqrt{-a(ax+b)^2}} - \frac{\sqrt{-a(ax+b)^2}}{y(x)(-ax-b)}}{\sqrt{2}}\right) + 2c_1}, y(x)\right]$$

Maple: cpu = 0.141 (sec), leaf count = 153

$$\left\{ \_C1 + \left(x + \frac{b}{a} + \frac{c\sqrt{\pi}\sqrt{2}}{2} Erf\left(\frac{\sqrt{2}(a^2x+ab+cy(x))}{2\,(ax+b)\,y\,(x)} \frac{1}{\sqrt{a}} \right) \mathrm{e}^{\frac{\left(a^2x+ab+cy(x)\right)^2}{2\,(y(x))^2(ax+b)^2a}} a^{-\frac{3}{2}} \right) \mathrm{e}^{-\frac{\left(a^2x+axy(x)+ab+by(x)+cy(x)\right.}{2\,(y(x))}} \right.$$

2.170 ODE No. 170

$$\boxed{x^3 \frac{\mathrm{d}}{\mathrm{d}x}y(x) - (y(x))^2 - x^4 = 0}$$

Mathematica: cpu = 0.022003 (sec), leaf count = 43

$$\left\{\left\{y(x) \to -\frac{x^3\left(-\frac{c_1}{x^2} + \frac{1}{x^2} - \frac{\log(x)}{x^2}\right)}{\frac{c_1}{x} + \frac{\log(x)}{x}}\right\}\right\}$$

Maple: cpu = 0.016 (sec), leaf count = 23

$$\left\{y(x) = \frac{x^2(\ln(x) - \_C1 - 1)}{\ln(x) - \_C1}\right\}$$

2.171 ODE No. 171

$$\boxed{x^3 \frac{\mathrm{d}}{\mathrm{d}x} y(x) - (y(x))^2 - x^2 y(x) = 0}$$

Mathematica: cpu = 0.009501 (sec), leaf count = 17

$$\left\{\left\{y(x) \to \frac{x^2}{c_1 x + 1}\right\}\right\}$$

Maple: cpu = 0.0 (sec), leaf count = 15

$$\left\{y(x) = \frac{x^2}{\_C1\, x + 1}\right\}$$

2.172 ODE No. 172

$$\boxed{x^3 \frac{\mathrm{d}}{\mathrm{d}x} y(x) - x^4 (y(x))^2 + x^2 y(x) + 20 = 0}$$

Mathematica: cpu = 0.040505 (sec), leaf count = 35

$$\left\{\left\{y(x) \to -\frac{5 c_1 x^4 - \frac{4}{x^5}}{x \left(c_1 x^5 + \frac{1}{x^4}\right)}\right\}\right\}$$

Maple: cpu = 0.203 (sec), leaf count = 26

$$\left\{y(x) = \frac{5\, x^9 + 4\, \_C1}{(-x^9 + \_C1)\, x^2}\right\}$$

2.173 ODE No. 173

$$\boxed{x^3 \frac{\mathrm{d}}{\mathrm{d}x} y(x) - x^6 (y(x))^2 - (2\, x - 3)\, x^2 y(x) + 3 = 0}$$

Mathematica: cpu = 0.016002 (sec), leaf count = 29

$$\left\{\left\{y(x) \to \frac{1}{x^3 \left(c_1 e^{4x} + \frac{1}{4}\right)} - \frac{3}{x^3}\right\}\right\}$$

Maple: cpu = 0.031 (sec), leaf count = 27

$$\left\{y(x) = -3\, \frac{(\mathrm{e}^x)^4\, \_C1 + 1}{x^3 \left((\mathrm{e}^x)^4\, \_C1 - 3\right)}\right\}$$

2.174 ODE No. 174

$$\boxed{x\left(x^2+1\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+x^2y(x)=0}$$

Mathematica: cpu = 0.006001 (sec), leaf count = 17

$$\left\{\left\{y(x)\to\frac{c_1}{\sqrt{x^2+1}}\right\}\right\}$$

Maple: cpu = 0.0 (sec), leaf count = 13

$$\left\{y(x)=\_C1\frac{1}{\sqrt{x^2+1}}\right\}$$

2.175 ODE No. 175

$$\boxed{x\left(x^2-1\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)-\left(2\,x^2-1\right)y(x)+ax^3=0}$$

Mathematica: cpu = 0.020002 (sec), leaf count = 24

$$\left\{\left\{y(x)\to ax+c_1\sqrt{1-x^2}x\right\}\right\}$$

Maple: cpu = 0.031 (sec), leaf count = 21

$$\left\{y(x)=x\sqrt{1+x}\sqrt{x-1}\_C1+ax\right\}$$

2.176 ODE No. 176

$$\boxed{x\left(x^2-1\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+\left(x^2-1\right)\left(y(x)\right)^2-x^2=0}$$

Mathematica: cpu = 0.123516 (sec), leaf count = 82

$$\left\{\left\{y(x)\to\frac{x\left(\frac{2c_1\left(E\left(x^2\right)-K\left(x^2\right)\right)}{\pi x}-2xG_{2,2}^{2,0}\left(x^2\middle|\begin{matrix}-\frac{1}{2},\frac{1}{2}\\-1,0\end{matrix}\right)\right)}{G_{2,2}^{2,0}\left(x^2\middle|\begin{matrix}\frac{1}{2},\frac{3}{2}\\0,0\end{matrix}\right)+\frac{2c_1E\left(x^2\right)}{\pi}}\right\}\right\}$$

Maple: cpu = 0.078 (sec), leaf count = 45

$$\left\{y(x)=-\frac{EllipticK(x)}{\_C1\,EllipticCE\left(x\right)-\_C1\,EllipticCK\left(x\right)+EllipticE\left(x\right)}+\frac{\_C1\,EllipticCE(x)}{\_C1\,EllipticCE\left(x\right)-\_C1\,Elli}\right.$$

2.177 ODE No. 177

$$\boxed{x^2(x-1)\frac{\mathrm{d}}{\mathrm{d}x}y(x)-(y(x))^2-x(x-2)\,y(x)=0}$$

Mathematica: cpu = 0.016002 (sec), leaf count = 22

$$\left\{\left\{y(x)\to -\frac{x^2}{c_1 x-c_1-1}\right\}\right\}$$

Maple: cpu = 0.015 (sec), leaf count = 18

$$\left\{y(x)=\frac{x^2}{\_C1\,x-\_C1+1}\right\}$$

2.178 ODE No. 178

$$\boxed{2\,x\left(x^2-1\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+2\left(x^2-1\right)(y(x))^2-\left(3\,x^2-5\right)y(x)+x^2-3=0}$$

Mathematica: cpu = 0.068009 (sec), leaf count = 62

$$\left\{\left\{y(x)\to \frac{\sqrt{x}}{\sqrt{1-x^2}\left(c_1-\frac{2\sqrt{1-\frac{1}{x^2}}xF\left(\sin^{-1}\left(\frac{1}{\sqrt{x}}\right)\middle|-1\right)}{\sqrt{1-x^2}}\right)}+1\right\}\right\}$$

Maple: cpu = 0.110 (sec), leaf count = 63

$$\left\{y(x)=1-2\,\frac{\sqrt{x}}{\sqrt{x-1}\sqrt{1+x}}\left(\_C1-2\,\frac{EllipticF\left(\sqrt{1+x},1/2\,\sqrt{2}\right)\sqrt{-x}\sqrt{-2\,x+2}\sqrt{2}}{\sqrt{2\,x-2}\sqrt{x}}\right)^{-1}\right\}$$

2.179 ODE No. 179

$$\boxed{3\,x\left(x^2-1\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+x(y(x))^2-\left(x^2+1\right)y(x)-3\,x=0}$$

Mathematica: cpu = 1.566699 (sec), leaf count = 2816

$$\left\{\left\{y(x)\to 3(x^2-1)\left(\frac{e^{\int_1^x \text{Root}\left[125K[1]^8-164K[1]^6+70K[1]^4-20K[1]^2+\left(1296K[1]^{12}-5184K[1]^{10}+7776K[1]^8-5184K[1]^6+1296K[1]^4\right)\#1^4+\left(-3\right.\right.\right.}}{}\right.\right.\right.$$

Maple: cpu = 0.109 (sec), leaf count = 145

$$\left\{y(x)=\frac{35\_C1\,x^4-35\_C1\,x^2}{8}{}_2\mathrm{F}_1(\frac{11}{6},\frac{13}{6};\,\frac{7}{3};\,x^2)\frac{1}{\sqrt[3]{x}}\left(x^{\frac{2}{3}}{}_2\mathrm{F}_1(\frac{5}{6},\frac{7}{6};\,\frac{4}{3};\,x^2)\_C1+{}_2\mathrm{F}_1(\frac{1}{2},\frac{5}{6};\,\frac{2}{3};\,x^2)\right)^{-1}\right.$$

2.180 ODE No. 180

$$\boxed{(ax^2+bx+c)\left(x\frac{\mathrm{d}}{\mathrm{d}x}y(x)-y(x)\right)-(y(x))^2+x^2=0}$$

Mathematica: cpu = 0.123016 (sec), leaf count = 132

$$\left\{\left\{y(x)\to-\frac{x\left(\exp\left(\frac{4\tan^{-1}\left(\frac{2ax}{\sqrt{4ac-b^2}}+\frac{b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}}+2c_1\right)-1\right)}{\exp\left(\frac{4\tan^{-1}\left(\frac{2ax}{\sqrt{4ac-b^2}}+\frac{b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}}+2c_1\right)+1}\right\}\right\}$$

Maple: cpu = 0.047 (sec), leaf count = 58

$$\left\{y(x)=-\tanh\left(1\left(\_C1\,\sqrt{4\,ac-b^2}+2\,\arctan\left(\frac{2\,ax+b}{\sqrt{4\,ac-b^2}}\right)\right)\frac{1}{\sqrt{4\,ac-b^2}}\right)x\right\}$$

2.181 ODE No. 181

$$\boxed{x^4\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)+(y(x))^2\right)+a=0}$$

Mathematica: cpu = 0.011501 (sec), leaf count = 347

$$\left\{\left\{y(x)\to-\frac{\frac{i\sqrt{\frac{2}{\pi}}c_1\sinh\left(\frac{\sqrt{-a}}{x}\right)}{\sqrt{-\frac{i\sqrt{-a}}{x}}}+\frac{i\sqrt{-a}\left(-\frac{\sqrt{\frac{2}{\pi}}c_1\cosh\left(\frac{\sqrt{-a}}{x}\right)}{\sqrt{-\frac{i\sqrt{-a}}{x}}}+\frac{\sqrt{\frac{2}{\pi}}c_1\left(-\frac{\sqrt{-a}x\sinh\left(\frac{\sqrt{-a}}{x}\right)}{a}-\cosh\left(\frac{\sqrt{-a}}{x}\right)\right)}{\sqrt{-\frac{i\sqrt{-a}}{x}}}-\frac{2\sqrt{\frac{2}{\pi}}\left(i\sinh\left(\frac{\sqrt{-a}}{x}\right)+\frac{i\sqrt{-a}}{\sqrt{-\frac{i\sqrt{-a}}{x}}}\right.\right.\right.}{x}}{2x\left(\frac{\sqrt{\frac{2}{\pi}}\cosh\left(\frac{\sqrt{-a}}{x}\right)}{\sqrt{-\frac{i\sqrt{-a}}{x}}}-\frac{i\sqrt{\frac{2}{\pi}}c_1\sinh\left(\frac{\sqrt{-a}}{x}\right)}{\sqrt{-\frac{i\sqrt{-a}}{x}}}\right)}\right\}\right\}$$

Maple: cpu = 0.063 (sec), leaf count = 30

$$\left\{y(x)=-\frac{1}{x^2}\left(\tan\left(\frac{\_C1\,x-1}{x}\sqrt{a}\right)\sqrt{a}-x\right)\right\}$$

2.182 ODE No. 182

$$x\left(x^{3}-1\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)-2\,x(y(x))^{2}+y(x)+x^{2}=0$$

Mathematica: cpu = 0.175022 (sec), leaf count = 96

$$\left\{\left\{y(x)\to -\frac{\left(x^3-1\right)\left(\frac{2c_1x^2}{(1-x^3)^{5/3}}+\frac{x}{(1-x^3)^{2/3}}+\frac{x^4}{(1-x^3)^{5/3}}\right)}{2\left(\frac{c_1}{(1-x^3)^{2/3}}+\frac{x^2}{2(1-x^3)^{2/3}}\right)}\right\}\right\}$$

Maple: cpu = 0.093 (sec), leaf count = 18

$$\left\{y(x)=\frac{x(x+\_C1)}{\_C1\;x^{2}+1}\right\}$$

2.183 ODE No. 183

$$\left(2\,x^{4}-x\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)-2\left(x^{3}-1\right)y(x)=0$$

Mathematica: cpu = 0.014002 (sec), leaf count = 22

$$\left\{\left\{y(x)\to \frac{c_1x^2}{\sqrt[3]{1-2x^3}}\right\}\right\}$$

Maple: cpu = 0.0 (sec), leaf count = 18

$$\left\{y(x)=\_C1\;x^{2}\frac{1}{\sqrt[3]{2\,x^{3}-1}}\right\}$$

2.184 ODE No. 184

$$\left(ax^{2}+bx+c\right)^{2}\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)+(y(x))^{2}\right)+A=0$$

Mathematica: cpu = 1.467686 (sec), leaf count = 704

$$\left\{\left\{y(x)\to -\frac{-\frac{2a\sqrt{ax^2+bx+c}\exp\left(-\frac{\sqrt{4ac-b^2}\sqrt{1-\frac{4A}{b^2-4ac}}\tan^{-1}\left(\frac{2ax+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{b^2-4ac}}\right)}{(b^2-4ac)\left(\frac{(2ax+b)^2}{4ac-b^2}+1\right)}+\frac{(2ax+b)\exp\left(-\frac{\sqrt{4ac-b^2}\sqrt{1-\frac{4A}{b^2-4ac}}\tan^{-1}\left(\frac{2ax+b}{\sqrt{4ac-b^2}}\cdots\right.}{\sqrt{b^2-4ac}}\cdots}{2\sqrt{b^2-4ac}\sqrt{1-\frac{4A}{b^2-4ac}}\sqrt{ax^2+bx+c}}\cdots}{c_1\sqrt{x(ax+b)+c}\left(-\exp\left(\frac{\sqrt{4ac-b^2}\sqrt{1-\frac{4A}{b^2-4ac}}\,\mathrm{t}\cdots}{\sqrt{b^2-4\cdots}}\right.\right.}\right.\right.$$

Maple: cpu = 0.234 (sec), leaf count = 846

$$\left\{ y(x) = -2\,\frac{a}{\sqrt{-4\,ac+b^2}\left(2\,ax+b+i\sqrt{4\,ac-b^2}\right)\left(i\sqrt{4\,ac-b^2}-2\,ax-b\right)}\left(-i\sqrt{4\,ac-b^2}\left(\frac{i\sqrt{4\,ac-b^2}}{2\,ax+b+i}\right.\right.\right.$$

2.185 ODE No. 185

$$\boxed{x^7\frac{\mathrm{d}}{\mathrm{d}x}y(x)+2\left(x^2+1\right)\left(y(x)\right)^3+5\,x^3(y(x))^2=0}$$

Mathematica: cpu = 0.375548 (sec), leaf count = 123

$$\text{Solve}\left[c_1=\frac{\frac{1}{2}\sqrt[4]{1-\left(\frac{ix^2}{y(x)}+\frac{i}{x}\right)^2}\left(\frac{ix^2}{y(x)}+\frac{i}{x}\right)\,{}_2F_1\left(\frac{1}{2},\frac{5}{4};\frac{3}{2};\left(\frac{ix^2}{y(x)}+\frac{i}{x}\right)^2\right)+ix}{\sqrt[4]{-1+\left(\frac{ix^2}{y(x)}+\frac{i}{x}\right)^2}},y(x)\right]$$

Maple: cpu = 0.031 (sec), leaf count = 63

$$\left\{ \_C1+x\frac{1}{\sqrt[4]{\left(x^{-1}+\frac{x^2}{y(x)}\right)^2+1}}+\frac{x^3+y(x)}{2\,xy\left(x\right)}{}_2\mathrm{F}_1(\frac{1}{2},\frac{5}{4};\,\frac{3}{2};\,-\frac{\left(x^3+y(x)\right)^2}{x^2\left(y\left(x\right)\right)^2})=0 \right\}$$

2.186 ODE No. 186

$$\boxed{x^n\frac{\mathrm{d}}{\mathrm{d}x}y(x)+\left(y(x)\right)^2-\left(n-1\right)x^{n-1}y(x)+x^{2\,n-2}=0}$$

Mathematica: cpu = 0.029004 (sec), leaf count = 19

$$\left\{\left\{y(x)\to x^{n-1}\tan\left(c_1-\log(x)\right)\right\}\right\}$$

Maple: cpu = 0.031 (sec), leaf count = 17

$$\left\{y(x)=\tan\left(-\ln\left(x\right)+\_C1\right)x^{n-1}\right\}$$

2.187 ODE No. 187

$$x^n \frac{\mathrm{d}}{\mathrm{d}x} y(x) - a(y(x))^2 - b x^{2n-2} = 0$$

Mathematica: cpu = 0.070009 (sec), leaf count = 328

$$\left\{\left\{y(x) \to -\frac{x^n \left(\frac{1}{2}\sqrt{a}\sqrt{b}c_1 \left(-\frac{n-1}{\sqrt{a}\sqrt{b}} - \sqrt{\frac{(n-1)^2}{ab} - 4}\right) x^{\frac{1}{2}\sqrt{a}\sqrt{b}\left(-\frac{n-1}{\sqrt{a}\sqrt{b}} - \sqrt{\frac{(n-1)^2}{ab}-4}\right)-1} + \frac{1}{2}\sqrt{a}\sqrt{b}\left(\sqrt{\frac{(n-1)^2}{ab}} - \right.\right.}{a\left(c_1 x^{\frac{1}{2}\sqrt{a}\sqrt{b}\left(-\frac{n-1}{\sqrt{a}\sqrt{b}} - \sqrt{\frac{(n-1)^2}{ab}-4}\right)} + x^{\frac{1}{2}\sqrt{a}\sqrt{b}\left(\sqrt{\frac{(n-1)^2}{ab}-4} - \frac{n-}{\sqrt{a}\sqrt{}}\right.}\right.}\right.\right.$$

Maple: cpu = 0.047 (sec), leaf count = 88

$$\left\{y(x) = \frac{1}{2a}\left(-x^{n-1}\tan\left(-\frac{\ln(x)}{2}\sqrt{4ab - n^2 + 2n - 1} + \frac{\_C1}{2}\sqrt{4ab - n^2 + 2n - 1}\right)\sqrt{4ab - n^2 + 2n -}\right.\right.$$

2.188 ODE No. 188

$$x^{2n+1} \frac{\mathrm{d}}{\mathrm{d}x} y(x) - a(y(x))^3 - b x^{3n} = 0$$

Mathematica: cpu = 21.064175 (sec), leaf count = 33

$$\mathrm{DSolve}\left[-ay(x)^3 - bnx^3 + x^{2n+1}y'(x) = 0, y(x), x\right]$$

Maple: cpu = 0.031 (sec), leaf count = 32

$$\left\{y(x) = \mathit{RootOf}\left(-\ln(x) + \_C1 + \int^{\_Z} \left(\_a^3 a - n\_a + b\right)^{-1} d\_a\right) x^n\right\}$$

2.189 ODE No. 189

$$x^{m(n-1)+n} \frac{\mathrm{d}}{\mathrm{d}x} y(x) - a(y(x))^n - b x^{n(m+1)} = 0$$

Mathematica: cpu = 59.178515 (sec), leaf count = 90

$$\mathrm{Solve}\left[\int_1^{y(x)\left(\frac{ax^{-(m+1)n}}{b}\right)^{\frac{1}{n}}} \frac{1}{-K[1]\left(\frac{b^{1-n}(m+1)^n}{a}\right)^{\frac{1}{n}} + K[1]^n + 1} dK[1] = bx^{m+1}\log(x)\left(\frac{ax^{-(m+1)n}}{b}\right)^{\frac{1}{n}} + c_1, y\right.$$

Maple: cpu = 0.187 (sec), leaf count = 61

$$\left\{\int_{\_b}^{y(x)} \frac{x^{mn}x^n}{-x^n\left(x^m x b - (m+1)\_a\right)x^{mn} - \_a^n x^m x a} d\_a + \ln(x) - \_C1 = 0\right\}$$

2.190 ODE No. 190

$$\boxed{\sqrt{x^2-1}\frac{\mathrm{d}}{\mathrm{d}x}y(x)-\sqrt{(y(x))^2-1}=0}$$

Mathematica: cpu = 0.052007 (sec), leaf count = 55

$$\left\{\left\{y(x)\to \frac{1}{2}\left(-e^{-c_1}\sqrt{x^2-1}+e^{c_1}\sqrt{x^2-1}+e^{-c_1}x+e^{c_1}x\right)\right\}\right\}$$

Maple: cpu = 0.0 (sec), leaf count = 29

$$\left\{\ln\left(x+\sqrt{x^2-1}\right)-\ln\left(y(x)+\sqrt{(y(x))^2-1}\right)+\_C1=0\right\}$$

2.191 ODE No. 191

$$\boxed{\sqrt{-x^2+1}\frac{\mathrm{d}}{\mathrm{d}x}y(x)-y(x)\sqrt{(y(x))^2-1}=0}$$

Mathematica: cpu = 0.030004 (sec), leaf count = 52

$$\left\{\left\{y(x)\to \sqrt{\tan^2(c_1+\sin^{-1}(x))+1}\left(-\cot\left(c_1+\sin^{-1}(x)\right)\right)\right\},\left\{y(x)\to \sqrt{\tan^2(c_1+\sin^{-1}(x))+1}\cot(\right.\right.$$

Maple: cpu = 0.015 (sec), leaf count = 16

$$\left\{\arcsin(x)+\arctan\left(\frac{1}{\sqrt{(y(x))^2-1}}\right)+\_C1=0\right\}$$

2.192 ODE No. 192

$$\boxed{\sqrt{a^2+x^2}\frac{\mathrm{d}}{\mathrm{d}x}y(x)+y(x)-\sqrt{a^2+x^2}+x=0}$$

Mathematica: cpu = 0.027504 (sec), leaf count = 57

$$\left\{\left\{y(x)\to \frac{c_1}{\sqrt{a^2+x^2}+x}+\frac{a^2\log\left(\sqrt{a^2+x^2}+x\right)}{\sqrt{a^2+x^2}+x}\right\}\right\}$$

Maple: cpu = 0.016 (sec), leaf count = 36

$$\left\{y(x)=1\left(a^2\ln\left(x+\sqrt{a^2+x^2}\right)+\_C1\right)\left(x+\sqrt{a^2+x^2}\right)^{-1}\right\}$$

2.193 ODE No. 193

$$\boxed{x\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)\ln(x)+y(x)-ax(\ln(x)+1)=0}$$

Mathematica: cpu = 0.007501 (sec), leaf count = 16

$$\left\{\left\{y(x)\to ax+\frac{c_1}{\log(x)}\right\}\right\}$$

Maple: cpu = 0.0 (sec), leaf count = 14

$$\left\{y(x)=ax+\frac{\_C1}{\ln(x)}\right\}$$

2.194 ODE No. 194

$$\boxed{x\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)\ln(x)-(y(x))^2\ln(x)-\left(2(\ln(x))^2+1\right)y(x)-(\ln(x))^3=0}$$

Mathematica: cpu = 0.075510 (sec), leaf count = 98

$$\left\{\left\{y(x)\to -\frac{x\left(\frac{c_1e^{\frac{\log^2(x)}{2}}\log(x)}{x}+\frac{e^{\frac{\log^2(x)}{2}}\log(x)}{x}+\frac{e^{\frac{\log^2(x)}{2}}\log^3(x)}{2x}\right)}{c_1e^{\frac{\log^2(x)}{2}}+\frac{1}{2}e^{\frac{\log^2(x)}{2}}\log^2(x)}\right\}\right\}$$

Maple: cpu = 0.015 (sec), leaf count = 23

$$\left\{y(x)=-\frac{\ln(x)\left((\ln(x))^2+\_C1+2\right)}{(\ln(x))^2+\_C1}\right\}$$

2.195 ODE No. 195

$$\boxed{\sin(x)\frac{\mathrm{d}}{\mathrm{d}x}y(x)-(y(x))^2(\sin(x))^2+(\cos(x)-3\sin(x))y(x)+4=0}$$

Mathematica: cpu = 0.057507 (sec), leaf count = 27

$$\left\{\left\{y(x)\to\frac{\csc(x)}{c_1e^{5x}+\frac{1}{5}}-4\csc(x)\right\}\right\}$$

Maple: cpu = 0.093 (sec), leaf count = 28

$$\left\{y(x)=-4\frac{(\mathrm{e}^x)^5\_C1+1}{\sin(x)\left((\mathrm{e}^x)^5\_C1-4\right)}\right\}$$

2.196 ODE No. 196

$$\boxed{\cos(x)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+y(x)+(1+\sin(x))\cos(x)=0}$$

Mathematica: cpu = 0.054007 (sec), leaf count = 53

$$\left\{\left\{y(x)\to c_1 e^{-2\tanh^{-1}\left(\tan\left(\frac{x}{2}\right)\right)}+e^{-2\tanh^{-1}\left(\tan\left(\frac{x}{2}\right)\right)}\left(\sin(x)+4\log\left(\cos\left(\frac{x}{2}\right)-\sin\left(\frac{x}{2}\right)\right)\right)\right\}\right\}$$

Maple: cpu = 0.062 (sec), leaf count = 29

$$\left\{y(x)=\frac{\sin(x)+2\ln(\cos(x))-2\ln(\sec(x)+\tan(x))+\_C1}{\sec(x)+\tan(x)}\right\}$$

2.197 ODE No. 197

$$\boxed{\cos(x)\frac{\mathrm{d}}{\mathrm{d}x}y(x)-(y(x))^4-y(x)\sin(x)=0}$$

Mathematica: cpu = 0.041005 (sec), leaf count = 98

$$\left\{\left\{y(x)\to\frac{1}{\sqrt[3]{c_1\cos^3(x)-\sin(x)-2\sin(x)\cos^2(x)}}\right\},\left\{y(x)\to-\frac{\sqrt[3]{-1}}{\sqrt[3]{c_1\cos^3(x)-\sin(x)-2\sin(x)\cos^2(x}}\right.\right.$$

Maple: cpu = 0.031 (sec), leaf count = 364

$$\left\{y(x)=\frac{1}{\_C1\ (\sin(x))^4+2\cos(x)(\sin(x))^3-2\_C1\ (\sin(x))^2-3\cos(x)\sin(x)+\_C1}\sqrt[3]{\cos(x)\ (\_C\right.$$

2.198 ODE No. 198

$$\boxed{\sin(x)\cos(x)\frac{\mathrm{d}}{\mathrm{d}x}y(x)-y(x)-(\sin(x))^3=0}$$

Mathematica: cpu = 0.024503 (sec), leaf count = 15

$$\{\{y(x)\to c_1\tan(x)-\sin(x)\}\}$$

Maple: cpu = 0.0 (sec), leaf count = 15

$$\{y(x)=-\cos(x)\tan(x)+\tan(x)\_C1\}$$

2.199 ODE No. 199

$$\boxed{\sin(2x)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+\sin(2y(x))=0}$$

Mathematica: cpu = 0.185024 (sec), leaf count = 15

$$\left\{\left\{y(x)\to \cot^{-1}\left(e^{-2c_1}\tan(x)\right)\right\}\right\}$$

Maple: cpu = 0.125 (sec), leaf count = 100

$$\left\{y(x)=\frac{1}{2}\arctan\left(2\,\frac{\_C1\,(2\sin(2x)+\sin(4x))}{-\_C1^{2}\cos(4x)+\_C1^{2}+4\cos(2x)+\cos(4x)+3},-\frac{\_C1^{2}\cos(4x)-\_C1^{2}+\right.\right.$$
$$\left.\left.-\_C1^{2}\cos(4x)+\_C1^{2}-\right.\right.$$

2.200 ODE No. 200

$$\boxed{\left(a(\sin(x))^2+b\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+ay(x)\sin(2x)+Ax\left(a(\sin(x))^2+c\right)=0}$$

Mathematica: cpu = 0.050506 (sec), leaf count = 77

$$\left\{\left\{y(x)\to \frac{\frac{1}{2}aAx^2-\frac{1}{2}aAx\sin(2x)-\frac{1}{4}aA\cos(2x)+Acx^2}{a\cos(2x)-a-2b}+\frac{c_1}{a\cos(2x)-a-2b}\right\}\right\}$$

Maple: cpu = 0.032 (sec), leaf count = 56

$$\left\{y(x)=\frac{-2\,A\sin(2x)\,ax+2\,Aax^2+4\,Acx^2-A\cos(2x)\,a-8\,\_C1}{4\,a\cos(2x)-4\,a-8\,b}\right\}$$

2.201 ODE No. 201

$$\boxed{2f(x)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+2f(x)(y(x))^2-\left(\frac{\mathrm{d}}{\mathrm{d}x}f(x)\right)y(x)-2(f(x))^2=0}$$

Mathematica: cpu = 0.077510 (sec), leaf count = 38

$$\left\{\left\{y(x)\to i\sqrt{f(x)}\tan\left(c_1+i\int_1^x-\sqrt{f(K[1])}\,dK[1]\right)\right\}\right\}$$

Maple: cpu = 0.031 (sec), leaf count = 23

$$\left\{y(x)=i\tan\left(-i\int\sqrt{f(x)}\,\mathrm{d}x+\_C1\right)\sqrt{f(x)}\right\}$$

2.202 ODE No. 202

$$\boxed{f(x)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+g(x)\,tg(y(x))+h(x)=0}$$

Mathematica: cpu = 20.512605 (sec), leaf count = 22

$$\text{DSolve}[f(x)y'(x)+g(x)\text{tg}(y(x))+h(x)=0,y(x),x]$$

Maple: cpu = 0.172 (sec), leaf count = 0

could not solve

2.203 ODE No. 203

$$\boxed{y(x)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+y(x)+x^3=0}$$

Mathematica: cpu = 3.318922 (sec), leaf count = 19

$$\text{DSolve}\left[x^3+y(x)y'(x)+y(x)=0,y(x),x\right]$$

Maple: cpu = 1.779 (sec), leaf count = 0

could not solve

2.204 ODE No. 204

$$\boxed{y(x)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+ay(x)+x=0}$$

Mathematica: cpu = 0.096512 (sec), leaf count = 70

$$\text{Solve}\left[\frac{1}{2}\log\left(\frac{ay(x)}{x}+\frac{y(x)^2}{x^2}+1\right)-\frac{a\tan^{-1}\left(\frac{a+\frac{2y(x)}{x}}{\sqrt{4-a^2}}\right)}{\sqrt{4-a^2}}=c_1-\log(x),y(x)\right]$$

Maple: cpu = 0.218 (sec), leaf count = 88

$$\left\{y(x)=RootOf\left(\_Z^2-\mathrm{e}^{RootOf\left(x^2\left(\left(\tanh\left(\frac{2\_C1+\_Z+2\ln(x)}{2a}\sqrt{a^2-4}\right)\right)^2a^2-4\left(\tanh\left(1/2\frac{\sqrt{a^2-4}(2\_C1+\_Z+2\ln(x))}{a}\right)\right)^2-a^2-4\right.\right.\right.\right.$$

2.205 ODE No. 205

$$\boxed{y(x)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+ay(x)+1/4\left(a^2-1\right)x+bx^n=0}$$

Mathematica: cpu = 24.751143 (sec), leaf count = 33

$$\text{DSolve}\left[\frac{1}{4}\left(a^2-1\right)x+ay(x)+bx^n+y(x)y'(x)=0,y(x),x\right]$$

Maple: cpu = 0.967 (sec), leaf count = 0

could not solve

2.206 ODE No. 206

$$\boxed{y(x)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+ay(x)+b\mathrm{e}^x-2\,a=0}$$

Mathematica: cpu = 30.060317 (sec), leaf count = 26

$$\text{DSolve}[ay(x)-2a+be^x+y(x)y'(x)=0,y(x),x]$$

Maple: cpu = 0.780 (sec), leaf count = 0

could not solve

2.207 ODE No. 207

$$\boxed{y(x)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+\left(y(x)\right)^2+4\,x(1+x)=0}$$

Mathematica: cpu = 0.010501 (sec), leaf count = 47

$$\left\{\left\{y(x)\to-\sqrt{c_1e^{-2x}-4x^2}\right\},\left\{y(x)\to\sqrt{c_1e^{-2x}-4x^2}\right\}\right\}$$

Maple: cpu = 0.016 (sec), leaf count = 37

$$\left\{y(x)=\sqrt{\mathrm{e}^{-2\,x}\_C1-4\,x^2},y(x)=-\sqrt{\mathrm{e}^{-2\,x}\_C1-4\,x^2}\right\}$$

2.208 ODE No. 208

$$\boxed{y(x)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+a(y(x))^2-b\cos\left(x+c\right)=0}$$

Mathematica: cpu = 0.064508 (sec), leaf count = 118

$$\left\{\left\{y(x)\to -\frac{\sqrt{4a^2c_1e^{-2ax}+4ab\cos(c+x)+c_1e^{-2ax}+2b\sin(c+x)}}{\sqrt{4a^2+1}}\right\},\left\{y(x)\to \frac{\sqrt{4a^2c_1e^{-2ax}+4ab\cos}\right.\right.$$

Maple: cpu = 0.047 (sec), leaf count = 116

$$\left\{y(x)=\frac{1}{4\,a^2+1}\sqrt{\left(4\,a^2+1\right)\left(4\,\mathrm{e}^{-2\,ax}\_C1\,a^2+4\,\cos\left(x+c\right)ab+\mathrm{e}^{-2\,ax}\_C1+2\,\sin\left(x+c\right)b\right)},y(x)=-\right.$$

2.209 ODE No. 209

$$\boxed{y(x)\frac{\mathrm{d}}{\mathrm{d}x}y(x)-\sqrt{a\left(y\left(x\right)\right)^2+b}=0}$$

Mathematica: cpu = 0.021003 (sec), leaf count = 84

$$\left\{\left\{y(x)\to -\frac{\sqrt{2a^2c_1x+a^2c_1^2+a^2x^2-b}}{\sqrt{a}}\right\},\left\{y(x)\to \frac{\sqrt{2a^2c_1x+a^2c_1^2+a^2x^2-b}}{\sqrt{a}}\right\}\right\}$$

Maple: cpu = 0.016 (sec), leaf count = 21

$$\left\{x-\frac{1}{a}\sqrt{a\left(y\left(x\right)\right)^2+b}+\_C1=0\right\}$$

2.210 ODE No. 210

$$\boxed{y(x)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+x(y(x))^2-4\,x=0}$$

Mathematica: cpu = 0.015502 (sec), leaf count = 47

$$\left\{\left\{y(x)\to -\sqrt{e^{2c_1-x^2}+4}\right\},\left\{y(x)\to \sqrt{e^{2c_1-x^2}+4}\right\}\right\}$$

Maple: cpu = 0.016 (sec), leaf count = 33

$$\left\{y(x)=\sqrt{\mathrm{e}^{-x^2}\_C1+4},y(x)=-\sqrt{\mathrm{e}^{-x^2}\_C1+4}\right\}$$

2.211 ODE No. 211

$$\boxed{y(x)\frac{\mathrm{d}}{\mathrm{d}x}y(x)-x\mathrm{e}^{\frac{x}{y(x)}}=0}$$

Mathematica: cpu = 38.749421 (sec), leaf count = 40

$$\text{Solve}\left[\int_1^{\frac{y(x)}{x}}\frac{K[1]}{K[1]^2-e^{\frac{1}{K[1]}}}\,dK[1]=c_1-\log(x),y(x)\right]$$

Maple: cpu = 0.016 (sec), leaf count = 31

$$\left\{y(x)=RootOf\left(-\int^{-Z}\frac{\_a}{-\_a^2+\mathrm{e}^{-\_a^{-1}}}d\_a+\ln\left(x\right)+\_C1\right)x\right\}$$

2.212 ODE No. 212

$$\boxed{y(x)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+f\left(\left(y(x)\right)^2+x^2\right)g(x)+x=0}$$

Mathematica: cpu = 22.411346 (sec), leaf count = 92

$$\text{Solve}\left[\int_1^{y(x)}\left(\frac{K[2]}{f\left(K[2]^2+x^2\right)}-\int_1^x-\frac{2K[1]K[2]f'(K[1]^2+K[2]^2)}{f\left(K[1]^2+K[2]^2\right)^2}\,dK[1]\right)dK[2]+\int_1^x\left(\frac{K[1]}{f\left(K[1]^2+y(x)\right.}\right.$$

Maple: cpu = 0.094 (sec), leaf count = 30

$$\left\{\int_{\_b}^{y(x)}\frac{\_a}{f\left(\_a^2+x^2\right)}\,\mathrm{d}\_a+\int g(x)\,\mathrm{d}x-\_C1=0\right\}$$

2.213 ODE No. 213

$$\boxed{(1+y(x))\frac{\mathrm{d}}{\mathrm{d}x}y(x)-y(x)-x=0}$$

Mathematica: cpu = 0.100513 (sec), leaf count = 71

$$\text{Solve}\left[\frac{1}{2}\log\left(\frac{x^2-y(x)^2+(x-3)y(x)-x-1}{(x-1)^2}\right)+\log(1-x)=c_1+\frac{\tanh^{-1}\left(\frac{y(x)+2x-1}{\sqrt{5}(y(x)+1)}\right)}{\sqrt{5}},y(x)\right]$$

Maple: cpu = 0.624 (sec), leaf count = 73

$$\left\{-\frac{1}{2}\ln\left(-\frac{(x-1)^2-(x-1)\left(-y(x)-1\right)-\left(-y(x)-1\right)^2}{\left(x-1\right)^2}\right)-\frac{\sqrt{5}}{5}Artanh\left(\frac{\left(x-3-2\,y(x)\right)\sqrt{5}}{5\,x-5}\right)-\ln($$

2.214 ODE No. 214

$$\boxed{(y(x)+x-1)\frac{\mathrm{d}}{\mathrm{d}x}y(x)-y(x)+2\,x+3=0}$$

Mathematica: cpu = 0.109014 (sec), leaf count = 78

$$\text{Solve}\left[2\sqrt{2}\tan^{-1}\left(\frac{-y(x)+2x+3}{\sqrt{2}(y(x)+x-1)}\right)=3c_1+2\log\left(\frac{6x^2+3y(x)^2-10y(x)+8x+11}{(3x+2)^2}\right)+4\log(3x+2\right.$$

Maple: cpu = 0.125 (sec), leaf count = 65

$$\left\{y(x)=\frac{5}{3}-\frac{\tan\left(RootOf\left(\sqrt{2}\ln\left(18\left(\tan\left(\_Z\right)\right)^2x^2+24\left(\tan\left(\_Z\right)\right)^2x+8\left(\tan\left(\_Z\right)\right)^2+18x^2+24x+\right.\right.\right.}{3}$$

2.215 ODE No. 215

$$\boxed{(y(x)+2\,x-2)\frac{\mathrm{d}}{\mathrm{d}x}y(x)-y(x)+x+1=0}$$

Mathematica: cpu = 0.119015 (sec), leaf count = 80

$$\text{Solve}\left[6\sqrt{3}\tan^{-1}\left(\frac{4-3y(x)}{\sqrt{3}(y(x)+2x-2)}\right)=2c_1+3\log\left(\frac{3x^2+3y(x)^2+3(x-3)y(x)-6x+7}{(1-3x)^2}\right)+6\log(3\right.$$

Maple: cpu = 0.125 (sec), leaf count = 68

$$\left\{y(x)=\frac{3}{2}-\frac{x}{2}+\frac{\sqrt{3}(3\,x-1)}{6}\tan\left(RootOf\left(\sqrt{3}\ln\left(\frac{27\,x^2}{4}-\frac{9\,x}{2}+\frac{3}{4}+\frac{27\left(\tan\left(\_Z\right)\right)^2x^2}{4}-\frac{9\left(\tan\left(\_Z\right.\right.\right.\right.\right.}{2}\right.$$

2.216 ODE No. 216

$$\boxed{(y(x)-2\,x+1)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+y(x)+x=0}$$

Mathematica: cpu = 0.101513 (sec), leaf count = 82

$$\text{Solve}\left[6\sqrt{3}\tan^{-1}\left(\frac{3y(x)+1}{\sqrt{3}(-y(x)+2x-1)}\right)=2c_1+3\log\left(\frac{3x^2+3y(x)^2-3(x-1)y(x)-3x+1}{(1-3x)^2}\right)+6\log\right.$$

Maple: cpu = 0.125 (sec), leaf count = 68

$$\left\{y(x)=-\frac{1}{2}+\frac{x}{2}-\frac{\sqrt{3}(3\,x-1)}{6}\tan\left(RootOf\left(\sqrt{3}\ln\left(\frac{27\,x^2}{4}-\frac{9\,x}{2}+\frac{3}{4}+\frac{27\left(\tan\left(\_Z\right)\right)^2x^2}{4}-\frac{9\left(\tan\left(\_\right.\right.\right.\right.\right.}{2}\right.$$

2.217 ODE No. 217

$$\boxed{\left(y(x)-x^2\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)-x=0}$$

Mathematica: cpu = 0.018502 (sec), leaf count = 29

$$\left\{\left\{y(x)\to \frac{1}{2}\left(W\left(-e^{c_1-2x^2-1}\right)+1\right)+x^2\right\}\right\}$$

Maple: cpu = 0.047 (sec), leaf count = 23

$$\left\{y(x)=x^2+\frac{lambertW\left(-4\_C1\,\mathrm{e}^{-2x^2-1}\right)}{2}+\frac{1}{2}\right\}$$

2.218 ODE No. 218

$$\boxed{\left(y(x)-x^2\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+4xy(x)=0}$$

Mathematica: cpu = 0.102513 (sec), leaf count = 257

$$\left\{\left\{y(x)\to x^2+\frac{1}{-\frac{1}{2x^2}-\frac{\frac{1}{2}-\frac{i}{2}}{\sqrt{2}x^2\sqrt{x^2\sinh\left(\frac{2c_1}{9}\right)+x^2\cosh\left(\frac{2c_1}{9}\right)-i}}}\right\},\left\{y(x)\to x^2+\frac{1}{-\frac{1}{2x^2}+\frac{\frac{1}{2}-\frac{i}{2}}{\sqrt{2}x^2\sqrt{x^2\sinh\left(\frac{2c_1}{9}\right)+x^2\cosh(}}\right.\right.$$

Maple: cpu = 0.140 (sec), leaf count = 53

$$\left\{y(x)=\frac{\_C1}{2}\left(\_C1-\sqrt{\_C1^2-4x^2}\right)-x^2,y(x)=\frac{\_C1}{2}\left(\_C1+\sqrt{\_C1^2-4x^2}\right)-x^2\right\}$$

2.219 ODE No. 219

$$\boxed{\left(y(x)+g(x)\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)-f2(x)\left(y(x)\right)^2-f1(x)\,y(x)-f0(x)=0}$$

Mathematica: cpu = 0 (sec), leaf count = 0

Hanged

Maple: cpu = 0.873 (sec), leaf count = 0

could not solve

2.220 ODE No. 220

$$\boxed{2\,y(x)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)-x(y(x))^2-x^3=0}$$

Mathematica: cpu = 0.012002 (sec), leaf count = 57

$$\left\{\left\{y(x)\to -\sqrt{c_1 e^{\frac{x^2}{2}}-x^2-2}\right\},\left\{y(x)\to \sqrt{c_1 e^{\frac{x^2}{2}}-x^2-2}\right\}\right\}$$

Maple: cpu = 0.016 (sec), leaf count = 43

$$\left\{y(x)=\sqrt{\mathrm{e}^{\frac{x^2}{2}}\_C1-x^2-2},y(x)=-\sqrt{\mathrm{e}^{\frac{x^2}{2}}\_C1-x^2-2}\right\}$$

2.221 ODE No. 221

$$\boxed{(2\,y(x)+x+1)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)-2\,y(x)-x+1=0}$$

Mathematica: cpu = 0.017502 (sec), leaf count = 35

$$\left\{\left\{y(x)\to \frac{2}{3}\left(W\left(-e^{c_1+\frac{9x}{4}-1}\right)+1\right)+\frac{1}{2}(-x-1)\right\}\right\}$$

Maple: cpu = 0.047 (sec), leaf count = 21

$$\left\{y(x)=-\frac{x}{2}+\frac{2}{3}lambertW\left(\frac{\mathrm{e}^{-\frac{1}{4}}\_C1}{4}\mathrm{e}^{\frac{9\,x}{4}}\right)+\frac{1}{6}\right\}$$

2.222 ODE No. 222

$$\boxed{(2\,y(x)+x+7)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)-y(x)+2\,x+4=0}$$

Mathematica: cpu = 0.056507 (sec), leaf count = 65

$$\text{Solve}\left[5c_1+2\log\left(\frac{4(x^2+y(x)^2+4y(x)+6x+13)}{5(x+3)^2}\right)+2\tan^{-1}\left(\frac{y(x)-2(x+2)}{2y(x)+x+7}\right)+4\log(x+3)=0,y\right.$$

Maple: cpu = 0.047 (sec), leaf count = 31

$$\left\{y(x)=-2-\tan\left(RootOf\left(-\_Z+\ln\left(\left(\cos\left(\_Z\right)\right)^{-2}\right)+2\,\ln\left(x+3\right)+2\,\_C1\right)\right)(x+3)\right\}$$

2.223 ODE No. 223

$$\boxed{(2\,y(x)-x)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)-y(x)-2\,x=0}$$

Mathematica: cpu = 0.025003 (sec), leaf count = 55

$$\left\{\left\{y(x)\to\frac{1}{2}\left(x-\sqrt{5x^2-4e^{c_1}}\right)\right\},\left\{y(x)\to\frac{1}{2}\left(\sqrt{5x^2-4e^{c_1}}+x\right)\right\}\right\}$$

Maple: cpu = 0.109 (sec), leaf count = 53

$$\left\{y(x)=\frac{1}{\_C1}\left(\frac{\_C1\,x}{2}-\frac{1}{2}\sqrt{5\,\_C1^{2}x^2+4}\right),y(x)=\frac{1}{\_C1}\left(\frac{\_C1\,x}{2}+\frac{1}{2}\sqrt{5\,\_C1^{2}x^2+4}\right)\right\}$$

2.224 ODE No. 224

$$\boxed{(2\,y(x)-6\,x)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)-y(x)+3\,x+2=0}$$

Mathematica: cpu = 0.017502 (sec), leaf count = 29

$$\left\{\left\{y(x)\to 3x-\frac{2}{5}\left(W\left(-e^{c_1+\frac{25x}{4}-1}\right)+1\right)\right\}\right\}$$

Maple: cpu = 0.047 (sec), leaf count = 35

$$\left\{y(x)=\frac{1}{5}\mathrm{e}^{-lambertW\left(-\frac{\mathrm{e}^{-1}}{2}\mathrm{e}^{\frac{25\,x}{4}}\mathrm{e}^{-\frac{25\,\_C1}{4}}\right)+\frac{25\,x}{4}-1-\frac{25\,\_C1}{4}}+3\,x-\frac{2}{5}\right\}$$

2.225 ODE No. 225

$$\boxed{(4\,y(x)+2\,x+3)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)-2\,y(x)-x-1=0}$$

Mathematica: cpu = 0.016002 (sec), leaf count = 33

$$\left\{\left\{y(x)\to\frac{1}{8}\left(W\left(-e^{c_1+8x-1}\right)+1\right)+\frac{1}{4}(-2x-3)\right\}\right\}$$

Maple: cpu = 0.031 (sec), leaf count = 20

$$\left\{y(x)=-\frac{x}{2}+\frac{lambertW\left(\mathrm{e}^{5}\left(\mathrm{e}^{x}\right)^{8}\_C1\right)}{8}-\frac{5}{8}\right\}$$

2.226 ODE No. 226

$$\boxed{(4\,y(x)-2\,x-3)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)+2\,y(x)-x-1=0}$$

Mathematica: cpu = 0.016002 (sec), leaf count = 35

$$\left\{\left\{y(x)\to \frac{1}{8}\left(-W\left(-e^{c_1+8x-1}\right)-1\right)+\frac{1}{4}(2x+3)\right\}\right\}$$

Maple: cpu = 0.047 (sec), leaf count = 21

$$\left\{y(x)=\frac{x}{2}-\frac{lambertW\left(-\mathrm{e}^{5}(\mathrm{e}^{x})^{8}\_C1\right)}{8}+\frac{5}{8}\right\}$$

2.227 ODE No. 227

$$\boxed{(4\,y(x)-3\,x-5)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)-3\,y(x)+7\,x+2=0}$$

Mathematica: cpu = 0.010501 (sec), leaf count = 107

$$\left\{\left\{y(x)\to \frac{1}{4}(3x+5)-\frac{1}{2}i\sqrt{-4c_1-2\left(-\frac{7x^2}{2}-2x\right)-\frac{1}{4}(3x+5)^2}\right\},\left\{y(x)\to \frac{1}{4}(3x+5)+\frac{1}{2}i\sqrt{-4c_1-\right.\right.$$

Maple: cpu = 0.109 (sec), leaf count = 38

$$\left\{y(x)=\frac{29}{19}-\frac{1}{38\_C1}\left(-\frac{(57\,x-21)\_C1}{2}+\frac{1}{2}\sqrt{-19\,(19\,x-7)^2\_C1^{\,2}+4}\right)\right\}$$

2.228 ODE No. 228

$$\boxed{(4\,y(x)+11\,x-11)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)-25\,y(x)-8\,x+62=0}$$

Mathematica: cpu = 0.196025 (sec), leaf count = 3357

$$\left\{\left\{y(x)\to \frac{}{4\left(-\frac{}{81(9x-1)\left(81\cosh\left(\frac{3c_1}{8}\right)x^2+81\sinh\left(\frac{3c_1}{8}\right)x^2-18\cosh\left(\frac{3c_1}{8}\right)x-18\sinh\left(\frac{3c_1}{8}\right)x+\cosh\left(\frac{3c_1}{8}\right)+\sinh\left(\frac{3c_1}{8}\right)-1\right)\sqrt[3]{-258280}\right.}\right.\right.$$

Maple: cpu = 0.280 (sec), leaf count = 377

$$\left\{ y(x) = \frac{22}{9} + 36\,(9\,x-1)\left(-1/27\,\sqrt[3]{64 - 8748\,(9\,x-1)^2\_C1 + 108\,\sqrt{6561\,(9\,x-1)^4\_C1^2 - 96\,(9\,x\right.\right.$$

2.229 ODE No. 229

$$\boxed{(12\,y(x) - 5\,x - 8)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x) - 5\,y(x) + 2\,x + 3 = 0}$$

Mathematica: cpu = 0.010501 (sec), leaf count = 121

$$\left\{ \left\{ y(x) \to \frac{1}{12}(5x+8) - \frac{i\sqrt{-12c_1 - 24\left(-\frac{x^2}{12} - \frac{x}{4}\right) - \frac{1}{12}(5x+8)^2}}{2\sqrt{3}} \right\}, \left\{ y(x) \to \frac{1}{12}(5x+8) + \frac{i\sqrt{-12c_1}\right.\right.$$

Maple: cpu = 0.125 (sec), leaf count = 33

$$\left\{ y(x) = -1 - \frac{1}{\_C1}\left(-\frac{(5\,x+20)\_C1}{12} + \frac{1}{12}\sqrt{(x+4)^2\_C1^2 + 24} \right) \right\}$$

2.230 ODE No. 230

$$\boxed{a y(x)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x) + b(y(x))^2 + f(x) = 0}$$

Mathematica: cpu = 0.121515 (sec), leaf count = 96

$$\left\{ \left\{ y(x) \to -e^{-\frac{bx}{a}}\sqrt{2\int_1^x -\frac{f(K[1])e^{\frac{2bK[1]}{a}}}{a}\,dK[1] + c_1} \right\}, \left\{ y(x) \to e^{-\frac{bx}{a}}\sqrt{2\int_1^x -\frac{f(K[1])e^{\frac{2bK[1]}{a}}}{a}\,dK[1] + \right.\right.$$

Maple: cpu = 0.047 (sec), leaf count = 104

$$\left\{ y(x) = \frac{1}{a}\sqrt{-\mathrm{e}^{2\,\frac{bx}{a}}a\left(-\_C1\,a + 2\int \left(\mathrm{e}^{\frac{bx}{a}}\right)^2 f(x)\,\mathrm{d}x \right)}\left(\mathrm{e}^{2\,\frac{bx}{a}}\right)^{-1}, y(x) = -\frac{1}{a}\sqrt{-\mathrm{e}^{2\,\frac{bx}{a}}a\left(-\_C1\,a + 2\int \right.\right.$$

2.231 ODE No. 231

$$\boxed{(ay(x)+bx+c)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+\alpha\, y(x)+\beta\, x+\gamma=0}$$

Mathematica: cpu = 2.446311 (sec), leaf count = 252

$$\text{Solve}\left[\frac{(\alpha-b)^2\left(-\log\left(\frac{(ay(x)+bx+c)^2\left(-\frac{(\alpha(bx+c)-a(\beta x+\gamma))\left(a(\alpha-b)y(x)+a(\beta x+\gamma)+b^2(-x)-bc\right)}{(ay(x)+bx+c)^2}+a\beta-\alpha b\right)}{(\alpha(bx+c)-a(\beta x+\gamma))^2}\right)\right)-\frac{2\tan^{-1}\left(\frac{\frac{2(a(\beta x+\gamma)}{ay(x)}}{(\alpha-b)\sqrt{\frac{4(a\beta-}{(\alpha-b}}\right.}{2(a\beta-\alpha b)}\right.$$

Maple: cpu = 0.156 (sec), leaf count = 206

$$\left\{y(x)=\frac{1}{-a\beta+b\alpha}\left(-b\gamma+\beta\, c+\frac{x(a\beta-b\alpha)+a\gamma-\alpha\, c}{2\, a}\left(\sqrt{4\, a\beta-\alpha^2-2\, b\alpha-b^2}\tan\left(\mathit{RootOf}\left(\sqrt{4\, a\beta\right.}\right.\right.\right.\right.$$

2.232 ODE No. 232

$$\boxed{xy(x)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+(y(x))^2+x^2=0}$$

Mathematica: cpu = 0.009001 (sec), leaf count = 56

$$\left\{\left\{y(x)\to-\frac{\sqrt{2c_1-x^4}}{\sqrt{2}x}\right\},\left\{y(x)\to\frac{\sqrt{2c_1-x^4}}{\sqrt{2}x}\right\}\right\}$$

Maple: cpu = 0.015 (sec), leaf count = 39

$$\left\{y(x)=-\frac{1}{2\, x}\sqrt{-2\, x^4+4\, \_C1},y(x)=\frac{1}{2\, x}\sqrt{-2\, x^4+4\, \_C1}\right\}$$

2.233 ODE No. 233

$$\boxed{xy(x)\frac{\mathrm{d}}{\mathrm{d}x}y(x)-(y(x))^2+ax^3\cos(x)=0}$$

Mathematica: cpu = 0.024503 (sec), leaf count = 38

$$\left\{\left\{y(x)\to -x\sqrt{c_1-2a\sin(x)}\right\},\left\{y(x)\to x\sqrt{c_1-2a\sin(x)}\right\}\right\}$$

Maple: cpu = 0.031 (sec), leaf count = 30

$$\left\{y(x)=\sqrt{-2\,a\sin\left(x\right)+\_C1}\,x,y(x)=-\sqrt{-2\,a\sin\left(x\right)+\_C1}\,x\right\}$$

2.234 ODE No. 234

$$\boxed{xy(x)\frac{\mathrm{d}}{\mathrm{d}x}y(x)-(y(x))^2+xy(x)+x^3-2\,x^2=0}$$

Mathematica: cpu = 29.157203 (sec), leaf count = 33

$$\text{DSolve}\left[x^3-2x^2+xy(x)y'(x)+xy(x)-y(x)^2=0,y(x),x\right]$$

Maple: cpu = 1.731 (sec), leaf count = 0

could not solve

2.235 ODE No. 235

$$\boxed{(xy(x)+a)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+by(x)=0}$$

Mathematica: cpu = 0.042505 (sec), leaf count = 40

$$\text{Solve}\left[x=c_1e^{-\frac{y(x)}{b}}-\frac{ae^{-\frac{y(x)}{b}}\text{Ei}\left(\frac{y(x)}{b}\right)}{b},y(x)\right]$$

Maple: cpu = 0.047 (sec), leaf count = 30

$$\left\{\_C1+\left(-\mathrm{e}^{\frac{y(x)}{b}}bx+aEi\left(1,-\frac{y(x)}{b}\right)\right)^{-1}=0\right\}$$

2.236 ODE No. 236

$$\boxed{x(y(x)+4)\frac{\mathrm{d}}{\mathrm{d}x}y(x)-(y(x))^2-2\,y(x)-2\,x=0}$$

Mathematica: cpu = 0.015502 (sec), leaf count = 114

$$\left\{\left\{y(x)\to\frac{1}{x\left(\frac{1}{x^2+4x}-\frac{e^{-2\left(\frac{\log(x)}{4}+\frac{3}{4}\log(x+4)\right)}}{\sqrt{c_1-\frac{4}{x+4}}}\right)}-4\right\},\left\{y(x)\to\frac{1}{x\left(\frac{e^{-2\left(\frac{\log(x)}{4}+\frac{3}{4}\log(x+4)\right)}}{\sqrt{c_1-\frac{4}{x+4}}}+\frac{1}{x^2+4x}\right)}-4\right\}\right\}$$

Maple: cpu = 0.047 (sec), leaf count = 147

$$\left\{y(x)=-1\left(-(x+4)^{\frac{3}{2}}\sqrt{\frac{\_C1\,x+4\,\_C1-4}{x+4}}x+4\,x^{3/2}+16\sqrt{x}\right)\left((x+4)^{\frac{3}{2}}\sqrt{\frac{\_C1\,x+4\,\_C1-4}{x+4}}+\right.\right.$$

2.237 ODE No. 237

$$\boxed{x(y(x)+a)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+by(x)+cx=0}$$

Mathematica: cpu = 7.597465 (sec), leaf count = 24

$$\text{DSolve}[x(a+y(x))y'(x)+by(x)+cx=0,y(x),x]$$

Maple: cpu = 2.293 (sec), leaf count = 0

could not solve

2.238 ODE No. 238

$$\boxed{(x(y(x)+x)+a)\frac{\mathrm{d}}{\mathrm{d}x}y(x)-y(x)\,(y(x)+x)-b=0}$$

Mathematica: cpu = 0.041505 (sec), leaf count = 192

$$\left\{\left\{y(x)\to\frac{1}{x\left(-\frac{x}{(a^2+ax^2+bx^2)^{3/2}\sqrt{c_1-\frac{1}{(a+b)\left(a^2+ax^2+bx^2\right)}}}-\frac{a}{-a^2-ax^2-bx^2}\right)}-\frac{a+x^2}{x}\right\},\left\{y(x)\to\frac{}{x\left(\frac{}{(a^2+ax^2+bx^2}\right.\right.\right.$$

Maple: cpu = 0.062 (sec), leaf count = 146

$$\left\{y(x) = \frac{1}{-a^2 + \_C1}\left(-abx - \_C1\, x + \sqrt{\_C1\, a^2x^2 + 2\,\_C1\, abx^2 + \_C1\, b^2x^2 + \_C1\, a^3 + \_C1\, a^2b - \_\right.\right.$$

2.239 ODE No. 239

$$\boxed{(xy(x) - x^2)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x) + (y(x))^2 - 3\,xy(x) - 2\,x^2 = 0}$$

Mathematica: cpu = 0.028504 (sec), leaf count = 54

$$\left\{\left\{y(x) \to x - \frac{\sqrt{e^{2c_1} + 2x^4}}{x}\right\}, \left\{y(x) \to \frac{\sqrt{e^{2c_1} + 2x^4}}{x} + x\right\}\right\}$$

Maple: cpu = 0.125 (sec), leaf count = 59

$$\left\{y(x) = \frac{1}{\_C1\, x}\left(x^2\_C1 - \sqrt{2\,x^4\_C1^2 + 1}\right), y(x) = \frac{1}{\_C1\, x}\left(x^2\_C1 + \sqrt{2\,x^4\_C1^2 + 1}\right)\right\}$$

2.240 ODE No. 240

$$\boxed{2\,xy(x)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x) - (y(x))^2 + ax = 0}$$

Mathematica: cpu = 0.008501 (sec), leaf count = 41

$$\left\{\left\{y(x) \to -\sqrt{c_1x - ax\log(x)}\right\}, \left\{y(x) \to \sqrt{c_1x - ax\log(x)}\right\}\right\}$$

Maple: cpu = 0.016 (sec), leaf count = 33

$$\left\{y(x) = \sqrt{-ax\ln(x) + \_C1\, x}, y(x) = -\sqrt{-ax\ln(x) + \_C1\, x}\right\}$$

2.241 ODE No. 241

$$\boxed{2\,xy(x)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x) - (y(x))^2 + ax^2 = 0}$$

Mathematica: cpu = 0.009001 (sec), leaf count = 41

$$\left\{\left\{y(x) \to -\sqrt{c_1x - ax^2}\right\}, \left\{y(x) \to \sqrt{c_1x - ax^2}\right\}\right\}$$

Maple: cpu = 0.015 (sec), leaf count = 33

$$\left\{y(x) = \sqrt{-ax^2 + \_C1\, x}, y(x) = -\sqrt{-ax^2 + \_C1\, x}\right\}$$

2.242 ODE No. 242

$$\boxed{2\,xy(x)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)+2\,(y(x))^2+1=0}$$

Mathematica: cpu = 0.013502 (sec), leaf count = 60

$$\left\{\left\{y(x)\to -\frac{\sqrt{e^{4c_1}-x^2}}{\sqrt{2}x}\right\},\left\{y(x)\to \frac{\sqrt{e^{4c_1}-x^2}}{\sqrt{2}x}\right\}\right\}$$

Maple: cpu = 0.015 (sec), leaf count = 39

$$\left\{y(x)=-\frac{1}{2\,x}\sqrt{-2\,x^2+4\,\_C1},y(x)=\frac{1}{2\,x}\sqrt{-2\,x^2+4\,\_C1}\right\}$$

2.243 ODE No. 243

$$\boxed{x(2\,y(x)+x-1)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)-y(x)\,(y(x)+2\,x+1)=0}$$

Mathematica: cpu = 8.050022 (sec), leaf count = 487

$$\left\{\left\{y(x)\to -\frac{\sqrt[3]{2}x}{\sqrt[3]{-27c_1^2x^2+\sqrt{108c_1^3x^3+\left(27c_1^2x-27c_1^2x^2\right)^2}+27c_1^2x}}+\frac{\sqrt[3]{-27c_1^2x^2+\sqrt{108c_1^3x^3+(27c_1^2x}}}{3\sqrt[3]{2}c_1}\right.\right.$$

Maple: cpu = 0.093 (sec), leaf count = 493

$$\left\{y(x)=\frac{3\,\sqrt[3]{5}}{40\,\_C1}\sqrt[3]{x\left(\sqrt{5}\sqrt{\frac{80\,x^2\_C1-160\,\_C1\,x+80\,\_C1-x}{\_C1}}+20\,x-20\right)\_C1^{\,2}}+\frac{3\,x5^{2/3}}{40}\frac{}{\sqrt[3]{x\left(\right.}}\right.$$

2.244 ODE No. 244

$$\boxed{x(2\,y(x)-x-1)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)+y(x)\,(2\,x-y(x)-1)=0}$$

Mathematica: cpu = 7.972512 (sec), leaf count = 484

$$\left\{\left\{y(x)\to -\frac{\sqrt[3]{2}x}{\sqrt[3]{27c_1^2x^2+\sqrt{\left(27c_1^2x^2+27c_1^2x\right)^2-108c_1^3x^3}+27c_1^2x}}-\frac{\sqrt[3]{27c_1^2x^2+\sqrt{(27c_1^2x^2+27c_1^2x)^2-}}}{3\sqrt[3]{2}c_1}\right.\right.$$

Maple: cpu = 0.078 (sec), leaf count = 499

$$\left\{ y(x) = \frac{3\sqrt[3]{5}}{40\_C1}\sqrt[3]{x\left(\sqrt{5}\sqrt{\frac{80\,x^2\_C1 + 160\_C1\,x + 80\_C1 - x}{\_C1}} - 20\,x - 20\right)\_C1^{\,2}} + \frac{3\,x5^{2/3}}{40}\frac{}{\sqrt[3]{x\left(}} \right.$$

2.245 ODE No. 245

$$\boxed{\left(2\,xy(x) + 4\,x^3\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x) + (y(x))^2 + 112\,x^2y(x) = 0}$$

Mathematica: cpu = 0.408552 (sec), leaf count = 1453

$$\left\{\left\{y(x) \to \text{Root}\left[-1521681143169024\#1x^{22} - 697437190619136\#1^2x^{20} - 145299414712320\#1^3x^{18} - 18\right.\right.$$

Maple: cpu = 0.218 (sec), leaf count = 31

$$\left\{ y(x) = \frac{\_C1}{x^{28}\left(RootOf\left(x^{30}\_Z^{360} - 24\,x^{30}\_Z^{330} - \_C1\right)\right)^{330}} \right\}$$

2.246 ODE No. 246

$$\boxed{x(3\,y(x) + 2\,x)\frac{\mathrm{d}}{\mathrm{d}x}y(x) + 3\,(y(x) + x)^2 = 0}$$

Mathematica: cpu = 0.031504 (sec), leaf count = 80

$$\left\{\left\{y(x) \to \frac{1}{6}\left(-\frac{\sqrt{2}\sqrt{3e^{4c_1} - x^4}}{x} - 4x\right)\right\}, \left\{y(x) \to \frac{1}{6}\left(\frac{\sqrt{2}\sqrt{3e^{4c_1} - x^4}}{x} - 4x\right)\right\}\right\}$$

Maple: cpu = 0.047 (sec), leaf count = 63

$$\left\{ y(x) = \frac{1}{\_C1\,x}\left(-\frac{2\,x^2\_C1}{3} - \frac{1}{6}\sqrt{-2\,x^4\_C1^{\,2} + 6}\right), y(x) = \frac{1}{\_C1\,x}\left(-\frac{2\,x^2\_C1}{3} + \frac{1}{6}\sqrt{-2\,x^4\_C1^{\,2} + 6}\right.\right.$$

2.247 ODE No. 247

$$(3x+2)(y(x)-2x-1)\frac{\mathrm{d}}{\mathrm{d}x}y(x)-(y(x))^2+xy(x)-7x^2-9x-3=0$$

Mathematica: cpu = 7.981514 (sec), leaf count = 693

$$\left\{\left\{y(x)\to\frac{\sqrt[3]{\sqrt{\left(-324e^{2c_1}x-216e^{2c_1}+1458x^3+2916x^2+1944x+432\right)^2+4\left(-81x^2-108x-36\right)^3}-}}{6\sqrt[3]{2}}\right.\right.$$

Maple: cpu = 0.156 (sec), leaf count = 517

$$\left\{y(x)=-\frac{1}{3}+\frac{3x+2}{6}\left(7\left(-1/4\sqrt[3]{2\left(3x+2\right)\_C1-27\left(3x+2\right)^3\_C1^3+2\sqrt{-27\left(3x+2\right)^4\_C1^4+}}\right.\right.\right.$$

2.248 ODE No. 248

$$\left(6xy(x)+x^2+3\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+3(y(x))^2+2xy(x)+2x=0$$

Mathematica: cpu = 0.013002 (sec), leaf count = 106

$$\left\{\left\{y(x)\to-\frac{\sqrt{6c_1x-2x^3+\frac{1}{6}\left(x^2+3\right)^2}}{\sqrt{6}x}-\frac{x^2+3}{6x}\right\},\left\{y(x)\to\frac{\sqrt{6c_1x-2x^3+\frac{1}{6}\left(x^2+3\right)^2}}{\sqrt{6}x}-\frac{x^2+3}{6x}\right\}\right.$$

Maple: cpu = 0.016 (sec), leaf count = 71

$$\left\{y(x)=\frac{1}{6x}\left(-x^2-3+\sqrt{x^4-12x^3-12\_C1\,x+6x^2+9}\right),y(x)=-\frac{1}{6x}\left(x^2+\sqrt{x^4-12x^3-12\_C\right.\right.$$

2.249 ODE No. 249

$$\boxed{(axy(x)+bx^n)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+\alpha\left(y(x)\right)^3+\beta\left(y(x)\right)^2=0}$$

Mathematica: cpu = 4.954629 (sec), leaf count = 115

$$\text{Solve}\left[\frac{(a(-n)+a+\alpha y(x))y(x)^{\frac{a-an}{\beta}-1}(\alpha y(x)+\beta)^{\frac{a(n-1)}{\beta}}}{a^2(n-1)^2(a(n-1)+\beta)}+\frac{x^{1-n}\exp\left(-\frac{a(n-1)(\log(y(x))-\log(\alpha y(x)+\beta))}{\beta}\right)}{ab(1-n)(n-1)}=c_1,\right.$$

Maple: cpu = 0.156 (sec), leaf count = 202

$$\left\{y(x)=\beta\Big(RootOf\Big(-\_Z^{\frac{a(n-1)}{\beta}}x^{1-n}a^2\beta\,n+\_C1\,a^2bn^2-\_Z^{\frac{an-a+\beta}{\beta}}\beta\,abn+\_Z^{\frac{a(n-1)}{\beta}}x^{1-n}a^2\beta-\_Z^{\frac{a(n-1)}{\beta}}\right.$$

2.250 ODE No. 250

$$\boxed{\left(Bxy(x)+Ax^2+ax+by(x)+c\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)-B(g(x))^2+Axy(x)+\alpha\,x+\beta\,y(x)+\gamma=0}$$

Mathematica: cpu = 0 (sec), leaf count = 0

Hanged

Maple: cpu = 5.741 (sec), leaf count = 0

could not solve

2.251 ODE No. 251

$$\boxed{\left(x^2y(x)-1\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+x(y(x))^2-1=0}$$

Mathematica: cpu = 0.011501 (sec), leaf count = 60

$$\left\{\left\{y(x)\to\frac{1}{x^2}-\frac{\sqrt{c_1x^2+2x^3+1}}{x^2}\right\},\left\{y(x)\to\frac{\sqrt{c_1x^2+2x^3+1}}{x^2}+\frac{1}{x^2}\right\}\right\}$$

Maple: cpu = 0.032 (sec), leaf count = 50

$$\left\{y(x)=\frac{1}{x^2}\left(1+\sqrt{-2\,x^2\_C1+2\,x^3+1}\right),y(x)=-\frac{1}{x^2}\left(-1+\sqrt{-2\,x^2\_C1+2\,x^3+1}\right)\right\}$$

2.252 ODE No. 252

$$\boxed{\left(x^2 y(x)-1\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)-x(y(x))^2+1=0}$$

Mathematica: cpu = 7.835995 (sec), leaf count = 819

$$\left\{\left\{y(x)\to \frac{6xc_1-x}{6c_1-1}+\frac{\sqrt[3]{-1944c_1^2x^3+648c_1x^3-54x^3+1944c_1^2-648c_1+\sqrt{4\left(54x^2c_1-9x^2\right)^3+(-194}}}{3\sqrt[3]{2}\left(6c_1-1\right)}\right.\right.$$

Maple: cpu = 0.562 (sec), leaf count = 1623

$$\left\{y(x)=-\frac{1}{4x^2}\left(63x^3-63\,\frac{x^2}{\_C1\,x^6-80x^6+160x^3-80}\sqrt[3]{\_C1\left(-1+4\sqrt{-\frac{5x^6-10x^3+5}{\_C1\,x^6-80x^6+160x}}\right.}\right.\right.$$

2.253 ODE No. 253

$$\boxed{\left(x^2 y(x)-1\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+8x(y(x))^2-8=0}$$

Mathematica: cpu = 19.448470 (sec), leaf count = 28

$$\text{DSolve}\left[\left(x^2y(x)-1\right)y'(x)+8xy(x)^2-8=0,y(x),x\right]$$

Maple: cpu = 1.810 (sec), leaf count = 0

could not solve

2.254 ODE No. 254

$$\boxed{x(xy(x)-2)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+x^2(y(x))^3+x(y(x))^2-2y(x)=0}$$

Mathematica: cpu = 0.030004 (sec), leaf count = 99

$$\left\{\left\{y(x)\to -\frac{2x}{\frac{\sqrt{2}\sqrt{-2x(c_1-\log(x))-\frac{x}{2}}}{\sqrt{-\frac{1}{x^3}}}-x^2}\right\},\left\{y(x)\to \frac{2x}{\frac{\sqrt{2}\sqrt{-2x(c_1-\log(x))-\frac{x}{2}}}{\sqrt{-\frac{1}{x^3}}}+x^2}\right\}\right\}$$

Maple: cpu = 0.016 (sec), leaf count = 59

$$\left\{y(x)=-\frac{1}{\left(2\ln(x)-2\_C1\right)x}\left(-1+\sqrt{1-4\ln(x)+4\_C1}\right),y(x)=\frac{1}{\left(2\ln(x)-2\_C1\right)x}\left(1+\sqrt{1-\right.\right.$$

2.255 ODE No. 255

$$\boxed{x(xy(x)-3)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+x(y(x))^2-y(x)=0}$$

Mathematica: cpu = 5.161155 (sec), leaf count = 31

$$\left\{\left\{y(x)\to -\frac{3W\left(2e^{\frac{9c_1}{2^{2/3}}-1}x^{2/3}\right)}{x}\right\}\right\}$$

Maple: cpu = 0.156 (sec), leaf count = 74

$$\left\{y(x)=-3\,\frac{lambertW\left(2/3\,\sqrt[3]{-1/8\,x^2}\_C1\right)}{x},y(x)=-3\,\frac{lambertW\left(1/3\,\sqrt[3]{-1/8\,x^2}\_C1\,\left(i\sqrt{3}-1\right)\right)}{x},y(\right.$$

2.256 ODE No. 256

$$\boxed{x^2(-1+y(x))\frac{\mathrm{d}}{\mathrm{d}x}y(x)+(x-1)\,y(x)=0}$$

Mathematica: cpu = 0.019502 (sec), leaf count = 21

$$\left\{\left\{y(x)\to -W\left(x\left(-e^{\frac{1}{x}-c_1}\right)\right)\right\}\right\}$$

Maple: cpu = 0.047 (sec), leaf count = 31

$$\left\{y(x)=\mathrm{e}^{\frac{x\ln(x)-lambertW\left(-x\mathrm{e}^{-C1+x^{-1}}\right)x+\_C1\,x+1}{x}}\right\}$$

2.257 ODE No. 257

$$\boxed{x\left(xy(x)+x^4-1\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)-y(x)\left(xy(x)-x^4-1\right)=0}$$

Mathematica: cpu = 0.358046 (sec), leaf count = 38

$$\text{Solve}\left[\frac{c_1+2xy(x)-2\log\left(\frac{1}{1-xy(x)}\right)-2}{x^2y(x)^2}+\frac{1}{x^4}=0,y(x)\right]$$

Maple: cpu = 0.078 (sec), leaf count = 98

$$\left\{y(x)=\frac{-\_C1+\mathrm{e}^{RootOf\left(-2\_Z\,x^4\left(\mathrm{e}^{-Z}\right)^2+2\,x^4\left(\mathrm{e}^{-Z}\right)^2-2\,\mathrm{e}^{-Z}\_C1\,x^4+\left(\mathrm{e}^{-Z}\right)^2-2\,\mathrm{e}^{-Z}\_C1+\_C1^2\right)}}{x\mathrm{e}^{RootOf\left(-2\_Z\,x^4\left(\mathrm{e}^{-Z}\right)^2+2\,x^4\left(\mathrm{e}^{-Z}\right)^2-2\,\mathrm{e}^{-Z}\_C1\,x^4+\left(\mathrm{e}^{-Z}\right)^2-2\,\mathrm{e}^{-Z}\_C1+\_C1^2\right)}}\right\}$$

2.258 ODE No. 258

$$\boxed{2\,x^2 y(x)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)+(y(x))^2-2\,x^3-x^2=0}$$

Mathematica: cpu = 0.012502 (sec), leaf count = 43

$$\left\{\left\{y(x)\to -\sqrt{c_1 e^{\frac{1}{x}}+x^2}\right\},\left\{y(x)\to \sqrt{c_1 e^{\frac{1}{x}}+x^2}\right\}\right\}$$

Maple: cpu = 0.016 (sec), leaf count = 33

$$\left\{y(x)=\sqrt{\mathrm{e}^{x^{-1}}\_C1+x^2},y(x)=-\sqrt{\mathrm{e}^{x^{-1}}\_C1+x^2}\right\}$$

2.259 ODE No. 259

$$\boxed{2\,x^2 y(x)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)-(y(x))^2-x^2\mathrm{e}^{x-x^{-1}}=0}$$

Mathematica: cpu = 0.019002 (sec), leaf count = 50

$$\left\{\left\{y(x)\to -e^{-\frac{1}{2}/x}\sqrt{c_1+e^x}\right\},\left\{y(x)\to e^{-\frac{1}{2}/x}\sqrt{c_1+e^x}\right\}\right\}$$

Maple: cpu = 0.032 (sec), leaf count = 51

$$\left\{y(x)=\sqrt{\mathrm{e}^{-x^{-1}}\_C1+\mathrm{e}^{\frac{x^2-1}{x}}},y(x)=-\sqrt{\mathrm{e}^{-x^{-1}}\_C1+\mathrm{e}^{\frac{x^2-1}{x}}}\right\}$$

2.260 ODE No. 260

$$\boxed{\left(2\,x^2 y(x)+x\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)-x^2(y(x))^3+2\,x(y(x))^2+y(x)=0}$$

Mathematica: cpu = 0.012502 (sec), leaf count = 80

$$\left\{\left\{y(x)\to \frac{x}{\frac{\sqrt{x(c_1-2\log(x))+4x}}{\sqrt{\frac{1}{x^3}}}-2x^2}\right\},\left\{y(x)\to -\frac{x}{\frac{\sqrt{x(c_1-2\log(x))+4x}}{\sqrt{\frac{1}{x^3}}}+2x^2}\right\}\right\}$$

Maple: cpu = 0.031 (sec), leaf count = 59

$$\left\{y(x)=\frac{1}{(2\,\ln(x)-2\,\_C1)\,x}\left(-2+\sqrt{4-2\,\ln(x)+2\,\_C1}\right),y(x)=-\frac{1}{(2\,\ln(x)-2\,\_C1)\,x}\left(2+\sqrt{4-\right.\right.$$

2.261 ODE No. 261

$$\boxed{\left(2\,x^2y(x)-x\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)-2\,x(y(x))^2-y(x)=0}$$

Mathematica: cpu = 0.864110 (sec), leaf count = 33

$$\left\{\left\{y(x)\to -\frac{1}{2xW\left(\frac{2e^{\frac{9c_1}{2^{2/3}}-1}}{x^2}\right)}\right\}\right\}$$

Maple: cpu = 0.094 (sec), leaf count = 18

$$\left\{y(x)=-\frac{1}{2\,x}\left(lambertW\left(-\frac{\_C1}{2\,x^2}\right)\right)^{-1}\right\}$$

2.262 ODE No. 262

$$\boxed{\left(2\,x^2y(x)-x^3\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+(y(x))^3-4\,x(y(x))^2+2\,x^3=0}$$

Mathematica: cpu = 0.081510 (sec), leaf count = 101

$$\left\{\left\{y(x)\to \frac{2x^3-\sqrt{e^{4c_1}x^2-3e^{2c_1}x^4}}{e^{2c_1}+x^2}\right\},\left\{y(x)\to \frac{\sqrt{e^{4c_1}x^2-3e^{2c_1}x^4}+2x^3}{e^{2c_1}+x^2}\right\}\right\}$$

Maple: cpu = 0.218 (sec), leaf count = 74

$$\left\{y(x)=-\frac{x}{x^2\_C1-1}\left(-3\,x^2\_C1+\sqrt{3\,x^2\_C1+1}+1\right)-x,y(x)=\frac{x}{x^2\_C1-1}\left(3\,x^2\_C1+\sqrt{3\,x^2\_C1+C}\right.\right.$$

2.263 ODE No. 263

$$\boxed{2\,x^3+y(x)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+3\,x^2(y(x))^2+7=0}$$

Mathematica: cpu = 0.036505 (sec), leaf count = 121

$$\left\{\left\{y(x)\to -\sqrt{c_1e^{-2x^3}+\frac{20\ 2^{2/3}e^{-2x^3}x\Gamma\left(\frac{1}{3},-2x^3\right)}{9\sqrt[3]{-x^3}}-\frac{2x}{3}}\right\},\left\{y(x)\to \sqrt{c_1e^{-2x^3}+\frac{20\ 2^{2/3}e^{-2x^3}x\Gamma\left(\frac{1}{3},-\right.}\right.\right.$$

Maple: cpu = 0.109 (sec), leaf count = 207

$$\left\{y(x)=-\frac{2^{\frac{2}{3}}}{18\,\Gamma\left(2/3\right)}\sqrt{-3\,\sqrt[3]{2}\Gamma\left(2/3\right)\sqrt[3]{-x^3}\left(-27\,\mathrm{e}^{-2\,x^3}\_C1\,\Gamma\left(2/3\right)\sqrt[3]{2}\sqrt[3]{-x^3}+80\,\mathrm{e}^{-2\,x^3}x\pi\sqrt{3}-120\,\mathrm{e}^{-}\right.}\right.$$

2.264 ODE No. 264

$$\boxed{2\,x\left(x^3y(x)+1\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+\left(3\,x^3y(x)-1\right)y(x)=0}$$

Mathematica: cpu = 0.341043 (sec), leaf count = 680

$$\left\{\left\{y(x)\to \text{Root}\left[81\#1^7e^{\frac{21c_1}{2}}x^{12}+756\#1^6e^{\frac{21c_1}{2}}x^9+2646\#1^5e^{\frac{21c_1}{2}}x^6+4116\#1^4e^{\frac{21c_1}{2}}x^3+2401\#1^3e^{\frac{21c_1}{2}}-\right.\right.\right.$$

Maple: cpu = 0.390 (sec), leaf count = 574

$$\left\{y(x)=\frac{-40353607\left(RootOf\left(9\,x^7\_Z^{98}-49\,\_C1\,\_Z^{42}+14\,\_C1\,\_Z^{21}-\_C1\right)\right)^{91}\_C1+756315\left(Roo\right.}{3\,x^3\left(RootOf\left(9\,x^7\_Z^{98}-49\,\_C1\,\_Z^{42}+14\,\_C1\,\_Z^{21}-\_C1\right)\right)^7\left(5764801\,\_C1\,\left(RootOf\right.\right.}\right.$$

2.265 ODE No. 265

$$\boxed{\left(x^{n(n+1)}y(x)-1\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+2\left(n+1\right)^2x^{n-1}\left(x^{n^2}\left(y(x)\right)^2-1\right)=0}$$

Mathematica: cpu = 407.590757 (sec), leaf count = 48

$$\text{DSolve}\left[2(n+1)^2x^{n-1}\left(x^{n^2}y(x)^2-1\right)+\left(x^{n(n+1)}y(x)-1\right)y'(x)=0,y(x),x\right]$$

Maple: cpu = 4.680 (sec), leaf count = 0

could not solve

2.266 ODE No. 266

$$\boxed{\left(y(x)-x\right)\sqrt{x^2+1}\frac{\mathrm{d}}{\mathrm{d}x}y(x)-a\sqrt{\left(\left(y\left(x\right)\right)^2+1\right)^3}=0}$$

Mathematica: cpu = 0 (sec), leaf count = 0

Hanged

Maple: cpu = 1.045 (sec), leaf count = 59

$$\left\{y(x)=\tan\left(RootOf\left(-\arctan\left(x\right)+\int^{-\arctan(x)+\_Z}-\frac{1}{2\,a^2+\cos\left(2\,\_a\right)-1}\left(\cos\left(2\,\_a\right)-1+\sqrt{-2\,a^2\right.\right.\right.\right.$$

2.267 ODE No. 267

$$\boxed{y(x)\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)(\sin(x))^2+(y(x))^2\cos(x)\sin(x)-1=0}$$

Mathematica: cpu = 0.033004 (sec), leaf count = 36

$$\left\{\left\{y(x)\to-\sqrt{c_1+2x}\csc(x)\right\},\left\{y(x)\to\sqrt{c_1+2x}\csc(x)\right\}\right\}$$

Maple: cpu = 0.015 (sec), leaf count = 32

$$\left\{y(x)=\frac{1}{\sin(x)}\sqrt{2\,x+\_C1},y(x)=-\frac{1}{\sin(x)}\sqrt{2\,x+\_C1}\right\}$$

2.268 ODE No. 268

$$\boxed{f(x)\,y(x)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)+g(x)\,(y(x))^2+h(x)=0}$$

Mathematica: cpu = 1.005128 (sec), leaf count = 140

$$\left\{\left\{y(x)\to-e^{\int_1^x-\frac{g(K[1])}{f(K[1])}\,dK[1]}\sqrt{2\int_1^x-\frac{h(K[2])\exp\left(-2\int_1^{K[2]}-\frac{g(K[1])}{f(K[1])}\,dK[1]\right)}{f(K[2])}\,dK[2]+c_1}\right\},\left\{y(x)\to e^{\int_1^x}\right.\right.$$

Maple: cpu = 0.063 (sec), leaf count = 124

$$\left\{y(x)=1\sqrt{-\mathrm{e}^{2\int\frac{g(x)}{f(x)}\,\mathrm{d}x}\left(2\int\frac{h\left(x\right)}{f\left(x\right)}\left(\mathrm{e}^{\int\frac{g(x)}{f(x)}\,\mathrm{d}x}\right)^2\mathrm{d}x-\_C1\right)}\left(\mathrm{e}^{2\int\frac{g(x)}{f(x)}\,\mathrm{d}x}\right)^{-1},y(x)=-1\sqrt{-\mathrm{e}^{2\int\frac{g(x)}{f(x)}\,\mathrm{d}x}\left(2\right.}\right.$$

2.269 ODE No. 269

$$\boxed{(g1(x)\,y(x)+g0(x))\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)-f1(x)\,y(x)-f2(x)\,(y(x))^2-f3(x)\,(y(x))^3-f0(x)=0}$$

Mathematica: cpu = 0 (sec), leaf count = 0

Hanged

Maple: cpu = 2.652 (sec), leaf count = 0

could not solve

2.270 ODE No. 270

$$\boxed{\left((y(x))^2 - x\right) \frac{\mathrm{d}}{\mathrm{d}x} y(x) - y(x) + x^2 = 0}$$

Mathematica: cpu = 0.014502 (sec), leaf count = 327

$$\left\{\left\{y(x) \to -\frac{3\sqrt[3]{2}x}{\sqrt[3]{\sqrt{\left(81c_1 + 27x^3\right)^2 - 2916x^3} + 81c_1 + 27x^3}} - \frac{\sqrt[3]{\sqrt{\left(81c_1 + 27x^3\right)^2 - 2916x^3} + 81c_1 + 27x}}{3\sqrt[3]{2}}\right.\right.$$

Maple: cpu = 0.031 (sec), leaf count = 402

$$\left\{y(x) = \frac{1}{2}\sqrt[3]{-4\,x^3 - 12\,\_C1 + 4\sqrt{x^6 + 6\,x^3\,\_C1 - 4\,x^3 + 9\,\_C1^2}} + 2\,\frac{x}{\sqrt[3]{-4\,x^3 - 12\,\_C1 + 4\sqrt{x^6 + 6}}}\right.$$

2.271 ODE No. 271

$$\boxed{\left((y(x))^2 + x^2\right) \frac{\mathrm{d}}{\mathrm{d}x} y(x) + 2\,x(y(x) + 2\,x) = 0}$$

Mathematica: cpu = 0.100013 (sec), leaf count = 370

$$\left\{\left\{y(x) \to \frac{\sqrt[3]{\sqrt{-8e^{3c_1}x^3 + e^{6c_1} + 20x^6} + e^{3c_1} - 4x^3}}{\sqrt[3]{2}} - \frac{\sqrt[3]{2}x^2}{\sqrt[3]{\sqrt{-8e^{3c_1}x^3 + e^{6c_1} + 20x^6} + e^{3c_1} - 4x^3}}\right\}, \left\{y(x\right.\right.$$

Maple: cpu = 0.125 (sec), leaf count = 417

$$\left\{y(x) = 1\left(\frac{1}{2}\sqrt[3]{4 - 16\,x^3\,\_C1^{3/2} + 4\sqrt{20\,\_C1^3 x^6 - 8\,x^3\,\_C1^{3/2} + 1}} - 2\,\frac{x^2\,\_C1}{\sqrt[3]{4 - 16\,x^3\,\_C1^{3/2} + 4\sqrt{20\,\_}}}\right.\right.$$

2.272 ODE No. 272

$$\boxed{\left((y(x))^2 + x^2\right) \frac{\mathrm{d}}{\mathrm{d}x} y(x) - (y(x))^2 = 0}$$

Mathematica: cpu = 0.044506 (sec), leaf count = 42

$$\left[\text{Solve}\left[\log\left(\frac{y(x)}{x}\right) + \frac{2\tan^{-1}\left(\frac{\frac{2y(x)}{x} - 1}{\sqrt{3}}\right)}{\sqrt{3}} = c_1 - \log(x), y(x)\right]\right.$$

Maple: cpu = 0.109 (sec), leaf count = 43

$$\left\{y(x) = \mathrm{e}^{\frac{2\sqrt{3}}{3} RootOf\left(-\sqrt{3} x \mathrm{e}^{-\_C1} + 3\tan(\_Z) x \mathrm{e}^{-\_C1} + 2\sqrt{3}\mathrm{e}^{2/3\sqrt{3}\_Z}\right) - \_C1}\right\}$$

2.273 ODE No. 273

$$\boxed{\left((y(x))^2 + x^2 + a\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x) + 2xy(x) = 0}$$

Mathematica: cpu = 0.014002 (sec), leaf count = 297

$$\left\{\left\{y(x) \to \frac{\sqrt[3]{\sqrt{2916\left(a+x^2\right)^3 + 6561c_1^2}} + 81c_1}{3\sqrt[3]{2}} - \frac{3\sqrt[3]{2}(a+x^2)}{\sqrt[3]{\sqrt{2916\left(a+x^2\right)^3 + 6561c_1^2} + 81c_1}}\right\}, \left\{y(x) \to \frac{\right.\right.$$

Maple: cpu = 0.015 (sec), leaf count = 470

$$\left\{y(x) = \frac{1}{2}\sqrt[3]{-12\_C1 + 4\sqrt{4x^6 + 12ax^4 + 12a^2x^2 + 4a^3 + 9\_C1^2}} - 2\frac{x^2 +}{\sqrt[3]{-12\_C1 + 4\sqrt{4x^6 + 12ax}}}\right.$$

2.274 ODE No. 274

$$\boxed{\left((y(x))^2 + x^2 + a\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x) + 2xy(x) + x^2 + b = 0}$$

Mathematica: cpu = 0.018502 (sec), leaf count = 411

$$\left\{\left\{y(x) \to \frac{\sqrt[3]{\sqrt{2916\left(a+x^2\right)^3 + (-81bx + 81c_1 - 27x^3)^2}} - 81bx + 81c_1 - 27x^3}{3\sqrt[3]{2}} - \frac{}{\sqrt[3]{\sqrt{2916\left(a+x^2\right)^3 -}}}\right.\right.$$

Maple: cpu = 0.015 (sec), leaf count = 810

$$\left\{y(x) = \frac{1}{2}\sqrt[3]{-4x^3 - 12bx - 12\_C1 + 4\sqrt{5x^6 + 12ax^4 + 6x^4b + 6x^3\_C1 + 12a^2x^2 + 9b^2x^2 + 18bx\_}}\right.$$

2.275 ODE No. 275

$$\boxed{\left((y(x))^2+x^2+x\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)-y(x)=0}$$

Mathematica: cpu = 0.024003 (sec), leaf count = 18

$$\text{Solve}\left[y(x)-\tan^{-1}\left(\frac{x}{y(x)}\right)=c_1,y(x)\right]$$

Maple: cpu = 0.078 (sec), leaf count = 30

$$\left\{\_C1+\frac{\mathrm{e}^{-2\,iy(x)}(ix+y(x))}{2\,iy\left(x\right)+2\,x}=0\right\}$$

2.276 ODE No. 276

$$\boxed{\left((y(x))^2-x^2\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+2\,xy(x)=0}$$

Mathematica: cpu = 0.036005 (sec), leaf count = 61

$$\left\{\left\{y(x)\to\frac{1}{2}\left(e^{c_1}-\sqrt{e^{2c_1}-4x^2}\right)\right\},\left\{y(x)\to\frac{1}{2}\left(\sqrt{e^{2c_1}-4x^2}+e^{c_1}\right)\right\}\right\}$$

Maple: cpu = 0.047 (sec), leaf count = 45

$$\left\{y(x)=\frac{1}{2\_C1}\left(1+\sqrt{-4\_C1^2x^2+1}\right),y(x)=-\frac{1}{2\_C1}\left(-1+\sqrt{-4\_C1^2x^2+1}\right)\right\}$$

2.277 ODE No. 277

$$\boxed{\left((y(x))^2+x^4\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)-4\,x^3y(x)=0}$$

Mathematica: cpu = 0.014502 (sec), leaf count = 53

$$\left\{\left\{y(x)\to\frac{1}{2}\left(c_1-\sqrt{c_1^2+4x^4}\right)\right\},\left\{y(x)\to\frac{1}{2}\left(\sqrt{c_1^2+4x^4}+c_1\right)\right\}\right\}$$

Maple: cpu = 0.234 (sec), leaf count = 67

$$\left\{y(x)=\left(\frac{1}{2\,x^2}\left(2\,x^2+\_C1-\sqrt{4\,x^4+\_C1^2}\right)-1\right)x^2,y(x)=\left(\frac{1}{2\,x^2}\left(2\,x^2+\_C1+\sqrt{4\,x^4+\_C1^2}\right)-\right.\right.$$

2.278 ODE No. 278

$$\boxed{\left((y(x))^2+4\sin(x)\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)-\cos(x)=0}$$

Mathematica: cpu = 0.064508 (sec), leaf count = 39

$$\text{Solve}\left[-\frac{1}{32}e^{-4y(x)}\left(8y(x)^2+4y(x)+1\right)-e^{-4y(x)}\sin(x)=c_1,y(x)\right]$$

Maple: cpu = 0.047 (sec), leaf count = 33

$$\left\{-\mathrm{e}^{-4\,y(x)}\sin(x)-\frac{\left(8\,(y(x))^2+4\,y(x)+1\right)\mathrm{e}^{-4\,y(x)}}{32}+\_C1=0\right\}$$

2.279 ODE No. 279

$$\boxed{\left((y(x))^2+2\,y(x)+x\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+(y(x)+x)^2\,(y(x))^2+y(x)\,(1+y(x))=0}$$

Mathematica: cpu = 0.624079 (sec), leaf count = 107

$$\left\{\left\{y(x)\to\frac{-\sqrt{(-c_1x+x^2-1)^2+4\,(x-c_1)}+c_1x-x^2+1}{2\,(x-c_1)}\right\},\left\{y(x)\to\frac{\sqrt{(-c_1x+x^2-1)^2+4\,(x-\right.\right.$$

Maple: cpu = 0.140 (sec), leaf count = 120

$$\left\{y(x)=\frac{1}{2\_C1-4\,x}\left(-\_C1\,x+2\,x^2-2+\sqrt{\_C1^2x^2-4\,x^3\_C1+4\,x^4+4\,\_C1\,x-8\,x^2-8\,\_C1+\right.\right.$$

2.280 ODE No. 280

$$\boxed{(y(x)+x)^2\frac{\mathrm{d}}{\mathrm{d}x}y(x)-a^2=0}$$

Mathematica: cpu = 0.036005 (sec), leaf count = 21

$$\text{Solve}\left[y(x)-a\tan^{-1}\left(\frac{y(x)+x}{a}\right)=c_1,y(x)\right]$$

Maple: cpu = 0.047 (sec), leaf count = 24

$$\{y(x)=a\mathit{RootOf}(\tan(\_Z)\,a-\_Z\,a+\_C1-x)-\_C1\}$$

2.281 ODE No. 281

$$\boxed{\left((y(x))^2+2\,xy(x)-x^2\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)-(y(x))^2+2\,xy(x)+x^2=0}$$

Mathematica: cpu = 0.062508 (sec), leaf count = 75

$$\left\{\left\{y(x)\to\frac{1}{2}\left(e^{c_1}-\sqrt{4e^{c_1}x+e^{2c_1}-4x^2}\right)\right\},\left\{y(x)\to\frac{1}{2}\left(\sqrt{4e^{c_1}x+e^{2c_1}-4x^2}+e^{c_1}\right)\right\}\right\}$$

Maple: cpu = 0.047 (sec), leaf count = 53

$$\left\{y(x)=\frac{1}{2\_C1}\left(1+\sqrt{-4\_C1^{\,2}x^2+4\_C1\,x+1}\right),y(x)=-\frac{1}{2\_C1}\left(-1+\sqrt{-4\_C1^{\,2}x^2+4\_C1\,x+\right.\right.$$

2.282 ODE No. 282

$$\boxed{(y(x)+3\,x-1)^2\frac{\mathrm{d}}{\mathrm{d}x}y(x)-(2\,y(x)-1)\,(4\,y(x)+6\,x-3)=0}$$

Mathematica: cpu = 0.087011 (sec), leaf count = 2129

$$\left\{\left\{y(x)\to\frac{1}{6}(12x+4e^{c_1}+1)-\frac{1}{6}\sqrt{36x^2+96e^{c_1}x-12x-16e^{c_1}+16e^{2c_1}+3\ 2^{2/3}\sqrt[3]{-7776e^{c_1}x^5+6480e\right.\right.$$

Maple: cpu = 0.156 (sec), leaf count = 72

$$\left\{3\,\ln\left(\frac{-6\,y(x)+3}{6\,x-1}\right)-\ln\left(-\frac{6\,y(x)-4+6\,x}{6\,x-1}\right)-3\,\ln\left(\frac{-6\,y(x)+18\,x}{6\,x-1}\right)-\ln(6\,x-1)-\_C1=0\right\}$$

2.283 ODE No. 283

$$\boxed{3\left((y(x))^2-x^2\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+2\,(y(x))^3-6\,x(1+x)\,y(x)-3\,\mathrm{e}^x=0}$$

Mathematica: cpu = 0.046006 (sec), leaf count = 477

$$\left\{\left\{y(x)\to-\frac{e^{-2x}\sqrt[3]{\sqrt{(27c_1e^{4x}-27e^{7x})^{\,2}-2916e^{12x}x^6}+27c_1e^{4x}-27e^{7x}}}{3\sqrt[3]{2}}-\frac{3\sqrt[3]{2}}{\sqrt[3]{\sqrt{(27c_1e^{4x}-27e^{7x})^{\,2}-2}}}\right.\right.$$

Maple: cpu = 0.047 (sec), leaf count = 622

$$\left\{y(x)=\frac{1}{2\,\mathrm{e}^{2\,x}}\sqrt[3]{\left(4\,\mathrm{e}^{3\,x}-4\_C1+4\sqrt{-4\,x^6\left(\mathrm{e}^{2\,x}\right)^2+\left(\mathrm{e}^{3\,x}\right)^2-2\,\mathrm{e}^{3\,x}\_C1+\_C1^{\,2}}\right)\left(\mathrm{e}^{2\,x}\right)^2}+2\,\frac{\right.$$

2.284 ODE No. 284

$$\boxed{\left(4\left(y(x)\right)^2+x^2\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)-xy(x)=0}$$

Mathematica: cpu = 0.033004 (sec), leaf count = 59

$$\left\{\left\{y(x)\to -\frac{x}{2\sqrt{W\left(\frac{1}{4}e^{-\frac{c_1}{2}}x^2\right)}}\right\},\left\{y(x)\to \frac{x}{2\sqrt{W\left(\frac{1}{4}e^{-\frac{c_1}{2}}x^2\right)}}\right\}\right\}$$

Maple: cpu = 0.094 (sec), leaf count = 21

$$\left\{y(x)=\mathrm{e}^{\frac{1}{2}lambertW\left(\frac{\left(\mathrm{e}^{-C1}\right)^2x^2}{4}\right)-\_C1}\right\}$$

2.285 ODE No. 285

$$\boxed{\left(4\left(y(x)\right)^2+2\,xy(x)+3\,x^2\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+\left(y(x)\right)^2+6\,xy(x)+2\,x^2=0}$$

Mathematica: cpu = 0.029004 (sec), leaf count = 402

$$\left\{\left\{y(x)\to \frac{\sqrt[3]{\sqrt{\left(432e^{3c_1}+54x^3\right)^2+3881196x^6}+432e^{3c_1}+54x^3}}{12\sqrt[3]{2}}-\frac{33x^2}{2\ 2^{2/3}\sqrt[3]{\sqrt{\left(432e^{3c_1}+54x^3\right)^2+3881}}}\right.\right.$$

Maple: cpu = 0.047 (sec), leaf count = 431

$$\left\{y(x)=\frac{1}{\_C1}\left(\frac{1}{4}\sqrt[3]{x^3{\_C1}^3+8+2\sqrt{333{\_C1}^6x^6+4\,x^3{\_C1}^3+16}}-\frac{11{\_C1}^2x^2}{4}\frac{}{\sqrt[3]{x^3{\_C1}^3+8+2\sqrt{}}}\right.\right.$$

2.286 ODE No. 286

$$\boxed{(2\,y(x)-3\,x+1)^2\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)-(3\,y(x)-2\,x-4)^2=0}$$

Mathematica: cpu = 0.183523 (sec), leaf count = 3501

Maple: cpu = 0 (sec), leaf count = 0

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2.287 ODE No. 287

$$\boxed{(2\,y(x)-4\,x+1)^2\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)-(y(x)-2\,x)^2=0}$$

Mathematica: cpu = 0.912616 (sec), leaf count = 77

$$\text{Solve}\left[\frac{y(x)}{2}+\frac{1}{196}\left(14y(x)-\left(8-9\sqrt{2}\right)\log\left(-7y(x)+14x+\sqrt{2}-4\right)-\left(8+9\sqrt{2}\right)\log\left(7y(x)-14x+\right.\right.\right.$$

Maple: cpu = 0.063 (sec), leaf count = 56

$$\left\{-\frac{x}{7}+\frac{4\,y(x)}{7}-\frac{2\,\ln\left(7\,(y(x)-2\,x)^2+8\,y(x)-16\,x+2\right)}{49}-\frac{9\,\sqrt{2}}{98}\mathit{Artanh}\left(\frac{(14\,y(x)-28\,x+8)\,\sqrt{2}}{4}\right)-\right.$$

2.288 ODE No. 288

$$\boxed{\left(6\,(y(x))^2-3\,x^2y(x)+1\right)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)-3\,x(y(x))^2+x=0}$$

Mathematica: cpu = 0.017502 (sec), leaf count = 534

$$\left\{\left\{y(x)\to-\frac{\sqrt[3]{4\sqrt{3}\sqrt{-54c_1x^6+648c_1x^2+432c_1^2-27x^8+207x^4+32}+144c_1-9x^6+108x^2}}{4\;3^{2/3}}+\frac{}{3\sqrt[3]{3}\sqrt[3]{}}\right.\right.$$

Maple: cpu = 0.031 (sec), leaf count = 587

$$\left\{y(x)=\frac{1}{12}\sqrt[3]{-324\,x^2-432\,\_C1+27\,x^6+12\,\sqrt{-81\,x^8-162\,\_C1\,x^6+621\,x^4+1944\,x^2\_C1+1296\_}\right.$$

2.289 ODE No. 289

$$\boxed{(6\,y(x)-x)^2\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)-6\,(y(x))^2+2\,xy(x)+a=0}$$

Mathematica: cpu = 0.016502 (sec), leaf count = 115

$$\left\{\left\{y(x)\to\frac{1}{6}\left(\sqrt[3]{-18ax+18c_1-x^3}+x\right)\right\},\left\{y(x)\to\frac{x}{6}-\frac{1}{12}\left(1-i\sqrt{3}\right)\sqrt[3]{-18ax+18c_1-x^3}\right\},\left\{y(x)\right.\right.$$

Maple: cpu = 0.031 (sec), leaf count = 115

$$\left\{y(x)=\frac{1}{6}\sqrt[3]{-x^3-18\,ax-18\,\_C1}+\frac{x}{6},y(x)=-\frac{1}{12}\sqrt[3]{-x^3-18\,ax-18\,\_C1}-\frac{i}{12}\sqrt{3}\sqrt[3]{-x^3-18\,ax-\right.$$

2.290 ODE No. 290

$$\boxed{\left(a(y(x))^2+2\,bxy(x)+cx^2\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+b(y(x))^2+2\,cxy(x)+dx^2=0}$$

Mathematica: cpu = 0.056007 (sec), leaf count = 831

$$\left\{\left\{y(x)\to-\frac{bx}{a}+\frac{\sqrt[3]{-54b^3x^3+81abcx^3-27a^2dx^3+27a^2e^{3c_1}+\sqrt{4\left(9acx^2-9b^2x^2\right)^3+\left(-54b^3x^3+81c\right.}}}{3\sqrt[3]{2}a}\right.\right.$$

Maple: cpu = 0.062 (sec), leaf count = 1666

$$\left\{y(x)=\frac{1}{\_C1}\left(\frac{1}{2\,a}\sqrt[3]{-4\,\_C1^3a^2dx^3+12\,cx^3\_C1^3ba-8\,b^3x^3\_C1^3+4\,\sqrt{\_C1^6a^2d^2x^6-6\,\_C1^6abcdx}}\right.\right.$$

2.291 ODE No. 291

$$\boxed{\left(b(\beta\,y(x)+\alpha\,x)^2-\beta\,(ax+by(x))\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+a(\beta\,y(x)+\alpha\,x)^2-\alpha\,(ax+by(x))=0}$$

Mathematica: cpu = 0.460558 (sec), leaf count = 39

$$\text{Solve}\left[\frac{a\beta\left(\log(ax+by(x))+\frac{1}{\alpha x+\beta y(x)}\right)}{a\beta-\alpha b}=c_1,y(x)\right]$$

Maple: cpu = 0.109 (sec), leaf count = 50

$$\left\{y(x) = \frac{-ax + \mathrm{e}^{RootOf(\_C1\, a\beta\, x - \_C1\, \alpha\, bx - \_Z\, a\beta\, x + \_Z\, \alpha\, bx - \_C1\, \beta\, \mathrm{e}^{-\_Z} + \mathrm{e}^{-\_Z}\_Z\, \beta + b)}}{b}\right\}$$

2.292 ODE No. 292

$$\boxed{(ay(x) + bx + c)^2 \frac{\mathrm{d}}{\mathrm{d}x} y(x) + (\alpha\, y(x) + \beta\, x + \gamma)^2 = 0}$$

Mathematica: cpu = 54.667442 (sec), leaf count = 760

$$\text{Solve}\left[(\alpha b - a\beta)\text{RootSum}\left[\#1^3 a\beta^3 - \#1^3 \alpha b\beta^2 + 2\#1^2 a\alpha\beta^2 y(x) + \#1^2 ab^2\beta y(x) + 3\gamma\#1^2 a\beta^2 - 2\#1^2\alpha^2 b\right.\right.$$

Maple: cpu = 0.031 (sec), leaf count = 124

$$\left\{y(x) = \frac{1}{-a\beta + b\alpha}\left(-\gamma\, b + \beta\, c + RootOf\left(\int^{\_Z} \frac{\_a^2 a^2 - 2\,\_a\, ab + b^2}{\_a^3 a^2 - 2\,\_a^2 ab - \_a^2\alpha^2 + 2\,\_a\,\alpha\,\beta + \_a\, b^2 - \beta^2} d\_a\right.\right.\right.$$

2.293 ODE No. 293

$$\boxed{x\left((y(x))^2 - 3\,x\right)\frac{\mathrm{d}}{\mathrm{d}x} y(x) + 2\,(y(x))^3 - 5\,xy(x) = 0}$$

Mathematica: cpu = 0.105513 (sec), leaf count = 661

$$\left\{\left\{y(x) \to \text{Root}\left[-\#1^{15} - \frac{25\#1^2 e^{\frac{65c_1}{2}}}{x^{26}} + \frac{65e^{\frac{65c_1}{2}}}{x^{25}}\&, 1\right]\right\}, \left\{y(x) \to \text{Root}\left[-\#1^{15} - \frac{25\#1^2 e^{\frac{65c_1}{2}}}{x^{26}} + \frac{65e^{\frac{65c}{2}}}{x^{25}}\right.\right.\right.$$

Maple: cpu = 0.234 (sec), leaf count = 36

$$\left\{\ln(x) - \_C1 + \frac{6}{13}\ln\left(y(x)\frac{1}{\sqrt{x}}\right) - \frac{2}{65}\ln\left(-\frac{-5\,(y(x))^2 + 13\,x}{x}\right) = 0\right\}$$

2.294 ODE No. 294

$$\boxed{x\left(\left(y(x)\right)^2+x^2-a\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)-y(x)\left(\left(y(x)\right)^2+x^2+a\right)=0}$$

Mathematica: cpu = 0.040005 (sec), leaf count = 71

$$\left\{\left\{y(x)\to\frac{1}{2}\left(c_1x-\sqrt{-4a+c_1^2x^2+4x^2}\right)\right\},\left\{y(x)\to\frac{1}{2}\left(\sqrt{-4a+c_1^2x^2+4x^2}+c_1x\right)\right\}\right\}$$

Maple: cpu = 0.078 (sec), leaf count = 112

$$\left\{\left(\left(y(x)\right)^{-2}-\left(-x^2+a\right)^{-1}\right)^{-1}=-x\sqrt{x^2-a}\frac{1}{\sqrt{\_C1+4\frac{a}{x^2-a}}}+\frac{x^2}{2}-\frac{a}{2},\left(\left(y(x)\right)^{-2}-\left(-x^2+a\right)^{-1}\right)^{-1}=\right.$$

2.295 ODE No. 295

$$\boxed{x\left(\left(y(x)\right)^2+xy(x)-x^2\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)-\left(y(x)\right)^3+x\left(y(x)\right)^2+x^2y(x)=0}$$

Mathematica: cpu = 0.036505 (sec), leaf count = 31

$$\text{Solve}\left[\frac{x}{y(x)}+\frac{y(x)}{x}+\log\left(\frac{y(x)}{x}\right)=c_1-2\log(x),y(x)\right]$$

Maple: cpu = 0.141 (sec), leaf count = 29

$$\left\{y(x)=\mathrm{e}^{RootOf\left(\left(\mathrm{e}^{-Z}\right)^2+2\,\mathrm{e}^{-Z}\ln(x)+2\,\mathrm{e}^{-Z}\_C1+\_Z\,\mathrm{e}^{-Z}+1\right)}x\right\}$$

2.296 ODE No. 296

$$\boxed{x\left(\left(y(x)\right)^2+x^2y(x)+x^2\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)-2\left(y(x)\right)^3-2x^2\left(y(x)\right)^2+x^4=0}$$

Mathematica: cpu = 0.571072 (sec), leaf count = 102

$$\left\{\left\{y(x)\to-e^{-c_1}x^2-e^{-c_1}\sqrt{-e^{c_1}x^4+e^{2c_1}x^2+x^4}\right\},\left\{y(x)\to e^{-c_1}\sqrt{-e^{c_1}x^4+e^{2c_1}x^2+x^4}-e^{-c_1}x^2\right\}\right\}$$

Maple: cpu = 0.562 (sec), leaf count = 165

$$\left\{y(x)=-x^3(x-2)\left(\frac{1}{(x-2)x^2}\left(\_C1\,x-x^2-\sqrt{-\_C1\,x^4+\_C1^2x^2+x^4}\right)-1\right)\left(\_C1\,x-x^2-\sqrt{-\right.\right.$$

2.297 ODE No. 297

$$\boxed{2\,x\left(\left(y(x)\right)^2+5\,x^2\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+\left(y(x)\right)^3-x^2y(x)=0}$$

Mathematica: cpu = 0.058007 (sec), leaf count = 216

$$\left\{\left\{y(x)\to \text{Root}\left[-\#1^5+\frac{\#1^2e^{3c_1}}{x^{3/2}}+3e^{3c_1}\sqrt{x}\&,1\right]\right\},\left\{y(x)\to \text{Root}\left[-\#1^5+\frac{\#1^2e^{3c_1}}{x^{3/2}}+3e^{3c_1}\sqrt{x}\&,2\right]\right\}$$

Maple: cpu = 0.219 (sec), leaf count = 29

$$\left\{y(x)=\left(RootOf\left(x^9\_C1\,\_Z^{45}-\_Z^{18}-6\,\_Z^9-9\right)\right)^{\frac{9}{2}}x\right\}$$

2.298 ODE No. 298

$$\boxed{3\,x(y(x))^2\frac{\mathrm{d}}{\mathrm{d}x}y(x)+\left(y(x)\right)^3-2\,x=0}$$

Mathematica: cpu = 0.009001 (sec), leaf count = 72

$$\left\{\left\{y(x)\to\frac{\sqrt[3]{c_1+x^2}}{\sqrt[3]{x}}\right\},\left\{y(x)\to-\frac{\sqrt[3]{-1}\sqrt[3]{c_1+x^2}}{\sqrt[3]{x}}\right\},\left\{y(x)\to\frac{(-1)^{2/3}\sqrt[3]{c_1+x^2}}{\sqrt[3]{x}}\right\}\right\}$$

Maple: cpu = 0.015 (sec), leaf count = 99

$$\left\{y(x)=\frac{1}{x}\sqrt[3]{\left(x^2+\_C1\right)x^2},y(x)=-\frac{1}{2\,x}\sqrt[3]{\left(x^2+\_C1\right)x^2}-\frac{\frac{i}{2}\sqrt{3}}{x}\sqrt[3]{\left(x^2+\_C1\right)x^2},y(x)=-\frac{1}{2\,x}\sqrt[3]{(x^2+\right.$$

2.299 ODE No. 299

$$\boxed{\left(3\,x(y(x))^2-x^2\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+\left(y(x)\right)^3-2\,xy(x)=0}$$

Mathematica: cpu = 0.017002 (sec), leaf count = 371

$$\left\{\left\{y(x)\to-\frac{\sqrt[3]{\frac{2}{3}}x^2}{\sqrt[3]{9c_1x^2+\sqrt{3}\sqrt{27c_1^2x^4-4x^9}}}-\frac{\sqrt[3]{9c_1x^2+\sqrt{3}\sqrt{27c_1^2x^4-4x^9}}}{\sqrt[3]{2}3^{2/3}x}\right\},\left\{y(x)\to\frac{(1\right.$$

Maple: cpu = 0.125 (sec), leaf count = 327

$$\left\{y(x)=\frac{1}{6\,x}\sqrt[3]{\left(12\sqrt{-12\,x^5+81\,\_C1^2}+108\,\_C1\right)x^2}+2\,\frac{x^2}{\sqrt[3]{\left(12\sqrt{-12\,x^5+81\,\_C1^2}+108\,\_C1\right)x^2}},\right.$$

2.300 ODE No. 300

$$\boxed{6\,x(y(x))^2\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)+2\,(y(x))^3+x=0}$$

Mathematica: cpu = 0.009501 (sec), leaf count = 99

$$\left\{\left\{y(x)\to\frac{\sqrt[3]{4c_1-x^2}}{2^{2/3}\sqrt[3]{x}}\right\},\left\{y(x)\to-\frac{\sqrt[3]{-1}\sqrt[3]{4c_1-x^2}}{2^{2/3}\sqrt[3]{x}}\right\},\left\{y(x)\to\frac{(-1)^{2/3}\sqrt[3]{4c_1-x^2}}{2^{2/3}\sqrt[3]{x}}\right\}\right\}$$

Maple: cpu = 0.015 (sec), leaf count = 120

$$\left\{y(x)=\frac{1}{2\,x}\sqrt[3]{(-2\,x^2+8\_C1)\,x^2},y(x)=-\frac{1}{4\,x}\sqrt[3]{(-2\,x^2+8\_C1)\,x^2}-\frac{\frac{i}{4}\sqrt{3}}{x}\sqrt[3]{(-2\,x^2+8\_C1)\,x^2},y(x\right.$$

2.301 ODE No. 301

$$\boxed{\left(6\,x(y(x))^2+x^2\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)-y(x)\left(3\,(y(x))^2-x\right)=0}$$

Mathematica: cpu = 0.039005 (sec), leaf count = 64

$$\left\{\left\{y(x)\to-\frac{\sqrt{x}\sqrt{W\left(\frac{6e^{3c_1}}{x^3}\right)}}{\sqrt{6}}\right\},\left\{y(x)\to\frac{\sqrt{x}\sqrt{W\left(\frac{6e^{3c_1}}{x^3}\right)}}{\sqrt{6}}\right\}\right\}$$

Maple: cpu = 0.156 (sec), leaf count = 25

$$\left\{y(x)=\frac{1}{x}\mathrm{e}^{-\frac{1}{2}lambertW\left(6\,\frac{\mathrm{e}^3\_C1}{x^3}\right)+\frac{3\_C1}{2}}\right\}$$

2.302 ODE No. 302

$$\boxed{\left(x^2(y(x))^2+x\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+y(x)=0}$$

Mathematica: cpu = 0.016002 (sec), leaf count = 70

$$\left\{\left\{y(x)\to\frac{c_1x-\sqrt{x}\sqrt{c_1^2x+4}}{2x}\right\},\left\{y(x)\to\frac{c_1x+\sqrt{x}\sqrt{c_1^2x+4}}{2x}\right\}\right\}$$

Maple: cpu = 0.109 (sec), leaf count = 137

$$\left\{y(x)=-\frac{1}{2\_C1\,x}\sqrt{-2\,x\_C1\,\left(-2\_C1-x+\sqrt{4\_C1\,x+x^2}\right)},y(x)=\frac{1}{2\_C1\,x}\sqrt{-2\,x\_C1\,\left(-2\_C\right.}\right.$$

2.303 ODE No. 303

$$\boxed{(xy(x)-1)^2 x\frac{\mathrm{d}}{\mathrm{d}x}y(x)+\left(x^2(y(x))^2+1\right)y(x)=0}$$

Mathematica: cpu = 0.044006 (sec), leaf count = 25

$$\text{Solve}\left[xy(x)-\frac{1}{xy(x)}-2\log(y(x))=c_1,y(x)\right]$$

Maple: cpu = 0.125 (sec), leaf count = 34

$$\left\{y(x)=\frac{\mathrm{e}^{RootOf\left(-2\,\mathrm{e}^{-Z}\ln(x)-\mathrm{e}^{2-Z}+2\,\mathrm{e}^{-Z}\_C1+2\,\_Z\,\mathrm{e}^{-Z}+1\right)}}{x}\right\}$$

2.304 ODE No. 304

$$\boxed{\left(10\,x^3(y(x))^2+x^2y(x)+2\,x\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+5\,x^2(y(x))^3+x(y(x))^2=0}$$

Mathematica: cpu = 45.176237 (sec), leaf count = 59

$$\text{Solve}\left[-y(x)\left(\frac{\log\left(5x^2y(x)^2+2\right)}{2y(x)}+\frac{\tan^{-1}\left(\sqrt{\frac{5}{2}}xy(x)\right)}{\sqrt{10}y(x)}\right)-\log(y(x))=c_1,y(x)\right]$$

Maple: cpu = 0.156 (sec), leaf count = 44

$$\left\{y(x)=\frac{\sqrt{10}}{5\,x}\tan\left(RootOf\left(\sqrt{10}\ln\left(\frac{4\left(\tan\left(\_Z\right)\right)^2\left(\left(\tan\left(\_Z\right)\right)^2+1\right)}{5\,x^2}\right)+2\sqrt{10}\_C1+2\,\_Z\right)\right)\right\}$$

2.305 ODE No. 305

$$\boxed{\left((y(x))^3-3\,x\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)-3\,y(x)+x^2=0}$$

Mathematica: cpu = 0.017502 (sec), leaf count = 1277

$$\left\{\left\{y(x)\to-\frac{1}{2}\sqrt{\frac{16\sqrt[3]{2}\left(x^3+3c_1\right)}{\sqrt[3]{104976x^2-\sqrt{11019960576x^4-4\left(144x^3+432c_1\right)^3}}}+\frac{\sqrt[3]{104976x^2-\sqrt{1101996057}}}{9\sqrt[3]{2}}}\right.\right.$$

Maple: cpu = 0.015 (sec), leaf count = 21

$$\left\{\frac{x^3}{3}-3\,xy(x)+\frac{(y(x))^4}{4}+\_C1=0\right\}$$

2.306 ODE No. 306

$$\boxed{\left((y(x))^3-x^3\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)-x^2y(x)=0}$$

Mathematica: cpu = 0.051007 (sec), leaf count = 201

$$\left\{\left\{y(x)\to\sqrt[3]{x^3-\sqrt{x^6-e^{6c_1}}}\right\},\left\{y(x)\to-\sqrt[3]{-1}\sqrt[3]{x^3-\sqrt{x^6-e^{6c_1}}}\right\},\left\{y(x)\to(-1)^{2/3}\sqrt[3]{x^3-\sqrt{x^6-e}\right.\right.$$

Maple: cpu = 0.250 (sec), leaf count = 391

$$\left\{y(x)=x\frac{1}{\sqrt[3]{-\left(x^3\_C1-\sqrt{\_C1^2x^6+1}\right)x^3\_C1}},y(x)=x\frac{1}{\sqrt[3]{-\left(x^3\_C1+\sqrt{\_C1^2x^6+1}\right)x^3\_C1}},y(\right.$$

2.307 ODE No. 307

$$\boxed{\left((y(x))^2+x^2+a\right)y(x)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+\left((y(x))^2+x^2-a\right)x=0}$$

Mathematica: cpu = 0.024003 (sec), leaf count = 149

$$\left\{\left\{y(x)\to-\sqrt{-\sqrt{a^2+4ax^2+4c_1}-a-x^2}\right\},\left\{y(x)\to\sqrt{-\sqrt{a^2+4ax^2+4c_1}-a-x^2}\right\},\left\{y(x)\to-\right.\right.$$

Maple: cpu = 0.046 (sec), leaf count = 125

$$\left\{y(x)=\sqrt{-x^2-a-\sqrt{4\,ax^2+a^2-4\,\_C1}},y(x)=\sqrt{-x^2-a+\sqrt{4\,ax^2+a^2-4\,\_C1}},y(x)=-\sqrt{-x\right.$$

2.308 ODE No. 308

$$\boxed{2\left(y(x)\right)^3\frac{\mathrm{d}}{\mathrm{d}x}y(x)+x(y(x))^2=0}$$

Mathematica: cpu = 0.007001 (sec), leaf count = 55

$$\left\{\{y(x)\to 0\},\left\{y(x)\to -\frac{\sqrt{4c_1-x^2}}{\sqrt{2}}\right\},\left\{y(x)\to \frac{\sqrt{4c_1-x^2}}{\sqrt{2}}\right\}\right\}$$

Maple: cpu = 0.015 (sec), leaf count = 37

$$\left\{y(x)=0,y(x)=-\frac{1}{2}\sqrt{-2\,x^2+4\_C1},y(x)=\frac{1}{2}\sqrt{-2\,x^2+4\_C1}\right\}$$

2.309 ODE No. 309

$$\boxed{\left(2\left(y(x)\right)^3+y(x)\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)-2\,x^3-x=0}$$

Mathematica: cpu = 0.011001 (sec), leaf count = 151

$$\left\{\left\{y(x)\to -\frac{\sqrt{-\sqrt{8c_1+4x^4+4x^2+1}-1}}{\sqrt{2}}\right\},\left\{y(x)\to \frac{\sqrt{-\sqrt{8c_1+4x^4+4x^2+1}-1}}{\sqrt{2}}\right\},\left\{y(x)\to -\frac{\sqrt{}}{}\right.\right.$$

Maple: cpu = 0.047 (sec), leaf count = 113

$$\left\{y(x)=-\frac{1}{2}\sqrt{-2-2\sqrt{4\,x^4+4\,x^2+8\_C1+1}},y(x)=\frac{1}{2}\sqrt{-2-2\sqrt{4\,x^4+4\,x^2+8\_C1+1}},y(x)=-\right.$$

2.310 ODE No. 310

$$\boxed{\left(2\left(y(x)\right)^3+5\,x^2y(x)\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+5\,x(y(x))^2+x^3=0}$$

Mathematica: cpu = 0.044006 (sec), leaf count = 159

$$\left\{\left\{y(x)\to -\frac{\sqrt{-\sqrt{2e^{4c_1}+23x^4}-5x^2}}{\sqrt{2}}\right\},\left\{y(x)\to \frac{\sqrt{-\sqrt{2e^{4c_1}+23x^4}-5x^2}}{\sqrt{2}}\right\},\left\{y(x)\to -\frac{\sqrt{\sqrt{2e^{4c_1}+}}{\sqrt{}}\right.\right.$$

Maple: cpu = 0.109 (sec), leaf count = 125

$$\left\{y(x)=-\frac{1}{2}\sqrt{-10\,x^2\_C1-2\sqrt{23\,x^4\_C1^2+2}}\frac{1}{\sqrt{\_C1}},y(x)=\frac{1}{2}\sqrt{-10\,x^2\_C1-2\sqrt{23\,x^4\_C1^2+2}}\frac{}{\sqrt{}}\right.$$

2.311 ODE No. 311

$$\left(20\left(y(x)\right)^3-3\,x(y(x))^2+6\,x^2y(x)+3\,x^3\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)-(y(x))^3+6\,x(y(x))^2+9\,x^2y(x)+4\,x^3=0$$

Mathematica: cpu = 0.051506 (sec), leaf count = 2201

$$\left\{\left\{y(x)\to\frac{x}{20}+\frac{1}{2}\sqrt{-\frac{39x^2}{100}+\frac{\sqrt[3]{99x^6+351e^{c_1}x^2+\sqrt{3}\sqrt{-67037x^{12}+185406e^{c_1}x^8-83733e^{2c_1}x^4+320}}}{5\sqrt[3]{23}^{2/3}}}\right.\right.$$

Maple: cpu = 0.062 (sec), leaf count = 50

$$\left\{y(x)=\frac{RootOf\left(x^4\_C1^4+3\,x^3\_C1^3\_Z+3\,\_C1^2\_Z^2x^2-\_C1\,\_Z^3x+5\,\_Z^4-1\right)}{\_C1}\right\}$$

2.312 ODE No. 312

$$\left(\frac{\left(y(x)\right)^2}{b}+\frac{x^2}{a}\right)\left(y(x)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+x\right)+\frac{(a-b)\left(y(x)\frac{\mathrm{d}}{\mathrm{d}x}y(x)-x\right)}{a+b}=0$$

Mathematica: cpu = 0.245531 (sec), leaf count = 204

$$\left\{\left\{y(x)\to-\frac{\sqrt{b}\sqrt{a^2+2a^2W\left(\frac{c_1(a+b)e^{\frac{bx^2}{2a^2}-\frac{b}{2a}-\frac{x^2}{2b}-\frac{1}{2}}}{2a^3b^2}\right)+ab-ax^2-bx^2}}{\sqrt{a}\sqrt{a+b}}\right\},\left\{y(x)\to\frac{\sqrt{b}\sqrt{a^2+2a^2W\left(\right.\right.\right.}\right.$$

Maple: cpu = 1.061 (sec), leaf count = 236

$$\left\{y(x)=\frac{1}{a}\sqrt{a\left(-bx^2+ab+\mathrm{e}^{-\frac{1}{2\,a^2b}\left(2\,lambertW\left(1/2\,\frac{(a+b)\mathrm{e}^{-1/2}}{a^2b}\mathrm{e}^{-1/2\,\frac{x^2}{b}}\mathrm{e}^{1/2\,\frac{bx^2}{a^2}}\mathrm{e}^{-1/2\,\frac{b}{a}}\left(\mathrm{e}^{\frac{-C1}{ab}}\right)^{-1}\right)a^2b+a^2x^2-b^2x^2+a^2b+\right.\right.\right.\right.$$

2.313 ODE No. 313

$$\left(2\,a(y(x))^3+3\,ax(y(x))^2-bx^3+cx^2\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)-a(y(x))^3+c(y(x))^2+3\,bx^2y(x)+2\,bx^3=0$$

Mathematica: cpu = 0.069009 (sec), leaf count = 537

$$\left\{\left\{y(x)\to\frac{\sqrt[3]{2}(3acx+3ac_1)}{3a\sqrt[3]{\sqrt{\left(27a^2bx^3+27a^2c_1x\right)^2+4\left(3acx+3ac_1\right)^3}+27a^2bx^3+27a^2c_1x}}-\frac{\sqrt[3]{\sqrt{(27a^2bx^3+27a\right.}}\right.\right.$$

Maple: cpu = 0.156 (sec), leaf count = 912

$$\left\{y(x)=\frac{1}{6\,a}\sqrt[3]{\left(-108\,bx^3+108\,\_C1\,x+12\sqrt{-\frac{-81\,ab^2x^6+162\,\_C1\,abx^4-12\,c^3x^3-81\,\_C1^2ax^2+}{a}}\right.}\right.$$

2.314 ODE No. 314

$$\left[x(y(x))^3\frac{\mathrm{d}}{\mathrm{d}x}y(x)+(y(x))^4-x\sin(x)=0\right]$$

Mathematica: cpu = 0.042505 (sec), leaf count = 188

$$\left\{\left\{y(x)\to-\frac{\sqrt[4]{c_1-4x^4\cos(x)+16x^3\sin(x)+48x^2\cos(x)-96x\sin(x)-96\cos(x)}}{x}\right\},\left\{y(x)\to-\frac{i\sqrt[4]{c_1}\right.\right.$$

Maple: cpu = 0.047 (sec), leaf count = 170

$$\left\{y(x)=\frac{1}{x}\sqrt[4]{-4\,x^4\cos(x)+16\,\sin(x)\,x^3+48\,x^2\cos(x)-96\,\cos(x)-96\,x\sin(x)+\_C1},y(x)=\frac{-i}{x}\sqrt[4]{}\right.$$

2.315 ODE No. 315

$$\left[\left(2\,x(y(x))^3-x^4\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)-(y(x))^4+2\,x^3y(x)=0\right]$$

Mathematica: cpu = 0.114515 (sec), leaf count = 368

$$\left\{\left\{y(x)\to\frac{\sqrt[3]{\frac{2}{3}}e^{c_1}x}{\sqrt[3]{\sqrt{3}\sqrt{27x^6-4e^{3c_1}x^3}-9x^3}}+\frac{\sqrt[3]{\sqrt{3}\sqrt{27x^6-4e^{3c_1}x^3}-9x^3}}{\sqrt[3]{2}3^{2/3}}\right\},\left\{y(x)\to-\frac{(1+i\right.\right.$$

Maple: cpu = 0.062 (sec), leaf count = 447

$$\left\{ y(x) = \frac{\sqrt[3]{12}}{6\_C1} \sqrt[3]{x \left(-9\,x^2 \_C1 + \sqrt{3} \sqrt{\frac{x \left(27\,x^3 \_C1^3 - 4 \right)}{\_C1}} \right) \_C1^2} + \frac{x 12^{\frac{2}{3}}}{6} \frac{1}{\sqrt[3]{x \left(-9\,x^2 \_C1 + \sqrt{3} \sqrt{\frac{x(} \right.} \right.$$

2.316 ODE No. 316

$$\boxed{\left(2\,x(y(x))^3 + y(x)\right) \frac{\mathrm{d}}{\mathrm{d}x} y(x) + 2\,(y(x))^2 = 0}$$

Mathematica: cpu = 0.039005 (sec), leaf count = 48

$$\left\{ \{y(x) \to 0\}, \text{Solve}\left[x = c_1 e^{-\frac{1}{2} y(x)^2} - \frac{1}{4} e^{-\frac{1}{2} y(x)^2} \text{Ei}\left(\frac{y(x)^2}{2} \right), y(x) \right] \right\}$$

Maple: cpu = 0.047 (sec), leaf count = 53

$$\left\{ y(x) = 0, y(x) = \sqrt{-2\,RootOf\left(\mathrm{e}^{-\_Z} Ei\left(1, \_Z\right) + 4\,\mathrm{e}^{-\_Z} \_C1 - 4\,x \right)}, y(x) = -\sqrt{-2\,RootOf\left(\mathrm{e}^{-\_Z} Ei\left(1, \_Z \right.} \right.$$

2.317 ODE No. 317

$$\boxed{\left(2\,x(y(x))^3 + xy(x) + x^2\right) \frac{\mathrm{d}}{\mathrm{d}x} y(x) + (y(x))^2 - xy(x) = 0}$$

Mathematica: cpu = 0.320541 (sec), leaf count = 23

$$\text{Solve}\left[y(x)^2 - \frac{x}{y(x)} + \log(y(x)) + \log(x) = c_1, y(x) \right]$$

Maple: cpu = 0.093 (sec), leaf count = 29

$$\left\{ y(x) = \mathrm{e}^{RootOf\left(-\left(\mathrm{e}^{-\_Z}\right)^3 - \mathrm{e}^{-\_Z} \ln(x) + \mathrm{e}^{-\_Z} \_C1 - \_Z\,\mathrm{e}^{-\_Z} + x \right)} \right\}$$

2.318 ODE No. 318

$$\boxed{\left(3\,x(y(x))^3-4\,xy(x)+y(x)\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+(y(x))^2\left((y(x))^2-2\right)=0}$$

Mathematica: cpu = 0.060008 (sec), leaf count = 4284

$$\left\{\{y(x)\to 0\},\left\{y(x)\to -\sqrt{\frac{4\sqrt[3]{2}x^2}{3\sqrt[3]{16x^6+24x^5-27c_1^2x^4+12x^4+2x^3+3\sqrt{3}\sqrt{-32c_1^2x^{10}-48c_1^2x^9+27c_1^4x}}}}\right.\right.$$

Maple: cpu = 0.016 (sec), leaf count = 28

$$\left\{x+(y(x))^{-2}-\frac{\_C1}{(y(x))^2}\frac{1}{\sqrt{(y(x))^2-2}}=0,y(x)=0\right\}$$

2.319 ODE No. 319

$$\boxed{\left(7\,x(y(x))^3+y(x)-5\,x\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+(y(x))^4-5\,y(x)=0}$$

Mathematica: cpu = 0.023503 (sec), leaf count = 302

$$\left\{\left\{y(x)\to \text{Root}\left[10\#1^7x+2\#1^5-100\#1^4x-25\#1^2+250\#1x-10c_1\&,1\right]\right\},\left\{y(x)\to \text{Root}\left[10\#1^7x+\right.\right.\right.$$

Maple: cpu = 0.031 (sec), leaf count = 33

$$\left\{x-\frac{1}{y(x)\left((y(x))^3-5\right)^2}\left(-\frac{(y(x))^5}{5}+\frac{5(y(x))^2}{2}+\_C1\right)=0\right\}$$

2.320 ODE No. 320

$$\boxed{\left(x^2(y(x))^3+xy(x)\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)-1=0}$$

Mathematica: cpu = 0.057007 (sec), leaf count = 76

$$\left\{\left\{y(x)\to -\frac{\sqrt{2xW\left(c_1e^{\frac{1}{2x}-1}\right)+2x-1}}{\sqrt{x}}\right\},\left\{y(x)\to \frac{\sqrt{2xW\left(c_1e^{\frac{1}{2x}-1}\right)+2x-1}}{\sqrt{x}}\right\}\right\}$$

Maple: cpu = 0.078 (sec), leaf count = 70

$$\left\{y(x)=\frac{1}{x}\sqrt{x\left(2\,lambertW\left(1/2\_C1\,\mathrm{e}^{-1/2\,\frac{2\,x-1}{x}}\right)x+2\,x-1\right)},y(x)=-\frac{1}{x}\sqrt{x\left(2\,lambertW\left(1/2\_C1\,\mathrm{e}\right.\right.\right.$$

2.321 ODE No. 321

$$\boxed{\left(2\,x^2(y(x))^3+x^2(y(x))^2-2\,x\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)-2\,y(x)-1=0}$$

Mathematica: cpu = 0.181023 (sec), leaf count = 47

$$\text{Solve}\left[\frac{1}{64}\left(-4y(x)^2+4y(x)-2\log(8y(x)+4)+3\right)-\frac{1}{4x(2y(x)+1)}=c_1,y(x)\right]$$

Maple: cpu = 0.125 (sec), leaf count = 42

$$\left\{y(x)=\frac{\mathrm{e}^{RootOf\left(x\left(\mathrm{e}^{\_Z}\right)^3-4\,x\left(\mathrm{e}^{\_Z}\right)^2+8\,\_C1\,x\mathrm{e}^{\_Z}+2\,\_Z\,x\mathrm{e}^{\_Z}+3\,x\mathrm{e}^{\_Z}+16\right)}}{2}-\frac{1}{2}\right\}$$

2.322 ODE No. 322

$$\boxed{\left(10\,x^2(y(x))^3-3\,(y(x))^2-2\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+5\,x(y(x))^4+x=0}$$

Mathematica: cpu = 0.024503 (sec), leaf count = 2077

$$\left\{\left\{y(x)\to-\frac{1}{2}\sqrt{\frac{4\sqrt[3]{2}\left(5x^4-10c_1x^2-2\right)}{5x^2\sqrt[3]{2268x^2-216c_1+\sqrt{\left(2160x^2+108\left(x^2-2c_1\right)\right)^2-4\left(60x^4-120c_1x^2-24\right)^3}}}+\frac{\sqrt[3]{}}{}\right.\right.$$

Maple: cpu = 0.031 (sec), leaf count = 28

$$\left\{\frac{x^2\left(5\,(y(x))^4+1\right)}{2}-(y(x))^3-2\,y(x)+\_C1=0\right\}$$

2.323 ODE No. 323

$$\boxed{\left(ax(y(x))^3+c\right)x\frac{\mathrm{d}}{\mathrm{d}x}y(x)+\left(bx^3y(x)+c\right)y(x)=0}$$

Mathematica: cpu = 0.032004 (sec), leaf count = 463

$$\left\{\left\{y(x)\to\frac{\sqrt[3]{54a^2cx^2+\sqrt{2916a^4c^2x^4+108a^3x^3\left(bx^3-2c_1x\right)^3}}}{3\sqrt[3]{2}ax}-\frac{\sqrt[3]{2}(bx^3-2c_1x)}{\sqrt[3]{54a^2cx^2+\sqrt{2916a^4c^2x^4+108a^3x^3}}}\right.\right.$$

Maple: cpu = 0.093 (sec), leaf count = 761

$$\left\{y(x)=\frac{1}{3\,ax}\sqrt[3]{\left(27\,c+3\sqrt{-\frac{-3\,b^3x^8+18\_C1\,b^2x^6-36\_C1^2bx^4+24\_C1^3x^2-81\,c^2a}{a}}\right)a^2x^2+x(-\right.$$

2.324 ODE No. 324

$$\boxed{\left(2\,x^3(y(x))^3-x\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+2\,x^3(y(x))^3-y(x)=0}$$

Mathematica: cpu = 0.026003 (sec), leaf count = 723

$$\left\{\left\{y(x)\to-\frac{2x^3-c_1x^2}{6x^2}+\frac{\sqrt[3]{12c_1x^8-6c_1^2x^7+c_1^3x^6+3\sqrt{3}\sqrt{-24c_1x^{12}+12c_1^2x^{11}-2c_1^3x^{10}+16x^{13}+27}}}{6x^2}\right.\right.$$

Maple: cpu = 0.109 (sec), leaf count = 770

$$\left\{y(x)=\frac{1}{6\,x}\sqrt[3]{\left(\_C1^3x^2-6\_C1^2x^3+12\_C1\,x^4-8\,x^5+3\sqrt{-6\_C1^3x^2+36\_C1^2x^3-72\_C1\,x^4+}\right.\right.$$

2.325 ODE No. 325

$$\boxed{y(x)\left(\left(y(x)\right)^3-2\,x^3\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+\left(2\left(y(x)\right)^3-x^3\right)x=0}$$

Mathematica: cpu = 0.049006 (sec), leaf count = 139

$$\text{Solve}\left[\frac{1}{7}\text{RootSum}\left[\#1^4+\#1^3+3\#1^2+\#1+1\&,\frac{8\#1^3\log\left(\frac{y(x)}{x}-\#1\right)+9\#1^2\log\left(\frac{y(x)}{x}-\#1\right)+12\#}{4\#1^3+3\#1^2+6\#1}\right.\right.$$

Maple: cpu = 0.296 (sec), leaf count = 1192

$$\left\{y(x)=-\frac{\sqrt{3}x}{6}\left(\sqrt{3}-3\,RootOf\left(3\_Z-\sqrt{3}-\sqrt{3}\_Z^2+4\,\tan\left(7/6\,\sqrt{3}\ln\left(2\right)\right)+3\,\_Z^3+3\,\tan\left(7/6\,\sqrt{}\right.\right.\right.\right.$$

2.326 ODE No. 326

$$\boxed{y(x)\left(\left(ay(x)+bx\right)^3+bx^3\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+x\left(\left(ay(x)+bx\right)^3+a\left(y(x)\right)^3\right)=0}$$

Mathematica: cpu = 0.272035 (sec), leaf count = 13289

Maple: cpu = 0.343 (sec), leaf count = 160

$$\left\{y(x)=\frac{x\left(\_C1\,x-bRootOf\left(b^2\_Z^4-2\,bx\_C1\,\_Z^3+\left(a^2x^2\_C1^2+b^2x^2\_C1^2+\_C1^2x^2-a^2\right)\_Z^2-\right.\right.\right.}{aRootOf\left(b^2\_Z^4-2\,bx\_C1\,\_Z^3+\left(a^2x^2\_C1^2+b^2x^2\_C1^2+\_C1^2x^2-a^2\right)\_Z^2-2\,bx\right.}$$

2.327 ODE No. 327

$$\boxed{\left(x(y(x))^4+2\,x^2(y(x))^3+2\,y(x)+x\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+(y(x))^5+y(x)=0}$$

Mathematica: cpu = 0.384549 (sec), leaf count = 669

$$\left\{\left\{y(x)\to\frac{\sqrt[3]{9c_1^2x^2+3\sqrt{3}\sqrt{-4c_1^3x^6-c_1^4x^4+18c_1^2x^4+4c_1^3x^2+27x^4}+2c_1^3+27x^2}}{3\sqrt[3]{2}x}-\frac{}{3x\sqrt[3]{9c_1^2x^2+3\sqrt{3}\sqrt{}}}\right.\right.$$

Maple: cpu = 0.156 (sec), leaf count = 583

$$\left\{y(x)=\frac{1}{12\_C1\,x}\left(\left(-12\,ix^2\_C1-i\left(108\,\_C1^3x^2+12\sqrt{3}\sqrt{27\,\_C1^4x^2+18\,\_C1^2x^2+(4\,x^4-4)\,\_C}\right.\right.\right.\right.$$

2.328 ODE No. 328

$$\boxed{ax^2(y(x))^n\frac{\mathrm{d}}{\mathrm{d}x}y(x)-2\,x\frac{\mathrm{d}}{\mathrm{d}x}y(x)+y(x)=0}$$

Mathematica: cpu = 0.095012 (sec), leaf count = 42

$$\text{Solve}\left[\frac{n(\log(x)-\log\left(-axy(x)^n+n+2\right))}{n+2}-\frac{2n\log(y(x))}{n+2}=c_1,y(x)\right]$$

Maple: cpu = 0.140 (sec), leaf count = 33

$$\left\{\frac{x^n}{\left(\left(y\left(x\right)\right)^n ax-n-2\right)^n\left(\left(y\left(x\right)\right)^n\right)^2}-\_C1=0\right\}$$

2.329 ODE No. 329

$$\boxed{(y(x))^m\,x^n\left(ax\frac{\mathrm{d}}{\mathrm{d}x}y(x)+by(x)\right)+\alpha\,x\frac{\mathrm{d}}{\mathrm{d}x}y(x)+\beta\,y(x)=0}$$

Mathematica: cpu = 0.313540 (sec), leaf count = 102

$$\text{Solve}\left[\frac{m((a\beta-\alpha b)\log\left(x^ny(x)^m(bm-an)-\alpha n+\beta m\right)+\beta\log(x)(bm-an))}{(bm-an)(\beta m-\alpha n)}+\frac{\alpha m\log(\beta my(x)-\alpha ny(\right.$$

Maple: cpu = 0.249 (sec), leaf count = 78

$$\left\{x^{a\beta\,mn-b\beta\,m^2}\left(\left(y(x)\right)^m\right)^{a\alpha\,n-\alpha\,bm}\left(\left(y(x)\right)^m x^nna-\left(y(x)\right)^m mx^nb+\alpha\,n-\beta\,m\right)^{-a\beta\,m+\alpha\,bm}-\_C1=0\right\}$$

2.330 ODE No. 330

$$\boxed{(f(y(x)+x)+1)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+f(y(x)+x)=0}$$

Mathematica: cpu = 32.940183 (sec), leaf count = 49

$$\text{Solve}\left[\int_1^{y(x)}\left(-\int_1^x f'(K[1]+K[2])\,dK[1]+f(K[2]+x)+1\right)dK[2]+\int_1^x f(K[1]+y(x))\,dK[1]=c_1,y\right.$$

Maple: cpu = 0.031 (sec), leaf count = 22

$$\left\{y(x)=-x+RootOf\left(-x+\int^{\_Z}1+f(\_a)\,d\_a+\_C1\right)\right\}$$

2.331 ODE No. 331

$$\boxed{\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)\sum_{\nu=1}^{p}f_\nu(x)\left(y(x)\right)^\nu-\sum_{\nu=1}^{q}g_\nu(x)\left(y(x)\right)^\nu=0}$$

Mathematica: cpu = 0 (sec), leaf count = 0

Hanged

Maple: cpu = 0 (sec), leaf count = 0

hanged

2.332 ODE No. 332

$$\boxed{\left(\sqrt{xy\left(x\right)}-1\right)x\frac{\mathrm{d}}{\mathrm{d}x}y(x)-\left(\sqrt{xy\left(x\right)}+1\right)y(x)=0}$$

Mathematica: cpu = 0.080510 (sec), leaf count = 24

$$\text{Solve}\left[\frac{2}{\sqrt{xy(x)}}+\log(y(x))-\log(x)=c_1,y(x)\right]$$

Maple: cpu = 0.015 (sec), leaf count = 31

$$\left\{\ln\left(x\right)-\_C1-\frac{1}{2}\left(\ln\left(xy(x)\right)\sqrt{xy\left(x\right)}+2\right)\frac{1}{\sqrt{xy\left(x\right)}}=0\right\}$$

2.333 ODE No. 333

$$\boxed{\left(2\,x^{5/2}(y(x))^{3/2}+x^2y(x)-x\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)-x^{3/2}(y(x))^{5/2}+x(y(x))^2-y(x)=0}$$

Mathematica: cpu = 0.173022 (sec), leaf count = 72

$$\text{Solve}\left[\frac{2\sqrt{xy(x)}\log(y(x))}{\sqrt{x}\sqrt{y(x)}}-\frac{\sqrt{xy(x)}\left(3x^{3/2}y(x)^{3/2}\log(x)+6xy(x)-2\right)}{3x^2y(x)^2}=c_1,y(x)\right]$$

Maple: cpu = 0.062 (sec), leaf count = 32

$$\left\{\ln\left(y(x)\right)-1\frac{1}{\sqrt{x}}\frac{1}{\sqrt{y\left(x\right)}}+\frac{1}{3}(y(x))^{-\frac{3}{2}}x^{-\frac{3}{2}}-\frac{\ln\left(x\right)}{2}-\_C1=0\right\}$$

2.334 ODE No. 334

$$\boxed{\left(\sqrt{y\left(x\right)+x}+1\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+1=0}$$

Mathematica: cpu = 0.035505 (sec), leaf count = 39

$$\left\{\left\{y(x)\to-2\sqrt{c_1+x+1}+c_1+2\right\},\left\{y(x)\to2\sqrt{c_1+x+1}+c_1+2\right\}\right\}$$

Maple: cpu = 0.031 (sec), leaf count = 19

$$\left\{-y(x)-2\sqrt{y\left(x\right)+x}-\_C1=0\right\}$$

2.335 ODE No. 335

$$\boxed{\sqrt{\left(y\left(x\right)\right)^2-1}\frac{\mathrm{d}}{\mathrm{d}x}y(x)-\sqrt{x^2-1}=0}$$

Mathematica: cpu = 0.181023 (sec), leaf count = 75

$$\left\{\left\{y(x)\to\text{InverseFunction}\left[\frac{1}{2}\#1\sqrt{\#1^2-1}-\frac{1}{2}\log\left(\sqrt{\#1^2-1}+\#1\right)\&\right]\left[c_1+\frac{1}{2}\sqrt{x^2-1}x-\frac{1}{2}\log\left(\sqrt{\right.}\right.\right.\right.$$

Maple: cpu = 0.0 (sec), leaf count = 50

$$\left\{\_C1+x\sqrt{x^2-1}-\ln\left(x+\sqrt{x^2-1}\right)-y(x)\sqrt{\left(y\left(x\right)\right)^2-1}+\ln\left(y(x)+\sqrt{\left(y\left(x\right)\right)^2-1}\right)=0\right\}$$

2.336 ODE No. 336

$$\boxed{\left(\sqrt{(y(x))^2+1}+ax\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+\sqrt{x^2+1}+ay(x)=0}$$

Mathematica: cpu = 0.063008 (sec), leaf count = 53

$$\text{Solve}\left[axy(x)+\frac{1}{2}\sqrt{x^2+1}x+\frac{1}{2}\left(y(x)\sqrt{y(x)^2+1}+\sinh^{-1}(y(x))\right)+\frac{1}{2}\sinh^{-1}(x)=c_1,y(x)\right]$$

Maple: cpu = 0.031 (sec), leaf count = 41

$$\left\{\frac{x}{2}\sqrt{x^2+1}+\frac{Arcsinh(x)}{2}+axy(x)+\frac{y(x)}{2}\sqrt{(y(x))^2+1}+\frac{Arcsinh(y(x))}{2}+\_C1=0\right\}$$

2.337 ODE No. 337

$$\boxed{\left(\sqrt{(y(x))^2+x^2}+x\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)-y(x)=0}$$

Mathematica: cpu = 0.059007 (sec), leaf count = 52

$$\left\{\left\{y(x)\to -e^{\frac{c_1}{2}}\sqrt{e^{c_1}+2x}\right\},\left\{y(x)\to e^{\frac{c_1}{2}}\sqrt{e^{c_1}+2x}\right\}\right\}$$

Maple: cpu = 0.031 (sec), leaf count = 28

$$\left\{-\_C1+\frac{1}{(y(x))^2}\sqrt{(y(x))^2+x^2}+\frac{x}{(y(x))^2}=0\right\}$$

2.338 ODE No. 338

$$\boxed{\left(y(x)\sqrt{(y(x))^2+x^2}+\left((y(x))^2-x^2\right)\sin(\alpha)-2xy(x)\cos(\alpha)\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+x\sqrt{(y(x))^2+x^2}+2xy(x)\text{s}}$$

Mathematica: cpu = 77.787378 (sec), leaf count = 17681

$$\left\{\left\{y(x)\to -\frac{1}{2}e^{c_1}\sin(\alpha)-\frac{1}{2}\sqrt{e^{2c_1}\sin^2(\alpha)+\frac{1}{6}\left(4x^2-4e^{c_1}\cos(\alpha)x-e^{2c_1}-e^{2c_1}\cos(2\alpha)\right)+\frac{1}{2}\left(-4x^2+4\right.}\right.\right.$$

Maple: cpu = 0.530 (sec), leaf count = 136

$$\left\{y(x)=RootOf\left(-\ln(x)+\int^{\_Z}-\frac{1}{\left(\_a^2+1\right)\left(\cos(2\alpha)\_a^2+2\_a\sin(2\alpha)+\_a^2-\cos(2\alpha)+1\right)}\left(\cos\right.\right.$$

2.339 ODE No. 339

$$\left(x\sqrt{x^2+\left(y\left(x\right)\right)^2+1}-y(x)\left(\left(y(x)\right)^2+x^2\right)\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)-y(x)\sqrt{x^2+\left(y\left(x\right)\right)^2+1}-x\left(\left(y(x)\right)^2+x^2\right)=0$$

Mathematica: cpu = 0.109514 (sec), leaf count = 27

$$\text{Solve}\left[\sqrt{x^2+y(x)^2+1}+\tan^{-1}\left(\frac{x}{y(x)}\right)=c_1,y(x)\right]$$

Maple: cpu = 0.140 (sec), leaf count = 27

$$\left\{\arctan\left(\frac{y(x)}{x}\right)-\sqrt{x^2+\left(y\left(x\right)\right)^2+1}-\_C1=0\right\}$$

2.340 ODE No. 340

$$\left(\frac{e1\left(x+a\right)}{\left(\left(x+a\right)^2+\left(y\left(x\right)\right)^2\right)^{3/2}}+\frac{e2\left(x-a\right)}{\left(\left(x-a\right)^2+\left(y\left(x\right)\right)^2\right)^{3/2}}\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)-y(x)\left(\frac{e1}{\left(\left(x+a\right)^2+\left(y\left(x\right)\right)^2\right)^{3/2}}+\frac{}{\left(\left(x\right.\right.}\right.$$

Mathematica: cpu = 0 (sec), leaf count = 0

Hanged

Maple: cpu = 0 (sec), leaf count = 0

hanged

2.341 ODE No. 341

$$\left(x\mathrm{e}^{y(x)}+\mathrm{e}^{x}\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+\mathrm{e}^{y(x)}+y(x)\,\mathrm{e}^{x}=0$$

Mathematica: cpu = 0.049506 (sec), leaf count = 33

$$\left\{\left\{y(x)\to c_1e^{-x}-W\left(xe^{c_1e^{-x}-x}\right)\right\}\right\}$$

Maple: cpu = 0.047 (sec), leaf count = 30

$$\left\{y(x)=-lambertW\left(\frac{x}{\mathrm{e}^{x}}\left(\mathrm{e}^{\frac{\_C1}{\mathrm{e}^{x}}}\right)^{-1}\right)-\frac{\_C1}{\mathrm{e}^{x}}\right\}$$

2.342 ODE No. 342

$$\boxed{x\left(3\,\mathrm{e}^{xy(x)}+2\,\mathrm{e}^{-xy(x)}\right)\left(x\frac{\mathrm{d}}{\mathrm{d}x}y(x)+y(x)\right)+1=0}$$

Mathematica: cpu = 0.261033 (sec), leaf count = 163

$$\left\{\left\{y(x)\to -\frac{\cosh^{-1}\left(\frac{1}{24}\left(-5\sqrt{\log^2\left(\frac{c_1}{x}\right)+24}-\log\left(\frac{c_1}{x}\right)\right)\right)}{x}\right\},\left\{y(x)\to \frac{\cosh^{-1}\left(\frac{1}{24}\left(-5\sqrt{\log^2\left(\frac{c_1}{x}\right)+24}\right.\right.\right.\right.}{x}$$

Maple: cpu = 0.031 (sec), leaf count = 17

$$\left\{y(x)=\frac{1}{x}\ln\left(-\frac{\ln(x)}{5}+\frac{\_C1}{5}\right)\right\}$$

2.343 ODE No. 343

$$\boxed{\left(\ln\left(y(x)\right)+x\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)-1=0}$$

Mathematica: cpu = 0.037505 (sec), leaf count = 35

$$\text{Solve}\left[x=c_1e^{y(x)}+e^{y(x)}\left(\text{Ei}(-y(x))-e^{-y(x)}\log(y(x))\right),y(x)\right]$$

Maple: cpu = 0.046 (sec), leaf count = 27

$$\left\{y(x)=\mathrm{e}^{RootOf\left(-\_Z-x-Ei\left(1,\mathrm{e}^{-\_Z}\right)\mathrm{e}^{\mathrm{e}^{-\_Z}}+\mathrm{e}^{\mathrm{e}^{-\_Z}}\_C1\right)}\right\}$$

2.344 ODE No. 344

$$\boxed{\left(\ln\left(y(x)\right)+2\,x-1\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)-2\,y(x)=0}$$

Mathematica: cpu = 0.018502 (sec), leaf count = 23

$$\left\{\left\{y(x)\to -\frac{W(-2c_1e^{-2x})}{2c_1}\right\}\right\}$$

Maple: cpu = 0.016 (sec), leaf count = 19

$$\left\{y(x)=\mathrm{e}^{-lambertW\left(-2\,\mathrm{e}^{-2\,x}\_C1\right)-2\,x}\right\}$$

2.345 ODE No. 345

$$\boxed{x\left(2\,x^2 y(x)\ln\left(y(x)\right)+1\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)-2\,y(x)=0}$$

Mathematica: cpu = 0.041005 (sec), leaf count = 35

$$\text{Solve}\left[\frac{y(x)}{x^2}+2\left(\frac{1}{2}y(x)^2\log(y(x))-\frac{y(x)^2}{4}\right)=c_1,y(x)\right]$$

Maple: cpu = 0.063 (sec), leaf count = 36

$$\left\{y(x)=\mathrm{e}^{RootOf\left(2\_Z\,x^2\left(\mathrm{e}^{-Z}\right)^2-x^2\left(\mathrm{e}^{-Z}\right)^2+2\,x^2\_C1+2\,\mathrm{e}^{-Z}\right)}\right\}$$

2.346 ODE No. 346

$$\boxed{x(y(x)\ln\left(xy(x)\right)+y(x)-ax)\frac{\mathrm{d}}{\mathrm{d}x}y(x)-y(x)\left(ax\ln\left(xy(x)\right)-y(x)+ax\right)=0}$$

Mathematica: cpu = 0.054007 (sec), leaf count = 24

$$\text{Solve}[ax\log(xy(x))-y(x)\log(xy(x))=c_1,y(x)]$$

Maple: cpu = 0.202 (sec), leaf count = 19

$$\left\{\left(xy(x)\right)^{-ax+y(x)}-\_C1=0\right\}$$

2.347 ODE No. 347

$$\boxed{\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)\left(1+\sin\left(x\right)\right)\sin\left(y(x)\right)+\cos\left(x\right)\left(\cos\left(y(x)\right)-1\right)=0}$$

Mathematica: cpu = 0.117515 (sec), leaf count = 32

$$\left\{\{y(x)\to 0\},\left\{y(x)\to 2\sin^{-1}\left(\frac{1}{4}c_1\left(\sin\left(\frac{x}{2}\right)+\cos\left(\frac{x}{2}\right)\right)\right)\right\}\right\}$$

Maple: cpu = 0.094 (sec), leaf count = 16

$$\left\{y(x)=\pi-\arccos\left(\sin\left(x\right)\_C1+\_C1-1\right)\right\}$$

2.348 ODE No. 348

$$\boxed{(x \cos(y(x)) + \sin(x)) \frac{\mathrm{d}}{\mathrm{d}x} y(x) + y(x) \cos(x) + \sin(y(x)) = 0}$$

Mathematica: cpu = 0.048006 (sec), leaf count = 17

$$\text{Solve}[x \sin(y(x)) + y(x) \sin(x) = c_1, y(x)]$$

Maple: cpu = 0.078 (sec), leaf count = 15

$$\{y(x) \sin(x) + x \sin(y(x)) + \_C1 = 0\}$$

2.349 ODE No. 349

$$\boxed{x \left(\frac{\mathrm{d}}{\mathrm{d}x} y(x) \right) \cot\left(\frac{y(x)}{x} \right) + 2\, x \sin\left(\frac{y(x)}{x} \right) - y(x) \cot\left(\frac{y(x)}{x} \right) = 0}$$

Mathematica: cpu = 0.039005 (sec), leaf count = 15

$$\left\{ \left\{ y(x) \to x \csc^{-1}\left(2(c_1 + \log(x)) \right) \right\} \right\}$$

Maple: cpu = 0.031 (sec), leaf count = 15

$$\left\{ y(x) = \arcsin\left(\frac{1}{2 \ln(x) + 2 \_C1} \right) x \right\}$$

2.350 ODE No. 350

$$\boxed{\left(\frac{\mathrm{d}}{\mathrm{d}x} y(x) \right) \cos(y(x)) - \cos(x) (\sin(y(x)))^2 - \sin(y(x)) = 0}$$

Mathematica: cpu = 0.543569 (sec), leaf count = 53

$$\left\{ \left\{ y(x) \to \csc^{-1}\left(\frac{1}{2}\left(-2c_1 e^{-x} - \sin(x) - \cos(x) \right) \right) \right\}, \left\{ y(x) \to -\csc^{-1}\left(\frac{1}{2}\left(2c_1 e^{-x} + \sin(x) + \cos(x) \right) \right) \right.$$

Maple: cpu = 0.718 (sec), leaf count = 270

$$\left\{ y(x) = \arctan\left(-2 \frac{\mathrm{e}^x}{\mathrm{e}^x \cos(x) + \mathrm{e}^x \sin(x) + 2 \_C1}, \frac{1}{2 \cos(x) \sin(x) (\mathrm{e}^x)^2 + 4 \_C1 \sin(x) \mathrm{e}^x + 4 \cos(x)} \right.$$

2.351 ODE No. 351

$$\boxed{\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)\cos\left(y(x)\right)+x\sin\left(y(x)\right)\left(\cos\left(y(x)\right)\right)^{2}-\left(\sin\left(y(x)\right)\right)^{3}=0}$$

Mathematica: cpu = 0.367047 (sec), leaf count = 61

$$\left\{\left\{y(x)\to-\cot^{-1}\left(\sqrt{e^{x^2}\left(4c_1-\sqrt{\pi}\mathrm{erf}(x)\right)}\right)\right\},\left\{y(x)\to\cot^{-1}\left(\sqrt{e^{x^2}\left(4c_1-\sqrt{\pi}\mathrm{erf}(x)\right)}\right)\right\}\right\}$$

Maple: cpu = 0.343 (sec), leaf count = 55

$$\left\{y(x)=-\arcsin\left(\frac{1}{\sqrt{1-\sqrt{\pi}Erf\left(x\right)\mathrm{e}^{x^2}-2\_C1\,\mathrm{e}^{x^2}}}\right),y(x)=\arcsin\left(\frac{1}{\sqrt{1-\sqrt{\pi}Erf\left(x\right)\mathrm{e}^{x^2}-2\_C1\,\mathrm{e}^{x}}}\right.\right.$$

2.352 ODE No. 352

$$\boxed{\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)\left(\cos\left(y(x)\right)-\sin\left(\alpha\right)\sin\left(x\right)\right)\cos\left(y(x)\right)+\left(\cos\left(x\right)-\sin\left(\alpha\right)\sin\left(y(x)\right)\right)\cos\left(x\right)=0}$$

Mathematica: cpu = 0.132017 (sec), leaf count = 43

$$\mathrm{Solve}\left[4\sin(\alpha)\sin(x)\sin(y(x))-4\left(\frac{y(x)}{2}+\frac{1}{4}\sin(2y(x))\right)-2x-\sin(2x)=c_1,y(x)\right]$$

Maple: cpu = 0.188 (sec), leaf count = 35

$$\left\{-\sin\left(x\right)\sin\left(\alpha\right)\sin\left(y(x)\right)+\frac{\cos\left(x\right)\sin\left(x\right)}{2}+\frac{x}{2}+\frac{\sin\left(y(x)\right)\cos\left(y(x)\right)}{2}+\frac{y(x)}{2}+\_C1=0\right\}$$

2.353 ODE No. 353

$$\boxed{x\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)\cos\left(y(x)\right)+\sin\left(y(x)\right)=0}$$

Mathematica: cpu = 0.020002 (sec), leaf count = 14

$$\left\{\left\{y(x)\to\sin^{-1}\left(\frac{e^{c_1}}{x}\right)\right\}\right\}$$

Maple: cpu = 0.047 (sec), leaf count = 12

$$\left\{y(x)=\arcsin\left(\frac{1}{\_C1\,x}\right)\right\}$$

2.354 ODE No. 354

$$\boxed{(x \sin(y(x)) - 1) \frac{\mathrm{d}}{\mathrm{d}x} y(x) + \cos(y(x)) = 0}$$

Mathematica: cpu = 0.064008 (sec), leaf count = 145

$$\left\{\left\{y(x) \to -\cos^{-1}\left(\frac{c_1 x - \sqrt{c_1^2 - x^2 + 1}}{c_1^2 + 1}\right)\right\}, \left\{y(x) \to \cos^{-1}\left(\frac{c_1 x - \sqrt{c_1^2 - x^2 + 1}}{c_1^2 + 1}\right)\right\}, \left\{y(x) \to -\text{co}\right.\right.$$

Maple: cpu = 0.047 (sec), leaf count = 115

$$\left\{y(x) = \arctan\left(\frac{\_C1}{\_C1^2 + 1}\left(-\_C1\, x + \sqrt{\_C1^2 - x^2 + 1}\right) + x, -\frac{1}{\_C1^2 + 1}\left(-\_C1\, x + \sqrt{\_C1^2 - x^2 -\right.\right.$$

2.355 ODE No. 355

$$\boxed{(x \cos(y(x)) + \cos(x)) \frac{\mathrm{d}}{\mathrm{d}x} y(x) - y(x) \sin(x) + \sin(y(x)) = 0}$$

Mathematica: cpu = 0.048006 (sec), leaf count = 17

$$\text{Solve}[x \sin(y(x)) + y(x) \cos(x) = c_1, y(x)]$$

Maple: cpu = 0.062 (sec), leaf count = 15

$$\{y(x) \cos(x) + x \sin(y(x)) + \_C1 = 0\}$$

2.356 ODE No. 356

$$\boxed{\left(x^2 \cos(y(x)) + 2\, y(x) \sin(x)\right) \frac{\mathrm{d}}{\mathrm{d}x} y(x) + 2\, x \sin(y(x)) + (y(x))^2 \cos(x) = 0}$$

Mathematica: cpu = 0.061508 (sec), leaf count = 21

$$\text{Solve}\left[x^2 \sin(y(x)) + y(x)^2 \sin(x) = c_1, y(x)\right]$$

Maple: cpu = 0.078 (sec), leaf count = 19

$$\left\{(y(x))^2 \sin(x) + \sin(y(x))\, x^2 + \_C1 = 0\right\}$$

2.357 ODE No. 357

$$\boxed{x\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)\ln\left(x\right)\sin\left(y(x)\right)+\cos\left(y(x)\right)\left(1-x\cos\left(y(x)\right)\right)=0}$$

Mathematica: cpu = 0.317540 (sec), leaf count = 35

$$\left\{\left\{y(x)\to-\sec^{-1}\left(\frac{x-c_1}{\log(x)}\right)\right\},\left\{y(x)\to\sec^{-1}\left(\frac{x-c_1}{\log(x)}\right)\right\}\right\}$$

Maple: cpu = 0.406 (sec), leaf count = 13

$$\left\{y(x)=\arccos\left(\frac{\ln\left(x\right)}{x+\_C1}\right)\right\}$$

2.358 ODE No. 358

$$\boxed{\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)\sin\left(y(x)\right)\cos\left(x\right)+\cos\left(y(x)\right)\sin\left(x\right)=0}$$

Mathematica: cpu = 0.043506 (sec), leaf count = 29

$$\left\{\left\{y(x)\to-\cos^{-1}\left(\frac{1}{2}c_1\sec(x)\right)\right\},\left\{y(x)\to\cos^{-1}\left(\frac{1}{2}c_1\sec(x)\right)\right\}\right\}$$

Maple: cpu = 0.062 (sec), leaf count = 11

$$\left\{y(x)=\arccos\left(\frac{\_C1}{\cos\left(x\right)}\right)\right\}$$

2.359 ODE No. 359

$$\boxed{3\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)\sin\left(x\right)\sin\left(y(x)\right)+5\left(\cos\left(x\right)\right)^4y(x)=0}$$

Mathematica: cpu = 0.055507 (sec), leaf count = 45

$$\left\{\left\{y(x)\to\text{SinIntegral}^{(-1)}\left(c_1-\frac{5}{3}\left(\frac{5\cos(x)}{4}+\frac{1}{12}\cos(3x)+\log\left(\sin\left(\frac{x}{2}\right)\right)-\log\left(\cos\left(\frac{x}{2}\right)\right)\right)\right)\right\}\right\}$$

Maple: cpu = 0.047 (sec), leaf count = 28

$$\left\{\frac{\cos\left(3\,x\right)}{12}+\frac{5\,\cos\left(x\right)}{4}+\ln\left(\csc\left(x\right)-\cot\left(x\right)\right)+\frac{3\,Si(y(x))}{5}+\_C1=0\right\}$$

2.360 ODE No. 360

$$\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)\cos\left(ay(x)\right)-b(1-c\cos\left(ay(x)\right))\sqrt{\left(\cos\left(ay\left(x\right)\right)\right)^{2}-1+c\cos\left(ay\left(x\right)\right)}=0$$

Mathematica: cpu = 4.990134 (sec), leaf count = 369

$$\left\{\left\{y(x)\to \text{InverseFunction}\left[-\frac{i(\cos(\#1a)+1)\sqrt{\frac{2c\cos(\#1a)+\cos(2\#1a)-1}{(\cos(\#1a)+1)^2}}\sqrt{\frac{c\tan^2\left(\frac{\#1a}{2}\right)+\sqrt{c^2+4}+2}{\sqrt{c^2+4}+2}}\sqrt{1-\frac{c\tan^2\left(\frac{\#}{\sqrt{c^2+4}+}\right.}\right.\right.\right.$$
$$\left.\left.\left.\left.a\left(c^2-1\right)\sqrt{\frac{}{4-2\sqrt{}}}\right.\right.\right.\right.$$

Maple: cpu = 0.124 (sec), leaf count = 48

$$\left\{x+\int^{y(x)}2\frac{\cos\left(\_a\,a\right)}{b\left(c\cos\left(\_a\,a\right)-1\right)\sqrt{2\,\cos\left(2\,\_a\,a\right)-2+4\,c\cos\left(\_a\,a\right)}}d\_a+\_C1=0\right\}$$

2.361 ODE No. 361

$$\left(x\sin\left(xy(x)\right)+\cos\left(y(x)+x\right)-\sin\left(y(x)\right)\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+y(x)\sin\left(xy(x)\right)+\cos\left(y(x)+x\right)+\cos\left(x\right)=0$$

Mathematica: cpu = 0.213027 (sec), leaf count = 31

$$\text{Solve}[\cos(y(x))-\cos(xy(x))+\sin(x)\cos(y(x))+\cos(x)\sin(y(x))+\sin(x)=c_1,y(x)]$$

Maple: cpu = 0.172 (sec), leaf count = 22

$$\left\{-\cos\left(xy(x)\right)+\sin\left(y(x)+x\right)+\sin\left(x\right)+\cos\left(y(x)\right)+\_C1=0\right\}$$

2.362 ODE No. 362

$$\left(x^{2}y(x)\sin\left(xy(x)\right)-4\,x\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+x(y(x))^{2}\sin\left(xy(x)\right)-y(x)=0$$

Mathematica: cpu = 0.070009 (sec), leaf count = 23

$$\text{Solve}[-4\log(y(x))-\cos(xy(x))-\log(x)=c_1,y(x)]$$

Maple: cpu = 0.110 (sec), leaf count = 23

$$\left\{y(x)=\frac{1}{x}RootOf\left(-\_Z+\mathrm{e}^{-\frac{\cos\left(\_Z\right)}{4}}\_C1\,x^{\frac{3}{4}}\right)\right\}$$

2.363 ODE No. 363

$$\boxed{\left(x\frac{\mathrm{d}}{\mathrm{d}x}y(x)-y(x)\right)\left(\cos\left(\frac{y(x)}{x}\right)\right)^{2}+x=0}$$

Mathematica: cpu = 0.035005 (sec), leaf count = 33

$$\text{Solve}\left[\frac{y(x)}{2x}+\frac{1}{4}\sin\left(\frac{2y(x)}{x}\right)=c_1-\log(x),y(x)\right]$$

Maple: cpu = 0.062 (sec), leaf count = 35

$$\left\{-\frac{1}{2x}\left(\cos\left(\frac{y(x)}{x}\right)\sin\left(\frac{y(x)}{x}\right)x+y(x)\right)-\ln(x)-\_C1=0\right\}$$

2.364 ODE No. 364

$$\boxed{\left(y(x)\sin\left(\frac{y(x)}{x}\right)-x\cos\left(\frac{y(x)}{x}\right)\right)x\frac{\mathrm{d}}{\mathrm{d}x}y(x)-\left(x\cos\left(\frac{y(x)}{x}\right)+y(x)\sin\left(\frac{y(x)}{x}\right)\right)y(x)=0}$$

Mathematica: cpu = 0.064008 (sec), leaf count = 31

$$\text{Solve}\left[-\log\left(\frac{y(x)}{x}\right)-\log\left(\cos\left(\frac{y(x)}{x}\right)\right)=c_1+2\log(x),y(x)\right]$$

Maple: cpu = 0.078 (sec), leaf count = 23

$$\left\{y(x)=\frac{\_C1}{\cos\left(RootOf\left(-\_Z\,x^{2}\cos\left(\_Z\right)+\_C1\right)\right)x}\right\}$$

2.365 ODE No. 365

$$\boxed{\left(y(x)\,f\left(\left(y(x)\right)^{2}+x^{2}\right)-x\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+y(x)+xf\left(\left(y(x)\right)^{2}+x^{2}\right)=0}$$

Mathematica: cpu = 0 (sec), leaf count = 0

Hanged

Maple: cpu = 0.218 (sec), leaf count = 42

$$\left\{y(x)=x\left(\tan\left(RootOf\left(-2\_Z-\int^{\frac{x^{2}\left(\left(\tan\left(\_Z\right)\right)^{2}+1\right)}{\left(\tan\left(\_Z\right)\right)^{2}}}\frac{f(\_a)}{\_a}d\_a+2\_C1\right)\right)\right)^{-1}\right\}$$

2.366 ODE No. 366

$$\boxed{f\left(x^2+a(y(x))^2\right)\left(ay(x)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+x\right)-y(x)-x\frac{\mathrm{d}}{\mathrm{d}x}y(x)=0}$$

Mathematica: cpu = 264.973147 (sec), leaf count = 88

$$\text{Solve}\left[\int_1^{y(x)}\left(-\int_1^x\left(1-2aK[1]K[2]f'\left(aK[2]^2+K[1]^2\right)\right)dK[1]-aK[2]f\left(aK[2]^2+x^2\right)+x\right)dK[2]+\right.$$

Maple: cpu = 0.046 (sec), leaf count = 45

$$\left\{-ax(y(x))^2\frac{1}{\sqrt{a^2\left(y\left(x\right)\right)^2}}-\int^{-\frac{a(y(x))^2}{2}-\frac{x^2}{2}}f(-2\_a)\,d\_a+\_C1=0\right\}$$

2.367 ODE No. 367

$$\boxed{f(x^cy(x))\left(bx\frac{\mathrm{d}}{\mathrm{d}x}y(x)-a\right)-x^a(y(x))^b\left(x\frac{\mathrm{d}}{\mathrm{d}x}y(x)+cy(x)\right)=0}$$

Mathematica: cpu = 22.563365 (sec), leaf count = 46

$$\text{DSolve}\left[f(x^cy(x))\left(bxy'(x)-a\right)-x^ay(x)^b\left(cy(x)+xy'(x)\right)=0,y(x),x\right]$$

Maple: cpu = 0.874 (sec), leaf count = 0

could not solve

2.368 ODE No. 368

$$\boxed{\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+ay(x)+bx^2=0}$$

Mathematica: cpu = 0 (sec), leaf count = 0

Hanged

Maple: cpu = 0 (sec), leaf count = 0

hanged

2.369 ODE No. 369

$$\boxed{\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+(y(x))^2-a^2=0}$$

Mathematica: cpu = 0.046506 (sec), leaf count = 107

$$\left\{\left\{y(x)\to -\frac{a\tan\left(x-c_1\right)}{\sqrt{\tan^2\left(x-c_1\right)+1}}\right\},\left\{y(x)\to \frac{a\tan\left(x-c_1\right)}{\sqrt{\tan^2\left(x-c_1\right)+1}}\right\},\left\{y(x)\to -\frac{a\tan\left(c_1+x\right)}{\sqrt{\tan^2\left(c_1+x\right)+1}}\right\},$$

Maple: cpu = 0.514 (sec), leaf count = 68

$$\left\{y(x)=a,y(x)=\tan\left(-x+\_C1\right)\sqrt{\frac{a^2}{\left(\tan\left(-x+\_C1\right)\right)^2+1}},y(x)=-a,y(x)=-\tan\left(-x+\_C1\right)\sqrt{(}\right.$$

2.370 ODE No. 370

$$\boxed{\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+(y(x))^2-(f(x))^2=0}$$

Mathematica: cpu = 22.438849 (sec), leaf count = 23

$$\text{DSolve}\left[-f(x)^2+y'(x)^2+y(x)^2=0,y(x),x\right]$$

Maple: cpu = 1.404 (sec), leaf count = 0

$$\text{could not solve}$$

2.371 ODE No. 371

$$\boxed{\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2-(y(x))^3+(y(x))^2=0}$$

Mathematica: cpu = 0.026003 (sec), leaf count = 37

$$\left\{\left\{y(x)\to \tan^2\left(\frac{1}{2}(c_1-x)\right)+1\right\},\left\{y(x)\to \tan^2\left(\frac{1}{2}(c_1+x)\right)+1\right\}\right\}$$

Maple: cpu = 0.468 (sec), leaf count = 20

$$\left\{y(x)=1,y(x)=\left(\tan\left(-\frac{x}{2}+\frac{\_C1}{2}\right)\right)^2+1\right\}$$

2.372 ODE No. 372

$$\boxed{\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2 - 4\left(y(x)\right)^3 + ay(x) + b = 0}$$

Mathematica: cpu = 0.003501 (sec), leaf count = 27

$$\{\{y(x) \to \wp(x - c_1; a, b)\}, \{y(x) \to \wp(x + c_1; a, b)\}\}$$

Maple: cpu = 0.499 (sec), leaf count = 271

$$\left\{y(x) = \frac{1}{6}\sqrt[3]{27\,b + 3\sqrt{-3\,a^3 + 81\,b^2}} + \frac{a}{2}\frac{1}{\sqrt[3]{27\,b + 3\sqrt{-3\,a^3 + 81\,b^2}}}, y(x) = -\frac{1}{12}\sqrt[3]{27\,b + 3\sqrt{-3\,a^3 + 81\,b^2}}\right.$$

2.373 ODE No. 373

$$\boxed{\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2 + a^2(y(x))^2\left(\left(\ln\left(y(x)\right)\right)^2 - 1\right) = 0}$$

Mathematica: cpu = 0.109014 (sec), leaf count = 71

$$\left\{\left\{y(x) \to e^{\frac{1}{2}\left(e^{-c_1 + iax} + e^{c_1 - iax}\right)}\right\}, \left\{y(x) \to \exp\left(\frac{1}{2}\left(e^{-c_1 - iax} + e^{c_1 + iax}\right)\right)\right\}\right\}$$

Maple: cpu = 0.187 (sec), leaf count = 47

$$\left\{y(x) = \left(\mathrm{e}^{\sin(\_C1\,a - ax)}\right)^{-1}, y(x) = \mathrm{e}^{RootOf\left(a^2\left(\mathrm{e}^{\_Z}\right)^2\left(\_Z^2 - 1\right)\right)}, y(x) = \mathrm{e}^{\sin(\_C1\,a - ax)}\right\}$$

2.374 ODE No. 374

$$\boxed{\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2 - 2\frac{\mathrm{d}}{\mathrm{d}x}y(x) - \left(y(x)\right)^2 = 0}$$

Mathematica: cpu = 0.061508 (sec), leaf count = 73

$$\left\{\left\{y(x) \to \text{InverseFunction}\left[-\frac{\sqrt{\#1^2 + 1}}{\#1} - \frac{1}{\#1} + \sinh^{-1}(\#1)\&\right][c_1 - x]\right\}, \left\{y(x) \to \text{InverseFunction}\right.\right.$$

Maple: cpu = 0.406 (sec), leaf count = 85

$$\left\{x - \left(y(x)\right)^{-1} - \frac{1}{y\,(x)}\left(\left(y(x)\right)^2 + 1\right)^{\frac{3}{2}} + y(x)\sqrt{\left(y\,(x)\right)^2 + 1} + Arcsinh(y(x)) - \_C1 = 0, x - \left(y(x)\right)^{-1} + \right.$$

2.375 ODE No. 375

$$\boxed{\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+a\frac{\mathrm{d}}{\mathrm{d}x}y(x)+bx=0}$$

Mathematica: cpu = 0.062508 (sec), leaf count = 71

$$\left\{\left\{y(x)\to\frac{1}{2}\left(-\frac{\left(a^2-4bx\right)^{3/2}}{6b}-ax\right)+c_1\right\},\left\{y(x)\to\frac{1}{2}\left(\frac{\left(a^2-4bx\right)^{3/2}}{6b}-ax\right)+c_1\right\}\right\}$$

Maple: cpu = 0.468 (sec), leaf count = 49

$$\left\{y(x)=-\frac{ax}{2}-\frac{1}{12\,b}\left(a^2-4\,bx\right)^{\frac{3}{2}}+\_C1,y(x)=-\frac{ax}{2}+\frac{1}{12\,b}\left(a^2-4\,bx\right)^{\frac{3}{2}}+\_C1\right\}$$

2.376 ODE No. 376

$$\boxed{\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+a\frac{\mathrm{d}}{\mathrm{d}x}y(x)+by(x)=0}$$

Mathematica: cpu = 0.313040 (sec), leaf count = 110

$$\left\{\left\{y(x)\to\text{InverseFunction}\left[-\frac{\sqrt{a^2-4\#1b}+a\log\left(\sqrt{a^2-4\#1b}-a\right)}{2b}\&\right]\left[c_1+\frac{x}{2}\right]\right\},\left\{y(x)\to\text{InverseF}\right.\right.$$

Maple: cpu = 0.796 (sec), leaf count = 215

$$\left\{y(x)=-\frac{1}{4\,b}\mathrm{e}^{-\frac{1}{2\,a}\left(a\ln\left(-\frac{1}{4\,b}\right)+2\,a lambertW\left(2\,\frac{\mathrm{e}^{-1}}{a}\mathrm{e}^{-\frac{\_C1\,b}{a}}\frac{1}{\sqrt{-b^{-1}}}\left(\mathrm{e}^{\frac{bx}{a}}\right)^{-1}\right)-2\,\_C1\,b+2\,bx+2\,a\right)}\left(\mathrm{e}^{-\frac{1}{2\,a}\left(a\ln\left(-\frac{1}{4\,b}\right)+2\,a lambertW\right.}\right.\right.$$

2.377 ODE No. 377

$$\boxed{\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+(x-2)\frac{\mathrm{d}}{\mathrm{d}x}y(x)-y(x)+1=0}$$

Mathematica: cpu = 0.006001 (sec), leaf count = 19

$$\left\{\left\{y(x)\to c_1x+c_1^2-2c_1+1\right\}\right\}$$

Maple: cpu = 0.390 (sec), leaf count = 25

$$\left\{y(x)=-\frac{x^2}{4}+x,y(x)=\_C1^2+\_C1\,x-2\,\_C1+1\right\}$$

2.378 ODE No. 378

$$\boxed{\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+(x+a)\frac{\mathrm{d}}{\mathrm{d}x}y(x)-y(x)=0}$$

Mathematica: cpu = 0.004501 (sec), leaf count = 18

$$\{\{y(x)\to ac_1+c_1x+c_1^2\}\}$$

Maple: cpu = 0.452 (sec), leaf count = 32

$$\left\{y(x)=-\frac{x^2}{4}-\frac{ax}{2}-\frac{a^2}{4},y(x)=\_C1^2+\_C1\,a+\_C1\,x\right\}$$

2.379 ODE No. 379

$$\boxed{\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2-(1+x)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+y(x)=0}$$

Mathematica: cpu = 0.004000 (sec), leaf count = 18

$$\{\{y(x)\to c_1x-c_1^2+c_1\}\}$$

Maple: cpu = 0.422 (sec), leaf count = 27

$$\left\{y(x)=\frac{x^2}{4}+\frac{x}{2}+\frac{1}{4},y(x)=-\_C1^2+\_C1\,x+\_C1\right\}$$

2.380 ODE No. 380

$$\boxed{\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+2\,x\frac{\mathrm{d}}{\mathrm{d}x}y(x)-y(x)=0}$$

Mathematica: cpu = 0.410552 (sec), leaf count = 1757

$$\left\{\left\{y(x)\to-\frac{x^2}{4}-\frac{1}{4}\sqrt[3]{x^6-20\cosh(3c_1)\,x^3-20\sinh(3c_1)\,x^3-8\cosh(6c_1)-8\sinh(6c_1)+8\sqrt{-\cosh(\right.\right.$$

Maple: cpu = 0.437 (sec), leaf count = 690

$$\left\{y(x)=\left(\frac{1}{2}\sqrt[3]{6\_C1-x^3+2\sqrt{-3\_C1\,x^3+9\_C1^2}}+\frac{x^2}{2}\frac{1}{\sqrt[3]{6\_C1-x^3+2\sqrt{-3\_C1\,x^3+9\_C1^2}}}\right.\right.$$

2.381 ODE No. 381

$$\boxed{\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2 - 2\,x\frac{\mathrm{d}}{\mathrm{d}x}y(x) + y(x) = 0}$$

Mathematica: cpu = 0.420553 (sec), leaf count = 1757

$$\left\{\left\{y(x) \to \frac{x^2}{4} + \frac{1}{4}\sqrt[3]{x^6 - 20\cosh(3c_1)\,x^3 - 20\sinh(3c_1)\,x^3 - 8\cosh(6c_1) - 8\sinh(6c_1) + 8\sqrt{-\cosh(3c\right.\right.$$

Maple: cpu = 0.405 (sec), leaf count = 656

$$\left\{y(x) = -\left(\frac{1}{2}\sqrt[3]{-6\_C1 + x^3 + 2\sqrt{-3\_C1\,x^3 + 9\_C1^2}} + \frac{x^2}{2}\frac{1}{\sqrt[3]{-6\_C1 + x^3 + 2\sqrt{-3\_C1\,x^3 + 9\_}}}\right.\right.$$

2.382 ODE No. 382

$$\boxed{\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2 + ax\frac{\mathrm{d}}{\mathrm{d}x}y(x) - bx^2 - c = 0}$$

Mathematica: cpu = 0.255032 (sec), leaf count = 201

$$\left\{\left\{y(x) \to \frac{1}{2}\left(\frac{1}{2}x\sqrt{a^2x^2 + 4bx^2 + 4c} + \frac{2c\log\left(\sqrt{a^2+4b}\sqrt{a^2x^2+4bx^2+4c} + a^2x + 4bx\right)}{\sqrt{a^2+4b}} - \frac{ax^2}{2}\right) + c_1\right\}\right.$$

Maple: cpu = 0.390 (sec), leaf count = 146

$$\left\{y(x) = -\frac{ax^2}{4} - \frac{x}{4}\sqrt{(a^2+4\,b)\,x^2 + 4\,c} - c\ln\left(\sqrt{a^2+4\,b}x + \sqrt{(a^2+4\,b)\,x^2+4\,c}\right)\frac{1}{\sqrt{a^2+4\,b}} + \_C1, y(\right.$$

2.383 ODE No. 383

$$\boxed{\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2 + ax\frac{\mathrm{d}}{\mathrm{d}x}y(x) + by(x) + cx^2 = 0}$$

Mathematica: cpu = 0 (sec), leaf count = 0

Hanged

Maple: cpu = 0 (sec), leaf count = 0

hanged

2.384 ODE No. 384

$$\boxed{\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+(ax+b)\frac{\mathrm{d}}{\mathrm{d}x}y(x)-ay(x)+c=0}$$

Mathematica: cpu = 2.056261 (sec), leaf count = 183

$$\left\{\left\{y(x)\to\frac{-2\sqrt{-a^4e^{2c_1}x^2-2a^4e^{2c_1}x+a^4\left(-e^{2c_1}\right)}+2a^3x+a^3-2a^2bx-ab^2-ae^{2c_1}+4ac}{4a^2}\right\},\left\{y(x)\to\right.\right.$$

Maple: cpu = 0.468 (sec), leaf count = 50

$$\left\{y(x)=\frac{-a^2x^2-2\,abx-b^2+4\,c}{4\,a},y(x)=\_C1\,x+\frac{\_C1^{\,2}+\_C1\,b+c}{a}\right\}$$

2.385 ODE No. 385

$$\boxed{\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2-2\,x^2\frac{\mathrm{d}}{\mathrm{d}x}y(x)+2\,xy(x)=0}$$

Mathematica: cpu = 0 (sec), leaf count = 0

Hanged

Maple: cpu = 0.562 (sec), leaf count = 169

$$\left\{y(x)=\frac{x^4-\left(RootOf\left(x^{16}-12\,\_Z^2x^{12}+16\,\_Z^3x^{10}+30\,\_Z^4x^8-96\,\_Z^5x^6+100\,\_Z^6x^4-48\,\_Z^7x^2\right.\right.\right.}{2\,x}$$

2.386 ODE No. 386

$$\boxed{\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+ax^3\frac{\mathrm{d}}{\mathrm{d}x}y(x)-2\,ax^2y(x)=0}$$

Mathematica: cpu = 0.204526 (sec), leaf count = 56

$$\left\{\left\{y(x)\to 2ae^{2c_1}\left(4e^{2c_1}+x^2\right)\right\},\left\{y(x)\to\frac{e^{2c_1}\left(e^{2c_1}-2ax^2\right)}{8a}\right\}\right\}$$

Maple: cpu = 0.655 (sec), leaf count = 27

$$\left\{y(x)=-\frac{ax^4}{8},y(x)=x^2\_C1+2\,\frac{\_C1^{\,2}}{a}\right\}$$

2.387 ODE No. 387

$$\boxed{\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)-y(x)\right)\mathrm{e}^x=0}$$

Mathematica: cpu = 0.535568 (sec), leaf count = 134

$$\left\{\text{Solve}\left[-\frac{-e^{x/2}\sqrt{4y(x)+e^x}-4y(x)\log\left(\sqrt{4y(x)+e^x}+e^{x/2}\right)+e^x}{2y(x)}=c_1,y(x)\right],\text{Solve}\left[2\log(y(x))-\right.\right.$$

Maple: cpu = 1.202 (sec), leaf count = 115

$$\left\{-\frac{\mathrm{e}^x}{2\,y\left(x\right)}+\ln\left(y(x)\right)+2\,\mathit{Artanh}\left(\sqrt{\mathrm{e}^{2\,x}+4\,y\left(x\right)\mathrm{e}^x}\mathrm{e}^{-x}\right)+\frac{1}{2\,y\left(x\right)}\sqrt{\mathrm{e}^{2\,x}+4\,y\left(x\right)\mathrm{e}^x}-\_C1=0,-2\,\mathit{Arta}\right.$$

2.388 ODE No. 388

$$\boxed{\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2-2\,y(x)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)-2\,x=0}$$

Mathematica: cpu = 0.670085 (sec), leaf count = 53

$$\text{Solve}\left[\left\{x=\frac{c_1\text{K\$1205645}}{\sqrt{\text{K\$1205645}^2+1}}+\frac{\text{K\$1205645}\sinh^{-1}(\text{K\$1205645})}{2\sqrt{\text{K\$1205645}^2+1}},y(x)=\frac{\text{K\$1205645}}{2}-\frac{x}{\text{K\$1205645}}\right\},\right.$$

Maple: cpu = 0.499 (sec), leaf count = 217

$$\left\{\_C1\left(-2\,y(x)+2\,\sqrt{\left(y\left(x\right)\right)^2+2\,x}\right)\frac{1}{\sqrt{2\,\left(y\left(x\right)\right)^2+2\,x-2\,y\left(x\right)\sqrt{\left(y\left(x\right)\right)^2+2\,x}+1}}+x-\frac{1}{2}\left(-y(x)+\right.\right.$$

2.389 ODE No. 389

$$\boxed{\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2-\left(4\,y(x)+1\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+\left(4\,y(x)+1\right)y(x)=0}$$

Mathematica: cpu = 0.074009 (sec), leaf count = 109

$$\left\{\left\{y(x)\to-\frac{1}{4}e^{x-4c_1}\left(2e^{2c_1}-e^x\right)\right\},\left\{y(x)\to\frac{1}{4}(\sinh\left(2c_1+x\right)+\cosh\left(2c_1+x\right)-2)\left(\sinh\left(2c_1+x\right)+\cos\right.\right.\right.$$

Maple: cpu = 0.811 (sec), leaf count = 193

$$\left\{y(x)=-\frac{1}{4},y(x)=-\frac{(\mathrm{e}^{x})^{2}}{2\_C1}\left(-\frac{\_C1}{(\mathrm{e}^{x})^{2}}\left(\sqrt{-\frac{\_C1}{(\mathrm{e}^{x})^{2}}}-2\right)\frac{1}{\sqrt{-\frac{\_C1}{(\mathrm{e}^{x})^{2}}}}+\frac{\_C1}{(\mathrm{e}^{x})^{2}}+2\right),y(x)=\frac{(\mathrm{e}^{x})^{2}}{2\_C1}\left(\frac{\_C1}{(\mathrm{e}^{x})^{2}}\right.\right.$$

2.390 ODE No. 390

$$\boxed{\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^{2}+ay(x)\frac{\mathrm{d}}{\mathrm{d}x}y(x)-bx-c=0}$$

Mathematica: cpu = 1.795728 (sec), leaf count = 142

$$\text{Solve}\left[\left\{x=c_1e^{b\left(\frac{\log(\text{K\$1206119})}{b}-\frac{\log\left(b-a\text{K\$1206119}^2\right)}{2b}\right)}+e^{b\left(\frac{\log(\text{K\$1206119})}{b}-\frac{\log\left(b-a\text{K\$1206119}^2\right)}{2b}\right)}\left(\frac{\tan^{-1}\left(\frac{\sqrt{a}\text{K\$1206119}}{\sqrt{b-a\text{K\$1206119}^2}}\right)}{\sqrt{a}}\right.\right.\right.$$

Maple: cpu = 0.655 (sec), leaf count = 416

$$\left\{y(x)=2\frac{b\mathrm{e}^{RootOf\left(\sqrt{a}\_C1\,b\mathrm{e}^{2\_Z}-a\mathrm{e}^{2\_Z}bx+\sqrt{a}\_C1\,b^{2}-\mathrm{e}^{2\_Z}\_Z\,b-a\mathrm{e}^{2\_Z}c+ab^{2}x-\_Z\,b^{2}+abc\right)}x}{\left(\mathrm{e}^{2\,RootOf\left(\sqrt{a}\_C1\,b\mathrm{e}^{2\_Z}-a\mathrm{e}^{2\_Z}bx+\sqrt{a}\_C1\,b^{2}-\mathrm{e}^{2\_Z}\_Z\,b-a\mathrm{e}^{2\_Z}c+ab^{2}x-\_Z\,b^{2}+abc\right)}+b\right)\sqrt{a}}+2\frac{\mathrm{e}^{RootOf(}}{\left(\mathrm{e}^{2\,RootOf(\sqrt{a}\_\right.}\right.\right.$$

2.391 ODE No. 391

$$\boxed{\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^{2}+(ay(x)+bx)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+abxy(x)=0}$$

Mathematica: cpu = 0.005501 (sec), leaf count = 29

$$\left\{\left\{y(x)\to c_1e^{-ax}\right\},\left\{y(x)\to c_1-\frac{bx^{2}}{2}\right\}\right\}$$

Maple: cpu = 0.0 (sec), leaf count = 22

$$\left\{y(x)=\_C1\,\mathrm{e}^{-ax},y(x)=-\frac{bx^{2}}{2}+\_C1\right\}$$

2.392 ODE No. 392

$$\boxed{\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2 - xy(x)\frac{\mathrm{d}}{\mathrm{d}x}y(x) + (y(x))^2\ln(ay(x)) = 0}$$

Mathematica: cpu = 0.255032 (sec), leaf count = 27

$$\left\{\left\{y(x) \to \frac{e^{\frac{c_1 x}{2} - \frac{c_1^2}{4}}}{a}\right\}\right\}$$

Maple: cpu = 0.312 (sec), leaf count = 50

$$\left\{y(x) = \frac{1}{a}\mathrm{e}^{\frac{x^2}{4}}, y(x) = \frac{1}{\mathrm{e}^{\_C1^2}\mathrm{e}^{\_C1\,x}a}, y(x) = \frac{\mathrm{e}^{-\_C1\,x}}{\mathrm{e}^{\_C1^2}a}\right\}$$

2.393 ODE No. 393

$$\boxed{\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2 + 2\,y(x)\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)\cot(x) - (y(x))^2 = 0}$$

Mathematica: cpu = 0.072509 (sec), leaf count = 31

$$\left\{\left\{y(x) \to c_1 \csc^2\left(\frac{x}{2}\right)\right\}, \left\{y(x) \to c_1 \sec^2\left(\frac{x}{2}\right)\right\}\right\}$$

Maple: cpu = 0.858 (sec), leaf count = 85

$$\left\{y(x) = \frac{\_C1}{\tan(x)}\sqrt{1 - \left((\tan(x))^2 + 1\right)^{-1}}\sqrt{(\tan(x))^2 + 1}\left(1 + \frac{1}{\sqrt{(\tan(x))^2 + 1}}\right)^{-1}, y(x) = \frac{\_C1}{\tan(x)}\left(1 +\right.\right.$$

2.394 ODE No. 394

$$\boxed{\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2 + 2\,f(x)\,y(x)\frac{\mathrm{d}}{\mathrm{d}x}y(x) + g(x)\,(y(x))^2 - \left(g(x) - (f(x))^2\right)\mathrm{e}^{-2\int_a^x f(xp)\,\mathrm{d}xp} = 0}$$

Mathematica: cpu = 58.132882 (sec), leaf count = 52

$$\text{DSolve}\left[-\left(g(x) - f(x)^2\right)e^{-2\int_a^x f(\text{xp})\,d\text{xp}} + 2f(x)y(x)y'(x) + g(x)y(x)^2 + y'(x)^2 = 0, y(x), x\right]$$

Maple: cpu = 3.822 (sec), leaf count = 310

$$\left\{y(x) = -\tan\left(\frac{1}{2\cos(2) + 2}\left(-2\_C1\,\cos(2) + \sqrt{2}\int\left(\mathrm{e}^{\int_a^x f(xp)\,\mathrm{d}xp}\right)^2\sqrt{-\frac{\cos(4)\,(f(x))^2}{\left(\mathrm{e}^{\int_a^x f(xp)\,\mathrm{d}xp}\right)^4} - 4\frac{\cos(2)\,(f\right.\right.\right.\right.$$

2.395 ODE No. 395

$$\boxed{\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+2\,f(x)\,y(x)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)+g(x)\,(y(x))^2+h(x)=0}$$

Mathematica: cpu = 38.765923 (sec), leaf count = 32

$$\text{DSolve}\left[2f(x)y(x)y'(x)+g(x)y(x)^2+h(x)+y'(x)^2=0,y(x),x\right]$$

Maple: cpu = 0.968 (sec), leaf count = 0

could not solve

2.396 ODE No. 396

$$\boxed{\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+y(x)\,(y(x)-x)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)-x(y(x))^3=0}$$

Mathematica: cpu = 0.014002 (sec), leaf count = 29

$$\left\{\left\{y(x)\to\frac{1}{x-c_1}\right\},\left\{y(x)\to c_1e^{\frac{x^2}{2}}\right\}\right\}$$

Maple: cpu = 0.016 (sec), leaf count = 20

$$\left\{y(x)=(x+\_C1)^{-1},y(x)=\mathrm{e}^{\frac{x^2}{2}}\_C1\right\}$$

2.397 ODE No. 397

$$\boxed{\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2-2\,x^3(y(x))^2\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)-4\,x^2(y(x))^3=0}$$

Mathematica: cpu = 0.431555 (sec), leaf count = 143

$$\left\{\text{Solve}\left[-\frac{x\sqrt{x^4y(x)+4}y(x)^{3/2}\sinh^{-1}\left(\frac{1}{2}x^2\sqrt{y(x)}\right)}{2\sqrt{x^2y(x)^3\left(x^4y(x)+4\right)}}-\frac{1}{4}\log(y(x))=c_1,y(x)\right],\text{Solve}\left[\frac{xy(x)^{3/2}\sqrt{x^4y(x)}}{2\sqrt{x^2y(}}\right.\right.$$

Maple: cpu = 0.671 (sec), leaf count = 131

$$\left\{y(x)=-4\,x^{-4},y(x)=\frac{\left(\sqrt{2}x^2\_C1-2\right)\_C1^2}{2\,\_C1^2x^4-4},y(x)=-\frac{\left(\sqrt{2}x^2\_C1+2\right)\_C1^2}{2\,\_C1^2x^4-4},y(x)=-2\,\frac{\sqrt{2}x^2\_C}{\_C1^2\left(-2\right.}\right.$$

2.398 ODE No. 398

$$\boxed{\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2 - 3\,x(y(x))^{2/3}\frac{\mathrm{d}}{\mathrm{d}x}y(x) + 9\,(y(x))^{5/3} = 0}$$

Mathematica: cpu = 0.737094 (sec), leaf count = 258

$$\left\{\text{Solve}\left[-\frac{\left(x^2-4\sqrt[3]{y(x)}\right)^{3/2}y(x)^2\log(y(x))}{6\left(\left(x^2-4\sqrt[3]{y(x)}\right)y(x)^{4/3}\right)^{3/2}}+\frac{\sqrt{\left(x^2-4\sqrt[3]{y(x)}\right)y(x)^{4/3}}\log\left(\sqrt{x^2-4\sqrt[3]{y(x)}}+x\right)}{\sqrt{x^2-4\sqrt[3]{y(x)}}y(x)^{2/3}}+\right.\right.$$

Maple: cpu = 2.402 (sec), leaf count = 137

$$\left\{\ln(x)+\frac{1}{6}\ln\left(\frac{y(x)}{x^6}\right)-\frac{1}{6}\ln\left(4\sqrt[3]{\frac{y(x)}{x^6}}-1\right)+1\sqrt{-4\left(\frac{y(x)}{x^6}\right)^{5/3}+\left(\frac{y(x)}{x^6}\right)^{\frac{4}{3}}}\,\mathit{Artanh}\left(\sqrt{-4\sqrt[3]{\frac{y(x)}{x^6}}\right.\right.$$

2.399 ODE No. 399

$$\boxed{2\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2 + (x-1)\frac{\mathrm{d}}{\mathrm{d}x}y(x) - y(x) = 0}$$

Mathematica: cpu = 0.003500 (sec), leaf count = 20

$$\left\{\left\{y(x)\to c_1 x + 2c_1^2 - c_1\right\}\right\}$$

Maple: cpu = 0.515 (sec), leaf count = 29

$$\left\{y(x) = -\frac{x^2}{8}+\frac{x}{4}-\frac{1}{8}, y(x) = 2\,\_C1^{\,2} + \_C1\,x - \_C1\right\}$$

2.400 ODE No. 400

$$\boxed{2\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2 - 2\,x^2\frac{\mathrm{d}}{\mathrm{d}x}y(x) + 3\,xy(x) = 0}$$

Mathematica: cpu = 0 (sec), leaf count = 0

Hanged

Maple: cpu = 0.624 (sec), leaf count = 123

$$\left\{y(x) = \frac{x^3}{6}, y(x) = -\frac{1}{3\_C1}\left(-\_C1\,x^3 - x\left(-x^2\_C1 + \sqrt{-6\,\_C1\,x}\right) - 3\right), y(x) = -\frac{1}{3\_C1}\left(-\_C1\,x^{3}\right.\right.$$

2.401 ODE No. 401

$$\boxed{3\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2-2\,x\frac{\mathrm{d}}{\mathrm{d}x}y(x)+y(x)=0}$$

Mathematica: cpu = 0.353545 (sec), leaf count = 1093

$$\left\{\left\{y(x)\to \text{Root}\left[-16e^{6c_1}x^6+3\#1^4x^4+144e^{6c_1}\#1x^4-24\#1^5x^2-378e^{6c_1}\#1^2x^2+243e^{12c_1}+48\#1^6+2\right.\right.\right.$$

Maple: cpu = 0.452 (sec), leaf count = 656

$$\left\{y(x)=-3\left(1/6\sqrt[3]{-54\_C1+x^3+6\sqrt{-3\_C1\,x^3+81\_C1^2}}+1/6\,\frac{x^2}{\sqrt[3]{-54\_C1+x^3+6\sqrt{-3\_C1}}}\right.\right.$$

2.402 ODE No. 402

$$\boxed{3\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+4\,x\frac{\mathrm{d}}{\mathrm{d}x}y(x)-y(x)+x^2=0}$$

Mathematica: cpu = 0 (sec), leaf count = 0

Hanged

Maple: cpu = 0.577 (sec), leaf count = 121

$$\left\{y(x)=-\frac{x^2}{3},y(x)=\frac{-2\_C1\,x\left(-\_C1\,x+\sqrt{3}\right)-5\_C1^2x^2+3}{12\_C1^2},y(x)=\frac{2\_C1\,x\left(\_C1\,x+\sqrt{3}\right)-5\_}{12\_C1^2}\right.$$

2.403 ODE No. 403

$$\boxed{a\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+b\frac{\mathrm{d}}{\mathrm{d}x}y(x)-y(x)=0}$$

Mathematica: cpu = 0.302538 (sec), leaf count = 116

$$\left\{\left\{y(x)\to \text{InverseFunction}\left[\frac{\sqrt{4\#1a+b^2}+b\log\left(\sqrt{4\#1a+b^2}-b\right)}{2a}\&\right]\left[\frac{x}{2a}+c_1\right]\right\},\left\{y(x)\to \text{InverseFu}\right.\right.$$

Maple: cpu = 0.858 (sec), leaf count = 197

$$\left\{y(x)=\frac{1}{4\,a}\mathrm{e}^{-\frac{1}{2\,b}\left(b\ln\left(\frac{1}{4\,a}\right)+2\,blambertW\left(2\,\frac{\mathrm{e}^{-1}}{b\sqrt{a^{-1}}}\mathrm{e}^{\frac{x}{b}}\left(\mathrm{e}^{-\frac{C1}{b}}\right)^{-1}\right)+2\_C1+2\,b-2\,x\right)}\left(\mathrm{e}^{-\frac{1}{2\,b}\left(b\ln\left(\frac{1}{4\,a}\right)+2\,blambertW\left(2\,\frac{\mathrm{e}^{-1}}{b\sqrt{a^{-1}}}\mathrm{e}^{\frac{x}{b}}\right.\right.\right.\right.\right.$$

2.404 ODE No. 404

$$\boxed{a\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+bx^2\frac{\mathrm{d}}{\mathrm{d}x}y(x)+cxy(x)=0}$$

Mathematica: cpu = 0 (sec), leaf count = 0

Hanged

Maple: cpu = 0.686 (sec), leaf count = 499

$$\left\{\int_{\_b}^{x}-1\left(-b\_a^2+\sqrt{\_a^4b^2-4\,\_a\,acy\left(x\right)}\right)\left(-b\_a^3+\sqrt{\_a^4b^2-4\,\_a\,acy\left(x\right)}\_a-6\,ay(x)\right)^{-1}\mathrm{d}\_a+\int\right.$$

2.405 ODE No. 405

$$\boxed{a\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+y(x)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)-x=0}$$

Mathematica: cpu = 1.013629 (sec), leaf count = 53

$$\text{Solve}\left[\left\{x=\frac{a\text{K\$1210941}\sin^{-1}(\text{K\$1210941})}{\sqrt{1-\text{K\$1210941}^2}}+\frac{c_1\text{K\$1210941}}{\sqrt{1-\text{K\$1210941}^2}},y(x)=\frac{x}{\text{K\$1210941}}-a\text{K\$1210941}\right\},\right.$$

Maple: cpu = 0.593 (sec), leaf count = 380

$$\left\{\right.-\_C1\left(-y(x)+\sqrt{4\,ax+\left(y\left(x\right)\right)^2}\right)\frac{1}{\sqrt{\frac{1}{a}\left(-y\left(x\right)+\sqrt{4\,ax+\left(y\left(x\right)\right)^2}+2\,a\right)}}\frac{1}{\sqrt{\frac{1}{a}\left(-y\left(x\right)+\sqrt{4\,ax+(\right.}}$$

2.406 ODE No. 406

$$\boxed{a\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2-y(x)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)-x=0}$$

Mathematica: cpu = 0.864110 (sec), leaf count = 49

$$\text{Solve}\left[\left\{x=\frac{a\text{K\$1211116}\sinh^{-1}(\text{K\$1211116})}{\sqrt{\text{K\$1211116}^2+1}}+\frac{c_1\text{K\$1211116}}{\sqrt{\text{K\$1211116}^2+1}},y(x)=a\text{K\$1211116}-\frac{x}{\text{K\$1211116}}\right\}\right.$$

Maple: cpu = 0.577 (sec), leaf count = 266

$$\left\{ \_C1\left(-y(x)+\sqrt{4\,ax+\left(y\left(x\right)\right)^{2}}\right)\frac{1}{\sqrt{-\frac{1}{a^{2}}\left(2\,y\left(x\right)\sqrt{4\,ax+\left(y\left(x\right)\right)^{2}}-4\,a^{2}-4\,ax-2\,\left(y\left(x\right)\right)^{2}\right)}}+x- \right.$$

2.407 ODE No. 407

$$\boxed{x\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^{2}-y(x)=0}$$

Mathematica: cpu = 0.020503 (sec), leaf count = 51

$$\left\{\left\{y(x)\to\frac{1}{4}\left(-4c_1\sqrt{x}+c_1^2+4x\right)\right\},\left\{y(x)\to\frac{1}{4}\left(4c_1\sqrt{x}+c_1^2+4x\right)\right\}\right\}$$

Maple: cpu = 0.499 (sec), leaf count = 39

$$\left\{y(x)=0,y(x)=\frac{1}{x}\left(-x+\sqrt{\_C1\,x}\right)^{2},y(x)=\frac{1}{x}\left(x+\sqrt{\_C1\,x}\right)^{2}\right\}$$

2.408 ODE No. 408

$$\boxed{x\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^{2}-2\,y(x)+x=0}$$

Mathematica: cpu = 0.532068 (sec), leaf count = 166

$$\left\{\text{Solve}\left[\frac{\left(\sqrt{\frac{2y(x)}{x}-1}-1\right)\left(\left(\sqrt{\frac{2y(x)}{x}-1}-1\right)\log\left(\sqrt{\frac{2y(x)}{x}-1}-1\right)-1\right)}{\sqrt{\frac{2y(x)}{x}-1}-\frac{y(x)}{x}}=c_1+\log(x),y(x)\right],\text{Solve}\right.$$

Maple: cpu = 0.514 (sec), leaf count = 73

$$\left\{y(x)=\left(\frac{1}{2}\left(lambertW\left(\frac{1}{\_C1}\sqrt{\_C1\,x}\right)+1\right)^{2}\left(lambertW\left(\frac{1}{\_C1}\sqrt{\_C1\,x}\right)\right)^{-2}+\frac{1}{2}\right)x,y(x)=\left(\frac{1}{2}\right.\right.$$

2.409 ODE No. 409

$$\boxed{x\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2-2\frac{\mathrm{d}}{\mathrm{d}x}y(x)-y(x)=0}$$

Mathematica: cpu = 30.779909 (sec), leaf count = 66

$$\text{Solve}\left[\left\{x=\frac{y(\text{K\$1211643})+2\text{K\$1211643}}{\text{K\$1211643}^2},y(x)=c_1e^{2(\log(\text{K\$1211643})-\log(1-\text{K\$1211643}))}+e^{2(\log(\text{K\$1211643})-\log(1\right.\right.$$

Maple: cpu = 0.468 (sec), leaf count = 63

$$\left\{y(x)=x\mathrm{e}^{2\,RootOf\left(-x\mathrm{e}^{2\_Z}+2\,x\mathrm{e}^{\_Z}+2\,\mathrm{e}^{\_Z}+\_C1-2\,\_Z-x\right)}-2\,\mathrm{e}^{RootOf\left(-x\mathrm{e}^{2\_Z}+2\,x\mathrm{e}^{\_Z}+2\,\mathrm{e}^{\_Z}+\_C1-2\,\_Z-x\right)}\right\}$$

2.410 ODE No. 410

$$\boxed{x\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+4\frac{\mathrm{d}}{\mathrm{d}x}y(x)-2\,y(x)=0}$$

Mathematica: cpu = 31.055944 (sec), leaf count = 80

$$\text{Solve}\left[\left\{x=-\frac{2(2\text{K\$1211948}-y(\text{K\$1211948}))}{\text{K\$1211948}^2},y(x)=c_1e^{-4\left(\frac{1}{2}\log(2-\text{K\$1211948})-\frac{\log(\text{K\$1211948})}{2}\right)}+4e^{-4\left(\frac{1}{2}\log(2-\right.\right.$$

Maple: cpu = 0.546 (sec), leaf count = 64

$$\left\{y(x)=\frac{x\mathrm{e}^{2\,RootOf\left(-x\mathrm{e}^{2\_Z}+4\,x\mathrm{e}^{\_Z}-4\,\mathrm{e}^{\_Z}+\_C1+8\,\_Z-4\,x\right)}}{2}+2\,\mathrm{e}^{RootOf\left(-x\mathrm{e}^{2\_Z}+4\,x\mathrm{e}^{\_Z}-4\,\mathrm{e}^{\_Z}+\_C1+8\,\_Z-4\,x\right)}\right\}$$

2.411 ODE No. 411

$$\boxed{x\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+x\frac{\mathrm{d}}{\mathrm{d}x}y(x)-y(x)=0}$$

Mathematica: cpu = 0.558571 (sec), leaf count = 181

$$\left\{\text{Solve}\left[\frac{\left(\sqrt{\frac{4y(x)}{x}+1}-1\right)\left(\left(\sqrt{\frac{4y(x)}{x}+1}-1\right)\log\left(\sqrt{\frac{4y(x)}{x}+1}-1\right)-1\right)}{2\left(-\frac{2y(x)}{x}+\sqrt{\frac{4y(x)}{x}+1}-1\right)}=c_1+\frac{\log(x)}{2},y(x)\right],\text{Solve}\right.$$

Maple: cpu = 0.531 (sec), leaf count = 69

$$\left\{y(x)=\left(\frac{1}{4}\left(lambertW\left(-\frac{1}{2}\frac{1}{\sqrt{\frac{\_C1}{x}}}\right)\right)^{-2}+\frac{1}{2}\left(lambertW\left(-\frac{1}{2}\frac{1}{\sqrt{\frac{\_C1}{x}}}\right)\right)^{-1}\right)x,y(x)=\left(\frac{1}{4}\left(lamber\right.\right.$$

2.412 ODE No. 412

$$\boxed{x\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+y(x)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+a=0}$$

Mathematica: cpu = 5.287171 (sec), leaf count = 16145

$$\left\{\left\{y(x)\to-\sqrt{-\frac{4ax}{3}-\frac{1}{2}\sqrt{-\frac{64}{9}a^2x^2+\frac{\cosh(3c_1)}{81ax}+\frac{\sinh(3c_1)}{81ax}+\frac{\sqrt[3]{4529848320a^6\cosh(6c_1)x^6+4529}}{}}}\right.\right.$$

Maple: cpu = 0.546 (sec), leaf count = 146

$$\left\{-x^2\_C1\left(\frac{1}{x}\left(-y(x)+\sqrt{(y(x))^2-4ax}\right)\right)^{\frac{3}{2}}\left(-y(x)+\sqrt{(y(x))^2-4ax}\right)^{-2}+x+\frac{4ax^2}{3}\left(-y(x)+\sqrt{}\right.\right.$$

2.413 ODE No. 413

$$\boxed{x\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+y(x)\frac{\mathrm{d}}{\mathrm{d}x}y(x)-x^2=0}$$

Mathematica: cpu = 0 (sec), leaf count = 0

Hanged

Maple: cpu = 0.640 (sec), leaf count = 337

$$\left\{\int_{\_b}^{x}-\frac{1}{\_a}\left(y(x)+\sqrt{4\_a^3+(y(x))^2}\right)\left(\sqrt{4\_a^3+(y(x))^2}+4y(x)\right)^{-1}\mathrm{d}\_a+\int^{y(x)}-2\frac{1}{\sqrt{4x^3+\_f^2}}+\right.$$

2.414 ODE No. 414

$$\boxed{x\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+y(x)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+x^3=0}$$

Mathematica: cpu = 0 (sec), leaf count = 0

Hanged

Maple: cpu = 0.639 (sec), leaf count = 337

$$\left\{\int_{\_b}^{x}-\frac{1}{\_a}\left(y(x)+\sqrt{-4\_a^4+\left(y\left(x\right)\right)^2}\right)\left(\sqrt{-4\_a^4+\left(y\left(x\right)\right)^2}+5\,y(x)\right)^{-1}\mathrm{d}\_a+\int^{y(x)}2\,\frac{1}{\sqrt{-4\,x^4+\_}}\right.$$

2.415 ODE No. 415

$$\boxed{x\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+y(x)\frac{\mathrm{d}}{\mathrm{d}x}y(x)-\left(y(x)\right)^4=0}$$

Mathematica: cpu = 0.210027 (sec), leaf count = 133

$$\left\{\left\{y(x)\to-\frac{\sqrt{\tanh^2\left(\frac{1}{2}\left(c_1-\log(x)\right)\right)-1}}{2\sqrt{x}}\right\},\left\{y(x)\to\frac{\sqrt{\tanh^2\left(\frac{1}{2}\left(c_1-\log(x)\right)\right)-1}}{2\sqrt{x}}\right\},\left\{y(x)\to-\frac{\sqrt{}}{}\right.\right.$$

Maple: cpu = 0.655 (sec), leaf count = 95

$$\left\{y(x)=-\frac{1}{2}\frac{1}{\sqrt{-x}},y(x)=\frac{1}{2}\frac{1}{\sqrt{-x}},y(x)=-\frac{1}{2\,x}\sqrt{-\left(\tanh\left(-\frac{\ln\left(x\right)}{2}+\frac{\_C1}{2}\right)\right)^2x+x}\left(\tanh\left(-\frac{\ln\left(x\right)}{2}\right.\right.\right.$$

2.416 ODE No. 416

$$\boxed{x\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+\left(y(x)-3\,x\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+y(x)=0}$$

Mathematica: cpu = 0 (sec), leaf count = 0

Hanged

Maple: cpu = 0.546 (sec), leaf count = 136

$$\left\{-\frac{\_C1}{x}\left(5\,x-y(x)+\sqrt{9\,x^2-10\,xy\left(x\right)+\left(y\left(x\right)\right)^2}\right)\left(\frac{1}{x}\left(3\,x-y(x)+\sqrt{9\,x^2-10\,xy\left(x\right)+\left(y\left(x\right)\right)^2}\right)\right)\right.$$

2.417 ODE No. 417

$$\boxed{x\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2 - y(x)\frac{\mathrm{d}}{\mathrm{d}x}y(x) + a = 0}$$

Mathematica: cpu = 0.374047 (sec), leaf count = 430

$$\left\{\left\{y(x) \to -\frac{8a^2}{4a - \sinh(c_1) - \cosh(c_1)} - \frac{\sqrt{16a^3\sinh(c_1) + 16a^3\cosh(c_1) - 8a^2x\sinh(c_1) - 8a^2x\cosh(c_1)}$$

Maple: cpu = 0.484 (sec), leaf count = 33

$$\left\{y(x) = -2\sqrt{ax}, y(x) = 2\sqrt{ax}, y(x) = \_C1\, x + \frac{a}{\_C1}\right\}$$

2.418 ODE No. 418

$$\boxed{x\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2 - y(x)\frac{\mathrm{d}}{\mathrm{d}x}y(x) + ay(x) = 0}$$

Mathematica: cpu = 0.446057 (sec), leaf count = 165

$$\left\{\text{Solve}\left[-\frac{\sqrt{\frac{y(x)}{x}}\sqrt{\frac{y(x)}{x} - 4a} - 4a\log\left(\sqrt{\frac{y(x)}{x} - 4a} + \sqrt{\frac{y(x)}{x}}\right) + \frac{y(x)}{x}}{4a} = c_1 + \frac{\log(x)}{2}, y(x)\right], \text{Solve}\left[\frac{y(x)}{4ax} -\right.\right.$$

Maple: cpu = 0.515 (sec), leaf count = 55

$$\left\{y(x) = 0, y(x) = -a^2x\left(-lambertW\left(-\frac{x\mathrm{e}}{\_C1\, a}\right) + 1\right)^2\left(-\left(-lambertW\left(-\frac{x\mathrm{e}}{\_C1\, a}\right) + 1\right)a + a\right)^{-1}\right\}$$

2.419 ODE No. 419

$$\boxed{x\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2 + 2\,y(x)\frac{\mathrm{d}}{\mathrm{d}x}y(x) - x = 0}$$

Mathematica: cpu = 0.679586 (sec), leaf count = 9073

Maple: cpu = 0.531 (sec), leaf count = 110

$$\left\{x-\frac{\_C1}{x}\left(-y(x)+\sqrt{(y(x))^2+x^2}\right)\left(\frac{1}{x^2}\left(2x^2+6(y(x))^2-6y(x)\sqrt{(y(x))^2+x^2}\right)\right)^{-\frac{2}{3}}=0,\frac{\_C1}{x}\left(\right.\right.$$

2.420 ODE No. 420

$$\boxed{x\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2-2y(x)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+a=0}$$

Mathematica: cpu = 1.329169 (sec), leaf count = 11757

$$\left\{\left\{y(x)\to-\sqrt{\frac{}{16\sqrt[3]{27a^6x^{12}-144a^5\cosh(3c_1)x^9-144a^5\sinh(3c_1)x^9+272a^4\cosh(6c_1)x^6+272a^4\sin}}\right.\right.$$

Maple: cpu = 0.546 (sec), leaf count = 897

$$\left\{y(x)=\frac{x}{2}\left(\frac{1}{6\_C1}\sqrt[3]{-36a\_C1^2+8x^3+12\sqrt{a\left(9a\_C1^2-4x^3\right)}\_C1}+\frac{2x^2}{3\_C1}\frac{}{\sqrt[3]{-36a\_C1^2+8x^3}}\right.\right.$$

2.421 ODE No. 421

$$\boxed{x\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2-2y(x)\frac{\mathrm{d}}{\mathrm{d}x}y(x)-x=0}$$

Mathematica: cpu = 0.032004 (sec), leaf count = 27

$$\{\{y(x)\to x\sinh(c_1-\log(x))\},\{y(x)\to x\sinh(c_1+\log(x))\}\}$$

Maple: cpu = 0.437 (sec), leaf count = 31

$$\left\{y(x)=-ix,y(x)=ix,y(x)=-\frac{\_C1}{2}\left(-\frac{x^2}{\_C1^2}+1\right)\right\}$$

2.422 ODE No. 422

$$\boxed{x\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2-2\,y(x)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)+4\,x=0}$$

Mathematica: cpu = 0.046506 (sec), leaf count = 49

$$\left\{\left\{y(x)\to 2\left(2x\sinh^2\left(\frac{1}{2}(c_1-\log(x))\right)+x\right)\right\},\left\{y(x)\to 2\left(2x\sinh^2\left(\frac{1}{2}(c_1+\log(x))\right)+x\right)\right\}\right\}$$

Maple: cpu = 0.515 (sec), leaf count = 29

$$\left\{y(x)=-2\,x,y(x)=2\,x,y(x)=-\frac{\_C1}{2}\left(-\frac{x^2}{\_C1^2}-4\right)\right\}$$

2.423 ODE No. 423

$$\boxed{x\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2-2\,y(x)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)+2\,y(x)+x=0}$$

Mathematica: cpu = 0.078510 (sec), leaf count = 59

$$\left\{\left\{y(x)\to\frac{1}{2}\left(-2e^{-c_1}x^2-e^{c_1}+2x\right)\right\},\left\{y(x)\to\frac{1}{2}\left(-e^{c_1}x^2-2e^{-c_1}+2x\right)\right\}\right\}$$

Maple: cpu = 0.515 (sec), leaf count = 52

$$\left\{y(x)=\left(1-\sqrt{2}\right)x,y(x)=\left(1+\sqrt{2}\right)x,y(x)=-x\left(\frac{\left(x+\_C1\right)^2}{\_C1^2}+1\right)\left(-2\,\frac{x+\_C1}{\_C1}+2\right)^{-1}\right\}$$

2.424 ODE No. 424

$$\boxed{x\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+a y(x)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)+bx=0}$$

Mathematica: cpu = 0.378048 (sec), leaf count = 223

$$\left\{\text{Solve}\left[\frac{-2a\tan^{-1}\left(\frac{ay(x)}{x\sqrt{4b-\frac{a^2y(x)^2}{x^2}}}\right)+(a+2)\left(2\tan^{-1}\left(\frac{(a+2)y(x)}{x\sqrt{4b-\frac{a^2y(x)^2}{x^2}}}\right)-i\log\left(\frac{(a+1)y(x)^2}{x^2}+b\right)\right)}{8(a+1)}=c_1+\right.\right.$$

Maple: cpu = 0.546 (sec), leaf count = 224

$$\left\{\frac{\_C1}{x}\left(\frac{a}{2\,x^2}\left(a^2(y(x))^2+\sqrt{a^2\left(y\left(x\right)\right)^2-4\,bx^2}ay(x)+a(y(x))^2-2\,bx^2+\sqrt{a^2\left(y\left(x\right)\right)^2-4\,bx^2}y(x)\right)\right)^{-}\right.$$

2.425 ODE No. 425

$$\boxed{(1+x)\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2-(y(x)+x)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+y(x)=0}$$

Mathematica: cpu = 0.270034 (sec), leaf count = 59

$$\left\{\left\{y(x)\to-\frac{e^{c_1}(e^{c_1}-2x)}{2\left(e^{c_1}+2\right)}\right\},\left\{y(x)\to-\frac{2e^{c_1}(2e^{c_1}-x)}{2e^{c_1}+1}\right\}\right\}$$

Maple: cpu = 0.562 (sec), leaf count = 59

$$\left\{y(x)=\frac{\left(-\_C1^2+\_C1\right)x}{-\_C1+1}-\frac{\_C1^2}{-\_C1+1},y(x)=x+2-2\sqrt{1+x},y(x)=x+2+2\sqrt{1+x}\right\}$$

2.426 ODE No. 426

$$\boxed{(3\,x+1)\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2-3\,(y(x)+2)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+9=0}$$

Mathematica: cpu = 0.392050 (sec), leaf count = 310

$$\left\{\left\{y(x)\to-\frac{\sqrt{9x^2\sinh\left(c_1\right)+9x^2\cosh\left(c_1\right)-210x\sinh\left(c_1\right)+6x\sinh\left(2c_1\right)-210x\cosh\left(c_1\right)+6x\cosh\left(2\right.\right.\right.}{\sinh\left(c_1\right)+\mathrm{c}}\right.$$

Maple: cpu = 0.546 (sec), leaf count = 49

$$\left\{y(x)=-2-2\sqrt{3\,x+1},y(x)=-2+2\sqrt{3\,x+1},y(x)=\_C1\,x+\frac{\_C1^2-6\,\_C1+9}{3\,\_C1}\right\}$$

2.427 ODE No. 427

$$\boxed{(3x+5)\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2-(3y(x)+x)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+y(x)=0}$$

Mathematica: cpu = 0.634581 (sec), leaf count = 479

$$\left\{\left\{y(x)\to\frac{-\sqrt{5}\sqrt{-144e^{\frac{4c_1}{3}}x^2-360e^{\frac{4c_1}{3}}x+24e^{\frac{8c_1}{3}}x-225e^{\frac{4c_1}{3}}+30e^{\frac{8c_1}{3}}-e^{4c_1}}+6e^{\frac{4c_1}{3}}x+15e^{\frac{4c_1}{3}}-30x\right.\right.$$

Maple: cpu = 0.452 (sec), leaf count = 67

$$\left\{y(x)=\frac{\left(-3\_C1^2+\_C1\right)x}{-3\_C1+1}-5\frac{\_C1^2}{-3\_C1+1},y(x)=\frac{x}{3}+\frac{10}{9}-\frac{2}{9}\sqrt{15x+25},y(x)=\frac{x}{3}+\frac{10}{9}+\frac{2}{9}\sqrt{15}\right.$$

2.428 ODE No. 428

$$\boxed{ax\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+(bx-ay(x)+c)\frac{\mathrm{d}}{\mathrm{d}x}y(x)-by(x)=0}$$

Mathematica: cpu = 0 (sec), leaf count = 0

Hanged

Maple: cpu = 0.546 (sec), leaf count = 85

$$\left\{y(x)=\frac{1}{a}\left(-bx+c-2\sqrt{-bcx}\right),y(x)=\frac{1}{a}\left(-bx+c+2\sqrt{-bcx}\right),y(x)=-\frac{\left(a\_C1^2+\_C1\,b\right)x}{-\_C1\,a-b}-\frac{c}{-\_C}\right.$$

2.429 ODE No. 429

$$\boxed{ax\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2-(ay(x)+bx-a-b)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+by(x)=0}$$

Mathematica: cpu = 0 (sec), leaf count = 0

Hanged

Maple: cpu = 0.437 (sec), leaf count = 96

$$\left\{y(x)=\frac{1}{a}\left(bx+a+b-2\sqrt{abx+b^2x}\right),y(x)=\frac{1}{a}\left(bx+a+b+2\sqrt{abx+b^2x}\right),y(x)=\frac{\left(-a\_C1^2+\_C\right.}{-\_C1\,a+}\right.$$

2.430 ODE No. 430

$$\boxed{(a2\,x+c2)\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+(a1\,x+b1\,y(x)+c1)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+a0\,x+b0\,y(x)+c0=0}$$

Mathematica: cpu = 0 (sec), leaf count = 0

Hanged

Maple: cpu = 1.201 (sec), leaf count = 9885

$$\left\{\frac{\_C1}{a2\,x+c2}\left(-\frac{1}{2\,(a2\,x+c2)^2}\left(2\,a0\,a2\,b1\,x^2+2\,a0\,b1\,c2\,x+2\,a2\,b1\,c0\,x+a1\,c1\,c2+b0\,c1\,c2+2\,a2\right.\right.\right.$$

2.431 ODE No. 431

$$\boxed{x^2\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2-(y(x))^4+(y(x))^2=0}$$

Mathematica: cpu = 0.037005 (sec), leaf count = 111

$$\left\{\left\{y(x)\to\sqrt{\tan^2(c_1-\log(x))+1}(-\cot(c_1-\log(x)))\right\},\left\{y(x)\to\sqrt{\tan^2(c_1-\log(x))+1}\cot(c_1-\log\right.\right.$$

Maple: cpu = 0.561 (sec), leaf count = 62

$$\left\{y(x)=-1,y(x)=1,y(x)=\frac{1}{\tan(-\ln(x)+\_C1)}\sqrt{(\tan(-\ln(x)+\_C1))^2+1},y(x)=-\frac{1}{\tan(-\ln(x\right.\right.$$

2.432 ODE No. 432

$$\boxed{\left(x\frac{\mathrm{d}}{\mathrm{d}x}y(x)+a\right)^2-2\,ay(x)+x^2=0}$$

Mathematica: cpu = 1.713718 (sec), leaf count = 64

$$\text{Solve}\left[\left\{y(x)=\frac{a^2+2a\text{K\$1274426}x+\text{K\$1274426}^2x^2+x^2}{2a},x=\frac{c_1}{\sqrt{\text{K\$1274426}^2+1}}-\frac{a\sinh^{-1}(\text{K\$127442}}{\sqrt{\text{K\$1274426}^2+}}\right.\right.$$

Maple: cpu = 7.551 (sec), leaf count = 615

$$\left\{y(x)=-\frac{\left(RootOf\left((Arcsinh(\_Z))^2a^2-\_Z^2x^2-2\,Arcsinh(\_Z)\,\_C1\,a+\_C1^2-x^2\right)\right)^4x^2}{-2\,\left(RootOf\left((Arcsinh(\_Z))^2a^2-\_Z^2x^2-2\,Arcsinh(\_Z)\,\_C1\,a+\_C1^2-x^2\right)\right)^2a-2\,a}-\right.$$

2.433 ODE No. 433

$$\boxed{\left(x\frac{\mathrm{d}}{\mathrm{d}x}y(x)+y(x)+2\,x\right)^2-4\,xy(x)-4\,x^2-4\,a=0}$$

Mathematica: cpu = 0.510065 (sec), leaf count = 22

$$\left\{\left\{y(x)\to\frac{-a-2c_1x+c_1^2}{x}\right\}\right\}$$

Maple: cpu = 0.640 (sec), leaf count = 32

$$\left\{y(x)=-\frac{x^2+a}{x},y(x)=\_C1+\frac{1}{x}\left(\frac{\_C1^2}{4}-a\right)\right\}$$

2.434 ODE No. 434

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x)-1=0}$$

Mathematica: cpu = 0.032004 (sec), leaf count = 27

$$\{\{y(x)\to x\sinh\left(c_1-\log(x)\right)\},\{y(x)\to x\sinh\left(c_1+\log(x)\right)\}\}$$

Maple: cpu = 0.015 (sec), leaf count = 7

$$\{y(x)=x+\_C1\}$$

2.435 ODE No. 435

$$\boxed{x^2\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2-2\,xy(x)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)+y(x)\left(1+y(x)\right)-x=0}$$

Mathematica: cpu = 0.037005 (sec), leaf count = 61

$$\left\{\left\{y(x)\to\frac{1}{4}\left(c_1^2x-4ic_1\sqrt{x}+4x-4\right)\right\},\left\{y(x)\to\frac{1}{4}\left(c_1^2x+4ic_1\sqrt{x}+4x-4\right)\right\}\right\}$$

Maple: cpu = 0.671 (sec), leaf count = 22

$$\left\{y(x)=x,y(x)=\_C1\,\sqrt{x}-\frac{x\_C1^2}{4}+x-1\right\}$$

2.436 ODE No. 436

$$\boxed{x^2\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2-2\,xy(x)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)+\left(y(x)\right)^2\left(-x^2+1\right)-x^4=0}$$

Mathematica: cpu = 0.034504 (sec), leaf count = 26

$$\left\{\left\{y(x)\to -x\sinh\left(x-c_1\right)\right\},\left\{y(x)\to x\sinh\left(c_1+x\right)\right\}\right\}$$

Maple: cpu = 1.809 (sec), leaf count = 59

$$\left\{y(x)=-ix,y(x)=ix,y(x)=-\frac{\_C1\,x}{2\,\mathrm{e}^x}\left(\frac{\left(\mathrm{e}^x\right)^2}{\_C1^2}-1\right),y(x)=\frac{x\left(\left(\mathrm{e}^x\right)^2\_C1^2-1\right)}{2\,\mathrm{e}^x\_C1}\right\}$$

2.437 ODE No. 437

$$\boxed{x^2\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2-\left(2\,xy(x)+a\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+\left(y(x)\right)^2=0}$$

Mathematica: cpu = 0.274035 (sec), leaf count = 47

$$\left\{\left\{y(x)\to\frac{x-2\sqrt{a}c_1}{4c_1^2}\right\},\left\{y(x)\to\frac{2\sqrt{a}c_1+x}{4c_1^2}\right\}\right\}$$

Maple: cpu = 0.515 (sec), leaf count = 36

$$\left\{y(x)=-\frac{a}{4\,x},y(x)=\_C1\,x-\sqrt{\_C1\,a},y(x)=\_C1\,x+\sqrt{\_C1\,a}\right\}$$

2.438 ODE No. 438

$$\boxed{x^2\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+3\,xy(x)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)+2\left(y(x)\right)^2=0}$$

Mathematica: cpu = 0.010501 (sec), leaf count = 21

$$\left\{\left\{y(x)\to\frac{c_1}{x^2}\right\},\left\{y(x)\to\frac{c_1}{x}\right\}\right\}$$

Maple: cpu = 0.0 (sec), leaf count = 17

$$\left\{y(x)=\frac{\_C1}{x^2},y(x)=\frac{\_C1}{x}\right\}$$

2.439 ODE No. 439

$$\boxed{x^2\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+3\,xy(x)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)+3\,(y(x))^2=0}$$

Mathematica: cpu = 0.034504 (sec), leaf count = 49

$$\left\{\left\{y(x)\to c_1x^{\frac{1}{2}\left(-3-i\sqrt{3}\right)}\right\},\left\{y(x)\to c_1x^{\frac{1}{2}i\left(\sqrt{3}+3i\right)}\right\}\right\}$$

Maple: cpu = 0.546 (sec), leaf count = 33

$$\left\{y(x)=\_C1\,x^{-\frac{i}{2}\sqrt{3}}x^{-\frac{3}{2}},y(x)=\_C1\,x^{\frac{i}{2}\sqrt{3}}x^{-\frac{3}{2}}\right\}$$

2.440 ODE No. 440

$$\boxed{x^2\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+4\,xy(x)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)-5\,(y(x))^2=0}$$

Mathematica: cpu = 0.009001 (sec), leaf count = 19

$$\left\{\left\{y(x)\to\frac{c_1}{x^5}\right\},\{y(x)\to c_1x\}\right\}$$

Maple: cpu = 0.0 (sec), leaf count = 15

$$\left\{y(x)=\frac{\_C1}{x^5},y(x)=\_C1\,x\right\}$$

2.441 ODE No. 441

$$\boxed{x^2\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2-4\,x(y(x)+2)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)+4\,y(x)\,(y(x)+2)=0}$$

Mathematica: cpu = 0.064508 (sec), leaf count = 65

$$\left\{\left\{y(x)\to-e^{-c_1}x\left(2\sqrt{2}e^{\frac{c_1}{2}}-x\right)\right\},\left\{y(x)\to e^{\frac{c_1}{2}}x\left(e^{\frac{c_1}{2}}x-2\sqrt{2}\right)\right\}\right\}$$

Maple: cpu = 1.311 (sec), leaf count = 265

$$\left\{y(x)=-2,y(x)=\frac{x^2}{\_C1}\left(-2\,\frac{\sqrt{2}\sqrt{x^2\_C1}}{x^2}+1\right),y(x)=\frac{x^2}{\_C1}\left(2\,\frac{\sqrt{2}\sqrt{x^2\_C1}}{x^2}+1\right),y(x)=-\frac{1}{\_C1^2}\left(\right.\right.$$

2.442 ODE No. 442

$$x^2\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+\left(x^2y(x)-2\,xy(x)+x^3\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+\left(\left(y(x)\right)^2-x^2y(x)\right)(1-x)=0$$

Mathematica: cpu = 0.007501 (sec), leaf count = 28

$$\left\{\left\{y(x)\to c_1e^{-x}x\right\},\left\{y(x)\to c_1x-x^2\right\}\right\}$$

Maple: cpu = 0.0 (sec), leaf count = 21

$$\left\{y(x)=(-x+\_C1)\,x,y(x)=\_C1\,\mathrm{e}^{-x}x\right\}$$

2.443 ODE No. 443

$$x\left(x\frac{\mathrm{d}}{\mathrm{d}x}y(x)-y(x)\right)^2-\frac{\mathrm{d}}{\mathrm{d}x}y(x)=0$$

Mathematica: cpu = 0.552570 (sec), leaf count = 1921

$$\left\{\left\{y(x)\to \text{Root}\left[1024x^{12}-576e^{12c_1}\#1^4x^8-2176e^{12c_1}\#1^3x^6+81e^{24c_1}\#1^8x^4-1536e^{12c_1}\#1^2x^4+36e^{24c_1}\right.\right.\right.$$

Maple: cpu = 1.638 (sec), leaf count = 221

$$\left\{y(x)=-\frac{2}{9\,x^2},y(x)=\frac{\left(RootOf\left(-729\,\_C1\,x^{12}+\_Z^8-12\,\_Z^7+60\,\_Z^6-160\,\_Z^5+240\,\_Z^4-192\right.\right.\right.}{}\right.$$

2.444 ODE No. 444

$$x^2\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2-y(x)\left(y(x)-2\,x\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+\left(y(x)\right)^2=0$$

Mathematica: cpu = 0.143518 (sec), leaf count = 103

$$\left\{\left\{y(x)\to-\frac{4e^{-2c_1}}{e^{2c_1}x-2}\right\},\left\{y(x)\to-\frac{4e^{-2c_1}}{e^{2c_1}x+2}\right\},\left\{y(x)\to-\frac{e^{-2c_1}}{2\left(2e^{2c_1}x-1\right)}\right\},\left\{y(x)\to-\frac{e^{-2c_1}}{2\left(2e^{2c_1}x+1\right)}\right.\right.$$

Maple: cpu = 1.045 (sec), leaf count = 121

$$\left\{y(x)=4\,x,y(x)=-\frac{\_C1^2\left(\sqrt{2}\_C1-2\,x\right)}{2\,\_C1^2-4\,x^2},y(x)=-2\,\frac{\_C1^2\left(\sqrt{2}\_C1-x\right)}{2\,\_C1^2-x^2},y(x)=2\,\frac{\_C1^2\left(\sqrt{2}\_C1+\right.}{2\,\_C1^2-x^2}\right.$$

2.445 ODE No. 445

$$\boxed{x^2\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+\left(ax^2(y(x))^3+b\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+ab(y(x))^3=0}$$

Mathematica: cpu = 0.009001 (sec), leaf count = 49

$$\left\{\left\{y(x)\to -\frac{1}{\sqrt{2ax-2c_1}}\right\},\left\{y(x)\to \frac{1}{\sqrt{2ax-2c_1}}\right\},\left\{y(x)\to \frac{b}{x}+c_1\right\}\right\}$$

Maple: cpu = 0.016 (sec), leaf count = 35

$$\left\{y(x)=\frac{1}{\sqrt{2\,ax+\_C1}},y(x)=-\frac{1}{\sqrt{2\,ax+\_C1}},y(x)=\frac{b}{x}+\_C1\right\}$$

2.446 ODE No. 446

$$\boxed{\left(x^2+1\right)\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2-2\,xy(x)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+(y(x))^2-1=0}$$

Mathematica: cpu = 0.490562 (sec), leaf count = 201

$$\left\{\left\{y(x)\to \frac{e^{2c_1}x-2e^{c_1}-x}{e^{2c_1}+1}\right\},\left\{y(x)\to \frac{e^{2c_1}x+2e^{c_1}-x}{e^{2c_1}+1}\right\},\left\{y(x)\to \frac{-e^{4c_1}x-2\sqrt{-e^{2c_1}+2e^{4c_1}-e^{6c_1}}-\right.\right.$$
$$\left.\left.2e^{2c_1}-e^{4c_1}-1\right.\right.$$

Maple: cpu = 0.577 (sec), leaf count = 57

$$\left\{y(x)=\sqrt{x^2+1},y(x)=-\sqrt{x^2+1},y(x)=\_C1\,x-\sqrt{-\_C1^{\,2}+1},y(x)=\_C1\,x+\sqrt{-\_C1^{\,2}+1}\right\}$$

2.447 ODE No. 447

$$\boxed{\left(x^2-1\right)\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2-1=0}$$

Mathematica: cpu = 0.015502 (sec), leaf count = 41

$$\left\{\left\{y(x)\to c_1-\log\left(\sqrt{x^2-1}+x\right)\right\},\left\{y(x)\to c_1+\log\left(\sqrt{x^2-1}+x\right)\right\}\right\}$$

Maple: cpu = 0.468 (sec), leaf count = 33

$$\left\{y(x)=-\ln\left(x+\sqrt{x^2-1}\right)+\_C1,y(x)=\ln\left(x+\sqrt{x^2-1}\right)+\_C1\right\}$$

2.448 ODE No. 448

$$\boxed{(x^2-1)\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2-(y(x))^2+1=0}$$

Mathematica: cpu = 0.091512 (sec), leaf count = 109

$$\left\{\left\{y(x)\to\frac{1}{2}\left(e^{-c_1}\sqrt{x^2-1}-e^{c_1}\sqrt{x^2-1}+e^{-c_1}x+e^{c_1}x\right)\right\},\left\{y(x)\to\frac{1}{2}\left(-e^{-c_1}\sqrt{x^2-1}+e^{c_1}\sqrt{x^2-1}+\right.\right.$$

Maple: cpu = 10.858 (sec), leaf count = 166

$$\left\{1\sqrt{(-1+y(x))(1+y(x))}\ln\left(y(x)+\sqrt{(y(x))^2-1}\right)\frac{1}{\sqrt{-1+y(x)}}\frac{1}{\sqrt{1+y(x)}}+\int^x\frac{1}{\_a^2-1}\sqrt{(\_a^2\right.$$

2.449 ODE No. 449

$$\boxed{(-a^2+x^2)\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+2\,xy(x)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+(y(x))^2=0}$$

Mathematica: cpu = 0.010001 (sec), leaf count = 27

$$\left\{\left\{y(x)\to\frac{c_1}{a-x}\right\},\left\{y(x)\to\frac{c_1}{a+x}\right\}\right\}$$

Maple: cpu = 0.0 (sec), leaf count = 23

$$\left\{y(x)=\frac{\_C1}{a-x},y(x)=\frac{\_C1}{x+a}\right\}$$

2.450 ODE No. 450

$$\boxed{(-a^2+x^2)\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2-2\,xy(x)\frac{\mathrm{d}}{\mathrm{d}x}y(x)-x^2=0}$$

Mathematica: cpu = 0.453058 (sec), leaf count = 26

$$\left\{\left\{y(x)\to\frac{a^2+c_1^2-x^2}{2c_1}\right\}\right\}$$

Maple: cpu = 0.795 (sec), leaf count = 51

$$\left\{y(x)=\sqrt{a^2-x^2},y(x)=-\sqrt{a^2-x^2},y(x)=x^2\_C1-\_C1\,a^2-\frac{1}{4\_C1}\right\}$$

2.451 ODE No. 451

$$\boxed{\left(x^2+a\right)\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2-2\,xy(x)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)+(y(x))^2+b=0}$$

Mathematica: cpu = 0 (sec), leaf count = 0

Hanged

Maple: cpu = 0.561 (sec), leaf count = 78

$$\left\{y(x)=\frac{1}{a}\sqrt{-ab\left(x^2+a\right)},y(x)=-\frac{1}{a}\sqrt{-ab\left(x^2+a\right)},y(x)=\_C1\,x-\sqrt{-a\_C1^{\,2}-b},y(x)=\_C1\,x+\right.$$

2.452 ODE No. 452

$$\boxed{\left(2\,x^2+1\right)\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+\left((y(x))^2+2\,xy(x)+x^2+2\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+2\,(y(x))^2+1=0}$$

Mathematica: cpu = 0 (sec), leaf count = 0

Hanged

Maple: cpu = 1.779 (sec), leaf count = 37

$$\left\{y(x)=-3\,x-2\,\sqrt{2\,x^2+1},y(x)=-3\,x+2\,\sqrt{2\,x^2+1}\right\}$$

2.453 ODE No. 453

$$\boxed{\left(a^2-1\right)x^2\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+2\,xy(x)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)-(y(x))^2+a^2x^2=0}$$

Mathematica: cpu = 0.573073 (sec), leaf count = 395

$$\left\{\text{Solve}\left[\frac{a\left(-\log\left(\frac{\left(a^2-1\right)\left(a\sqrt{a^2-\frac{y(x)^2}{x^2}}-1+a^2-\frac{iy(x)}{x}-1\right)}{a^3\left(\frac{y(x)}{x}-i\right)}\right)+\log\left(-\frac{\left(a^2-1\right)\left(a\sqrt{a^2-\frac{y(x)^2}{x^2}}-1+a^2+\frac{iy(x)}{x}-1\right)}{a^3\left(\frac{y(x)}{x}+i\right)}\right)+\log\left(\frac{y}{2\left(a^2-1\right)}\right.\right.\right.\right.$$

Maple: cpu = 1.170 (sec), leaf count = 229

$$\left\{\ln\left(x\right)-\frac{1}{a}\sqrt{-a^2}\arctan\left(\frac{a^2y(x)}{x}\frac{1}{\sqrt{-a^2}}\frac{1}{\sqrt{-\frac{a^2x^2-x^2-(y(x))^2}{x^2}}}\right)+\frac{1}{2}\ln\left(\frac{(y(x))^2+x^2}{x^2}\right)+\frac{1}{a}\ln\left(\frac{1}{x}\left(\sqrt{\underline{-a^2}\right.}\right.\right.$$

2.454 ODE No. 454

$$\boxed{ax^2\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2-2\,axy(x)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+(y(x))^2-a(a-1)\,x^2=0}$$

Mathematica: cpu = 0.154520 (sec), leaf count = 118

$$\left\{\left\{y(x)\to\frac{1}{2}e^{-c_1}x^{1-\frac{\sqrt{a-1}}{\sqrt{a}}}\left(e^{2c_1}-ax^{\frac{2\sqrt{a-1}}{\sqrt{a}}}\right)\right\},\left\{y(x)\to\frac{1}{2}e^{-c_1}x^{1-\frac{\sqrt{a-1}}{\sqrt{a}}}\left(e^{2c_1}x^{\frac{2\sqrt{a-1}}{\sqrt{a}}}-a\right)\right\}\right\}$$

Maple: cpu = 0.593 (sec), leaf count = 138

$$\left\{y(x)=\sqrt{-a}x,y(x)=RootOf\left(-\ln\left(x\right)-\int^{-Z}\frac{1}{\_a^2a-\_a^2+a^2-a}\sqrt{\left(\_a^2a-\_a^2+a^2-a\right)a}d\_a+\right.\right.$$

2.455 ODE No. 455

$$\boxed{x^3\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+x^2y(x)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+a=0}$$

Mathematica: cpu = 0.400551 (sec), leaf count = 123

$$\left\{\left\{y(x)\to-\frac{e^{-\frac{c_1}{2}}\left(2ae^{c_1}+x\right)}{\sqrt{2}x}\right\},\left\{y(x)\to\frac{e^{-\frac{c_1}{2}}\left(2ae^{c_1}+x\right)}{\sqrt{2}x}\right\},\left\{y(x)\to-\frac{e^{-\frac{c_1}{2}}\left(2ax+e^{c_1}\right)}{\sqrt{2}x}\right\},\left\{y(x)\to\right.\right.$$

Maple: cpu = 0.686 (sec), leaf count = 66

$$\left\{y(x)=-2\,\frac{\sqrt{ax}}{x},y(x)=2\,\frac{\sqrt{ax}}{x},y(x)=\frac{\_C1^2+4\,ax}{2\,\_C1\,x},y(x)=\frac{\_C1^2x+4\,a}{2\,\_C1\,x}\right\}$$

2.456 ODE No. 456

$$\boxed{x\left(x^2-1\right)\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+2\left(-x^2+1\right)y(x)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+x(y(x))^2-x=0}$$

Mathematica: cpu = 0.122516 (sec), leaf count = 79

$$\left\{\left\{y(x)\to x+2x\sinh^2\left(\frac{1}{2}\left(c_1-2i\tan^{-1}\left(\frac{\sqrt{x-1}}{\sqrt{x+1}}\right)\right)\right)\right\},\left\{y(x)\to x+2x\sinh^2\left(\frac{1}{2}\left(c_1+2i\tan^{-1}\left(\frac{\sqrt{}}{\sqrt{}}\right.\right.\right.\right.$$

Maple: cpu = 0.874 (sec), leaf count = 33

$$\left\{y(x)=x,y(x)=-x,y(x)=\sqrt{-\_C1^2+1}+\sqrt{x^2-1}\_C1\right\}$$

2.457 ODE No. 457

$$\boxed{x^4\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2-x\frac{\mathrm{d}}{\mathrm{d}x}y(x)-y(x)=0}$$

Mathematica: cpu = 0.948120 (sec), leaf count = 410

$$\left\{\text{Solve}\left[\frac{x\sqrt{4x^2y(x)+1}\left(\log(x)-\log\left(\sqrt{4x^2y(x)+1}+1\right)\right)}{\sqrt{4x^4y(x)+x^2}}+\frac{x\sqrt{4x^2y(x)+1}\log(y(x))-x\sqrt{4x^2y(x)}\right.\right.$$

Maple: cpu = 1.186 (sec), leaf count = 135

$$\left\{y(x)=-\frac{1}{4x^2},y(x)=\frac{-\_C1\left(-\_C1-2ix\right)-\_C1^2-2x^2}{2\_C1^2x^2},y(x)=\frac{-\_C1\left(-\_C1+2ix\right)-\_C1^2-\right.$$

2.458 ODE No. 458

$$\boxed{x^2\left(-a^2+x^2\right)\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2-1=0}$$

Mathematica: cpu = 0.059508 (sec), leaf count = 139

$$\left\{\left\{y(x)\to c_1-\frac{ix\sqrt{x^2-a^2}\log\left(\frac{2\left(\sqrt{x^2-a^2}-ia\right)}{x}\right)}{a\sqrt{x^4-a^2x^2}}\right\},\left\{y(x)\to c_1+\frac{ix\sqrt{x^2-a^2}\log\left(\frac{2\left(\sqrt{x^2-a^2}-ia\right)}{x}\right)}{a\sqrt{x^4-a^2x^2}}\right\}\right\}$$

Maple: cpu = 0.593 (sec), leaf count = 90

$$\left\{y(x)=-1\ln\left(\frac{1}{x}\left(-2a^2+2\sqrt{-a^2}\sqrt{-a^2+x^2}\right)\right)\frac{1}{\sqrt{-a^2}}+\_C1,y(x)=1\ln\left(\frac{1}{x}\left(-2a^2+2\sqrt{-a^2}\sqrt{-a^2}\right.\right.\right.$$

2.459 ODE No. 459

$$\boxed{\mathrm{e}^{-2\,x}\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2-\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)-1\right)^2+\mathrm{e}^{-2\,y(x)}=0}$$

Mathematica: cpu = 2.602831 (sec), leaf count = 271

$$\left\{\left\{y(x)\to \log\left(-\frac{e^{-c_1}(e^x+1)\left(e^{2c_1+x}-e^{2c_1}-e^x-1\right)}{\sqrt{8e^x+4e^{2x}+4}}\right)\right\},\left\{y(x)\to \log\left(\frac{e^{-c_1}(e^x+1)\left(e^{2c_1+x}-e^{2c_1}-e\right.\right.\right.$$

Maple: cpu = 0.422 (sec), leaf count = 65

$$\left\{y(x)=x+\ln\left(\frac{1}{\mathrm{e}^x}\left(-1-\sqrt{\left(\mathrm{e}^x\right)^2-\frac{\left(\mathrm{e}^x\right)^2}{\left(\mathrm{e}^{\_C1}\right)^2}}\right)\right)+\_C1,y(x)=x+\ln\left(\frac{1}{\mathrm{e}^x}\left(-1+\sqrt{\left(\mathrm{e}^x\right)^2-\frac{\left(\mathrm{e}^x\right)^2}{\left(\mathrm{e}^{\_C1}\right)^2}}\right.\right.\right.$$

2.460 ODE No. 460

$$\boxed{\left(\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+(y(x))^2\right)(\cos(x))^4-a^2=0}$$

Mathematica: cpu = 56.015113 (sec), leaf count = 28

$$\text{DSolve}\left[\cos^4(x)\left(y'(x)^2+y(x)^2\right)-a^2=0,y(x),x\right]$$

Maple: cpu = 5.163 (sec), leaf count = 0

could not solve

2.461 ODE No. 461

$$\boxed{d0(x)\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+2\,b0(x)\,y(x)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)+c0(x)\,(y(x))^2+2\,d0(x)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)+2\,e0(x)\,y(x)+f0(x)=0}$$

Mathematica: cpu = 108.142232 (sec), leaf count = 49

$$\text{DSolve}\left[a(x)y'(x)^2+2b(x)y(x)y'(x)+c(x)y(x)^2+2d(x)y'(x)+2e(x)y(x)+f(x)=0,y(x),x\right]$$

Maple: cpu = 19.953 (sec), leaf count = 0

could not solve

2.462 ODE No. 462

$$\boxed{y(x)\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2-1=0}$$

Mathematica: cpu = 0.014502 (sec), leaf count = 43

$$\left\{\left\{y(x)\to\left(\frac{3}{2}\right)^{2/3}(c_1-x)^{2/3}\right\},\left\{y(x)\to\left(\frac{3}{2}\right)^{2/3}(c_1+x)^{2/3}\right\}\right\}$$

Maple: cpu = 0.577 (sec), leaf count = 27

$$\left\{x-\frac{2}{3}(y(x))^{\frac{3}{2}}-\_C1=0,x+\frac{2}{3}(y(x))^{\frac{3}{2}}-\_C1=0\right\}$$

2.463 ODE No. 463

$$\boxed{y(x)\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2-\mathrm{e}^{2x}=0}$$

Mathematica: cpu = 0.017002 (sec), leaf count = 47

$$\left\{\left\{y(x)\to\left(\frac{3}{2}\right)^{2/3}(c_1-e^x)^{2/3}\right\},\left\{y(x)\to\left(\frac{3}{2}\right)^{2/3}(c_1+e^x)^{2/3}\right\}\right\}$$

Maple: cpu = 1.092 (sec), leaf count = 50

$$\left\{-1\sqrt{y\left(x\right)\left(\mathrm{e}^{x}\right)^{2}}\frac{1}{\sqrt{y\left(x\right)}}+\frac{2}{3}(y(x))^{\frac{3}{2}}+\_C1=0,1\sqrt{y\left(x\right)\left(\mathrm{e}^{x}\right)^{2}}\frac{1}{\sqrt{y\left(x\right)}}+\frac{2}{3}(y(x))^{\frac{3}{2}}+\_C1=0\right\}$$

2.464 ODE No. 464

$$\boxed{y(x)\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+2\,x\frac{\mathrm{d}}{\mathrm{d}x}y(x)-y(x)=0}$$

Mathematica: cpu = 0.061008 (sec), leaf count = 52

$$\left\{\left\{y(x)\to-e^{\frac{c_1}{2}}\sqrt{e^{c_1}-2x}\right\},\left\{y(x)\to e^{\frac{c_1}{2}}\sqrt{e^{c_1}-2x}\right\}\right\}$$

Maple: cpu = 0.983 (sec), leaf count = 71

$$\left\{y(x)=\sqrt{\_C1^{2}-2\_C1\,x},y(x)=\sqrt{\_C1^{2}+2\_C1\,x},y(x)=-ix,y(x)=ix,y(x)=-\sqrt{\_C1^{2}-2\_\right.$$

2.465 ODE No. 465

$$\boxed{y(x)\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+2\,x\frac{\mathrm{d}}{\mathrm{d}x}y(x)-9\,y(x)=0}$$

Mathematica: cpu = 0 (sec), leaf count = 0

Hanged

Maple: cpu = 0.640 (sec), leaf count = 209

$$\left\{-\frac{\_C1\,x}{2}\left(-x+\sqrt{x^2+9\,\left(y\left(x\right)\right)^2}\right)\left(\frac{1}{y\left(x\right)}\left(-x+\sqrt{x^2+9\,\left(y\left(x\right)\right)^2}\right)\right)^{\frac{2}{7}}\left(x\sqrt{x^2+9\,\left(y\left(x\right)\right)^2}-x^2-(y\right.\right.$$

2.466 ODE No. 466

$$\boxed{y(x)\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2-2\,x\frac{\mathrm{d}}{\mathrm{d}x}y(x)+y(x)=0}$$

Mathematica: cpu = 0.248532 (sec), leaf count = 145

$$\left\{\left\{y(x)\to-\sqrt{-2x\sinh\left(c_1\right)-2x\cosh\left(c_1\right)-\sinh\left(2c_1\right)-\cosh\left(2c_1\right)}\right\},\left\{y(x)\to\sqrt{-2x\sinh\left(c_1\right)-2x\cos\right.\right.$$

Maple: cpu = 0.811 (sec), leaf count = 71

$$\left\{y(x)=x,y(x)=\sqrt{\_C1^2-2\,ix\_C1},y(x)=\sqrt{\_C1^2+2\,ix\_C1},y(x)=-x,y(x)=-\sqrt{\_C1^2-2\,ix\_}\right.$$

2.467 ODE No. 467

$$\boxed{y(x)\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2-4\,x\frac{\mathrm{d}}{\mathrm{d}x}y(x)+y(x)=0}$$

Mathematica: cpu = 0 (sec), leaf count = 0

Hanged

Maple: cpu = 0.655 (sec), leaf count = 148

$$\left\{-\frac{\_C1\,x}{y\left(x\right)}\frac{1}{\sqrt[3]{\frac{1}{y(x)}\left(2\,x-\sqrt{4\,x^2-\left(y\left(x\right)\right)^2}\right)}}\frac{1}{\sqrt[3]{\frac{1}{(y(x))^2}\left(8\,x^2-4\,\left(y\left(x\right)\right)^2-4\,x\sqrt{4\,x^2-\left(y\left(x\right)\right)^2}\right)}}+x=0,\right.$$

2.468 ODE No. 468

$$y(x)\left(\frac{d}{dx}y(x)\right)^2-4a^2x\frac{d}{dx}y(x)+a^2y(x)=0$$

Mathematica: cpu = 0 (sec), leaf count = 0

Hanged

Maple: cpu = 0.577 (sec), leaf count = 181

$$\left\{-\frac{\_C1\,x}{ay\left(x\right)}\frac{1}{\sqrt[3]{\frac{a}{y(x)}\left(2\,ax+\sqrt{4\,a^2x^2-\left(y\left(x\right)\right)^2}\right)}}\frac{1}{\sqrt[3]{\frac{a^2}{(y(x))^2}\left(2\,a^2x^2+\sqrt{4\,a^2x^2-\left(y\left(x\right)\right)^2}ax-\left(y\left(x\right)\right)^2\right)}}+x\right.$$

2.469 ODE No. 469

$$y(x)\left(\frac{d}{dx}y(x)\right)^2+ax\frac{d}{dx}y(x)+by(x)=0$$

Mathematica: cpu = 0.945120 (sec), leaf count = 317

$$\left\{\text{Solve}\left[\frac{\left(\sqrt{a^2-\frac{4by(x)^2}{x^2}}-a\right)\left(\sqrt{a^2-\frac{4by(x)^2}{x^2}}+a+2b\right)\left(a\log\left(\sqrt{a^2-\frac{4by(x)^2}{x^2}}-a\right)+(a+2b)\log\left(\sqrt{a\right.\right.}\right.}{8b(a+b)\left(\sqrt{a^2-\frac{4by(x)^2}{x^2}}-a-\frac{2y(x)^2}{x^2}\right)}\right.\right.$$

Maple: cpu = 0.639 (sec), leaf count = 242

$$\left\{\frac{\_C1\,x}{\left(y\left(x\right)\right)^2}\left(-\frac{1}{2\,y\left(x\right)}\left(ax+\sqrt{a^2x^2-4\,b\left(y\left(x\right)\right)^2}\right)\right)^{-\frac{a}{a+b}}\left(ax+\sqrt{a^2x^2-4\,b\left(y\left(x\right)\right)^2}\right)\left(\frac{a}{2\,\left(y\left(x\right)\right)^2}\left(ax^2+\right.\right.\right.$$

2.470 ODE No. 470

$$\boxed{y(x)\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+x^3\frac{\mathrm{d}}{\mathrm{d}x}y(x)-x^2y(x)=0}$$

Mathematica: cpu = 0.883112 (sec), leaf count = 454

$$\left\{\text{Solve}\left[\frac{\sqrt{x^6+4x^2y(x)^2}\log\left(\sqrt{x^4+4y(x)^2}+x^2\right)}{2x\sqrt{x^4+4y(x)^2}}+\frac{-x\sqrt{x^4+4y(x)^2}\log\left(y(x)^2\right)+x\sqrt{x^4+4y(x)^2}\log\right.\right.$$

Maple: cpu = 0.780 (sec), leaf count = 87

$$\left\{y(x)=-\frac{i}{2}x^2,y(x)=\frac{i}{2}x^2,y(x)=-\frac{1}{4}\sqrt{-4\,x^2\_C1+\_C1^2},y(x)=\frac{1}{4}\sqrt{-4\,x^2\_C1+\_C1^2},y(x)=-2\right.$$

2.471 ODE No. 471

$$\boxed{y(x)\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2-\left(y(x)-x\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)-x=0}$$

Mathematica: cpu = 0.007001 (sec), leaf count = 47

$$\left\{\left\{y(x)\to c_1+x\right\},\left\{y(x)\to-\sqrt{2c_1-x^2}\right\},\left\{y(x)\to\sqrt{2c_1-x^2}\right\}\right\}$$

Maple: cpu = 0.015 (sec), leaf count = 33

$$\left\{y(x)=\sqrt{-x^2+\_C1},y(x)=-\sqrt{-x^2+\_C1},y(x)=x+\_C1\right\}$$

2.472 ODE No. 472

$$\boxed{\left(y(x)+x\right)\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+2\,x\frac{\mathrm{d}}{\mathrm{d}x}y(x)-y(x)=0}$$

Mathematica: cpu = 0.186024 (sec), leaf count = 127

$$\left\{\left\{y(x)\to\frac{1}{3}\left(-2\sqrt{e^{2c_1}-3e^{c_1}x}-e^{c_1}\right)\right\},\left\{y(x)\to\frac{1}{3}\left(2\sqrt{e^{2c_1}-3e^{c_1}x}-e^{c_1}\right)\right\},\left\{y(x)\to e^{c_1}-2\sqrt{e^{c_1}x+\right.\right.$$

Maple: cpu = 0.936 (sec), leaf count = 119

$$\left\{\ln\left(x\right)-\mathit{Artanh}\left(\frac{y(x)+2\,x}{2\,x}\frac{1}{\sqrt{\frac{\left(y(x)\right)^2+xy(x)+x^2}{x^2}}}\right)+\ln\left(\frac{y(x)}{x}\right)-\_C1=0,\ln\left(x\right)+\mathit{Artanh}\left(\frac{y(x)+2\,x}{2\,x}\right.\right.$$

2.473 ODE No. 473

$$\boxed{(y(x)-2\,x)\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2-2\,(x-1)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)+y(x)-2=0}$$

Mathematica: cpu = 0.407052 (sec), leaf count = 165

$$\left\{\left\{y(x)\to\frac{1}{2}\left(-\sqrt{-4e^{c_1}x+4e^{c_1}-e^{2c_1}}-e^{c_1}+4\right)\right\},\left\{y(x)\to\frac{1}{2}\left(\sqrt{-4e^{c_1}x+4e^{c_1}-e^{2c_1}}-e^{c_1}+4\right)\right\},\left\{\right.\right.$$

Maple: cpu = 0.936 (sec), leaf count = 78

$$\left\{y(x)=2+\_C1-\sqrt{-\_C1^{\,2}+2\_C1\ (x-1)},y(x)=2+\frac{\_C1}{2}-\frac{1}{2}\sqrt{-\_C1^{\,2}+4\_C1\ (x-1)},y(x)\right.$$

2.474 ODE No. 474

$$\boxed{2\,y(x)\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2-(4\,x-5)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)+2\,y(x)=0}$$

Mathematica: cpu = 0.232029 (sec), leaf count = 135

$$\left\{\left\{y(x)\to-i\sqrt{2}e^{\frac{c_1}{2}}\sqrt{8e^{c_1}+4x-5}\right\},\left\{y(x)\to i\sqrt{2}e^{\frac{c_1}{2}}\sqrt{8e^{c_1}+4x-5}\right\},\left\{y(x)\to-\frac{1}{4}ie^{\frac{c_1}{2}}\sqrt{e^{c_1}+8x-1}\right.\right.$$

Maple: cpu = 1.295 (sec), leaf count = 154

$$\left\{\ln\left(x-\frac{5}{4}\right)+\frac{1}{2}\ln\left(16\,\frac{(y(x))^2}{(4\,x-5)^2}-1\right)-\sqrt{-16\,\frac{(y\,(x))^2}{(4\,x-5)^2}+1}+Artanh\left(\frac{1}{\sqrt{-16\,\frac{(y(x))^2}{(4\,x-5)^2}+1}}\right)+\frac{\sqrt{4}}{2}\right.$$

2.475 ODE No. 475

$$\boxed{4\,y(x)\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+2\,x\frac{\mathrm{d}}{\mathrm{d}x}y(x)-y(x)=0}$$

Mathematica: cpu = 0.097512 (sec), leaf count = 205

$$\left\{\left\{y(x)\to-\frac{1}{2}e^{2c_1}\sqrt{e^{4c_1}-2x}\right\},\left\{y(x)\to\frac{1}{2}e^{2c_1}\sqrt{e^{4c_1}-2x}\right\},\left\{y(x)\to-\frac{1}{2}(\sinh(2c_1)+\cosh(2c_1))\sqrt{\sin\right.\right.$$

Maple: cpu = 0.936 (sec), leaf count = 69

$$\left\{y(x)=\sqrt{\_C1^{\,2}-\_C1\,x},y(x)=\sqrt{\_C1^{\,2}+\_C1\,x},y(x)=-\frac{i}{2}x,y(x)=\frac{i}{2}x,y(x)=-\sqrt{\_C1^{\,2}-\_C1\right.$$

2.476 ODE No. 476

$$\boxed{9\,y(x)\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+4\,x^3\frac{\mathrm{d}}{\mathrm{d}x}y(x)-4\,x^2y(x)=0}$$

Mathematica: cpu = 0.843107 (sec), leaf count = 454

$$\left\{\text{Solve}\left[\frac{\sqrt{x^6+9x^2y(x)^2}\log\left(\sqrt{x^4+9y(x)^2}+x^2\right)}{2x\sqrt{x^4+9y(x)^2}}+\frac{-x\sqrt{x^4+9y(x)^2}\log\left(y(x)^2\right)+x\sqrt{x^4+9y(x)^2}\log\right.\right.$$

Maple: cpu = 0.874 (sec), leaf count = 87

$$\left\{y(x)=-\frac{i}{3}x^2,y(x)=\frac{i}{3}x^2,y(x)=-\frac{1}{6}\sqrt{-4\,x^2\_C1+\_C1^2},y(x)=\frac{1}{6}\sqrt{-4\,x^2\_C1+\_C1^2},y(x)=-2\right.$$

2.477 ODE No. 477

$$\boxed{ay(x)\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+(2\,x-b)\frac{\mathrm{d}}{\mathrm{d}x}y(x)-y(x)=0}$$

Mathematica: cpu = 0.304539 (sec), leaf count = 146

$$\left\{\left\{y(x)\to-\frac{e^{\frac{c_1}{2}}\sqrt{2b+e^{c_1}-4x}}{2\sqrt{a}}\right\},\left\{y(x)\to\frac{e^{\frac{c_1}{2}}\sqrt{2b+e^{c_1}-4x}}{2\sqrt{a}}\right\},\left\{y(x)\to-\sqrt{2}e^{\frac{c_1}{2}}\sqrt{2ae^{c_1}-b+2x}\right\},\right.$$

Maple: cpu = 0.858 (sec), leaf count = 929

$$\left\{\int_{\_b}^{x}2\frac{-2\_a+b+\sqrt{4\,a\left(y\left(x\right)\right)^2+4\,\_a^2-4\,\_a\,b+b^2}}{4\,a\left(y\left(x\right)\right)^2+\sqrt{4\,a\left(y\left(x\right)\right)^2+4\,\_a^2-4\,\_a\,b+b^2}b-2\sqrt{4\,a\left(y\left(x\right)\right)^2+4\,\_a^2-4\,\_a\,b+b^2}\_a+b^2}\right.$$

2.478 ODE No. 478

$$\boxed{(ay(x)+b)\left(\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+1\right)-c=0}$$

Mathematica: cpu = 0.166521 (sec), leaf count = 141

$$\left\{\left\{y(x)\to\text{InverseFunction}\left[\frac{c\tan^{-1}\left(\frac{\sqrt{\#1a+b}}{\sqrt{-\#1a-b+c}}\right)-\sqrt{\#1a+b}\sqrt{-\#1a-b+c}}{a}\&\right][c_1-x]\right\},\left\{y(x)\to\right.\right.$$

Maple: cpu = 0.609 (sec), leaf count = 88

$$\left\{x-\int^{y(x)}(\_a\,a+b)\frac{1}{\sqrt{-(\_a\,a+b)\,(\_a\,a+b-c)}}d\_a-\_C1=0,x-\int^{y(x)}-(\_a\,a+b)\frac{}{\sqrt{-(\_a\,a+}\right.$$

2.479 ODE No. 479

$$(b2\,y(x)+a2\,x+c2)\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+(a1\,x+b1\,y(x)+c1)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+a0\,x+b0\,y(x)+c0=0$$

Mathematica: cpu = 0 (sec), leaf count = 0

Hanged

Maple: cpu = 0.811 (sec), leaf count = 929

$$\left\{x-\mathrm{e}^{\int\frac{1}{2\,b2\,y(x)+2\,a2\,x+2\,c2}\left(-a1\,x-b1\,y(x)-c1+\sqrt{-4\,a0\,a2\,x^2-4\,a0\,b2\,xy(x)+a1^2x^2+2\,a1\,b1\,xy(x)-4\,a2\,b0\,xy(x)-4\,b0\,b2\,(y(x))^2+b1^2(y(x))^2-4\,a0\,c2\,x\right.}\right.$$

2.480 ODE No. 480

$$(ay(x)-x^2)\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+2\,xy(x)\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2-(y(x))^2=0$$

Mathematica: cpu = 30.550379 (sec), leaf count = 41

$$\text{DSolve}\left[(ay(x)-x^2)\,y'(x)^2+2xy(x)y'(x)^2-y(x)^2=0,y(x),x\right]$$

Maple: cpu = 2.044 (sec), leaf count = 0

could not solve

2.481 ODE No. 481

$$xy(x)\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+\left((y(x))^2+x^2\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+xy(x)=0$$

Mathematica: cpu = 0.008501 (sec), leaf count = 49

$$\left\{\left\{y(x)\to\frac{c_1}{x}\right\},\left\{y(x)\to-\sqrt{2c_1-x^2}\right\},\left\{y(x)\to\sqrt{2c_1-x^2}\right\}\right\}$$

Maple: cpu = 0.016 (sec), leaf count = 35

$$\left\{y(x)=\sqrt{-x^2+\_C1},y(x)=\frac{-\_C1}{x},y(x)=-\sqrt{-x^2+\_C1}\right\}$$

2.482 ODE No. 482

$$\boxed{xy(x)\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+\left(x^{22}-(y(x))^2+a\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)-xy(x)=0}$$

Mathematica: cpu = 65.128270 (sec), leaf count = 38

$$\text{DSolve}\left[\left(a+x^{22}-y(x)^2\right)y'(x)+xy(x)y'(x)^2-xy(x)=0,y(x),x\right]$$

Maple: cpu = 1.264 (sec), leaf count = 0

could not solve

2.483 ODE No. 483

$$\boxed{\left(2\,xy(x)-x^2\right)\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+2\,xy(x)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+2\,xy(x)-(y(x))^2=0}$$

Mathematica: cpu = 0.157020 (sec), leaf count = 71

$$\left\{\left\{y(x)\to e^{\frac{c_1}{2}}-\sqrt{2e^{\frac{c_1}{2}}x-x^2}\right\},\left\{y(x)\to\sqrt{2e^{\frac{c_1}{2}}x-x^2}+e^{\frac{c_1}{2}}\right\}\right\}$$

Maple: cpu = 0.624 (sec), leaf count = 109

$$\left\{y(x)=0,y(x)=RootOf\left(-2\,\ln(x)+\int^{\_Z}\frac{1}{\_a\left(\_a^2+1\right)}\left(-2\,\_a^2+\sqrt{2\,\_a^3-4\,\_a^2+2\,\_a}\right)d\_a+2\right.$$

2.484 ODE No. 484

$$\boxed{\left(2\,xy(x)-x^2\right)\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2-6\,xy(x)\frac{\mathrm{d}}{\mathrm{d}x}y(x)-(y(x))^2+2\,xy(x)=0}$$

Mathematica: cpu = 0.170522 (sec), leaf count = 81

$$\left\{\left\{y(x)\to-\sqrt{3x^2-2e^{\frac{c_1}{2}}x}-e^{\frac{c_1}{2}}+2x\right\},\left\{y(x)\to\sqrt{3x^2-2e^{\frac{c_1}{2}}x}-e^{\frac{c_1}{2}}+2x\right\}\right\}$$

Maple: cpu = 0 (sec), leaf count = 0

hanged

2.485 ODE No. 485

$$\boxed{axy(x)\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2-\left(a(y(x))^2+bx^2+c\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+bxy(x)=0}$$

Mathematica: cpu = 0 (sec), leaf count = 0

Hanged

Maple: cpu = 0 (sec), leaf count = 0

hanged

2.486 ODE No. 486

$$\boxed{(y(x))^2\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+(y(x))^2-a^2=0}$$

Mathematica: cpu = 0.023503 (sec), leaf count = 117

$$\left\{\left\{y(x)\to-\sqrt{a^2-2c_1x-c_1^2-x^2}\right\},\left\{y(x)\to\sqrt{a^2-2c_1x-c_1^2-x^2}\right\},\left\{y(x)\to-\sqrt{a^2+2c_1x-c_1^2-\right.\right.$$

Maple: cpu = 0.608 (sec), leaf count = 59

$$\left\{y(x)=a,y(x)=\sqrt{-\_C1^2+2\_C1\,x+a^2-x^2},y(x)=-a,y(x)=-\sqrt{-\_C1^2+2\_C1\,x+a^2-x^2}\right\}$$

2.487 ODE No. 487

$$\boxed{(y(x))^2\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2-6\,x^3\frac{\mathrm{d}}{\mathrm{d}x}y(x)+4\,x^2y(x)=0}$$

Mathematica: cpu = 0 (sec), leaf count = 0

Hanged

Maple: cpu = 0.858 (sec), leaf count = 114

$$\left\{y(x)=\left(-\frac{\sqrt[3]{18}}{4}\sqrt[3]{x}-\frac{i}{4}\sqrt{3}\sqrt[3]{18}\sqrt[3]{x}\right)x,y(x)=\left(-\frac{\sqrt[3]{18}}{4}\sqrt[3]{x}+\frac{i}{4}\sqrt{3}\sqrt[3]{18}\sqrt[3]{x}\right)x,y(x)=RootOf\left(-\ln(x\right.\right.$$

2.488 ODE No. 488

$$\boxed{(y(x))^2 \left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2 - 4\,ay(x)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x) + (y(x))^2 - 4\,ax + 4\,a^2 = 0}$$

Mathematica: cpu = 0.366546 (sec), leaf count = 85

$$\left\{\left\{y(x) \to -\frac{\sqrt{16a^3x - 4a^2x^2 - 4ac_1x - c_1^2}}{2a}\right\}, \left\{y(x) \to \frac{\sqrt{16a^3x - 4a^2x^2 - 4ac_1x - c_1^2}}{2a}\right\}\right\}$$

Maple: cpu = 0.905 (sec), leaf count = 113

$$\left\{y(x) = -2\sqrt{ax}, y(x) = 2\sqrt{ax}, y(x) = -\frac{1}{4\,a}\sqrt{-16\,a^4 + 32\,a^3x - 16\,a^2x^2 + 8\,\_C1\,a^2 + 8\,\_C1\,ax - \_C\right.$$

2.489 ODE No. 489

$$\boxed{(y(x))^2 \left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2 + 2\,xy(x)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x) + a(y(x))^2 + bx + c = 0}$$

Mathematica: cpu = 0 (sec), leaf count = 0

Hanged

Maple: cpu = 2.621 (sec), leaf count = 5525

2.490 ODE No. 490

$$\boxed{(y(x))^2 \left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2 - 2\,xy(x)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x) + 2\,(y(x))^2 - x^2 + a = 0}$$

Mathematica: cpu = 0.601076 (sec), leaf count = 70

$$\left\{\left\{y(x) \to -\frac{\sqrt{-a + 8c_1x - 4c_1^2 - 2x^2}}{\sqrt{2}}\right\}, \left\{y(x) \to \frac{\sqrt{-a + 8c_1x - 4c_1^2 - 2x^2}}{\sqrt{2}}\right\}\right\}$$

Maple: cpu = 0.920 (sec), leaf count = 145

$$\left\{y(x) = \sqrt{-2\sqrt{a + 2\_C1}x - \_C1 - x^2 - a}, y(x) = \sqrt{2\sqrt{a + 2\_C1}x - \_C1 - x^2 - a}, y(x) = -\sqrt{-\right.$$

2.491 ODE No. 491

$$\boxed{(y(x))^2 \left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2 + 2\,axy(x)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x) + (1-a)\,(y(x))^2 + ax^2 + (a-1)\,b = 0}$$

Mathematica: cpu = 1.033131 (sec), leaf count = 79

$$\left\{\left\{y(x) \to -\sqrt{-2ac_1x + ac_1^2 + b + 2c_1x - c_1^2 - x^2}\right\}, \left\{y(x) \to \sqrt{-2ac_1x + ac_1^2 + b + 2c_1x - c_1^2 - x^2}\right\}\right\}$$

Maple: cpu = 1.107 (sec), leaf count = 251

$$\left\{y(x) = \sqrt{-ax^2 + b}, y(x) = \frac{1}{a}\sqrt{-a^2x^2 - 2\,a\sqrt{\_C1\,a^2 - a^2b - \_C1\,a + ab}x + \_C1\,a + a^2b - ab}, y(x) =\right.$$

2.492 ODE No. 492

$$\boxed{\left((y(x))^2 - a^2\right)\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2 + (y(x))^2 = 0}$$

Mathematica: cpu = 0.282536 (sec), leaf count = 111

$$\left\{\left\{y(x) \to \text{InverseFunction}\left[\sqrt{a^2 - \#1^2} - a\log\left(a\sqrt{a^2 - \#1^2} + a^2\right) + a\log(\#1)\&\right][c_1 - x]\right\}, \left\{y(x) -\right.\right.$$

Maple: cpu = 0.905 (sec), leaf count = 122

$$\left\{x - \sqrt{a^2 - (y\,(x))^2} + a^2\ln\left(\frac{1}{y\,(x)}\left(2\,a^2 + 2\sqrt{a^2}\sqrt{a^2 - (y\,(x))^2}\right)\right)\frac{1}{\sqrt{a^2}} - \_C1 = 0, x + \sqrt{a^2 - (y\,(x))\right.}$$

2.493 ODE No. 493

$$\boxed{\left((y(x))^2 - 2\,ax + a^2\right)\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2 + 2\,ay(x)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x) + (y(x))^2 = 0}$$

Mathematica: cpu = 8.600592 (sec), leaf count = 553

$$\left\{\text{Solve}\left[\left\{y(x) = \frac{-\sqrt{-a\text{K\$1287907}^2\left(a\text{K\$1287907}^2 - 2\text{K\$1287907}^2x - 2x\right)} - a\text{K\$1287907}}{\text{K\$1287907}^2 + 1}, x = \frac{ac_1^2\text{K\$}\right.\right.\right.$$

Maple: cpu = 1.341 (sec), leaf count = 124

$$\left\{[x(\_T) = \frac{1}{2\,a}\left(\left(\mathit{Artanh}\left(\frac{1}{\sqrt{\_T^2 + 1}}\right)\right)^2\sqrt{\_T^2 + 1}a^2 - 2\,\mathit{Artanh}\left(\frac{1}{\sqrt{\_T^2 + 1}}\right)\sqrt{\_T^2 + 1}\_C1\,a\right.\right.$$

2.494 ODE No. 494

$$\boxed{\left((y(x))^2-a^2x^2\right)\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+2\,xy(x)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)+\left(-a^2+1\right)x^2=0}$$

Mathematica: cpu = 0 (sec), leaf count = 0

Hanged

Maple: cpu = 0.764 (sec), leaf count = 173

$$\left\{y(x)=\sqrt{a^2-1}x,y(x)=RootOf\left(-\ln\left(x\right)+\int^{-Z}\frac{1}{\_a^4-\_a^2a^2+2\_a^2-a^2+1}\left(-\_a^3+\_a\,a^2+\sqrt{\_}\right.\right.\right.$$

2.495 ODE No. 495

$$\boxed{\left((y(x))^2+(1-a)\,x^2\right)\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+2\,axy(x)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)+(1-a)\,(y(x))^2+x^2=0}$$

Mathematica: cpu = 0.110014 (sec), leaf count = 83

$$\left\{\text{Solve}\left[\sqrt{a-1}\tan^{-1}\left(\frac{y(x)}{x}\right)-\frac{1}{2}\log\left(\frac{y(x)^2}{x^2}+1\right)=c_1+\log(x),y(x)\right],\text{Solve}\left[\sqrt{a-1}\tan^{-1}\left(\frac{y(x)}{x}\right)+\right.\right.$$

Maple: cpu = 0.905 (sec), leaf count = 61

$$\left\{y(x)=\tan\left(RootOf\left(-2\_Z\sqrt{a-1}-\ln\left(\frac{x^2}{\left(\cos\left(\_Z\right)\right)^2}\right)+2\_C1\right)\right)x,y(x)=\tan\left(RootOf\left(2\_Z\sqrt{\right.\right.\right.\right.$$

2.496 ODE No. 496

$$\boxed{(y(x)-x)^2\left(\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+1\right)-a^2\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)+1\right)^2=0}$$

Mathematica: cpu = 95.092075 (sec), leaf count = 65

$$\left\{\left\{y(x)\to c_1-\sqrt{a^2+2c_1x-c_1^2-x^2}\right\},\left\{y(x)\to\sqrt{a^2+2c_1x-c_1^2-x^2}+c_1\right\}\right\}$$

Maple: cpu = 0.718 (sec), leaf count = 130

$$\left\{y(x)=x-\sqrt{2}a,y(x)=x+\sqrt{2}a,y(x)=x+RootOf\left(-x+\int^{-Z}-\frac{1}{2\_a^2-4\,a^2}\left(\_a^2-2\,a^2+\sqrt{-\_a\right.\right.\right.$$

2.497 ODE No. 497

$$\boxed{3\left(y(x)\right)^{2}\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^{2}-2\,xy(x)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)+4\left(y(x)\right)^{2}-x^{2}=0}$$

Mathematica: cpu = 0.174022 (sec), leaf count = 203

$$\left\{\left\{y(x)\to-\frac{\sqrt{-4ix\sinh\left(3c_{1}\right)-4ix\cosh\left(3c_{1}\right)+\sinh\left(6c_{1}\right)+\cosh\left(6c_{1}\right)-3x^{2}}}{\sqrt{3}}\right\},\left\{y(x)\to\frac{\sqrt{-4ix\sinh}\right.\right.$$

Maple: cpu = 0.889 (sec), leaf count = 203

$$\left\{\ln\left(x\right)-\frac{\sqrt{3}}{6}\sqrt{\frac{\left(\sqrt{3}x-3\,y\left(x\right)\right)\left(\sqrt{3}x+3\,y\left(x\right)\right)}{x^{2}}}+\frac{1}{2}\sqrt{\frac{x^{2}-3\,\left(y\left(x\right)\right)^{2}}{x^{2}}}-\mathit{Artanh}\left(\frac{1}{2}\sqrt{\frac{x^{2}-3\,\left(y\left(x\right)\right)^{2}}{x^{2}}}\right)\right.$$

2.498 ODE No. 498

$$\boxed{\left(3\,y(x)-2\right)\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^{2}-4+4\,y(x)=0}$$

Mathematica: cpu = 0.103513 (sec), leaf count = 107

$$\left\{\left\{y(x)\to\text{InverseFunction}\left[-\sqrt{1-\#1}\sqrt{3\#1-2}-\frac{\sin^{-1}\left(\sqrt{3-3\#1}\right)}{\sqrt{3}}\&\right]\left[c_{1}-2x\right]\right\},\left\{y(x)\to\text{Invers}\right.\right.$$

Maple: cpu = 0.749 (sec), leaf count = 99

$$\left\{y(x)=1,y(x)=\frac{\sin\left(\mathit{RootOf}\left(-8\sqrt{3}\_C1\,\_Z+8\sqrt{3}x\_Z-\left(\cos\left(\_Z\right)\right)^{2}+48\,\_C1^{\,2}-96\,\_C1\,x+48\,x\right.\right.\right.}{6}$$

2.499 ODE No. 499

$$\boxed{\left(-a^{2}+1\right)\left(y(x)\right)^{2}\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^{2}-2\,a^{2}xy(x)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)+\left(y(x)\right)^{2}-a^{2}x^{2}=0}$$

Mathematica: cpu = 0.333542 (sec), leaf count = 212

$$\left\{\left\{y(x)\to-\frac{\sqrt{a^{6}\left(-x^{2}\right)+3a^{4}x^{2}+2a^{2}xe^{a^{2}c_{1}-c_{1}}-2xe^{a^{2}c_{1}-c_{1}}+e^{2a^{2}c_{1}-2c_{1}}-3a^{2}x^{2}+x^{2}}}{\sqrt{a^{6}-3a^{4}+3a^{2}-1}}\right\},\left\{y(x)\to\frac{\sqrt{a^{6}}\right.\right.$$

Maple: cpu = 0.702 (sec), leaf count = 201

$$\left\{y(x)=\mathit{RootOf}\left(-\ln\left(x\right)+\int^{\_Z}\frac{\_a}{a^{2}\_a^{4}-\_a^{4}+2\,\_a^{2}a^{2}-\_a^{2}+a^{2}}\left(-\_a^{2}a^{2}+\_a^{2}-a^{2}+\sqrt{\_a^{2}a^{2}-}\right.\right.\right.$$

2.500 ODE No. 500

$$\boxed{(a-b)\left(y(x)\right)^2\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2-2\,bxy(x)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)+a(y(x))^2-bx^2-ab=0}$$

Mathematica: cpu = 1.322668 (sec), leaf count = 100

$$\left\{\left\{y(x)\to-\frac{\sqrt{-ab-2ac_1x+ac_1^2+ax^2+b^2-bx^2}}{\sqrt{b-a}}\right\},\left\{y(x)\to\frac{\sqrt{-ab-2ac_1x+ac_1^2+ax^2+b^2-bx^2}}{\sqrt{b-a}}\right.\right.$$

Maple: cpu = 1.232 (sec), leaf count = 260

$$\left\{y(x)=\frac{1}{b}\sqrt{-\_C1\,ab+\_C1\,b^2-b^2x^2-2\,b\sqrt{\_C1\,ab-ab^2}x+ab^2},y(x)=\frac{1}{b}\sqrt{-\_C1\,ab+\_C1\,b^2-b\right.$$

2.501 ODE No. 501

$$\boxed{\left(a(y(x))^2+bx+c\right)\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2-by(x)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)+d(y(x))^2=0}$$

Mathematica: cpu = 33.600767 (sec), leaf count = 913

$$\left\{\mathrm{Solve}\left[\left\{y(x)=\frac{b\mathrm{K\$1419264}-\sqrt{-\mathrm{K\$1419264}^2\left(-b^2+4a\mathrm{K\$1419264}^2xb+4dxb+4ac\mathrm{K\$1419264}^2+4\right.\right.}}{2\left(a\mathrm{K\$1419264}^2+d\right)}\right.\right.$$

Maple: cpu = 4.259 (sec), leaf count = 287

$$\left\{[x(\_T)=-\frac{1}{4\,bd}\left(\left(\ln\left(2\right)\right)^2\sqrt{\_T^2a+d}b^2+2\,\ln\left(2\right)\ln\left(\frac{\sqrt{d}\sqrt{\_T^2a+d}+d}{\_T}\right)\sqrt{\_T^2a+d}b^2+4\,\ln\left(2\right)\right.\right.$$

2.502 ODE No. 502

$$\boxed{(ay(x)-bx)^2\left(a^2\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+b^2\right)-c^2\left(a\frac{\mathrm{d}}{\mathrm{d}x}y(x)+b\right)^2=0}$$

Mathematica: cpu = 1.717718 (sec), leaf count = 100

$$\left\{\left\{y(x)\to\frac{bc_1}{a}-\frac{\sqrt{2b^2c_1x-b^2c_1^2+b^2\left(-x^2\right)+c^2}}{a}\right\},\left\{y(x)\to\frac{\sqrt{2b^2c_1x-b^2c_1^2+b^2\left(-x^2\right)+c^2}}{a}+\frac{bc_1}{a}\right\}\right.$$

Maple: cpu = 0.890 (sec), leaf count = 195

$$\left\{y(x)=\frac{bx-\sqrt{2}c}{a},y(x)=\frac{bx+\sqrt{2}c}{a},y(x)=\frac{1}{a}\left(RootOf\left(-x+\int^{\_Z}\frac{a}{\left(2\_a^2a^2-4\,c^2\right)b}\left(-\_a^2a^2+2\,c^2-\right.\right.\right.\right.$$

2.503 ODE No. 503

$$(b2\,y(x)+a2\,x+c2)^2\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+(a1\,x+b1\,y(x)+c1)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+b0\,y(x)+a0+c0=0$$

Mathematica: cpu = 0 (sec), leaf count = 0

Hanged

Maple: cpu = 33.103 (sec), leaf count = 0

could not solve

2.504 ODE No. 504

$$x(y(x))^2\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2-\left((y(x))^3+x^3-a\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+x^2y(x)=0$$

Mathematica: cpu = 0 (sec), leaf count = 0

Hanged

Maple: cpu = 1.201 (sec), leaf count = 303

$$\left\{\int_{\_b}^{y(x)}\_a^2\frac{1}{\sqrt{\_a^6+(-2\,x^3-2\,a)\,\_a^3+(-x^3+a)^2}}\mathrm{d}\_a-\frac{\ln(x)}{2}-\_C1=0,\int_{\_b}^{y(x)}\_a^2\frac{}{\sqrt{\_a^6+(-2\,x^3}}\right.$$

2.505 ODE No. 505

$$x(y(x))^2\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2-2\,(y(x))^3\frac{\mathrm{d}}{\mathrm{d}x}y(x)+2\,x(y(x))^2-x^3=0$$

Mathematica: cpu = 0.013002 (sec), leaf count = 73

$$\left\{\left\{y(x)\to-\sqrt{2c_1+x^2}\right\},\left\{y(x)\to\sqrt{2c_1+x^2}\right\},\left\{y(x)\to-\sqrt{c_1x^4+x^2}\right\},\left\{y(x)\to\sqrt{c_1x^4+x^2}\right\}\right\}$$

Maple: cpu = 0.032 (sec), leaf count = 52

$$\left\{y(x)=\sqrt{x^2+\_C1},y(x)=\sqrt{x^2\_C1+1}x,y(x)=-\sqrt{x^2+\_C1},y(x)=-\sqrt{x^2\_C1+1}x\right\}$$

2.506 ODE No. 506

$$x^2 \left(x (y(x))^2-1\right) \left(\frac{\mathrm{d}}{\mathrm{d}x} y(x)\right)^2+2 x^2 (y(x))^2 (y(x)-x) \frac{\mathrm{d}}{\mathrm{d}x} y(x)-(y(x))^2 \left(x^2 y(x)-1\right)=0$$

Mathematica: cpu = 47.848076 (sec), leaf count = 58

$$\text{DSolve}\left[2x^2(y(x)-x)y(x)^2y'(x)+x^2\left(xy(x)^2-1\right)y'(x)^2-\left(x^2y(x)-1\right)y(x)^2=0,y(x),x\right]$$

Maple: cpu = 1.310 (sec), leaf count = 0

could not solve

2.507 ODE No. 507

$$\left((y(x))^4-a^2 x^2\right) \left(\frac{\mathrm{d}}{\mathrm{d}x} y(x)\right)^2+2 a^2 x y(x) \frac{\mathrm{d}}{\mathrm{d}x} y(x)+(y(x))^2 \left((y(x))^2-a^2\right)=0$$

Mathematica: cpu = 29.710773 (sec), leaf count = 443

$$\left\{\text{Solve}\left[\left\{x=\frac{a^2 \text{K\$1432838} y(\text{K\$1432838})-\sqrt{a^2 \text{K\$1432838}^2 \left(\text{K\$1432838}^2+1\right) y(\text{K\$1432838})^4}}{a^2 \text{K\$1432838}^2},y(x)=\right.\right.$$

Maple: cpu = 0 (sec), leaf count = 0

hanged

2.508 ODE No. 508

$$\left((y(x))^4+x^2 (y(x))^2-x^2\right) \left(\frac{\mathrm{d}}{\mathrm{d}x} y(x)\right)^2+2 x y(x) \frac{\mathrm{d}}{\mathrm{d}x} y(x)-(y(x))^2=0$$

Mathematica: cpu = 55.171506 (sec), leaf count = 47

$$\text{DSolve}\left[\left(x^2y(x)^2-x^2+y(x)^4\right)y'(x)^2+2xy(x)y'(x)-y(x)^2=0,y(x),x\right]$$

Maple: cpu = 2.122 (sec), leaf count = 60

$$\{y(x)=-ix,y(x)=ix,y(x)=-Artanh\left(RootOf\left(\left(Artanh(\_Z)\right)^2 \_Z^2-2\,Artanh(\_Z)\,\_C1\,\_Z^2+\_C\right.\right.$$

2.509 ODE No. 509

$$9\left(y(x)\right)^{4}\left(x^{2}-1\right)\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^{2}-6\,x(y(x))^{5}\frac{\mathrm{d}}{\mathrm{d}x}y(x)-4\,x^{2}=0$$

Mathematica: cpu = 0 (sec), leaf count = 0

Hanged

Maple: cpu = 1.622 (sec), leaf count = 245

$$\left\{y(x)=\sqrt[6]{-4\,x^{2}+4},y(x)=\left(-\frac{1}{2}-\frac{i}{2}\sqrt{3}\right)\sqrt[6]{-4\,x^{2}+4},y(x)=\left(-\frac{1}{2}+\frac{i}{2}\sqrt{3}\right)\sqrt[6]{-4\,x^{2}+4},y(x)=\left(\frac{1}{2}\right.\right.$$

2.510 ODE No. 510

$$x^{2}\left(x^{2}(y(x))^{4}-1\right)\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^{2}+2\,x^{3}(y(x))^{3}\left((y(x))^{2}-x^{2}\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)-\left(y(x)\right)^{2}\left(x^{4}(y(x))^{2}-1\right)=0$$

Mathematica: cpu = 60.566191 (sec), leaf count = 66

$$\text{DSolve}\left[-\left(x^{4}y(x)^{2}-1\right)y(x)^{2}+x^{2}\left(x^{2}y(x)^{4}-1\right)y'(x)^{2}+2x^{3}\left(y(x)^{2}-x^{2}\right)y(x)^{3}y'(x)=0,y(x),x\right]$$

Maple: cpu = 2.730 (sec), leaf count = 0

could not solve

2.511 ODE No. 511

$$\left(a^{2}\sqrt{\left(y\left(x\right)\right)^{2}+x^{2}}-x^{2}\right)\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^{2}+2\,xy(x)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+a^{2}\sqrt{\left(y\left(x\right)\right)^{2}+x^{2}}-\left(y(x)\right)^{2}=0$$

Mathematica: cpu = 1.555697 (sec), leaf count = 229

$$\left\{\text{Solve}\left[\tan^{-1}\left(\frac{x}{y(x)}\right)-\frac{2\sqrt{a^{2}\left(x^{2}+y(x)^{2}\right)\left(\sqrt{x^{2}+y(x)^{2}}-a^{2}\right)}\tan^{-1}\left(\frac{\sqrt{\sqrt{x^{2}+y(x)^{2}}-a^{2}}}{a}\right)}{a\sqrt{x^{2}+y(x)^{2}}\sqrt{\sqrt{x^{2}+y(x)^{2}}-a^{2}}}=c_{1},y(x)\right],\text{S}\right.$$

Maple: cpu = 8.112 (sec), leaf count = 199

$$\left\{ \arctan\left(\frac{x}{y\left(x\right)}\right) - 2\,\frac{\sqrt{a^2\left(\left(y\left(x\right)\right)^2+x^2\right)\left(-a^2+\sqrt{\left(y\left(x\right)\right)^2+x^2}\right)}}{a\sqrt{\left(y\left(x\right)\right)^2+x^2}\sqrt{-a^2+\sqrt{\left(y\left(x\right)\right)^2+x^2}}}\arctan\left(\frac{\sqrt{-a^2+\sqrt{\left(y\left(x\right)\right)^2+x^2}}}{a}\right)\right.$$

2.512 ODE No. 512

$$\left(a\left(\left(y(x)\right)^2+x^2\right)^{3/2}-x^2\right)\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+2\,xy(x)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)+a\left(\left(y(x)\right)^2+x^2\right)^{3/2}-\left(y(x)\right)^2=0$$

Mathematica: cpu = 4.686095 (sec), leaf count = 725

$$\left\{ \text{Solve}\left[\tan^{-1}\left(\frac{x}{y(x)}\right) - \frac{i\sqrt{a}(x^2+y(x)^2)\sqrt{\sqrt{x^2+y(x)^2}-a\left(x^2+y(x)^2\right)}\left(\sqrt{2}\left(\log\left(\frac{a^{3/2}\left(3i\sqrt{2}a\sqrt{x^2+y(x)}\right.\right.\right.\right.\right.$$

Maple: cpu = 40.935 (sec), leaf count = 135

$$\left\{ y(x)=x\left(\tan\left(\mathit{RootOf}\left(-\_Z+\int^{\frac{x^2\left(\left(\tan(\_Z)\right)^2+1\right)}{\left(\tan(\_Z)\right)^2}}-\frac{1}{2\,\_a^2\left(\_a\,a^2-1\right)}\left(\sqrt{\_a}a+1\right)\sqrt{-\_a^{\frac{5}{2}}a\left(\sqrt{\_a}a-\right.\right.\right.\right.$$

2.513 ODE No. 513

$$\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2\sin\left(y(x)\right)+2\,x\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)\left(\cos\left(y(x)\right)\right)^3-\sin\left(y(x)\right)\left(\cos\left(y(x)\right)\right)^4=0$$

Mathematica: cpu = 0 (sec), leaf count = 0

Hanged

Maple: cpu = 1.748 (sec), leaf count = 2402

$$\left\{ [x(\_T)=-\frac{1}{8\,\_T}\left(16\,\_T^2\sin\left(1/2\,\arctan\left(\frac{\_C1^2\,\_T^2-2\,\_T\,\_C1\sqrt[3]{\_C1^3\,\_T^3+54\,\_T\,\_C1+6}\right.\right.\right.\right.$$

2.514 ODE No. 514

$$\boxed{\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2 (a\cos(y(x))+b) - c\cos(y(x)) + d = 0}$$

Mathematica: cpu = 15.435460 (sec), leaf count = 605

$$\left\{\left\{y(x) \to \text{InverseFunction}\left[\frac{4\sin^2\left(\frac{\#1}{2}\right)\csc(\#1)\sqrt{a\cos(\#1)+b}\sqrt{\frac{\cot^2\left(\frac{\#1}{2}\right)(c-d)}{c+d}}\sqrt{\frac{\csc^2\left(\frac{\#1}{2}\right)(a+b)(d-c\cos(\#1))}{ad+bc}}\right.\right.\right.$$

Maple: cpu = 0.140 (sec), leaf count = 87

$$\left\{x - \int^{y(x)} (a\cos(\_a)+b)\frac{1}{\sqrt{(a\cos(\_a)+b)(c\cos(\_a)-d)}}d\_a - \_C1 = 0, x - \int^{y(x)} -(a\cos(\_a)+\right.$$

2.515 ODE No. 515

$$\boxed{f\left((y(x))^2+x^2\right)\left(\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+1\right) - \left(x\frac{\mathrm{d}}{\mathrm{d}x}y(x) - y(x)\right)^2 = 0}$$

Mathematica: cpu = 0 (sec), leaf count = 0

Hanged

Maple: cpu = 1.888 (sec), leaf count = 113

$$\left\{y(x) = x\left(\tan\left(\mathit{RootOf}\left(-\_Z + \int^{\frac{x^2\left((\tan(\_Z))^2+1\right)}{(\tan(\_Z))^2}} -\frac{1}{2\_a\,(f(\_a)-\_a)}\sqrt{-(f(\_a)-\_a)f(\_a)}d\_a\right.\right.\right.\right.$$

2.516 ODE No. 516

$$\left(\left(y(x)\right)^2+x^2\right) f\left(\frac{x}{\sqrt{\left(y\left(x\right)\right)^2+x^2}}\right)\left(\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+1\right)-\left(x\frac{\mathrm{d}}{\mathrm{d}x}y(x)-y(x)\right)^2=0$$

Mathematica: cpu = 2.612332 (sec), leaf count = 251

$$\left\{\text{Solve}\left[\int_1^{\frac{y(x)}{x}}\frac{K[1]^2 f\left(\frac{1}{\sqrt{K[1]^2+1}}\right)+f\left(\frac{1}{\sqrt{K[1]^2+1}}\right)-1}{(K[1]-i)(K[1]+i)\sqrt{f\left(\frac{1}{\sqrt{K[1]^2+1}}\right)}\left(K[1]\sqrt{f\left(\frac{1}{\sqrt{K[1]^2+1}}\right)}+i\sqrt{f\left(\frac{1}{\sqrt{K[1]^2+1}}\right)-1}\right)}dK[1]\right.\right.$$

Maple: cpu = 0.827 (sec), leaf count = 141

$$\left\{y(x)=RootOf\left(-\ln\left(x\right)+\int^{\_Z}-\frac{1}{\_a^2+1}\left(\_a\, f\left(\frac{1}{\sqrt{\_a^2+1}}\right)-\sqrt{-\left(f\left(\frac{1}{\sqrt{\_a^2+1}}\right)\right)^2+f\left(\frac{}{\sqrt{\_}\right.}\right.\right.\right.$$

2.517 ODE No. 517

$$\left(\left(y(x)\right)^2+x^2\right) f\left(\frac{y(x)}{\sqrt{\left(y\left(x\right)\right)^2+x^2}}\right)\left(\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+1\right)-\left(x\frac{\mathrm{d}}{\mathrm{d}x}y(x)-y(x)\right)^2=0$$

Mathematica: cpu = 2.738848 (sec), leaf count = 281

$$\left\{\text{Solve}\left[\int_1^{\frac{y(x)}{x}}\frac{K[1]^2 f\left(\frac{K[1]}{\sqrt{K[1]^2+1}}\right)+f\left(\frac{K[1]}{\sqrt{K[1]^2+1}}\right)-1}{(K[1]-i)(K[1]+i)\sqrt{f\left(\frac{K[1]}{\sqrt{K[1]^2+1}}\right)}\left(K[1]\sqrt{f\left(\frac{K[1]}{\sqrt{K[1]^2+1}}\right)}+i\sqrt{f\left(\frac{K[1]}{\sqrt{K[1]^2+1}}\right)-1}\right)}dK[1]\right.\right.$$

Maple: cpu = 0.812 (sec), leaf count = 78

$$\left\{y(x)=RootOf\left(-\ln\left(x\right)+\int^{\_Z}-\frac{1}{\_a^2+1}\left(\_a\, f\left(\_a\frac{1}{\sqrt{\_a^2+1}}\right)+\sqrt{-\left(f\left(\_a\frac{1}{\sqrt{\_a^2+1}}\right)\right)^2+f\right.\right.\right.$$

2.518 ODE No. 518

$$\boxed{\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^3-(y(x)-a)^2\,(y(x)-b)^2=0}$$

Mathematica: cpu = 0.801102 (sec), leaf count = 236

$$\left\{\left\{y(x)\to \text{InverseFunction}\left[-\frac{3\sqrt[3]{a-\#1}\left(\frac{\#1-b}{a-b}\right)^{2/3}\,{}_2F_1\left(\frac{1}{3},\frac{2}{3};\frac{4}{3};\frac{a-\#1}{a-b}\right)}{(b-\#1)^{2/3}}\&\right][c_1+x]\right\},\left\{y(x)\to \text{InverseFu}\right.\right.$$

Maple: cpu = 0.156 (sec), leaf count = 126

$$\left\{x-\int^{y(x)}\frac{1}{\sqrt[3]{(\_a-a)^2\,(-b+\_a)^2}}d\_a-\_C1=0,x-\int^{y(x)}2\,\frac{1}{(i\sqrt{3}-1)\,\sqrt[3]{(\_a-a)^2\,(-b+\_a)^2}}d\_a\right.$$

2.519 ODE No. 519

$$\boxed{\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^3-f(x)\left(a(y(x))^2+by(x)+c\right)^2=0}$$

Mathematica: cpu = 1.827732 (sec), leaf count = 473

$$\left\{\left\{y(x)\to \text{InverseFunction}\left[\frac{3\left(2\#1a-\sqrt{b^2-4ac}+b\right)\left(\frac{2\#1a+\sqrt{b^2-4ac}+b}{\sqrt{b^2-4ac}}\right)^{2/3}\,{}_2F_1\left(\frac{1}{3},\frac{2}{3};\frac{4}{3};\frac{-b-2a\#1+\sqrt{b^2-4ac}}{2\sqrt{b^2-4ac}}\right.\right.\right.$$

$$\left.\left.\left.\frac{}{2\,2^{2/3}a(\#1(\#1a+b)+c)^{2/3}}\right.\right.\right.$$

Maple: cpu = 0.250 (sec), leaf count = 197

$$\left\{\int^{y(x)}\left(\_a^2a+\_a\,b+c\right)^{-\frac{2}{3}}d\_a+\int^{x}-1\sqrt[3]{f\left(\_a\right)\left(a\left(y\left(x\right)\right)^2+by\left(x\right)+c\right)^2}\left(a(y(x))^2+by(x)+c\right)^{-\frac{2}{3}}d\_\right.$$

2.520 ODE No. 520

$$\boxed{\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^3+\frac{\mathrm{d}}{\mathrm{d}x}y(x)-y(x)=0}$$

Mathematica: cpu = 151.472735 (sec), leaf count = 3323

$$\left\{\left\{y(x)\to \text{InverseFunction}\left[\frac{\left(243\#1^2-27\sqrt{81\#1^2+12}\#1-24\sqrt[3]{2}\sqrt[6]{3}\tan^{-1}\left(\frac{1}{\sqrt{3}}-\left(\frac{2}{3}\right)^{2/3}\sqrt[3]{\sqrt{81\#1^2}}\right.\right.}{}\right.\right.\right.$$

Maple: cpu = 0.062 (sec), leaf count = 245

$$\left\{x-\int^{y(x)}6\,\frac{\sqrt[3]{108\_a+12\sqrt{81\_a^2+12}}}{\left(108\_a+12\sqrt{81\_a^2+12}\right)^{2/3}-12}d\_a-\_C1=0,x-\int^{y(x)}12\,\frac{}{\left(i\sqrt{3}-1\right)\left(\sqrt[3]{108\_a+\right.}}\right.$$

2.521 ODE No. 521

$$\boxed{\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^3+x\frac{\mathrm{d}}{\mathrm{d}x}y(x)-y(x)=0}$$

Mathematica: cpu = 0.003500 (sec), leaf count = 14

$$\{\{y(x)\to c_1x+c_1^3\}\}$$

Maple: cpu = 0.031 (sec), leaf count = 33

$$\left\{y(x)=-\frac{2\,x}{9}\sqrt{-3\,x},y(x)=\frac{2\,x}{9}\sqrt{-3\,x},y(x)=\_C1^3+\_C1\,x\right\}$$

2.522 ODE No. 522

$$\boxed{\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^3-(x+5)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)+y(x)=0}$$

Mathematica: cpu = 0.003501 (sec), leaf count = 20

$$\{\{y(x)\to c_1x-c_1^3+5c_1\}\}$$

Maple: cpu = 0.047 (sec), leaf count = 46

$$\left\{y(x)=-\frac{2\,x+10}{9}\sqrt{3\,x+15},y(x)=\frac{2\,x+10}{9}\sqrt{3\,x+15},y(x)=-\_C1^3+\_C1\,x+5\,\_C1\right\}$$

2.523 ODE No. 523

$$\boxed{\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^3 - ax\frac{\mathrm{d}}{\mathrm{d}x}y(x) + x^3 = 0}$$

Mathematica: cpu = 0 (sec), leaf count = 0

Hanged

Maple: cpu = 0.046 (sec), leaf count = 299

$$\left\{y(x) = \int -\frac{i}{12}\left(\sqrt{3}\left(-108\,x^3 + 12\sqrt{-3\,x^3\left(4\,a^3 - 27\,x^3\right)}\right)^{\frac{2}{3}} - 12\sqrt{3}ax - i\left(-108\,x^3 + 12\sqrt{-3\,x^3\left(4\,a^3\right.}\right.\right.$$

2.524 ODE No. 524

$$\boxed{\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^3 - 2\,y(x)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x) + (y(x))^2 = 0}$$

Mathematica: cpu = 0 (sec), leaf count = 0

Hanged

Maple: cpu = 0.047 (sec), leaf count = 295

$$\left\{x - \int^{y(x)} 6\,\frac{\sqrt[3]{-108\,\_a^2 + 12\sqrt{3}\sqrt{\_a^3\left(27\,\_a - 32\right)}}}{\left(-108\,\_a^2 + 12\sqrt{3}\sqrt{\_a^3\left(27\,\_a - 32\right)}\right)^{2/3} + 24\,\_a}d\_a - \_C1 = 0, x - \int^{y(x)} 24\,\frac{}{\left(i\sqrt{3} -\right.}\right.$$

2.525 ODE No. 525

$$\boxed{\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2 - axy(x)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x) + 2\,a(y(x))^2 = 0}$$

Mathematica: cpu = 0.063008 (sec), leaf count = 135

$$\left\{\left\{y(x) \to c_1 \exp\left(\frac{1}{2}\left(\frac{ax^2}{2} + \frac{1}{2}\sqrt{a}x\sqrt{ax^2 - 8} - 4\log\left(\sqrt{a}\sqrt{ax^2 - 8} + ax\right)\right)\right)\right\}, \left\{y(x) \to c_1 \exp\left(\frac{1}{2}\left(\frac{ax}{2}\right.\right.\right.\right.$$

Maple: cpu = 0.062 (sec), leaf count = 125

$$\left\{y(x) = \_C1\left(a^2x\frac{1}{\sqrt{a^2}} + \sqrt{a^2x^2 - 8\,a}\right)^{-2\frac{a}{\sqrt{a^2}}}\mathrm{e}^{\frac{ax^2}{4} + \frac{x}{4}\sqrt{a^2x^2 - 8\,a}}, y(x) = \_C1\left(a^2x\frac{1}{\sqrt{a^2}} + \sqrt{a^2x^2 - 8\,a}\right)^2\right.$$

2.526 ODE No. 526

$$\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^3-\left((y(x))^2+xy(x)+x^2\right)\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+\left(x(y(x))^3+x^2(y(x))^2+x^3y(x)\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)-x^3(y(x)$$

Mathematica: cpu = 0.009501 (sec), leaf count = 45

$$\left\{\left\{y(x)\to\frac{1}{-c_1-x}\right\},\left\{y(x)\to c_1e^{\frac{x^2}{2}}\right\},\left\{y(x)\to c_1+\frac{x^3}{3}\right\}\right\}$$

Maple: cpu = 0.016 (sec), leaf count = 32

$$\left\{y(x)=(-x+\_C1)^{-1},y(x)=\mathrm{e}^{\frac{x^2}{2}}\_C1,y(x)=\frac{x^3}{3}+\_C1\right\}$$

2.527 ODE No. 527

$$\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^3-x(y(x))^4\frac{\mathrm{d}}{\mathrm{d}x}y(x)-(y(x))^5=0$$

Mathematica: cpu = 0 (sec), leaf count = 0

Hanged

Maple: cpu = 0.671 (sec), leaf count = 43

$$\left\{y(x)=\_C1\sqrt{\frac{\_C1^{10}}{\left(\_C1^4x-1\right)^2}},y(x)=-\frac{3\sqrt{3}}{2}x^{-\frac{3}{2}},y(x)=\frac{3\sqrt{3}}{2}x^{-\frac{3}{2}}\right\}$$

2.528 ODE No. 528

$$\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^3+a\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+by(x)+abx=0$$

Mathematica: cpu = 0 (sec), leaf count = 0

Hanged

Maple: cpu = 0.078 (sec), leaf count = 95

$$\left\{y(x)=-ax-\frac{a\left(\mathrm{e}^{RootOf\left(-2a^2\_Z-3\mathrm{e}^2-\_Z+8a\mathrm{e}-\_Z+2\_C1b-5a^2-2bx\right)}-a\right)^2+\left(\mathrm{e}^{RootOf\left(-2a^2\_Z-3\mathrm{e}^2-\_Z+8a\mathrm{e}-\_Z+2\_C\right.}\right.}{b}\right.$$

2.529 ODE No. 529

$$\boxed{\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^3+x\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2-y(x)=0}$$

Mathematica: cpu = 52.151622 (sec), leaf count = 1758

$$\left\{\left\{y(x)\to\frac{1}{2}\left(\frac{4\ 2^{2/3}x^4}{3\left(-16x^3-72x^2-108x+216c_1+\sqrt{4\left(-4x^2-12x-9\right)^3+\left(-16x^3-72x^2-108x+2\right.\right.\right.\right.\right.$$

Maple: cpu = 0.031 (sec), leaf count = 1473

$$\left\{y(x)=0,y(x)=\left(\frac{1}{6}\sqrt[3]{-36\,x^2-54\,x+108\,\_C1-8\,x^3+27+6\,\sqrt{-48\,\_C1\,x^3-216\,x^2\_C1-24\,x^3+}\right.\right.$$

2.530 ODE No. 530

$$\boxed{\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^3-y(x)\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+(y(x))^2=0}$$

Mathematica: cpu = 0 (sec), leaf count = 0

Hanged

Maple: cpu = 0.094 (sec), leaf count = 421

$$\left\{x-\int^{y(x)}6\,\frac{\sqrt[3]{-108\,\_a^2+8\,\_a^3+12\,\sqrt{-3\,\_a^4\left(4\,\_a-27\right)}}}{4\,\_a^2+2\,\_a\,\sqrt[3]{-108\,\_a^2+8\,\_a^3+12\,\sqrt{-3\,\_a^4\left(4\,\_a-27\right)}}+\left(-108\,\_a^2+8\,\_a^3+12\,\sqrt{}\right.}\right.$$

2.531 ODE No. 531

$$\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2-\left((y(x))^4+x(y(x))^2+x^2\right)\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+\left(x(y(x))^6+x^2(y(x))^4+x^3(y(x))^2\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)-x^3$$

Mathematica: cpu = 73.501334 (sec), leaf count = 72

$$\text{DSolve}\left[-x^3y(x)^6-\left(x^2+y(x)^4+xy(x)^2\right)y'(x)^2+\left(x^3y(x)^2+x^2y(x)^4+xy(x)^6\right)y'(x)+y'(x)^2=0,y(x)\right.$$

Maple: cpu = 1.935 (sec), leaf count = 0

could not solve

2.532 ODE No. 532

$$a\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^3+b\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+c\frac{\mathrm{d}}{\mathrm{d}x}y(x)-y(x)-d=0$$

Mathematica: cpu = 3505.56 (sec), leaf count = 1258

$$\left\{\left\{y(x)\to \text{InverseFunction}\left[\int_1^{\#1}\frac{\sqrt[3]{2b^3-9}}{2b\sqrt[3]{2b^3-9acb-27a^2d-27a^2K[1]+\sqrt{4\left(3ac-b^2\right)^3+\left(2b^3-9acb-\right.}}\right.\right.\right.$$

Maple: cpu = 0.125 (sec), leaf count = 1211

$$\left\{x-\int^{y(x)}6\frac{a\sqrt[3]{108\_a\,a^2}}{\left(108\_a\,a^2+12\sqrt{3}\sqrt{27\_a^2a^2+54\_a\,a^2d+18\_a\,abc-4\_a\,b^3+27\,a^2d^2+18\,abcd+4\,ac}\right.}\right.$$

2.533 ODE No. 533

$$x\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^3-y(x)\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+a=0$$

Mathematica: cpu = 0 (sec), leaf count = 0

Hanged

Maple: cpu = 0.032 (sec), leaf count = 92

$$\left\{y(x)=\frac{3\sqrt[3]{2}}{2}\sqrt[3]{ax^2},y(x)=-\frac{3\sqrt[3]{2}}{4}\sqrt[3]{ax^2}-\frac{3i}{4}\sqrt{3}\sqrt[3]{2}\sqrt[3]{ax^2},y(x)=-\frac{3\sqrt[3]{2}}{4}\sqrt[3]{ax^2}+\frac{3i}{4}\sqrt{3}\sqrt[3]{2}\sqrt[3]{ax^2},y(x)=\right.$$

2.534 ODE No. 534

$$\boxed{4x\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^3-6y(x)\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+3y(x)-x=0}$$

Mathematica: cpu = 0 (sec), leaf count = 0

Hanged

Maple: cpu = 0.062 (sec), leaf count = 102

$$\left\{y(x)=x,y(x)=\left(-\frac{1}{2}-\frac{\sqrt{3}}{2}\right)x,y(x)=\left(\frac{\sqrt{3}}{2}-\frac{1}{2}\right)x,y(x)=x\left(-\frac{(x+\_C1)\sqrt{2}}{\_C1^{\,2}}\sqrt{\_C1\ (x+\_C1)}\right.\right.$$

2.535 ODE No. 535

$$\boxed{8x\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^3-12y(x)\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+9y(x)=0}$$

Mathematica: cpu = 0 (sec), leaf count = 0

Hanged

Maple: cpu = 0.046 (sec), leaf count = 80

$$\left\{y(x)=0,y(x)=\frac{x}{\_C1^{\,3}}(\_C1\ (3\_C1+x))^{\frac{3}{2}}\left(-3\,\frac{3\_C1+x}{\_C1}+9\right)^{-1},y(x)=-\frac{3x}{2},y(x)=\frac{3x}{2},y(x)=\right.$$

2.536 ODE No. 536

$$\boxed{\left(-a^2+x^2\right)\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^3+bx\left(-a^2+x^2\right)\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+\frac{\mathrm{d}}{\mathrm{d}x}y(x)+bx=0}$$

Mathematica: cpu = 0.023503 (sec), leaf count = 86

$$\left\{\left\{y(x)\to c_1-\frac{bx^2}{2}\right\},\left\{y(x)\to c_1-\tan^{-1}\left(\frac{x\sqrt{a^2-x^2}}{x^2-a^2}\right)\right\},\left\{y(x)\to\tan^{-1}\left(\frac{x\sqrt{a^2-x^2}}{x^2-a^2}\right)+c_1\right\}\right\}$$

Maple: cpu = 0.016 (sec), leaf count = 52

$$\left\{y(x)=-\frac{bx^2}{2}+\_C1,y(x)=-\arctan\left(x\frac{1}{\sqrt{a^2-x^2}}\right)+\_C1,y(x)=\arctan\left(x\frac{1}{\sqrt{a^2-x^2}}\right)+\_C1\right\}$$

2.537 ODE No. 537

$$x^3\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^3-3\,x^2y(x)\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+\left(3\,x(y(x))^2+x^6\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)-(y(x))^3-2\,x^5y(x)=0$$

Mathematica: cpu = 0 (sec), leaf count = 0

Hanged

Maple: cpu = 0 (sec), leaf count = 0

hanged

2.538 ODE No. 538

$$2\left(x\frac{\mathrm{d}}{\mathrm{d}x}y(x)+y(x)\right)^3-y(x)\frac{\mathrm{d}}{\mathrm{d}x}y(x)=0$$

Mathematica: cpu = 0 (sec), leaf count = 0

Hanged

Maple: cpu = 0.608 (sec), leaf count = 3181

$$\left\{\int_{\_b}^{x}-\frac{1}{\_a}\left(6^{\frac{2}{3}}\left(y(x)\left(\sqrt{3}\sqrt{\frac{y\,(x)\,(27\,\_a\,y\,(x)-2)}{\_a}}-9\,y(x)\right)\_a^2\right)^{\frac{2}{3}}-6\,y(x)\,\_a\,\sqrt[3]{6}\sqrt[3]{y\,(x)\left(\sqrt{3}\sqrt{\frac{y\,(}{}}\right.}\right.\right.$$

2.539 ODE No. 539

$$\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^3\sin(x)-\left(y(x)\sin(x)-(\cos(x))^2\right)\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2-\left(y(x)\,(\cos(x))^2+\sin(x)\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+y(x)$$

Mathematica: cpu = 0.026503 (sec), leaf count = 45

$$\left\{\{y(x)\to c_1e^x\},\{y(x)\to c_1-\cos(x)\},\left\{y(x)\to c_1-\log\left(\sin\left(\frac{x}{2}\right)\right)+\log\left(\cos\left(\frac{x}{2}\right)\right)\right\}\right\}$$

Maple: cpu = 0.031 (sec), leaf count = 32

$$\{y(x)=\_C1\,\mathrm{e}^x,y(x)=-\cos(x)+\_C1,y(x)=-\ln(\csc(x)-\cot(x))+\_C1\}$$

2.540 ODE No. 540

$$\boxed{2\,y(x)\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^3-y(x)\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+2\,x\frac{\mathrm{d}}{\mathrm{d}x}y(x)-x=0}$$

Mathematica: cpu = 0.019502 (sec), leaf count = 69

$$\left\{\left\{y(x)\to c_1+\frac{x}{2}\right\},\left\{y(x)\to\frac{\left(3c_1-2ix^{3/2}\right)^{2/3}}{2^{2/3}}\right\},\left\{y(x)\to\frac{\left(3c_1+2ix^{3/2}\right)^{2/3}}{2^{2/3}}\right\}\right\}$$

Maple: cpu = 0.047 (sec), leaf count = 109

$$\left\{x+\frac{\_C1\,x}{y\left(x\right)}\left(\frac{1}{y\left(x\right)}\left(-\sqrt{-xy\left(x\right)}+y(x)\right)\right)^{-\frac{2}{3}}\left(\frac{1}{y\left(x\right)}\left(-x+\sqrt{-xy\left(x\right)}+y(x)\right)\right)^{-\frac{2}{3}}=0,x+\frac{\_C1\,x}{y\left(x\right)}\left(\right.\right.$$

2.541 ODE No. 541

$$\boxed{\left(y(x)\right)^2\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^3+2\,x\frac{\mathrm{d}}{\mathrm{d}x}y(x)-y(x)=0}$$

Mathematica: cpu = 0 (sec), leaf count = 0

Hanged

Maple: cpu = 0.499 (sec), leaf count = 103

$$\left\{y(x)=\sqrt{\_C1^3+2\_C1\,x},y(x)=-\frac{2\,i}{3}\sqrt[4]{2}\sqrt[4]{3}\sqrt[4]{-x^3},y(x)=\frac{2\,i}{3}\sqrt[4]{2}\sqrt[4]{3}\sqrt[4]{-x^3},y(x)=-\sqrt{\_C1^3+2\_C\right.$$

2.542 ODE No. 542

$$\boxed{16\left(y(x)\right)^2\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^3+2\,x\frac{\mathrm{d}}{\mathrm{d}x}y(x)-y(x)=0}$$

Mathematica: cpu = 0 (sec), leaf count = 0

Hanged

Maple: cpu = 0.500 (sec), leaf count = 107

$$\left\{y(x)=\sqrt{16\_C1^3+2\_C1\,x},y(x)=-\frac{i}{3}\sqrt[4]{2}\sqrt[4]{3}\sqrt[4]{-x^3},y(x)=\frac{i}{3}\sqrt[4]{2}\sqrt[4]{3}\sqrt[4]{-x^3},y(x)=-\sqrt{16\_C1^3+2\right.$$

2.543 ODE No. 543

$$x(y(x))^2\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^3-(y(x))^3\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+x\left(x^2+1\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)-x^2y(x)=0$$

Mathematica: cpu = 0 (sec), leaf count = 0

Hanged

Maple: cpu = 1.060 (sec), leaf count = 325

$$\left\{y(x)=-\frac{i}{2}\sqrt[4]{-16\,x^4+40\,x^2+2-2\sqrt{-512\,x^6+192\,x^4-24\,x^2+1}},y(x)=-\frac{i}{2}\sqrt[4]{-16\,x^4+40\,x^2+2+\right.$$

2.544 ODE No. 544

$$x^7(y(x))^2\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^3-\left(3\,x^6(y(x))^3-1\right)\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+3\,x^5(y(x))^4\frac{\mathrm{d}}{\mathrm{d}x}y(x)-x^4(y(x))^5=0$$

Mathematica: cpu = 0 (sec), leaf count = 0

Hanged

Maple: cpu = 0.686 (sec), leaf count = 7860

2.545 ODE No. 545

$$\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^4-(y(x)-a)^3(y(x)-b)^2=0$$

Mathematica: cpu = 0.701589 (sec), leaf count = 383

$$\left\{\left\{y(x)\to\text{InverseFunction}\left[-\frac{\sqrt[4]{a-\#1}\sqrt{\frac{\#1-b}{a-b}}B_{\frac{a-\#1}{a-b}}\left(\frac{1}{4},\frac{1}{2}\right)}{\sqrt{b-\#1}\sqrt[4]{\frac{a-\#1}{a-b}}}\&\right]\left[c_1-\sqrt[4]{-1}x\right]\right\},\left\{y(x)\to\text{InverseFunct}\right.\right.$$

Maple: cpu = 0.140 (sec), leaf count = 141

$$\left\{x-\int^{y(x)}\frac{1}{\sqrt[4]{(\_a-a)^3(-b+\_a)^2}}d\_a-\_C1=0,x-\int^{y(x)}-i\frac{1}{\sqrt[4]{(\_a-a)^3(-b+\_a)^2}}d\_a-\_C1=\right.$$

2.546 ODE No. 546

$$\boxed{\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^4+3\left(x-1\right)\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2-3\left(2\,y(x)-1\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+3\,x=0}$$

Mathematica: cpu = 0 (sec), leaf count = 0

Hanged

Maple: cpu = 0.125 (sec), leaf count = 245

$$\left\{y(x)=-x+\frac{5}{6},y(x)=x+\frac{1}{6},y(x)=\frac{x}{6}\left(3\left(-\_C1/2-1/2\sqrt{\_C1^2+4\,x}\right)^2+3\right)\left(-\frac{\_C1}{2}-\frac{1}{2}\sqrt{\_C\right.\right.$$

2.547 ODE No. 547

$$\boxed{\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^4-4\,y(x)\left(x\frac{\mathrm{d}}{\mathrm{d}x}y(x)-2\,y(x)\right)^2=0}$$

Mathematica: cpu = 1.233157 (sec), leaf count = 490

$$\left\{\text{Solve}\left[\frac{\sqrt{\left(x^2-4\sqrt{y(x)}\right)y(x)}\log\left(\sqrt{x^2-4\sqrt{y(x)}}+x\right)}{\sqrt{x^2-4\sqrt{y(x)}}\sqrt{y(x)}}-\frac{\sqrt{x^2-4\sqrt{y(x)}}\sqrt{y(x)}\log(y(x))}{4\sqrt{\left(x^2-4\sqrt{y(x)}\right)y(x)}}+\frac{1}{4}\log(y\right.\right.$$

Maple: cpu = 0.171 (sec), leaf count = 118

$$\left\{1\sqrt{y\left(x\right)}\left(\sqrt{x^2-4\sqrt{y\left(x\right)}}+x\right)^{1\sqrt{x^2y(x)-4\left(y(x)\right)^{3/2}}\frac{1}{\sqrt{x^2-4\sqrt{y(x)}}}\frac{1}{\sqrt{y(x)}}}\left(\left(\sqrt{x^2-4\sqrt{y\left(x\right)}}-x\right)^{1\sqrt{x^2y(x)-4\left(y(x\right.}\right.\right.$$

2.548 ODE No. 548

$$\boxed{\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^6-\left(y(x)-a\right)^4\left(y(x)-b\right)^3=0}$$

Mathematica: cpu = 1.005628 (sec), leaf count = 569

$$\left\{\left\{y(x)\to\text{InverseFunction}\left[-\frac{\sqrt[3]{a-\#1}\sqrt{\frac{\#1-b}{a-b}}B_{\frac{a-\#1}{a-b}}\left(\frac{1}{3},\frac{1}{2}\right)}{\sqrt{b-\#1}\sqrt[3]{\frac{a-\#1}{a-b}}}\&\right][c_1-ix]\right\},\left\{y(x)\to\text{InverseFunction}\left[\right.\right.\right.$$

Maple: cpu = 0.234 (sec), leaf count = 241

$$\left\{x-\int^{y(x)}\frac{1}{\sqrt[6]{(\_a-a)^4(-b+\_a)^3}}d\_a-\_C1=0,x-\int^{y(x)}\frac{-2i}{\sqrt{3}-i}\frac{1}{\sqrt[6]{(\_a-a)^4(-b+\_a)^3}}d\_a-\_\right.$$

2.549 ODE No. 549

$$\boxed{x^2\left(\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+1\right)^3-a^2=0}$$

Mathematica: cpu = 0.246031 (sec), leaf count = 406

$$\left\{\left\{y(x)\to c_1-\frac{\sqrt[3]{x}\left(2x^{2/3}+\left(1+i\sqrt{3}\right)a^{2/3}\right)\sqrt{\frac{-2x^{2/3}+\left(-1-i\sqrt{3}\right)a^{2/3}}{x^{2/3}}}}{2\sqrt{2}}\right\},\left\{y(x)\to c_1+\frac{\sqrt[3]{x}\sqrt{\frac{-2x^{2/3}+\left(-1-i\sqrt{\right.}}{x^{2/3}}}}{}\right.\right.$$

Maple: cpu = 0.140 (sec), leaf count = 552

$$\left\{y(x)=-1\sqrt{-\frac{1}{a^4}\left(a^2x\right)^{\frac{4}{3}}\left(\left(a^2x\right)^{\frac{2}{3}}-a^2\right)}\left(\left(a^2x\right)^{\frac{2}{3}}-a^2\right)\left(a^2x\right)^{-\frac{2}{3}}+\_C1,y(x)=1\sqrt{-\frac{1}{a^4}\left(a^2x\right)^{\frac{4}{3}}\left(\left(a^2x\right)^{\frac{2}{3}}\right.}\right.$$

2.550 ODE No. 550

$$\boxed{\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^r-a(y(x))^s-bx^{\frac{rs}{r-s}}=0}$$

Mathematica: cpu = 0 (sec), leaf count = 0

Hanged

Maple: cpu = 0.203 (sec), leaf count = 61

$$\left\{-\int_{\_b}^{y(x)}\left(x(r-s)\sqrt[r]{a\_a^s+bx^{\frac{rs}{r-s}}}-r\_a\right)^{-1}\mathrm{d}\_a(r-s)+\ln(x)-\_C1=0\right\}$$

2.551 ODE No. 551

$$\boxed{\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^n - (f(x))^n\,(y(x)-a)^{n+1}\,(y(x)-b)^{n-1} = 0}$$

Mathematica: cpu = 0.381048 (sec), leaf count = 84

$$\left\{\left\{y(x) \to \frac{-a(a-b)^n\left(\int_1^x(-1)^{\frac{1}{n}+1}f(K[1])\,dK[1]+c_1\right)^n - bn^n}{-(a-b)^n\left(\int_1^x(-1)^{\frac{1}{n}+1}f(K[1])\,dK[1]+c_1\right)^n - n^n}\right\}\right\}$$

Maple: cpu = 0.297 (sec), leaf count = 127

$$\left\{y(x) = -a\left(\frac{n}{-\_C1\,a+\_C1\,b-a\int f(x)\,\mathrm{d}x+b\int f(x)\,\mathrm{d}x}\right)^n\left(-1+\left(\frac{n}{-\_C1\,a+\_C1\,b-a\int f(x)\,\mathrm{d}\right.\right.\right.$$

2.552 ODE No. 552

$$\boxed{\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^n - f(x)\,g(y(x)) = 0}$$

Mathematica: cpu = 0.164021 (sec), leaf count = 39

$$\left\{\left\{y(x) \to \text{InverseFunction}\left[\int_1^{\#1} g(K[1])^{-1/n}\,dK[1]\&\right]\left[\int_1^x f(K[2])^{\frac{1}{n}}\,dK[2]+c_1\right]\right\}\right\}$$

Maple: cpu = 0.062 (sec), leaf count = 43

$$\left\{\int^{y(x)}(g(\_a))^{-n^{-1}}\,d\_a+\int^x -\frac{\sqrt[n]{f(\_a)\,g(y(x))}}{\sqrt[n]{g(y(x))}}d\_a+\_C1 = 0\right\}$$

2.553 ODE No. 553

$$\boxed{a\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^m + b\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^n - y(x) = 0}$$

Mathematica: cpu = 0.120015 (sec), leaf count = 51

$$\text{Solve}\left[\left\{x = \frac{am\text{K\$1483716}^{m-1}}{m-1}+\frac{bn\text{K\$1483716}^{n-1}}{n-1}+c_1, y(x) = a\text{K\$1483716}^m + b\text{K\$1483716}^n\right\}, \{y(x),\right.$$

Maple: cpu = 0.031 (sec), leaf count = 36

$$\left\{x-\int^{y(x)}(RootOf(-a\_Z^m-b\_Z^n+\_a))^{-1}\,d\_a-\_C1 = 0, y(x) = 0\right\}$$

2.554 ODE No. 554

$$\boxed{x^{n-1}\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^{n}-nx\frac{\mathrm{d}}{\mathrm{d}x}y(x)+y(x)=0}$$

Mathematica: cpu = 0.075010 (sec), leaf count = 49

$$\text{Solve}\left[\left\{y(x)=\frac{\text{K\$1483865}nx^2-\text{K\$1483865}^n x^n}{x},x=c_1(\text{K\$1483865}-\text{K\$1483865}n)^{\frac{n}{1-n}}\right\},\{y(x),\text{K\$148}3\right.$$

Maple: cpu = 0.266 (sec), leaf count = 29

$$\left\{y(x)=\_C1\ \sqrt[n]{\frac{x}{\_C1}}n-\frac{\left(\_C1^{-1}\right)^{-n}}{\_C1}\right\}$$

2.555 ODE No. 555

$$\boxed{\sqrt{\left(\frac{\mathrm{d}}{\mathrm{d}x}y\left(x\right)\right)^{2}+1}+x\frac{\mathrm{d}}{\mathrm{d}x}y(x)-y(x)=0}$$

Mathematica: cpu = 0 (sec), leaf count = 0

Hanged

Maple: cpu = 0.015 (sec), leaf count = 15

$$\left\{y(x)=\sqrt{\_C1^{\,2}+1}+\_C1\ x\right\}$$

2.556 ODE No. 556

$$\boxed{\sqrt{\left(\frac{\mathrm{d}}{\mathrm{d}x}y\left(x\right)\right)^{2}+1}+x\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^{2}+y(x)=0}$$

Mathematica: cpu = 6.600838 (sec), leaf count = 60

$$\text{Solve}\left[\left\{x=\frac{c_1}{(\text{K\$1484035}+1)^2}+\frac{-\sqrt{\text{K\$1484035}^2+1}-\sinh^{-1}(\text{K\$1484035})}{(\text{K\$1484035}+1)^2},y(x)=\text{K\$1484035}^2(-x)-\right.\right.$$

Maple: cpu = 0.156 (sec), leaf count = 581

$$\left\{x^2\_C1\left(\sqrt{-4\,xy\left(x\right)+2+2\,\sqrt{4\,x^2-4\,xy\left(x\right)+1}}-2\,x\right)^{-2}+x+2\,\frac{x^2}{\left(\sqrt{-4\,xy\left(x\right)+2+2\,\sqrt{4\,x^2-4\,x}\right.}\right.$$

2.557 ODE No. 557

$$\boxed{x\left(\sqrt{\left(\frac{\mathrm{d}}{\mathrm{d}x}y\left(x\right)\right)^{2}+1}+\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)-y(x)=0}$$

Mathematica: cpu = 0.016002 (sec), leaf count = 39

$$\left\{\left\{y(x)\to -\sqrt{c_1 x-x^2}\right\},\left\{y(x)\to \sqrt{c_1 x-x^2}\right\}\right\}$$

Maple: cpu = 0.093 (sec), leaf count = 78

$$\left\{\_C1\frac{1}{\sqrt{\frac{\left((y(x))^2+x^2\right)^2}{x^2(y(x))^2}}}\left(-\frac{x^2-\left(y(x)\right)^2}{2\,xy\left(x\right)}+\frac{1}{2}\sqrt{\frac{x^4+2\,x^2\left(y\left(x\right)\right)^2+\left(y\left(x\right)\right)^4}{x^2\left(y\left(x\right)\right)^2}}\right)^{-1}+x=0\right\}$$

2.558 ODE No. 558

$$\boxed{ax\sqrt{\left(\frac{\mathrm{d}}{\mathrm{d}x}y\left(x\right)\right)^{2}+1}+x\frac{\mathrm{d}}{\mathrm{d}x}y(x)-y(x)=0}$$

Mathematica: cpu = 0.586574 (sec), leaf count = 395

$$\left\{\text{Solve}\left[\frac{a\left(-\log\left(\frac{\left(a^2-1\right)\left(a\sqrt{a^2-\frac{y(x)^2}{x^2}-1}+a^2-\frac{iy(x)}{x}-1\right)}{a^3\left(\frac{y(x)}{x}-i\right)}\right)+\log\left(-\frac{\left(a^2-1\right)\left(a\sqrt{a^2-\frac{y(x)^2}{x^2}-1}+a^2+\frac{iy(x)}{x}-1\right)}{a^3\left(\frac{y(x)}{x}+i\right)}\right)+\log\left(\frac{y}{2\left(a^2-1\right)}\right.\right.\right.\right.$$

Maple: cpu = 0.140 (sec), leaf count = 223

$$\left\{x-\_C1\mathrm{e}^{\frac{1}{a}Arcsinh\left(\frac{1}{\left(a^2-1\right)x}\left(\sqrt{-a^2x^2+x^2+(y(x))^2}a+y(x)\right)\right)}\frac{1}{\sqrt{\frac{1}{(a^2-1)^2x^2}\left(-a^2x^2+a^2\left(y\left(x\right)\right)^2+2\sqrt{-a^2x^2+x^2+\right.}\right.}}\right.$$

2.559 ODE No. 559

$$\boxed{y(x)\sqrt{\left(\frac{\mathrm{d}}{\mathrm{d}x}y\left(x\right)\right)^{2}+1}-ay(x)\frac{\mathrm{d}}{\mathrm{d}x}y(x)-ax=0}$$

Mathematica: cpu = 0.351045 (sec), leaf count = 212

$$\left\{\left\{y(x)\to -\frac{\sqrt{a^6\left(-x^2\right)+3a^4x^2+2a^2xe^{a^2c_1-c_1}-2xe^{a^2c_1-c_1}+e^{2a^2c_1-2c_1}-3a^2x^2+x^2}}{\sqrt{a^6-3a^4+3a^2-1}}\right\},\left\{y(x)\to \frac{\sqrt{a^6}\right.\right.$$

Maple: cpu = 0.234 (sec), leaf count = 223

$$\left\{x-\mathrm{e}^{\int \frac{1}{\left(a^2-1\right)y(x)}\left(-a^2x+\sqrt{a^2x^2+a^2(y(x))^2-(y(x))^2}\right)a\left(a\sqrt{\_a^2+1}-\_a\right)\frac{1}{\sqrt{\_a^2+1}}\left(-\_a\,a+\sqrt{\_a^2+1}\right)^{-1}\left(-\_a^2a+\sqrt{\_a^2+1}\_a-a\right)^{-1}d\_a}\right.$$

2.560 ODE No. 560

$$\boxed{ay(x)\sqrt{\left(\frac{\mathrm{d}}{\mathrm{d}x}y\left(x\right)\right)^{2}+1}-2\,xy(x)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+\left(y(x)\right)^{2}-x^{2}=0}$$

Mathematica: cpu = 21.646749 (sec), leaf count = 110

$$\left\{\left\{y(x)\to -\frac{\sqrt{a^2c_1^2\left(-x^2\right)-4a^2c_1x-4a^2+4x^2}}{\sqrt{a^2c_1^2-4}}\right\},\left\{y(x)\to \frac{\sqrt{a^2c_1^2\left(-x^2\right)-4a^2c_1x-4a^2+4x^2}}{\sqrt{a^2c_1^2-4}}\right\}\right\}$$

Maple: cpu = 0.671 (sec), leaf count = 1512

$$\left\{\int_{\_b}^{x}1\left(2\,\_a^3-2\,\_a\left(y(x)\right)^2+\sqrt{a^2\left(\_a^4+2\,\_a^2\left(y\left(x\right)\right)^2-a^2\left(y\left(x\right)\right)^2+\left(y\left(x\right)\right)^4\right)}\right)\left(-2\,a^2\_a\left(y(x)\right)^2+\right.\right.$$

2.561 ODE No. 561

$$\boxed{f\left(\left(y(x)\right)^{2}+x^{2}\right)\sqrt{\left(\frac{\mathrm{d}}{\mathrm{d}x}y\left(x\right)\right)^{2}+1}-x\frac{\mathrm{d}}{\mathrm{d}x}y(x)+y(x)=0}$$

Mathematica: cpu = 0 (sec), leaf count = 0

Hanged

Maple: cpu = 1.919 (sec), leaf count = 50

$$\left\{ y(x) = x \left(\tan \left(RootOf \left(-2 \_Z + \int^{\frac{x^2 \left((\tan(\_Z))^2 + 1 \right)}{(\tan(\_Z))^2}} \frac{f(\_a)}{\_a} \frac{1}{\sqrt{-(f(\_a))^2 + \_a}} d\_a + 2 \_C1 \right) \right) \right)^{-1} \right\}$$

2.562 ODE No. 562

$$\boxed{a \sqrt[3]{\left(\frac{\mathrm{d}}{\mathrm{d}x} y(x) \right)^3 + 1} + bx \frac{\mathrm{d}}{\mathrm{d}x} y(x) - y(x) = 0}$$

Mathematica: cpu = 264.371071 (sec), leaf count = 119

$$\text{Solve}\left[\left\{ x = \frac{a(b-1)\text{K\$1486420}^3 (\text{K\$1486420} - b\text{K\$1486420})^{\frac{b}{1-b} + \frac{1}{b-1}} \, {}_2F_1\left(\frac{2}{3}, \frac{2-3b}{3-3b}; \frac{5-6b}{3-3b}; -\text{K\$1486420}^3 \right)}{3b-2} + \right.$$

Maple: cpu = 0.094 (sec), leaf count = 3961

$$\left\{ x - \left(\frac{1}{2b^3x^3 + 2a^3} \left(2b^2x^2 y(x) \sqrt[3]{-4b^6x^6 - 8a^3b^3x^3 - 4b^3x^3 (y(x))^3 + 4\sqrt{b^6x^6 + 2a^3b^3x^3 + 2b^3x^3 (y} \right. \right. \right.$$

2.563 ODE No. 563

$$\boxed{\ln \left(\frac{\mathrm{d}}{\mathrm{d}x} y(x) \right) + x \frac{\mathrm{d}}{\mathrm{d}x} y(x) + ay(x) + b = 0}$$

Mathematica: cpu = 0.108514 (sec), leaf count = 59

$$\text{Solve}\left[a \left(\frac{(a+1) \log\left(1 - aW\left(xe^{-ay(x)-b}\right)\right)}{a^2} + \frac{W\left(xe^{-ay(x)-b}\right)}{a} \right) + ay(x) = c_1, y(x) \right]$$

Maple: cpu = 0.125 (sec), leaf count = 66

$$\left\{ -\left(\mathrm{e}^{-ay(x) - lambertW\left(x\mathrm{e}^{-ay(x)-b}\right) - b} \right)^{-(a+1)^{-1}} \_C1 + x - \frac{\mathrm{e}^{ay(x) + lambertW\left(x\mathrm{e}^{-ay(x)-b}\right) + b}}{a} = 0 \right\}$$

2.564 ODE No. 564

$$\boxed{\ln\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)+a\left(x\frac{\mathrm{d}}{\mathrm{d}x}y(x)-y(x)\right)=0}$$

Mathematica: cpu = 0.042005 (sec), leaf count = 28

$$\left\{\left\{y(x)\to -\frac{e^{-c_1}\left(e^{c_1}c_1-ax\right)}{a}\right\}\right\}$$

Maple: cpu = 0.031 (sec), leaf count = 36

$$\left\{y(x)=\_C1\,x+\frac{\ln\left(\_C1\right)}{a},y(x)=\frac{1}{a}\ln\left(-\frac{1}{ax}\right)-a^{-1}\right\}$$

2.565 ODE No. 565

$$\boxed{y(x)\ln\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)+\frac{\mathrm{d}}{\mathrm{d}x}y(x)-y(x)\ln\left(y(x)\right)-xy(x)=0}$$

Mathematica: cpu = 0.011501 (sec), leaf count = 25

$$\left\{\left\{y(x)\to c_1e^{\frac{1}{2}W\left(e^x\right)^2+W\left(e^x\right)}\right\}\right\}$$

Maple: cpu = 0.093 (sec), leaf count = 17

$$\left\{y(x)=\_C1\,\mathrm{e}^{\frac{lambertW\left(\mathrm{e}^x\right)\left(lambertW\left(\mathrm{e}^x\right)+2\right)}{2}}\right\}$$

2.566 ODE No. 566

$$\boxed{\sin\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)+\frac{\mathrm{d}}{\mathrm{d}x}y(x)-x=0}$$

Mathematica: cpu = 0.010001 (sec), leaf count = 19

$$\text{DSolve}[y'(x)+\sin\left(y'(x)\right)-x=0,y(x),x]$$

Maple: cpu = 0.031 (sec), leaf count = 16

$$\left\{y(x)=\int RootOf(\_Z+\sin\left(\_Z\right)-x)\,\mathrm{d}x+\_C1\right\}$$

2.567 ODE No. 567

$$\boxed{a\cos\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)+b\frac{\mathrm{d}}{\mathrm{d}x}y(x)+x=0}$$

Mathematica: cpu = 0.011001 (sec), leaf count = 21

$$\text{DSolve}[a\cos\left(y'(x)\right)+by'(x)+x=0,y(x),x]$$

Maple: cpu = 0.031 (sec), leaf count = 18

$$\left\{y(x)=\int \mathit{RootOf}\left(a\cos\left(\_Z\right)+\_Z\,b+x\right)\,\mathrm{d}x+\_C1\right\}$$

2.568 ODE No. 568

$$\boxed{\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2\sin\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)-y(x)=0}$$

Mathematica: cpu = 0.036505 (sec), leaf count = 28

$$\text{Solve}\left[\left\{x=c_1+\text{K\$1487319}\sin(\text{K\$1487319})-\cos(\text{K\$1487319}),y(x)=\text{K\$1487319}^2\sin(\text{K\$1487319})\right\},\{\text{K\$1487319}\right.$$

Maple: cpu = 0.047 (sec), leaf count = 32

$$\left\{x-\int^{y(x)}\left(\mathit{RootOf}\left(\sin\left(\_Z\right)\_Z^2-\_a\right)\right)^{-1}d\_a-\_C1=0,y(x)=0\right\}$$

2.569 ODE No. 569

$$\boxed{\left(\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+1\right)\left(\sin\left(x\frac{\mathrm{d}}{\mathrm{d}x}y(x)-y(x)\right)\right)^2-1=0}$$

Mathematica: cpu = 0.040505 (sec), leaf count = 59

$$\left\{\left\{y(x)\to c_1x-\frac{1}{2}\cos^{-1}\left(\frac{c_1^2-1}{c_1^2+1}\right)\right\},\left\{y(x)\to c_1x+\frac{1}{2}\cos^{-1}\left(\frac{c_1^2-1}{c_1^2+1}\right)\right\}\right\}$$

Maple: cpu = 0.358 (sec), leaf count = 147

$$\left\{y(x)=\_C1\,x-\arcsin\left(\frac{1}{\sqrt{\_C1^2+1}}\right),y(x)=\_C1\,x+\arcsin\left(\frac{1}{\sqrt{\_C1^2+1}}\right),y(x)=-\sqrt{1-x}\sqrt{x}\right.$$

2.570 ODE No. 570

$$\boxed{\left(\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+1\right)\left(\arctan\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)+ax\right)+\frac{\mathrm{d}}{\mathrm{d}x}y(x)=0}$$

Mathematica: cpu = 0.108514 (sec), leaf count = 29

$$\text{DSolve}\left[\left(y'(x)^2+1\right)\left(ax+\tan^{-1}\left(y'(x)\right)\right)+y'(x)=0,y(x),x\right]$$

Maple: cpu = 0.047 (sec), leaf count = 30

$$\left\{y(x)=\int\tan\left(RootOf\left(ax(\tan\left(\_Z\right))^2+\left(\tan\left(\_Z\right)\right)^2\_Z+ax+\tan\left(\_Z\right)+\_Z\right)\right)\mathrm{d}x+\_C1\right\}$$

2.571 ODE No. 571

$$\boxed{ax^nf\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)+x\frac{\mathrm{d}}{\mathrm{d}x}y(x)-y(x)=0}$$

Mathematica: cpu = 0.102013 (sec), leaf count = 114

$$\text{Solve}\left[\left\{y(x)=af(\text{K\$1487621})x^n+\text{K\$1487621}x,x=\left(nf(\text{K\$1487621})^{\frac{1}{n}-1}\left(\int_1^{\text{K\$1487621}}-\frac{f(K[1])^{\frac{n-1}{n}-1}}{an}\right.\right.\right.$$

Maple: cpu = 0.203 (sec), leaf count = 199

$$\left\{[y(\_T)=a\left(\left(-\frac{1}{af\left(\_T\right)n}\left(-\_C1\,an+\int\left(f(\_T)\right)^{-n^{-1}}\,\mathrm{d}\_Tn-\int\left(f(\_T)\right)^{-n^{-1}}\,\mathrm{d}\_T\right)\right)^{(n-1)^{-1}}(f(\right.\right.\right.$$

2.572 ODE No. 572

$$\boxed{\left(x\frac{\mathrm{d}}{\mathrm{d}x}y(x)-y(x)\right)^nf\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)+y(x)\,g\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)+xh\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)=0}$$

Mathematica: cpu = 0.030504 (sec), leaf count = 41

$$\text{DSolve}\left[f(y'(x))\left(xy'(x)-y(x)\right)^n+y(x)g(y'(x))+xh(y'(x))=0,y(x),x\right]$$

Maple: cpu = 0.905 (sec), leaf count = 0

could not solve

2.573 ODE No. 573

$$\boxed{f\left(x\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2\right)+2\,x\frac{\mathrm{d}}{\mathrm{d}x}y(x)-y(x)=0}$$

Mathematica: cpu = 0.012002 (sec), leaf count = 42

$$\left\{\left\{y(x)\to f(c_1)-2\sqrt{c_1}\sqrt{x},y(x)\to f(c_1)+2\sqrt{c_1}\sqrt{x}\right\}\right\}$$

Maple: cpu = 0.109 (sec), leaf count = 16

$$\left\{y(x)=f\left(\frac{-C1^2}{4}\right)+\_C1\,\sqrt{x}\right\}$$

2.574 ODE No. 574

$$\boxed{f\left(x-3/2\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2\right)+\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^3-y(x)=0}$$

Mathematica: cpu = 0.014502 (sec), leaf count = 102

$$\left\{\left\{y(x)\to\frac{1}{9}\left(9f(c_1)+2\sqrt{6}x\sqrt{x-c_1}-2\sqrt{6}c_1\sqrt{x-c_1}\right),y(x)\to\frac{1}{9}\left(9f(c_1)-2\sqrt{6}x\sqrt{x-c_1}+2\sqrt{6}c_1\sqrt{x\right.\right.\right.$$

Maple: cpu = 0.109 (sec), leaf count = 67

$$\left\{y(x)=f(\_C1)-\frac{2}{9}\sqrt{-6\,\_C1^3+18\,\_C1^2x-18\,x^2\_C1+6\,x^3},y(x)=f(\_C1)+\frac{2}{9}\sqrt{-6\,\_C1^3+18\right.$$

2.575 ODE No. 575

$$\boxed{\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)f\left(xy(x)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)-(y(x))^2\right)-x^2\frac{\mathrm{d}}{\mathrm{d}x}y(x)+xy(x)=0}$$

Mathematica: cpu = 0.017002 (sec), leaf count = 41

$$\text{DSolve}\left[y'(x)f\left(xy(x)y'(x)-y(x)^2\right)+x^2(-y'(x))+xy(x)=0,y(x),x\right]$$

Maple: cpu = 0.452 (sec), leaf count = 0

could not solve

2.576 ODE No. 576

$$\boxed{\phi\left(f\left(x,y(x),\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right),g\left(x,y(x),\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)\right)=0}$$

Mathematica: cpu = 0.007001 (sec), leaf count = 23

$$\text{DSolve}[\phi(f(x,y(x),y'(x)),g(x,y(x),y'(x)))=0,y(x),x]$$

Maple: cpu = 0.016 (sec), leaf count = 0

could not solve

2.577 ODE No. 577

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x)=F\left(\frac{y(x)}{x+a}\right)=0}$$

Mathematica: cpu = 12.111538 (sec), leaf count = 240

$$\text{Solve}\left[\int_1^{y(x)}\left(\frac{1}{-aF\left(\frac{K[2]}{a+x}\right)-xF\left(\frac{K[2]}{a+x}\right)+K[2]}-\int_1^{x}\left(\frac{F'\left(\frac{K[2]}{K[1]+a}\right)}{(K[1]+a)\left(aF\left(\frac{K[2]}{K[1]+a}\right)+K[1]F\left(\frac{K[2]}{K[1]+a}\right)-K\right.\right.\right.$$

Maple: cpu = 0.031 (sec), leaf count = 28

$$\left\{y(x)=-RootOf\left(\int^{\_Z}\left(F(-\_a)+\_a\right)^{-1}d\_a+\ln\left(x+a\right)+\_C1\right)(x+a)\right\}$$

2.578 ODE No. 578

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x)=2\,x+F\big(y(x)-x^2\big)=0}$$

Mathematica: cpu = 16.413084 (sec), leaf count = 97

$$\text{Solve}\left[\int_1^{y(x)}-\frac{F(K[2]-x^2)\int_1^{x}-\frac{2K[1]F'(K[2]-K[1]^2)}{F(K[2]-K[1]^2)^2}\,dK[1]+1}{F\left(K[2]-x^2\right)}\,dK[2]+\int_1^{x}\left(\frac{2K[1]}{F\left(y(x)-K[1]^2\right)}+1\right)dK[1]\right.$$

Maple: cpu = 0.031 (sec), leaf count = 22

$$\left\{y(x)=x^2+RootOf\left(-x+\int^{\_Z}\left(F(\_a)\right)^{-1}d\_a+\_C1\right)\right\}$$

2.579 ODE No. 579

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = -1/2\,ax + F\big(y(x) + 1/4\,ax^2 + 1/2\,bx\big) = 0}$$

Mathematica: cpu = 13.258184 (sec), leaf count = 510

$$\text{Solve}\left[\int_1^{y(x)} -\frac{2F\left(K[2] + \frac{ax^2}{4} + \frac{bx}{2}\right)\int_1^x \left(\frac{2aK[1]F'\left(\frac{1}{4}aK[1]^2+\frac{1}{2}bK[1]+K[2]\right)}{\left(2F\left(\frac{1}{4}aK[1]^2+\frac{1}{2}bK[1]+K[2]\right)+b\right)^2} + \frac{2F'\left(\frac{1}{4}aK[1]^2+\frac{1}{2}bK[1]+K[2]\right)}{2F\left(\frac{1}{4}aK[1]^2+\frac{1}{2}bK[1]+K[2]\right)+b} - \frac{4F\left(\frac{1}{4}aK[\right.}\right.\right.$$

Maple: cpu = 0.031 (sec), leaf count = 35

$$\left\{y(x) = -\frac{ax^2}{4} - \frac{bx}{2} + RootOf\left(-x + 2\int^{\_Z} \left(2\,F(\_a) + b\right)^{-1} d\_a + \_C1\right)\right\}$$

2.580 ODE No. 580

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = F\big(y(x)\,\mathrm{e}^{-bx}\big)\,\mathrm{e}^{bx} = 0}$$

Mathematica: cpu = 24.434103 (sec), leaf count = 200

$$\text{Solve}\left[\int_1^{y(x)} \left(\frac{1}{bK[2] - e^{bx}F\left(e^{-bx}K[2]\right)} - \int_1^x \left(\frac{F'\left(K[2]e^{-bK[1]}\right)}{e^{bK[1]}F\left(K[2]e^{-bK[1]}\right) - bK[2]} - \frac{e^{bK[1]}F\left(K[2]e^{-bK[1]}\right)\left(F'\right.}{\left(e^{bK[1]}F\left(K[2]e^{-bK\right.\right.}\right.\right.\right.$$

Maple: cpu = 0.047 (sec), leaf count = 31

$$\left\{y(x) = \frac{RootOf\left(-x + \int^{\_Z} \left(F(\_a) - \_a\,b\right)^{-1} d\_a + \_C1\right)}{\mathrm{e}^{-bx}}\right\}$$

2.581 ODE No. 581

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = 1/2\,\frac{1}{x^3}\left(1 + 2\,F\left(1/4\,\frac{4\,x^2y(x)+1}{x^2}\right)x\right) = 0}$$

Mathematica: cpu = 40.986705 (sec), leaf count = 141

$$\text{Solve}\left[\int_1^{y(x)} -\frac{F\left(\frac{x^2K[2]+\frac{1}{4}}{x^2}\right)\int_1^x -\frac{F'\left(\frac{K[2]K[1]^2+\frac{1}{4}}{K[1]^2}\right)}{2K[1]^3F\left(\frac{K[2]K[1]^2+\frac{1}{4}}{K[1]^2}\right)^2}\,dK[1] + 1}{F\left(\frac{x^2K[2]+\frac{1}{4}}{x^2}\right)}\,dK[2] + \int_1^x \left(\frac{1}{2K[1]^3F\left(\frac{y(x)K[1]^2+\frac{1}{4}}{K[1]^2}\right)} + \right.\right.$$

Maple: cpu = 0.093 (sec), leaf count = 32

$$\left\{ y(x) = \frac{4\,RootOf\left(\int^{-Z} (F(\_a))^{-1}\,d\_ax + \_C1\,x + 1 \right) x^2 - 1}{4\,x^2} \right\}$$

2.582 ODE No. 582

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x} y(x) = \frac{1}{ax^2}\left(1 + F\left(\frac{axy(x)+1}{ax} \right) ax^2 \right) = 0}$$

Mathematica: cpu = 16.699621 (sec), leaf count = 139

$$\text{Solve}\left[\int_1^{y(x)} -\frac{F\left(\frac{axK[2]+1}{ax}\right) \int_1^x \frac{F'\left(\frac{aK[1]K[2]+1}{aK[1]}\right)}{aK[1]^2 F\left(\frac{aK[1]K[2]+1}{aK[1]}\right)^2}\,dK[1] - 1}{F\left(\frac{axK[2]+1}{ax}\right)}\,dK[2] + \int_1^x \left(-\frac{1}{aK[1]^2 F\left(\frac{ay(x)K[1]+1}{aK[1]}\right)} - 1 \right)$$

Maple: cpu = 0.156 (sec), leaf count = 30

$$\left\{ y(x) = \frac{RootOf\left(-x + \int^{-Z} (F(\_a))^{-1}\,d\_a + \_C1 \right) ax - 1}{ax} \right\}$$

2.583 ODE No. 583

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x} y(x) = -1/2\left(ax^2 - 2\,F\left(y(x) + 1/8\,ax^4 \right) \right) x = 0}$$

Mathematica: cpu = 41.455764 (sec), leaf count = 123

$$\text{Solve}\left[\int_1^{y(x)} -\frac{F\left(K[2] + \frac{ax^4}{8}\right) \int_1^x \frac{aK[1]^3 F'\left(\frac{1}{8}aK[1]^4 + K[2]\right)}{2F\left(\frac{1}{8}aK[1]^4 + K[2]\right)^2}\,dK[1] + 1}{F\left(K[2] + \frac{ax^4}{8}\right)}\,dK[2] + \int_1^x \left(K[1] - \frac{aK[1]^3}{2F\left(\frac{1}{8}aK[1]^4 + y(\right.\right.$$

Maple: cpu = 0.125 (sec), leaf count = 31

$$\left\{ y(x) = -\frac{ax^4}{8} + RootOf\left(-x^2 + 2\int^{\_Z} (F(\_a))^{-1}\,d\_a + 2\,\_C1 \right) \right\}$$

2.584 ODE No. 584

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = 2\,\frac{a}{y\left(x\right) + 2\,F\left(\left(y\left(x\right)\right)^{2} - 4\,ax\right)a} = 0}$$

Mathematica: cpu = 18.981910 (sec), leaf count = 112

$$\text{Solve}\left[\int_{1}^{y(x)}\left(\frac{K[2]}{4a^{2}F\left(K[2]^{2}-4ax\right)} - \frac{2a\int_{1}^{x}\frac{K[2]F'\left(K[2]^{2}-4aK[1]\right)}{aF\left(K[2]^{2}-4aK[1]\right)^{2}}\,dK[1]-1}{2a}\right)dK[2] + \int_{1}^{x} -\frac{1}{2aF\left(y(x)^{2}-4\right.}\right.$$

Maple: cpu = 0.047 (sec), leaf count = 35

$$\left\{\frac{y(x)}{2\,a} + \frac{\int^{\left(y(x)\right)^{2}-4\,ax}\left(F(\_a)\right)^{-1}d\_a}{8\,a^{2}} - \_C1 = 0\right\}$$

2.585 ODE No. 585

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = F(\ln\left(\ln\left(y(x)\right)\right) - \ln\left(x\right))\,y(x) = 0}$$

Mathematica: cpu = 123.303658 (sec), leaf count = 202

$$\text{Solve}\left[\int_{1}^{y(x)}\left(\frac{1}{K[2](xF(\log(\log(K[2])) - \log(x)) - \log(K[2]))} - \int_{1}^{x}\left(\frac{F(\log(\log(K[2])) - \log(K[1]))\left(\frac{K}{}\right.\right.\right.\right.$$

Maple: cpu = 0.406 (sec), leaf count = 163

$$\left\{\int_{\_b}^{x}\frac{F(\ln\left(\ln\left(y(x)\right)\right) - \ln\left(\_a\right))}{-\_a\,F\left(\ln\left(\ln\left(y\left(x\right)\right)\right) - \ln\left(\_a\right)\right) + \ln\left(y\left(x\right)\right)}\,\mathrm{d}\_a + \int^{y(x)} -\frac{1}{\_f\,\left(-xF\left(\ln\left(\ln\left(\_f\right)\right) - \ln\left(x\right)\right) + \ln\left(\_\right.\right.}\right.\right.$$

2.586 ODE No. 586

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{x}{\sqrt{x^{2}+1}}F\left(\frac{y(x)}{\sqrt{x^{2}+1}}\right) = 0}$$

Mathematica: cpu = 143.313198 (sec), leaf count = 972

$$\text{Solve}\left[\int_1^{y(x)}\left(-\frac{\sqrt{x^2+1}F\left(\frac{K[2]}{\sqrt{x^2+1}}\right)}{-x^2F\left(\frac{K[2]}{\sqrt{x^2+1}}\right)^2-F\left(\frac{K[2]}{\sqrt{x^2+1}}\right)^2+K[2]^2}-\int_1^x\left(\frac{K[1]\sqrt{K[1]^2+1}\left(\frac{2F\left(\frac{K[2]}{\sqrt{K[1]^2+1}}\right)F'\left(\frac{K[2]}{\sqrt{K[1]^2+1}}\right.\right.\right.\right.\right.$$

$$\left.\left.\left.\left.\left.\frac{}{\sqrt{K[1]^2+1}}\right.\right.\right.\right.\right.$$

$$\left.\left.\left.\left.\left.\frac{}{K[2]\left(K[1]^2F\left(\frac{}{}\right.\right.\right.\right.\right.\right.$$

Maple: cpu = 0.203 (sec), leaf count = 39

$$\left\{y(x)=RootOf\left(-\ln\left(x^2+1\right)+2\int^{\_Z}\left(F(\_a)-\_a\right)^{-1}d\_a+2\_C1\right)\sqrt{x^2+1}\right\}$$

2.587 ODE No. 587

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x)=1/2\left(x^{3/2}+2\,F\left(y(x)-1/6\,x^3\right)\right)\sqrt{x}=0}$$

Mathematica: cpu = 44.026091 (sec), leaf count = 120

$$\text{Solve}\left[\int_1^{y(x)}-\frac{F\left(K[2]-\frac{x^3}{6}\right)\int_1^x-\frac{K[1]^2F'\left(K[2]-\frac{K[1]^3}{6}\right)}{2F\left(K[2]-\frac{K[1]^3}{6}\right)^2}dK[1]+1}{F\left(K[2]-\frac{x^3}{6}\right)}dK[2]+\int_1^x\left(\frac{K[1]^2}{2F\left(y(x)-\frac{K[1]^3}{6}\right)}+\sqrt{K[\right.\right.$$

$$\left.\left.\right.\right.$$

Maple: cpu = 0.109 (sec), leaf count = 29

$$\left\{\int_{\_b}^{y(x)}\left(F\left(\_a-\frac{x^3}{6}\right)\right)^{-1}\mathrm{d}\_a-\frac{2}{3}x^{\frac{3}{2}}-\_C1=0\right\}$$

2.588 ODE No. 588

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x)=\frac{x+F(-(x-y(x))\,(y(x)+x))}{y\,(x)}=0}$$

Mathematica: cpu = 31.940556 (sec), leaf count = 106

$$\text{Solve}\left[\int_1^{y(x)}\left(-\int_1^x-\frac{2K[1]K[2]F'((K[2]-K[1])(K[1]+K[2]))}{F((K[2]-K[1])(K[1]+K[2]))^2}dK[1]-\frac{K[2]}{F((K[2]-x)(K[2]+x))}\right)dK\right.$$

Maple: cpu = 0.109 (sec), leaf count = 53

$$\left\{y(x)=\sqrt{x^2+RootOf\left(-2\,x+\int^{\_Z}\left(F\left(\_a\right)\right)^{-1}d\_a+2\,\_C1\right)},y(x)=-\sqrt{x^2+RootOf\left(-2\,x+\int^{-}\right.}\right.$$

2.589 ODE No. 589

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x)=\frac{\left(y(x)\right)^2}{x}F\left(-\frac{-1+y(x)\ln\left(x\right)}{y\left(x\right)}\right)=0}$$

Mathematica: cpu = 19.556483 (sec), leaf count = 242

$$\text{Solve}\left[\int_1^{y(x)}\left(\frac{1}{K[2]^2\left(-F\left(\frac{1-\log(x)K[2]}{K[2]}\right)-1\right)}-\int_1^{x}\left(\frac{\left(-\frac{\log(K[1])}{K[2]}-\frac{1-K[2]\log(K[1])}{K[2]^2}\right)F'\left(\frac{1-K[2]\log(K[1])}{K[2]}\right)}{K[1]\left(F\left(\frac{1-K[2]\log(K[1])}{K[2]}\right)+1\right)}-\right.\right.\right.$$

Maple: cpu = 0.124 (sec), leaf count = 38

$$\left\{\int_{\_b}^{y(x)}\frac{1}{\_a^2}\left(F\left(\frac{1-\_a\,\ln\left(x\right)}{\_a}\right)+1\right)^{-1}\mathrm{d}\_a-\ln\left(x\right)-\_C1=0\right\}$$

2.590 ODE No. 590

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x)=\frac{x}{-y\left(x\right)+F\left(\left(y\left(x\right)\right)^2+x^2\right)}=0}$$

Mathematica: cpu = 30.943929 (sec), leaf count = 91

$$\text{Solve}\left[\int_1^{y(x)}\left(-\int_1^{x}\frac{2K[1]K[2]F'(K[1]^2+K[2]^2)}{F\left(K[1]^2+K[2]^2\right)^2}\,dK[1]-\frac{K[2]}{F\left(K[2]^2+x^2\right)}+1\right)\,dK[2]+\int_1^{x}-\frac{K[\right.$$

Maple: cpu = 0.125 (sec), leaf count = 28

$$\left\{-y(x)+\frac{\int^{\left(y(x)\right)^2+x^2}\left(F(\_a)\right)^{-1}d\_a}{2}-\_C1=0\right\}$$

2.591 ODE No. 591

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{x}{\sqrt{a}y\left(x\right)}F\left(\frac{a(y(x))^2+bx^2}{a}\right) = 0}$$

Mathematica: cpu = 18.189310 (sec), leaf count = 250

$$\text{Solve}\left[\int_1^{y(x)}\left(-\int_1^x\left(\frac{2bK[1]K[2]F'\left(\frac{aK[2]^2+bK[1]^2}{a}\right)}{\sqrt{a}\left(\sqrt{a}F\left(\frac{aK[2]^2+bK[1]^2}{a}\right)+b\right)}-\frac{2bK[1]K[2]F\left(\frac{aK[2]^2+bK[1]^2}{a}\right)F'\left(\frac{aK[2]^2+bK[1]^2}{a}\right)}{\left(\sqrt{a}F\left(\frac{aK[2]^2+bK[1]^2}{a}\right)+b\right)^2}\right)\right.\right.$$

Maple: cpu = 0.140 (sec), leaf count = 108

$$\left\{y(x) = \frac{1}{a}\sqrt{a\left(-bx^2+RootOf\left(\int^{-Z}\left(\sqrt{a}b+F\left(\_a\right)a\right)^{-1}d\_aa^{\frac{3}{2}}b-bx^2+2\_C1\,a\right)a\right)}, y(x) = -\frac{1}{a}\sqrt{}\right.$$

2.592 ODE No. 592

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = 1/5\,\frac{6\,x^3+5\,\sqrt{x}+5\,F\left(y(x)-2/5\,x^3-2\,\sqrt{x}\right)}{x} = 0}$$

Mathematica: cpu = 248.171514 (sec), leaf count = 238

$$\text{Solve}\left[\int_1^{y(x)}-\frac{F\left(K[2]-\frac{2x^3}{5}-2\sqrt{x}\right)\int_1^x\left(-\frac{6K[1]^2F'\left(-\frac{2}{5}K[1]^3-2\sqrt{K[1]}+K[2]\right)}{5F\left(-\frac{2}{5}K[1]^3-2\sqrt{K[1]}+K[2]\right)^2}-\frac{F'\left(-\frac{2}{5}K[1]^3-2\sqrt{K[1]}+K[2]\right)}{\sqrt{K[1]}F\left(-\frac{2}{5}K[1]^3-2\sqrt{K[1]}+K[2]\right)^2}\right.}{F\left(K[2]-\frac{2x^3}{5}-2\sqrt{x}\right)}\right.$$

Maple: cpu = 0.156 (sec), leaf count = 33

$$\left\{\int_{\_b}^{y(x)}\left(F\left(\_a-\frac{2\,x^3}{5}-2\,\sqrt{x}\right)\right)^{-1}\mathrm{d}\_a-\ln\left(x\right)-\_C1 = 0\right\}$$

2.593 ODE No. 593

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{F\left(\left(y(x)\right)^{3/2} - 3/2\,\mathrm{e}^{x}\right)\mathrm{e}^{x}}{\sqrt{y\left(x\right)}} = 0}$$

Mathematica: cpu = 62.104386 (sec), leaf count = 218

$$\text{Solve}\left[\int_{1}^{y(x)}\left(\frac{\sqrt{K[2]}}{F\left(K[2]^{3/2} - \frac{3e^{x}}{2}\right) - 1} - \int_{1}^{x}\left(\frac{3e^{K[1]}\sqrt{K[2]}F\left(K[2]^{3/2} - \frac{3e^{K[1]}}{2}\right)F'\left(K[2]^{3/2} - \frac{3e^{K[1]}}{2}\right)}{2\left(F\left(K[2]^{3/2} - \frac{3e^{K[1]}}{2}\right) - 1\right)^{2}} - \frac{3e\right.\right.\right.$$

Maple: cpu = 0.265 (sec), leaf count = 35

$$\left\{\int_{\_b}^{y(x)} 1\sqrt{\_a}\left(F\left(\_a^{\frac{3}{2}} - \frac{3\,\mathrm{e}^{x}}{2}\right) - 1\right)^{-1}\mathrm{d}\_a - \mathrm{e}^{x} - \_C1 = 0\right\}$$

2.594 ODE No. 594

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{x}{y\left(x\right)}F\left(-\frac{-\left(y(x)\right)^{2} + b}{x^{2}}\right) = 0}$$

Mathematica: cpu = 17.877770 (sec), leaf count = 233

$$\text{Solve}\left[\int_{1}^{y(x)}\left(-\int_{1}^{x}\left(\frac{K[1]F\left(\frac{K[2]^{2}-b}{K[1]^{2}}\right)\left(2K[2]F'\left(\frac{K[2]^{2}-b}{K[1]^{2}}\right) - 2K[2]\right)}{\left(K[1]^{2}F\left(\frac{K[2]^{2}-b}{K[1]^{2}}\right) - K[2]^{2} + b\right)^{2}} - \frac{2K[2]F'\left(\frac{K[2]^{2}-b}{K[1]^{2}}\right)}{K[1]\left(K[1]^{2}F\left(\frac{K[2]^{2}-b}{K[1]^{2}}\right) - K[2]^{2}\right.}\right.\right.\right.$$

Maple: cpu = 0.140 (sec), leaf count = 67

$$\left\{y(x) = \sqrt{RootOf\left(-2\ln\left(x\right) + \int^{-Z}\left(F\left(\_a\right) - \_a\right)^{-1}d\_a + 2\_C1\right)x^{2} + b}, y(x) = -\sqrt{RootOf\left(-2\right.\right.}\right.$$

2.595 ODE No. 595

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{1}{x^2 y\left(x\right)} F\left(\frac{x(y(x))^2+1}{x}\right) = 0}$$

Mathematica: cpu = 19.349457 (sec), leaf count = 201

$$\text{Solve}\left[\int_1^{y(x)} \left(\frac{K[2]}{2F\left(\frac{xK[2]^2+1}{x}\right)-1} - \int_1^x \left(\frac{4K[2]F\left(\frac{K[1]K[2]^2+1}{K[1]}\right)F'\left(\frac{K[1]K[2]^2+1}{K[1]}\right)}{K[1]^2\left(2F\left(\frac{K[1]K[2]^2+1}{K[1]}\right)-1\right)^2} - \frac{2K[2]F'\left(\frac{K[1]K[2]^2+\right.}{K[1]^2\left(2F\left(\frac{K[1]K[2]^2+1}{K[1]}\right.\right.}\right.\right.\right.$$

Maple: cpu = 0.124 (sec), leaf count = 72

$$\left\{y(x) = \frac{1}{x}\sqrt{x\left(RootOf\left(\int^{\_Z} \left(-1+2F\left(\_a\right)\right)^{-1} d\_a x + \_C1\, x + 1\right)x - 1\right)}, y(x) = -\frac{1}{x}\sqrt{x\left(RootOf\right.}\right.$$

2.596 ODE No. 596

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{-2x^2 + x + F(y(x)+x^2-x)}{x} = 0}$$

Mathematica: cpu = 49.763319 (sec), leaf count = 153

$$\text{Solve}\left[\int_1^{y(x)} -\frac{F(K[2]+x^2-x)\int_1^x \left(\frac{2K[1]F'(K[1]^2-K[1]+K[2])}{F(K[1]^2-K[1]+K[2])^2} - \frac{F'(K[1]^2-K[1]+K[2])}{F(K[1]^2-K[1]+K[2])^2}\right)dK[1]+1}{F\left(K[2]+x^2-x\right)}dK[2] + \int_1^x\right.$$

Maple: cpu = 0.093 (sec), leaf count = 26

$$\left\{y(x) = -x^2 + RootOf\left(-\ln\left(x\right) + \int^{\_Z} \left(F\left(\_a\right)\right)^{-1} d\_a + \_C1\right) + x\right\}$$

2.597 ODE No. 597

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = 2\,\frac{a}{x^2}\left(-y(x) + 2\,F\left(\frac{x(y(x))^2 - 4\,a}{x}\right)a\right)^{-1} = 0}$$

Mathematica: cpu = 27.163949 (sec), leaf count = 127

$$\text{Solve}\left[\int_1^{y(x)}\left(-\int_1^x \frac{2K[2]F'\left(\frac{K[1]K[2]^2-4a}{K[1]}\right)}{K[1]^2F\left(\frac{K[1]K[2]^2-4a}{K[1]}\right)^2}\,dK[1]-\frac{K[2]}{2aF\left(\frac{xK[2]^2-4a}{x}\right)}+1\right)dK[2]+\int_1^x -\frac{1}{K[1]^2F\left(\frac{y(x)^2}{}\right.}\right.$$

Maple: cpu = 0.296 (sec), leaf count = 37

$$\left\{-\frac{y(x)}{2\,a}+\frac{1}{8\,a^2}\int^{(y(x))^2-4\,\frac{a}{x}}(F(\_a))^{-1}\,d\_a-\_C1=0\right\}$$

2.598 ODE No. 598

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x)=\frac{1}{x-1}\left(y(x)+F\left(\frac{y(x)}{x}\right)\right)=0}$$

Mathematica: cpu = 0.077010 (sec), leaf count = 36

$$\text{Solve}\left[\int_1^{\frac{y(x)}{x}}\frac{1}{F(K[1])+K[1]}\,dK[1]=c_1+\log(1-x)-\log(x),y(x)\right]$$

Maple: cpu = 0.032 (sec), leaf count = 29

$$\left\{y(x)=RootOf\left(-\int^{\_Z}(F(\_a)+\_a)^{-1}\,d\_a-\ln(x)+\ln(x-1)+\_C1\right)x\right\}$$

2.599 ODE No. 599

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x)=\frac{-x+F\left((y(x))^2+x^2\right)}{y(x)}=0}$$

Mathematica: cpu = 22.629374 (sec), leaf count = 92

$$\text{Solve}\left[\int_1^{y(x)}\left(-\int_1^x \frac{2K[1]K[2]F'(K[1]^2+K[2]^2)}{F\left(K[1]^2+K[2]^2\right)^2}\,dK[1]-\frac{K[2]}{F\left(K[2]^2+x^2\right)}\right)dK[2]+\int_1^x\left(1-\frac{K[}{F\left(K[1]^2\right.}\right.$$

Maple: cpu = 0.093 (sec), leaf count = 57

$$\left\{y(x)=\sqrt{-x^2+RootOf\left(-2\,x+\int^{\_Z}(F(\_a))^{-1}\,d\_a+2\,\_C1\right)},y(x)=-\sqrt{-x^2+RootOf\left(-2\,x+\right.}\right.$$

2.600 ODE No. 600

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{(y(x))^2}{x} F\left(-\frac{2\,y(x)\ln(x)-1}{y(x)}\right) = 0}$$

Mathematica: cpu = 24.086559 (sec), leaf count = 243

$$\text{Solve}\left[\int_1^{y(x)} \left(-\int_1^x \left(\frac{2\left(-\frac{2\log(K[1])}{K[2]} - \frac{1-2K[2]\log(K[1])}{K[2]^2}\right) F'\left(\frac{1-2K[2]\log(K[1])}{K[2]}\right)}{K[1]\left(F\left(\frac{1-2K[2]\log(K[1])}{K[2]}\right)+2\right)} - \frac{2\left(-\frac{2\log(K[1])}{K[2]} - \frac{1-2K[2]\log(K[\right.\right.\right.\right.$$

$$\left.\left.\left.\left.K[1]\left(F\right.\right.\right.\right.$$

Maple: cpu = 0.141 (sec), leaf count = 38

$$\left\{\int_{\_b}^{y(x)} \frac{1}{\_a^2}\left(F\left(\frac{-2\,\_a\ln(x)+1}{\_a}\right)+2\right)^{-1} \mathrm{d}\_a - \ln(x) - \_C1 = 0\right\}$$

2.601 ODE No. 601

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{F(-(x-y(x))\,(y(x)+x))\,x}{y(x)} = 0}$$

Mathematica: cpu = 32.152083 (sec), leaf count = 179

$$\text{Solve}\left[\int_1^{y(x)} \left(\frac{K[2]}{F((K[2]-x)(K[2]+x))-1} - \int_1^x \left(\frac{2K[1]K[2]F((K[2]-K[1])(K[1]+K[2]))F'((K[2]-\right.\right.\right.$$

$$\left.\left.\left.(F((K[2]-K[1])(K[1]+K[2]))-\right.\right.\right.$$

Maple: cpu = 0.125 (sec), leaf count = 61

$$\left\{y(x) = \sqrt{x^2 + RootOf\left(-x^2 + \int^{\_Z} \left(F\left(\_a\right)-1\right)^{-1} d\_a + 2\,\_C1\right)}, y(x) = -\sqrt{x^2 + RootOf\left(-x^2 + \right.}\right.$$

2.602 ODE No. 602

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{(y(x))^2}{x^3}\left(2 + F\left(\frac{x^2-y(x)}{x^2 y(x)}\right)x^2\right) = 0}$$

Mathematica: cpu = 46.096854 (sec), leaf count = 164

$$\text{Solve}\left[\int_1^{y(x)} \left(-\int_1^x -\frac{2\left(-\frac{K[1]^2-K[2]}{K[1]^2K[2]^2} - \frac{1}{K[1]^2K[2]}\right) F'\left(\frac{K[1]^2-K[2]}{K[1]^2K[2]}\right)}{K[1]^3 F\left(\frac{K[1]^2-K[2]}{K[1]^2K[2]}\right)^2} dK[1] - \frac{1}{K[2]^2 F\left(\frac{x^2-K[2]}{x^2K[2]}\right)}\right) dK[2] + \int_{\_}$$

Maple: cpu = 0.125 (sec), leaf count = 33

$$\left\{ y(x) = \frac{x^2}{RootOf\left(-\ln\left(x\right) - \int^{-Z} \left(F\left(\_a\right)\right)^{-1} d\_a + \_C1\right) x^2 + 1} \right\}$$

2.603 ODE No. 603

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x} y(x) = \frac{2\,F(y(x) + \ln\left(2\,x+1\right))\,x + F(y(x) + \ln\left(2\,x+1\right)) - 2}{2\,x+1} = 0}$$

Mathematica: cpu = 17.469218 (sec), leaf count = 114

$$\text{Solve}\left[\int_1^{y(x)} -\frac{F(K[2] + \log(2x+1)) \int_1^x -\frac{2F'(K[2]+\log(2K[1]+1))}{(2K[1]+1)F(K[2]+\log(2K[1]+1))^2}\,dK[1] - 1}{F(K[2] + \log(2x+1))}\,dK[2] + \int_1^x \left(\frac{}{(2K[1]+1\right.\right.$$

Maple: cpu = 0.124 (sec), leaf count = 27

$$\left\{ y(x) = -\ln\left(2\,x+1\right) + RootOf\left(-x + \int^{-Z} \left(F\left(\_a\right)\right)^{-1} d\_a + \_C1\right) \right\}$$

2.604 ODE No. 604

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x} y(x) = 2\left(y(x)\right)^3 \left(1 + 2\,F\left(\frac{1 + 4\,x\left(y(x)\right)^2}{\left(y\left(x\right)\right)^2}\right) y(x)\right)^{-1} = 0}$$

Mathematica: cpu = 26.277337 (sec), leaf count = 140

$$\text{Solve}\left[\int_1^{y(x)} \left(-\int_1^x \frac{\left(\frac{8K[1]}{K[2]} - \frac{2\left(4K[1]K[2]^2+1\right)}{K[2]^3}\right) F'\left(\frac{4K[1]K[2]^2+1}{K[2]^2}\right)}{F\left(\frac{4K[1]K[2]^2+1}{K[2]^2}\right)^2}\,dK[1] + \frac{1}{2K[2]^3 F\left(\frac{4xK[2]^2+1}{K[2]^2}\right)} + \frac{1}{K[2]^2} \right) d\right.$$

Maple: cpu = 0.141 (sec), leaf count = 30

$$\left\{ -\_C1 - \left(y(x)\right)^{-1} - \frac{\int^{4\,x + \left(y(x)\right)^{-2}} \left(F\left(\_a\right)\right)^{-1} d\_a}{4} = 0 \right\}$$

2.605 ODE No. 605

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = -1/4\,\frac{\left(y(x)\right)^2}{x}\left(2\,x - F\left(-1/2\,\frac{xy(x)-2}{y\left(x\right)}\right)\right) = 0}$$

Mathematica: cpu = 28.541624 (sec), leaf count = 142

$$\text{Solve}\left[\int_1^{y(x)}\left(-\int_1^x \frac{2\left(-\frac{K[1]}{2K[2]} - \frac{1-\frac{1}{2}K[1]K[2]}{K[2]^2}\right)F'\left(\frac{1-\frac{1}{2}K[1]K[2]}{K[2]}\right)}{F\left(\frac{1-\frac{1}{2}K[1]K[2]}{K[2]}\right)^2}\,dK[1] - \frac{4}{K[2]^2 F\left(\frac{1-\frac{1}{2}xK[2]}{K[2]}\right)}\right)\,dK[2] + \int_1^x$$

Maple: cpu = 0.125 (sec), leaf count = 29

$$\left\{y(x) = 2\left(2\,RootOf\left(-\ln\left(x\right) - 4\int^{\_Z}\left(F(\_a)\right)^{-1}d\_a + \_C1\right) + x\right)^{-1}\right\}$$

2.606 ODE No. 606

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = -\left(-\mathrm{e}^{-x^2} + x^2\mathrm{e}^{-x^2} - F\left(y(x) - 1/2\,x^2\mathrm{e}^{-x^2}\right)\right)x = 0}$$

Mathematica: cpu = 64.106640 (sec), leaf count = 358

$$\text{Solve}\left[\int_1^{y(x)} -\frac{F\left(K[2] - \frac{1}{2}e^{-x^2}x^2\right)\int_1^x\left(\frac{e^{-K[1]^2}K[1]^3F'\left(K[2]-\frac{1}{2}e^{-K[1]^2}K[1]^2\right)}{F\left(K[2]-\frac{1}{2}e^{-K[1]^2}K[1]^2\right)^2} - \frac{e^{-K[1]^2}K[1]\left(e^{K[1]^2}F\left(K[2]-\frac{1}{2}e^{-K[1]^2}K[1]\right.\right.}{F\left(K[2]-\frac{1}{2}e^{-K[1]}\right.}}{F\left(K[2] - \frac{1}{2}e^{-x^2}x^2\right)}\right.$$

Maple: cpu = 0.655 (sec), leaf count = 34

$$\left\{y(x) = \frac{x^2\mathrm{e}^{-x^2}}{2} + RootOf\left(x^2 - 2\int^{\_Z}\left(F(\_a)\right)^{-1}d\_a + 2\,\_C1\right)\right\}$$

2.607 ODE No. 607

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{1}{x}\left(2\,y(x) + F\left(\frac{y(x)}{x^2}\right)x^3\right) = 0}$$

Mathematica: cpu = 739.416394 (sec), leaf count = 118

$$\text{Solve}\left[\int_1^{y(x)} -\frac{x^2 F\left(\frac{K[2]}{x^2}\right)\left(\int_1^x \left(\frac{2}{K[1]^3 F\left(\frac{K[2]}{K[1]^2}\right)} - \frac{2K[2]F'\left(\frac{K[2]}{K[1]^2}\right)}{K[1]^5 F\left(\frac{K[2]}{K[1]^2}\right)^2}\right) dK[1]\right) + 1}{x^2 F\left(\frac{K[2]}{x^2}\right)}\, dK[2] + \int_1^x \left(\frac{2y(x)}{K[1]^3 F\left(\frac{y(x)}{K[1]^2}\right.\right.\right.$$

Maple: cpu = 0.078 (sec), leaf count = 22

$$\left\{y(x) = \mathit{RootOf}\left(-x + \int^{\_Z} (F(\_a))^{-1}\, d\_a + \_C1\right) x^2\right\}$$

2.608 ODE No. 608

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \sqrt{y\,(x)}\left(\sqrt{y\,(x)} + F\left(\frac{x - y(x)}{\sqrt{y\,(x)}}\right)\right)^{-1} = 0}$$

Mathematica: cpu = 284.310103 (sec), leaf count = 271

$$\text{Solve}\left[\int_1^{y(x)} \left(-\int_1^x -\frac{-2\left(-\frac{K[1]-K[2]}{2K[2]^{3/2}} - \frac{1}{\sqrt{K[2]}}\right)\sqrt{K[2]}F'\left(\frac{K[1]-K[2]}{\sqrt{K[2]}}\right) - \frac{F\left(\frac{K[1]-K[2]}{\sqrt{K[2]}}\right)}{\sqrt{K[2]}} - 1}{\left(-2\sqrt{K[2]}F\left(\frac{K[1]-K[2]}{\sqrt{K[2]}}\right) + K[1] - K[2]\right)^2}\, dK[1] - \frac{F\left(\frac{x-K[\right.}{x\sqrt{K[}}\right.$$

Maple: cpu = 0.125 (sec), leaf count = 40

$$\left\{\frac{\ln\left(y(x)\right)}{2} - \int^{x\frac{1}{\sqrt{y(x)}} - \sqrt{y(x)}} (2\,F(\_a) - \_a)^{-1}\, d\_a - \_C1 = 0\right\}$$

2.609 ODE No. 609

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{-3\,x^2 y(x) + F(x^3 y(x))}{x^3} = 0}$$

Mathematica: cpu = 51.408028 (sec), leaf count = 114

$$\text{Solve}\left[\int_1^{y(x)} -\frac{F(x^3 K[2]) \int_1^x \left(\frac{3K[1]^5 K[2] F'(K[1]^3 K[2])}{F(K[1]^3 K[2])^2} - \frac{3K[1]^2}{F(K[1]^3 K[2])}\right) dK[1] + x^3}{F\left(x^3 K[2]\right)} dK[2] + \int_1^x \left(1 - \frac{3y(x)K\right.\right.$$

Maple: cpu = 0.140 (sec), leaf count = 22

$$\left\{y(x) = \frac{RootOf\left(x - \int^{\_Z} (F(\_a))^{-1}\, d\_a + \_C1\right)}{x^3}\right\}$$

2.610 ODE No. 610

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{1}{x}\left(y(x) + F\left(\frac{y(x)}{x}\right) x^2\right) = 0}$$

Mathematica: cpu = 0.062508 (sec), leaf count = 24

$$\text{Solve}\left[\int_1^{\frac{y(x)}{x}} \frac{1}{F(K[1])}\, dK[1] = c_1 + x, y(x)\right]$$

Maple: cpu = 0.016 (sec), leaf count = 20

$$\left\{y(x) = RootOf\left(x - \int^{\_Z} (F(\_a))^{-1}\, d\_a + \_C1\right) x\right\}$$

2.611 ODE No. 611

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{-2\,x - y(x) + F(x(y(x) + x))}{x} = 0}$$

Mathematica: cpu = 39.069461 (sec), leaf count = 188

$$\text{Solve}\left[\int_1^{y(x)} -\frac{F(x(K[2] + x)) \int_1^x \left(\frac{2K[1]^2 F'(K[1](K[1]+K[2]))}{F(K[1](K[1]+K[2]))^2} + \frac{K[1](K[2] - F(K[1](K[1]+K[2])))F'(K[1](K[1]+K[2]))}{F(K[1](K[1]+K[2]))^2} - \frac{1-\right.\right.}{F(x(K[2] + x))}$$

Maple: cpu = 0.078 (sec), leaf count = 28

$$\left\{ y(x) = \frac{-x^2 + RootOf\left(-x + \int^{-Z} (F(\_a))^{-1} d\_a + \_C1\right)}{x} \right\}$$

2.612 ODE No. 612

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x} y(x) = 1/2 \left(y(x)\, \mathrm{e}^{-1/4\, x^2} x + 2\, F\left(y(x)\, \mathrm{e}^{-1/4\, x^2}\right)\right) \mathrm{e}^{1/4\, x^2} = 0}$$

Mathematica: cpu = 49.253254 (sec), leaf count = 196

$$\text{Solve}\left[\int_1^{y(x)} -\frac{e^{-\frac{x^2}{4}} \left(e^{\frac{x^2}{4}} F\left(e^{-\frac{x^2}{4}} K[2]\right) \int_1^x \left(\frac{e^{-\frac{1}{4}K[1]^2} K[1]}{2F\left(e^{-\frac{1}{4}K[1]^2} K[2]\right)} - \frac{e^{-\frac{1}{2}K[1]^2} K[1] K[2] F'\left(e^{-\frac{1}{4}K[1]^2} K[2]\right)}{2F\left(e^{-\frac{1}{4}K[1]^2} K[2]\right)^2}\right) dK[1] + 1\right)}{F\left(e^{-\frac{x^2}{4}} K[2]\right)}\right.$$

Maple: cpu = 0.110 (sec), leaf count = 27

$$\left\{ y(x) = RootOf\left(-x + \int^{-Z} (F(\_a))^{-1} d\_a + \_C1\right) \left(\mathrm{e}^{-\frac{x^2}{4}}\right)^{-1} \right\}$$

2.613 ODE No. 613

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x} y(x) = \frac{1}{x}\left(x + y(x) + F\left(-\frac{-y(x) + x \ln(x)}{x}\right) x^2\right) = 0}$$

Mathematica: cpu = 818.937492 (sec), leaf count = 223

$$\text{Solve}\left[\int_1^{y(x)} -\frac{xF\left(\frac{K[2]-x\log(x)}{x}\right) \int_1^x \left(-\frac{K[2]F'\left(\frac{K[2]-K[1]\log(K[1])}{K[1]}\right)}{K[1]^3 F\left(\frac{K[2]-K[1]\log(K[1])}{K[1]}\right)^2} - \frac{F'\left(\frac{K[2]-K[1]\log(K[1])}{K[1]}\right)}{K[1]^2 F\left(\frac{K[2]-K[1]\log(K[1])}{K[1]}\right)^2} + \frac{1}{K[1]^2 F\left(\frac{K[2]-K[1]\log}{K[1]}\right.}\right.$$

Maple: cpu = 0.093 (sec), leaf count = 23

$$\left\{ y(x) = \left(\ln(x) + RootOf\left(-x + \int^{-Z} (F(\_a))^{-1} d\_a + \_C1\right)\right) x \right\}$$

2.614 ODE No. 614

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{x(a-1)(a+1)}{y(x) + F\left(1/2\,(y(x))^2 - 1/2\,a^2x^2 + 1/2\,x^2\right)a^2 - F\left(1/2\,(y(x))^2 - 1/2\,a^2x^2 + 1/2\,x^2\right)} = 0}$$

Mathematica: cpu = 72.937762 (sec), leaf count = 171

$$\text{Solve}\left[\int_1^{y(x)} \left(-\int_1^x \frac{K[1]K[2]F'\left(-\frac{1}{2}a^2K[1]^2 + \frac{K[1]^2}{2} + \frac{K[2]^2}{2}\right)}{F\left(-\frac{1}{2}a^2K[1]^2 + \frac{K[1]^2}{2} + \frac{K[2]^2}{2}\right)^2}\,dK[1] + \frac{K[2]}{(a^2-1)\,F\left(\frac{K[2]^2}{2} - \frac{1}{2}a^2x^2 + \frac{x^2}{2}\right)}\right.\right.$$

Maple: cpu = 0.328 (sec), leaf count = 59

$$\left\{\frac{y(x)}{(a-1)(a+1)} + \frac{1}{2\,a^4 - 4\,a^2 + 2}\int^{-a^2x^2+x^2+(y(x))^2}\left(F\left(\frac{\_a}{2}\right)\right)^{-1}d\_a - \_C1 = 0\right\}$$

2.615 ODE No. 615

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{y(x)}{x\left(-1 + F\left(xy(x)\right)y(x)\right)} = 0}$$

Mathematica: cpu = 17.029162 (sec), leaf count = 74

$$\text{Solve}\left[\int_1^{y(x)} \left(-\int_1^x \frac{F'(K[1]K[2])}{F(K[1]K[2])^2}\,dK[1] - \frac{1}{K[2]F(xK[2])} + 1\right)\,dK[2] + \int_1^x -\frac{1}{K[1]F(y(x)K[1])}\,dK[1] +$$

Maple: cpu = 0.109 (sec), leaf count = 26

$$\left\{-y(x) + \int^{xy(x)} \frac{1}{F\left(\_a\right)\_a}d\_a - \_C1 = 0\right\}$$

2.616 ODE No. 616

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = -\frac{-x^2 + 2\,x^3y(x) - F\left(\left(xy(x) - 1\right)x\right)}{x^4} = 0}$$

Mathematica: cpu = 52.212630 (sec), leaf count = 174

$$\text{Solve}\left[\int_1^{y(x)} -\frac{F(x(xK[2]-1))\int_1^x \left(\frac{2K[2]K[1]^3F'(K[1](K[1]K[2]-1))}{F(K[1](K[1]K[2]-1))^2} - \frac{K[1]^2F'(K[1](K[1]K[2]-1))}{F(K[1](K[1]K[2]-1))^2} - \frac{2K[1]}{F(K[1](K[1]K[2]-1)}\right.\right.}{F(x(xK[2]-1))}$$

Maple: cpu = 0.093 (sec), leaf count = 26

$$\left\{ y(x) = \frac{RootOf\left(\int^{-Z} (F(\_a))^{-1} d\_a x + \_C1\, x + 1 \right) + x}{x^2} \right\}$$

2.617 ODE No. 617

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x} y(x) = 1/9\, \frac{x (y(x))^2\, \mathrm{e}^{3\, x^2}}{\mathrm{e}^{9/2\, x^2}} F\left(1/3\, \frac{(3 + y(x))\, \mathrm{e}^{3/2\, x^2}}{y\,(x)} \right) = 0}$$

Mathematica: cpu = 67.610585 (sec), leaf count = 612

$$\text{Solve}\left[\int_1^{y(x)} \left(- \int_1^{x} \left(- \frac{K[2] \left(\frac{e^{\frac{3K[1]^2}{2}}}{3K[2]} - \frac{e^{\frac{3K[1]^2}{2}} (K[2]+3)}{3K[2]^2} \right) K[1] F'\left(\frac{e^{\frac{3K[1]^2}{2}} (K[2]+3)}{3K[2]} \right)}{K[2] F\left(\frac{e^{\frac{3K[1]^2}{2}} (K[2]+3)}{3K[2]} \right) - 9 e^{\frac{3K[1]^2}{2}} K[2] - 27 e^{\frac{3K[1]^2}{2}}} + \frac{K[2] K[1] F\left(\frac{e^{\frac{3K[1]^2}{2}} (K\right.\right.\right.$$

Maple: cpu = 0.234 (sec), leaf count = 47

$$\left\{ y(x) = -3\, \frac{\mathrm{e}^{3/2\, x^2}}{\mathrm{e}^{3/2\, x^2} - 3\, RootOf\left(-x^2 - 18 \int^{-Z} (F\left(\_a\right) - 27\, \_a)^{-1} d\_a + 2\, \_C1 \right)} \right\}$$

2.618 ODE No. 618

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x} y(x) = \frac{(1 + y(x)) \left((y(x) - \ln\left(1 + y(x)\right) - \ln\left(x\right)) x + 1 \right)}{x y\,(x)} = 0}$$

Mathematica: cpu = 0.103513 (sec), leaf count = 25

$$\left\{ \left\{ y(x) \to -W\left(-\frac{e^{c_1 e^x - 1}}{x} \right) - 1 \right\} \right\}$$

Maple: cpu = 0.312 (sec), leaf count = 34

$$\left\{ y(x) = \frac{1}{x} \left(\mathrm{e}^{-lambertW\left(-\frac{\mathrm{e}^{\mathrm{e}^x} \_C1 - 1}{x} \right) + \mathrm{e}^x \_C1 - 1} - x \right) \right\}$$

2.619 ODE No. 619

$$\frac{\mathrm{d}}{\mathrm{d}x}y(x) = 6\,\frac{y(x)}{8\,(y\,(x))^4 + 9\,(y\,(x))^3 + 12\,(y\,(x))^2 + 6\,y\,(x) - F\left(-1/3\,(y\,(x))^4 - 1/2\,(y\,(x))^3 - (y\,(x))^2 -}$$

Mathematica: cpu = 60.581193 (sec), leaf count = 327

$$\text{Solve}\left[\int_1^{y(x)} \left(-\frac{F\left(-\frac{1}{3}K[2]^4 - \frac{K[2]^3}{2} - K[2]^2 - K[2] + x\right)\int_1^x -\frac{6\left(-\frac{4}{3}K[2]^3 - \frac{3K[2]^2}{2} - 2K[2] - 1\right)F'\left(-\frac{1}{3}K[2]^4 - \frac{K[2]^3}{2} - \right.}{F\left(-\frac{1}{3}K[2]^4 - \frac{K[2]^3}{2} - K[2]^2 - K[2] + K[1]\right.}}{F\left(-\frac{1}{3}K[2]^4 - \frac{K[2]^3}{2} - K[2]^2 - K[2] + x\right)}\right.\right.$$

Maple: cpu = 0.359 (sec), leaf count = 81

$$\left\{\int_{\_b}^{y(x)} \frac{1}{\_a}\left(-8\,\_a^4 - 9\,\_a^3 - 12\,\_a^2 + F\left(-\frac{\_a^4}{3} - \frac{\_a^3}{2} - \_a^2 - \_a + x\right) - 6\,\_a\right)\left(F\left(-\frac{\_a^4}{3} - \frac{\_a}{2}\right.\right.\right.$$

2.620 ODE No. 620

$$\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{(y(x))^2 + 2\,xy(x) + x^2 + \mathrm{e}^{2\,F(-(x-y(x))(y(x)+x))}}{(y\,(x))^2 + 2\,xy\,(x) + x^2 - \mathrm{e}^{2\,F(-(x-y(x))(y(x)+x))}} = 0$$

Mathematica: cpu = 0 (sec), leaf count = 0

Hanged

Maple: cpu = 0.156 (sec), leaf count = 37

$$\left\{y(x) = \mathrm{e}^{RootOf\left(-\_Z + \int \left(\mathrm{e}^{-\_Z}\right)^2 - 2\,x\mathrm{e}^{-\_Z}\left(\mathrm{e}^{2\,F(\_a)} + \_a\right)^{-1} d\_a + \_C1\right)} - x\right\}$$

2.621 ODE No. 621

$$\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \left(y(x) + \sqrt{x}\right)^{-1} = 0$$

Mathematica: cpu = 0.098513 (sec), leaf count = 445

$$\left\{\left\{y(x) \to \frac{1}{\text{Root}\left[\#1^6\left(16e^{12c_1} + 16x^3\right) - 24\#1^4x^2 + 8\#1^3x^{3/2} + 9\#1^2x - 6\#1\sqrt{x} + 1\&, 1\right]} - \sqrt{x}\right\}, \left\{y\right.\right.$$

Maple: cpu = 0.234 (sec), leaf count = 59

$$\left\{y(x) = 1\left(\sqrt{x}\left(RootOf\left(\_Z^{18}\_C1 - 9\,x\_Z^{6} - 6\,\sqrt{x}\_Z^{3} - 1\right)\right)^{3} + 1\right)\left(RootOf\left(\_Z^{18}\_C1 - 9\,x\_Z^{6} - 6\right.\right.\right.$$

2.622 ODE No. 622

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \left(y(x) + 2 + \sqrt{3\,x+1}\right)^{-1} = 0}$$

Mathematica: cpu = 0.449057 (sec), leaf count = 134

$$\text{Solve}\left[44c_1 + 6\sqrt{33}\tanh^{-1}\left(\frac{3y(x) + 7\sqrt{3x+1} + 6}{\sqrt{33}\left(y(x) + \sqrt{3x+1} + 2\right)}\right) = 33\left(\log\left(\left(y(x) + \sqrt{3x+1} + 2\right)^{2}\left(\frac{}{(y(x)+}\right.\right.\right.$$

Maple: cpu = 0.172 (sec), leaf count = 83

$$\left\{\ln\left(3\sqrt{3\,x+1}y(x) + 3\left(y(x)\right)^{2} + 6\sqrt{3\,x+1} - 6\,x + 12\,y(x) + 10\right) - 6\,\frac{\sqrt{3\,x+1}}{\sqrt{99\,x+33}}Artanh\left(\frac{3\sqrt{3\,x+1}}{\sqrt{99}}\right.\right.$$

2.623 ODE No. 623

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{x^2}{y\left(x\right) + x^{3/2}} = 0}$$

Mathematica: cpu = 0.176522 (sec), leaf count = 77

$$\text{Solve}\left[44c_1 + 6\sqrt{33}\tanh^{-1}\left(\frac{7x^{3/2} + 3y(x)}{\sqrt{33}\left(x^{3/2} + y(x)\right)}\right) = 33\left(\log\left(-\frac{3y(x)}{2x^{3/2}} - \frac{3y(x)^2}{2x^3} + 1\right) + 3\log(x)\right), y(x)\right]$$

Maple: cpu = 0.172 (sec), leaf count = 51

$$\left\{\ln\left(3\,x^{3/2}y(x) - 2\,x^{3} + 3\left(y(x)\right)^{2}\right) - \frac{2\sqrt{33}}{11}Artanh\left(\frac{\sqrt{33}}{33}\left(3\,x^{3/2} + 6\,y(x)\right)x^{-\frac{3}{2}}\right) - \_C1 = 0\right\}$$

2.624 ODE No. 624

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{x^{5/3}}{y\left(x\right) + x^{4/3}} = 0}$$

Mathematica: cpu = 0.951621 (sec), leaf count = 9837

Maple: cpu = 0.858 (sec), leaf count = 46

$$\left\{y(x) = \frac{1}{2}\left(RootOf\left(\_Z^{192} + 12\,x^{4/3}\_Z^{176} + 48\,x^{8/3}\_Z^{160} + 64\,x^{4}\_Z^{144} - \_C1\right)\right)^{16} + \frac{1}{2}x^{\frac{4}{3}}\right\}$$

2.625 ODE No. 625

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = i/2x^2\left(i - 2\,\sqrt{-x^3 + 6\,y\left(x\right)}\right) = 0}$$

Mathematica: cpu = 0.209527 (sec), leaf count = 76

$$\text{Solve}\left[-y(x) + \frac{1}{12}\left(2i\sqrt{6y(x) - x^3} - \log\left(-x^3 + 6y(x) + 1\right) - 2i\tan^{-1}\left(\sqrt{6y(x) - x^3}\right) - 2x^3 + 12y(x)\right)\right.$$

Maple: cpu = 0.156 (sec), leaf count = 53

$$\left\{-2\,i\sqrt{-x^3 + 6\,y\left(x\right)} + 2\,i\arctan\left(\sqrt{-x^3 + 6\,y\left(x\right)}\right) + \ln\left(x^3 - 6\,y(x) - 1\right) + 2\,x^3 - \_C1 = 0\right\}$$

2.626 ODE No. 626

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{x}{y\left(x\right) + \sqrt{x^2+1}} = 0}$$

Mathematica: cpu = 0.195525 (sec), leaf count = 104

$$\text{Solve}\left[\frac{1}{2}\left(\log\left(\frac{-\sqrt{x^2+1}y(x)^2 - \left(x^2+1\right)y(x) + \left(x^2+1\right)^{3/2}}{\left(x^2+1\right)^{3/2}}\right) + \log\left(x^2+1\right)\right) = c_1 + \frac{\tanh^{-1}\left(\frac{3\sqrt{x^2+1}}{\sqrt{5}\left(\sqrt{x^2+\right.}\right.}\right.}{\sqrt{5}}\right.$$

Maple: cpu = 0.359 (sec), leaf count = 112

$$\left\{-\frac{4}{3}\ln\left(36\,\frac{\sqrt{x^2+1}}{y\left(x\right)+\sqrt{x^2+1}}\right) + \frac{2}{3}\ln\left(-\frac{1296}{11}\left(y(x)\sqrt{x^2+1} - x^2 + \left(y(x)\right)^2 - 1\right)\left(y(x)+\sqrt{x^2+1}\right)^{-2}\right)\right.$$

2.627 ODE No. 627

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{\left(-1+y(x)\ln\left(x\right)\right)^2}{x} = 0}$$

Mathematica: cpu = 0.753596 (sec), leaf count = 25

$$\left\{\left\{y(x) \to \frac{\tan\left(c_1+\log(x)\right)}{\log(x)\tan\left(c_1+\log(x)\right)+1}\right\}\right\}$$

Maple: cpu = 0.141 (sec), leaf count = 39

$$\left\{y(x) = \frac{\sin\left(\ln\left(x\right)\right)\_C1 + \cos\left(\ln\left(x\right)\right)}{\left(\sin\left(\ln\left(x\right)\right)\_C1 + \cos\left(\ln\left(x\right)\right)\right)\ln\left(x\right) + \cos\left(\ln\left(x\right)\right)\_C1 - \sin\left(\ln\left(x\right)\right)}\right\}$$

2.628 ODE No. 628

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = 1/3\,x\left(-2+3\sqrt{x^2+3\,y\left(x\right)}\right) = 0}$$

Mathematica: cpu = 0.085511 (sec), leaf count = 33

$$\left\{\left\{y(x) \to \frac{1}{48}\left(-54c_1x^2 + 81c_1^2 + 9x^4 - 16x^2\right)\right\}\right\}$$

Maple: cpu = 0.156 (sec), leaf count = 23

$$\left\{\_C1 + \frac{3\,x^2}{4} + \frac{2}{3} - \sqrt{x^2+3\,y\left(x\right)} = 0\right\}$$

2.629 ODE No. 629

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{\left(2\,y(x)\ln\left(x\right)-1\right)^2}{x} = 0}$$

Mathematica: cpu = 0.780599 (sec), leaf count = 47

$$\left\{\left\{y(x) \to \frac{1}{\sqrt{2}\left(\sqrt{2}\log(x) - \tan\left(\frac{1}{2}\left(\sqrt{2}c_1 + 2\sqrt{2}\log(x)\right)\right)\right)}\right\}\right\}$$

Maple: cpu = 0.172 (sec), leaf count = 72

$$\left\{y(x) = \frac{\sin\left(\sqrt{2}\ln\left(x\right)\right)\_C1 + \cos\left(\sqrt{2}\ln\left(x\right)\right)}{\left(2\,\sin\left(\sqrt{2}\ln\left(x\right)\right)\_C1 + 2\,\cos\left(\sqrt{2}\ln\left(x\right)\right)\right)\ln\left(x\right) + \sqrt{2}\cos\left(\sqrt{2}\ln\left(x\right)\right)\_C1 - \sqrt{2}\sin\left(\sqrt{2}\ln\left(x\right)\right.}\right.$$

2.630 ODE No. 630

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{\mathrm{e}^{bx}}{y\left(x\right)\mathrm{e}^{-bx}+1} = 0}$$

Mathematica: cpu = 0.566572 (sec), leaf count = 101

$$\text{Solve}\left[\frac{1}{2}b\left(\log\left(-be^{-2bx}y(x)^2 - be^{-bx}y(x) + 1\right) + 2bx\right) = \frac{b\tan^{-1}\left(\frac{(b+2)\left(-e^{bx}\right)-by(x)}{b\sqrt{-\frac{b+4}{b}}\left(e^{bx}+y(x)\right)}\right)}{\sqrt{-\frac{b+4}{b}}} + c_1, y(x)\right]$$

Maple: cpu = 0.249 (sec), leaf count = 98

$$\left\{y(x) = \frac{1}{\mathrm{e}^{-bx}}\mathit{RootOf}\left(-\mathrm{e}^{\mathit{RootOf}\left(\left(\tanh\left(\frac{2\_C1\,b-2\,bx-\_Z\sqrt{b^2+4\,b}}{2\,b}\right)\right)^2 b+4\left(\tanh\left(1/2\,\frac{\sqrt{b^2+4\,b}\,(2\_C1\,b-2\,bx-\_Z)}{b}\right)\right)^2-4\,\mathrm{e}^{-\_Z}-b-4\right)}\right.\right.$$

2.631 ODE No. 631

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = 1/2\,x^2\left(1+2\,\sqrt{x^3-6\,y\left(x\right)}\right) = 0}$$

Mathematica: cpu = 0.096512 (sec), leaf count = 31

$$\left\{\left\{y(x) \to \frac{1}{6}\left(-12c_1x^3 - 36c_1^2 - x^6 + x^3\right)\right\}\right\}$$

Maple: cpu = 0.172 (sec), leaf count = 23

$$\left\{\_C1 - x^3 - \frac{1}{2} - \sqrt{x^3-6\,y\left(x\right)} = 0\right\}$$

2.632 ODE No. 632

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{\mathrm{e}^{x}}{y\left(x\right)\mathrm{e}^{-x}+1} = 0}$$

Mathematica: cpu = 0.168521 (sec), leaf count = 65

$$\text{Solve}\left[\frac{1}{2}\log\left(-e^{-2x}y(x)^2-e^{-x}y(x)+1\right)+x=c_1+\frac{\tanh^{-1}\left(\frac{y(x)+3e^x}{\sqrt{5}(y(x)+e^x)}\right)}{\sqrt{5}},y(x)\right]$$

Maple: cpu = 0.203 (sec), leaf count = 52

$$\left\{x+\frac{\ln\left(\left(y(x)\right)^{2}\left(\mathrm{e}^{-x}\right)^{2}+y(x)\,\mathrm{e}^{-x}-1\right)}{2}-\frac{\sqrt{5}}{5}\mathit{Artanh}\left(\frac{\left(1+2\,y(x)\,\mathrm{e}^{-x}\right)\sqrt{5}}{5}\right)-\_C1=0\right\}$$

2.633 ODE No. 633

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{\mathrm{e}^{2/3\,x}}{y\left(x\right)\mathrm{e}^{-2/3\,x}+1} = 0}$$

Mathematica: cpu = 0.191024 (sec), leaf count = 85

$$\text{Solve}\left[7\left(-9c_1+3\log\left(-\frac{2}{3}e^{-4x/3}y(x)^2-\frac{2}{3}e^{-2x/3}y(x)+1\right)+4x\right)=6\sqrt{7}\tanh^{-1}\left(\frac{y(x)+4e^{2x/3}}{\sqrt{7}\left(y(x)+e^{2x/3}\right)}\right),\right.$$

Maple: cpu = 0.686 (sec), leaf count = 52

$$\left\{y(x)=1\mathit{RootOf}\left(-\mathrm{e}^{\mathit{RootOf}\left(-343\left(\tanh\left(1/6\left(4\_C1-4\,x-3\_Z\right)\sqrt{7}\right)\right)^{2}+343+98\,\mathrm{e}^{-\_Z}\right)}-3+2\_Z+2\_Z^{2}\right)\left(\mathrm{e}^{-\frac{2\,x}{3}}\right)^{-}\right.$$

2.634 ODE No. 634

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = 1/2\,\frac{1+2\,x^{5}\sqrt{4\,x^{2}y\left(x\right)+1}}{x^{3}} = 0}$$

Mathematica: cpu = 0.184523 (sec), leaf count = 33

$$\left\{\left\{y(x)\to\frac{-8c_1x^6+16c_1^2x^2+x^{10}-4}{16x^2}\right\}\right\}$$

Maple: cpu = 0.187 (sec), leaf count = 26

$$\left\{\_C1-\frac{1}{x}\sqrt{4\,x^{2}y\left(x\right)+1}+\frac{x^{4}}{2}=0\right\}$$

2.635 ODE No. 635

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = 1/2\,x\left(x + 2\,\sqrt{x^3 - 6\,y\left(x\right)}\right) = 0}$$

Mathematica: cpu = 0.125016 (sec), leaf count = 33

$$\left\{\left\{y(x) \to \frac{1}{24}\left(36c_1x^2 - 36c_1^2 - 9x^4 + 4x^3\right)\right\}\right\}$$

Maple: cpu = 0.156 (sec), leaf count = 22

$$\left\{\_C1 - \frac{3\,x^2}{2} - \sqrt{x^3 - 6\,y\left(x\right)} = 0\right\}$$

2.636 ODE No. 636

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \left(-\ln\left(y(x)\right) + x^2\right)y(x) = 0}$$

Mathematica: cpu = 0.055007 (sec), leaf count = 24

$$\left\{\left\{y(x) \to e^{-2c_1e^{-x} + x^2 - 2x + 2}\right\}\right\}$$

Maple: cpu = 0.140 (sec), leaf count = 19

$$\left\{y(x) = \mathrm{e}^{-\frac{\_C1}{\mathrm{e}^x} + x^2 - 2\,x + 2}\right\}$$

2.637 ODE No. 637

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{x\mathrm{e}^{-x^2}}{y\left(x\right)\mathrm{e}^{x^2} + 1} = 0}$$

Mathematica: cpu = 9.663227 (sec), leaf count = 59

$$\text{Solve}\left[-\frac{1}{4}\log\left(2e^{2x^2}y(x)^2 + 2e^{x^2}y(x) + 1\right) - \frac{1}{2}\tan^{-1}\left(2e^{x^2}y(x) + 1\right) + \frac{x^2}{2} = c_1, y(x)\right]$$

Maple: cpu = 1.482 (sec), leaf count = 84

$$\left\{y(x) = -\frac{1}{\mathrm{e}^{x^2}}\tan\left(\mathit{RootOf}\left(2\,x^2 - \ln\left(\frac{81\left(\tan\left(\_Z\right)\right)^2}{10} + \frac{81}{10}\right) + 2\,\ln\left(9/2\,\tan\left(\_Z\right) - 9/2\right) + 6\,\_C1 -\right.\right.\right.$$

2.638 ODE No. 638

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = -(-\ln(\ln(y(x))) + \ln(x))\, y(x) = 0}$$

Mathematica: cpu = 2.786354 (sec), leaf count = 21

$$\text{DSolve}[y'(x) = y(x)(\log(\log(y(x))) - \log(x)), y(x), x]$$

Maple: cpu = 0.124 (sec), leaf count = 35

$$\left\{\int_{\_b}^{y(x)} \frac{1}{\_a\,(x\ln(x) - \ln(\ln(\_a))\,x + \ln(\_a))}\,\mathrm{d}\_a + \ln(x) - \_C1 = 0\right\}$$

2.639 ODE No. 639

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = (-\ln(\ln(y(x))) + \ln(x))^2\, y(x) = 0}$$

Mathematica: cpu = 0.363546 (sec), leaf count = 23

$$\text{DSolve}\left[y'(x) = y(x)(\log(x) - \log(\log(y(x))))^2, y(x), x\right]$$

Maple: cpu = 0.172 (sec), leaf count = 50

$$\left\{\int_{\_b}^{y(x)} \frac{1}{\_a\,\left(x\left(\ln(x)\right)^2 - 2\ln(x)\ln(\ln(\_a))\,x + \left(\ln(\ln(\_a))\right)^2 x - \ln(\_a)\right)}\,\mathrm{d}\_a - \ln(x) - \_C1 = 0\right\}$$

2.640 ODE No. 640

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{y(x)}{\ln(\ln(y(x))) - \ln(x) + 1} = 0}$$

Mathematica: cpu = 3.865991 (sec), leaf count = 24

$$\text{DSolve}\left[y'(x) = \frac{y(x)}{\log(\log(y(x))) - \log(x) + 1}, y(x), x\right]$$

Maple: cpu = 0.203 (sec), leaf count = 45

$$\left\{\int_{\_b}^{y(x)} \frac{-\ln(\ln(\_a)) + \ln(x) - 1}{\_a\,(-\ln(\_a)\ln(\ln(\_a)) + (\ln(x) - 1)\ln(\_a) + x)}\,\mathrm{d}\_a - \_C1 = 0\right\}$$

2.641 ODE No. 641

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = 1/2\,\frac{1+2\,\sqrt{4\,x^2y\left(x\right)+1}x^4}{x^3} = 0}$$

Mathematica: cpu = 0.177022 (sec), leaf count = 35

$$\left\{\left\{y(x) \to \frac{-24c_1x^5+36c_1^2x^2+4x^8-9}{36x^2}\right\}\right\}$$

Maple: cpu = 0.172 (sec), leaf count = 26

$$\left\{\_C1 - \frac{1}{x}\sqrt{4\,x^2y\left(x\right)+1} + \frac{2\,x^3}{3} = 0\right\}$$

2.642 ODE No. 642

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{\left(-\left(y(x)\right)^2+4\,ax\right)^2}{y\left(x\right)} = 0}$$

Mathematica: cpu = 0.145018 (sec), leaf count = 105

$$\left\{\left\{y(x) \to -\sqrt{4ax-\sqrt{2}\sqrt{a}\tanh\left(\frac{2\sqrt{2}ax-\sqrt{2}c_1}{\sqrt{a}}\right)}\right\}, \left\{y(x) \to \sqrt{4ax-\sqrt{2}\sqrt{a}\tanh\left(\frac{2\sqrt{2}ax-\sqrt{2}c\right.}\right.}\right.$$

Maple: cpu = 0.187 (sec), leaf count = 286

$$\left\{y(x) = \sqrt{4}\sqrt{\left(\_C1\,\mathrm{e}^{2\,x\left(\sqrt{2}\sqrt{a}-2\,ax\right)}+\mathrm{e}^{-2\,x\left(\sqrt{2}\sqrt{a}+2\,ax\right)}\right)\left(\_C1\,\left(ax-\frac{\sqrt{2}}{4}\sqrt{a}\right)\mathrm{e}^{2\,x\left(\sqrt{2}\sqrt{a}-2\,ax\right)}+\mathrm{e}^{-2\,x\left(\sqrt{\right.}\right.}\right.}\right.$$

2.643 ODE No. 643

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = 1/3\,x\left(-2+3\,x\sqrt{x^2+3\,y\left(x\right)}\right) = 0}$$

Mathematica: cpu = 0.118515 (sec), leaf count = 31

$$\left\{\left\{y(x) \to \frac{1}{12}\left(-6c_1x^3+9c_1^2+x^6-4x^2\right)\right\}\right\}$$

Maple: cpu = 0.172 (sec), leaf count = 22

$$\left\{\_C1 + \frac{x^3}{2} - \sqrt{x^2+3\,y\left(x\right)} = 0\right\}$$

2.644 ODE No. 644

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = -1/2\,x^2\left(ax - 2\,\sqrt{a\left(ax^4 + 8\,y\left(x\right)\right)}\right) = 0}$$

Mathematica: cpu = 0.274535 (sec), leaf count = 34

$$\left\{\left\{y(x) \to \frac{1}{72}a\left(-96c_1x^3 + 144c_1^2 + 16x^6 - 9x^4\right)\right\}\right\}$$

Maple: cpu = 0.265 (sec), leaf count = 27

$$\left\{\_C1 + \frac{4\,ax^3}{3} - \sqrt{a\left(ax^4 + 8\,y\left(x\right)\right)} = 0\right\}$$

2.645 ODE No. 645

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \left(-\ln\left(y(x)\right) + x\right)y(x) = 0}$$

Mathematica: cpu = 0.038505 (sec), leaf count = 20

$$\left\{\left\{y(x) \to e^{-e^{c_1 - x} + x - 1}\right\}\right\}$$

Maple: cpu = 0.110 (sec), leaf count = 14

$$\left\{y(x) = \mathrm{e}^{\frac{-C1}{\mathrm{e}^x} - 1 + x}\right\}$$

2.646 ODE No. 646

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = 1/2\,\frac{x^3 + x^2 + 2\,\sqrt{x^3 - 6\,y\left(x\right)}}{1 + x} = 0}$$

Mathematica: cpu = 0.180523 (sec), leaf count = 35

$$\left\{\left\{y(x) \to \frac{1}{6}\left(18c_1\log(x+1) - 9c_1^2 + x^3 - 9\log^2(x+1)\right)\right\}\right\}$$

Maple: cpu = 0.202 (sec), leaf count = 23

$$\left\{\_C1 - 3\,\ln\left(1 + x\right) - \sqrt{x^3 - 6\,y\left(x\right)} = 0\right\}$$

2.647 ODE No. 647

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{\left(a(y(x))^2 + bx^2\right)^2 x}{a^{5/2} y\left(x\right)} = 0}$$

Mathematica: cpu = 0.422554 (sec), leaf count = 115

$$\left\{\left\{y(x) \to -\sqrt{\frac{\sqrt{b}\tan\left(\frac{a^{3/2}bx^2+2c_1}{a^{9/4}\sqrt{b}}\right)}{\sqrt[4]{a}} - \frac{bx^2}{a}}\right\}, \left\{y(x) \to \sqrt{\frac{\sqrt{b}\tan\left(\frac{a^{3/2}bx^2+2c_1}{a^{9/4}\sqrt{b}}\right)}{\sqrt[4]{a}} - \frac{bx^2}{a}}\right\}\right\}$$

Maple: cpu = 0.218 (sec), leaf count = 460

$$\left\{y(x) = \frac{1}{a}\sqrt{-\left(\left(bx^2 - a^{\frac{3}{2}}\sqrt{-ba^{-\frac{3}{2}}}\right)\mathrm{e}^{\frac{x^2}{2}\left(-2a^{3/2}\sqrt{-\frac{b}{a^{3/2}}}+bx^2\right)a^{-\frac{3}{2}}} + \_C1\left(a^{\frac{3}{2}}\sqrt{-ba^{-\frac{3}{2}}} + bx^2\right)\mathrm{e}^{\frac{x^2}{2}\left(2a^{3/2}\sqrt{-\right.}\right.}\right.$$

2.648 ODE No. 648

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = -1/2\,\frac{x^3\left(\sqrt{a}x + \sqrt{a} - 2\sqrt{ax^4 + 8\,y\left(x\right)}\right)\sqrt{a}}{1+x} = 0}$$

Mathematica: cpu = 0.351044 (sec), leaf count = 128

$$\left\{\left\{y(x) \to \frac{1}{72}(-96ac_1x^3 + 144ac_1x^2 - 288ac_1x + 288ac_1\log(x+1) + 144ac_1^2 - 432ac_1 + 16ax^6 - 48ax^5\right.\right.$$

Maple: cpu = 0.437 (sec), leaf count = 41

$$\left\{\frac{1}{4}\sqrt{ax^4 + 8\,y\left(x\right)}\frac{1}{\sqrt{a}} - \frac{x^3}{3} + \frac{x^2}{2} - x + \ln\left(1+x\right) - \_C1 = 0\right\}$$

2.649 ODE No. 649

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = -x/4 + 1/4 + x\sqrt{x^2 - 2\,x + 1 + 8\,y\left(x\right)} = 0}$$

Mathematica: cpu = 0.180523 (sec), leaf count = 37

$$\left\{\left\{y(x) \to \frac{1}{8}\left(-16c_1x^2 + 16c_1^2 + 4x^4 - x^2 + 2x - 1\right)\right\}\right\}$$

Maple: cpu = 0.187 (sec), leaf count = 27

$$\left\{\_C1 + 2\,x^2 + \frac{1}{4} - \sqrt{x^2 - 2\,x + 1 + 8\,y\left(x\right)} = 0\right\}$$

2.650 ODE No. 650

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = -x/2 - a/2 + x\sqrt{x^2 + 2\,ax + a^2 + 4\,y\left(x\right)} = 0}$$

Mathematica: cpu = 0.245531 (sec), leaf count = 40

$$\left\{\left\{y(x) \to \frac{1}{4}\left(-a^2 - 2ax - 4c_1x^2 + 4c_1^2 + x^4 - x^2\right)\right\}\right\}$$

Maple: cpu = 0.187 (sec), leaf count = 28

$$\left\{\_C1 + x^2 + \frac{1}{2} - \sqrt{x^2 + 2\,ax + a^2 + 4\,y\left(x\right)} = 0\right\}$$

2.651 ODE No. 651

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{\left(\ln\left(y(x)\right) + x^2\right)y(x)}{x} = 0}$$

Mathematica: cpu = 0.037505 (sec), leaf count = 16

$$\left\{\left\{y(x) \to e^{2c_1x + x^2}\right\}\right\}$$

Maple: cpu = 0.047 (sec), leaf count = 13

$$\left\{y(x) = \mathrm{e}^{-\_C1\,x}\mathrm{e}^{x^2}\right\}$$

2.652 ODE No. 652

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{2\,a + x\sqrt{-\left(y\left(x\right)\right)^2 + 4\,ax}}{y\left(x\right)} = 0}$$

Mathematica: cpu = 1.924244 (sec), leaf count = 101

$$\left\{\left\{y(x) \to -\frac{\sqrt{4096a^5x - 256a^4x^4 + 32a^2e^{c_1}x^2 - e^{2c_1}}}{32a^2}\right\}, \left\{y(x) \to \frac{\sqrt{4096a^5x - 256a^4x^4 + 32a^2e^{c_1}x^2 - e}\right.\right.$$

Maple: cpu = 0.124 (sec), leaf count = 27

$$\left\{-\sqrt{-\left(y\left(x\right)\right)^2 + 4\,ax} - \frac{x^2}{2} - \_C1 = 0\right\}$$

2.653 ODE No. 653

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = -x/2 + 1 + x\sqrt{x^2 - 4\,x + 4\,y\left(x\right)} = 0}$$

Mathematica: cpu = 0.182023 (sec), leaf count = 34

$$\left\{\left\{y(x) \to \frac{1}{4}\left(-4c_1x^2 + 4c_1^2 + x^4 - x^2 + 4x\right)\right\}\right\}$$

Maple: cpu = 0.172 (sec), leaf count = 24

$$\left\{\_C1 + x^2 + \frac{1}{2} - \sqrt{x^2 - 4\,x + 4\,y\left(x\right)} = 0\right\}$$

2.654 ODE No. 654

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = -1/3\,\frac{2\,x^2 + 2\,x - 3\,\sqrt{x^2 + 3\,y\left(x\right)}}{1 + x} = 0}$$

Mathematica: cpu = 0.165021 (sec), leaf count = 37

$$\left\{\left\{y(x) \to \frac{1}{12}\left(-18c_1\log(x+1) + 9c_1^2 - 4x^2 + 9\log^2(x+1)\right)\right\}\right\}$$

Maple: cpu = 0.203 (sec), leaf count = 23

$$\left\{\_C1 + \frac{3\,\ln\left(1 + x\right)}{2} - \sqrt{x^2 + 3\,y\left(x\right)} = 0\right\}$$

2.655 ODE No. 655

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{\left(y(x)\right)^3\,\mathrm{e}^{-4/3\,x}}{y\left(x\right)\mathrm{e}^{-2/3\,x} + 1} = 0}$$

Mathematica: cpu = 11.358942 (sec), leaf count = 82

$$\text{Solve}\left[\frac{3}{2}\log(y(x)) + \frac{1}{28}\left(-21\log\left(-3y(x)^2 + 2e^{2x/3}y(x) + 2e^{4x/3}\right) + 6\sqrt{7}\tanh^{-1}\left(\frac{y(x) + 2e^{2x/3}}{\sqrt{7}y(x)}\right) + 28x\right.\right.$$

Maple: cpu = 0.920 (sec), leaf count = 64

$$\left\{x + \frac{3}{2}\ln\left(y(x)\,\mathrm{e}^{-\frac{2\,x}{3}}\right) - \frac{3}{4}\ln\left(3\left(y(x)\right)^2\left(\mathrm{e}^{-2/3\,x}\right)^2 - 2\,y(x)\,\mathrm{e}^{-2/3\,x} - 2\right) + \frac{3\,\sqrt{7}}{14}\mathit{Artanh}\left(\frac{\sqrt{7}}{14}\left(6\,y(x)\,\mathrm{e}^{-2/3\,x}\right.\right.\right.$$

2.656 ODE No. 656

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{\left(\ln\left(y(x)\right) + x^3\right) y(x)}{x} = 0}$$

Mathematica: cpu = 0.042505 (sec), leaf count = 20

$$\left\{\left\{y(x) \to e^{3c_1 x + \frac{x^3}{2}}\right\}\right\}$$

Maple: cpu = 0.062 (sec), leaf count = 15

$$\left\{y(x) = \mathrm{e}^{\frac{x^3}{2}} \mathrm{e}^{-C1\, x}\right\}$$

2.657 ODE No. 657

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = -x/4 + 1/4 + x^2\sqrt{x^2 - 2\,x + 1 + 8\,y\left(x\right)} = 0}$$

Mathematica: cpu = 0.190024 (sec), leaf count = 37

$$\left\{\left\{y(x) \to \frac{1}{72}\left(-96c_1x^3 + 144c_1^2 + 16x^6 - 9x^2 + 18x - 9\right)\right\}\right\}$$

Maple: cpu = 0.171 (sec), leaf count = 26

$$\left\{\_C1 + \frac{4\,x^3}{3} - \sqrt{x^2 - 2\,x + 1 + 8\,y\left(x\right)} = 0\right\}$$

2.658 ODE No. 658

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = -1/4\,\frac{x^2 - 1 - 4\,\sqrt{x^2 - 2\,x + 1 + 8\,y\left(x\right)}}{1 + x} = 0}$$

Mathematica: cpu = 0.247531 (sec), leaf count = 45

$$\left\{\left\{y(x) \to \frac{1}{8}\left(-32c_1\log(4(x+1)) + 16c_1^2 - x^2 + 2x + 16\log^2(4(x+1)) - 1\right)\right\}\right\}$$

Maple: cpu = 0.218 (sec), leaf count = 28

$$\left\{\_C1 + 4\,\ln\left(1 + x\right) - \frac{1}{4} - \sqrt{x^2 - 2\,x + 1 + 8\,y\left(x\right)} = 0\right\}$$

2.659 ODE No. 659

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = -1/2\,ax - b/2 + x\sqrt{a^2x^2 + 2\,abx + b^2 + 4\,ay\left(x\right) - 4\,c} = 0}$$

Mathematica: cpu = 0.440556 (sec), leaf count = 60

$$\left\{\left\{y(x) \to \frac{-4a^2c_1x^2 + 4a^2c_1^2 + a^2x^4 - a^2x^2 - 2abx - b^2 + 4c}{4a}\right\}\right\}$$

Maple: cpu = 0.187 (sec), leaf count = 41

$$\left\{\_C1 + ax^2 + \frac{a}{2} - \sqrt{a^2x^2 + 2\,abx + b^2 + 4\,ay\left(x\right) - 4\,c} = 0\right\}$$

2.660 ODE No. 660

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = -x/2 - a/2 + x^2\sqrt{x^2 + 2\,ax + a^2 + 4\,y\left(x\right)} = 0}$$

Mathematica: cpu = 0.265034 (sec), leaf count = 42

$$\left\{\left\{y(x) \to \frac{1}{36}\left(-9a^2 - 18ax - 24c_1x^3 + 36c_1^2 + 4x^6 - 9x^2\right)\right\}\right\}$$

Maple: cpu = 0.188 (sec), leaf count = 29

$$\left\{\_C1 + \frac{2\,x^3}{3} - \sqrt{x^2 + 2\,ax + a^2 + 4\,y\left(x\right)} = 0\right\}$$

2.661 ODE No. 661

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = -1/2\,ax - b/2 + x^2\sqrt{a^2x^2 + 2\,abx + b^2 + 4\,ay\left(x\right) - 4\,c} = 0}$$

Mathematica: cpu = 0.420553 (sec), leaf count = 61

$$\left\{\left\{y(x) \to \frac{-24a^2c_1x^3 + 36a^2c_1^2 + 4a^2x^6 - 9a^2x^2 - 18abx - 9b^2 + 36c}{36a}\right\}\right\}$$

Maple: cpu = 0.218 (sec), leaf count = 39

$$\left\{\_C1 + \frac{2\,ax^3}{3} - \sqrt{a^2x^2 + 2\,abx + b^2 + 4\,ay\left(x\right) - 4\,c} = 0\right\}$$

2.662 ODE No. 662

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = x/2 + 1/2 + x^2\sqrt{x^2 + 2\,x + 1 - 4\,y\left(x\right)} = 0}$$

Mathematica: cpu = 0.196525 (sec), leaf count = 37

$$\left\{\left\{y(x) \to \frac{1}{36}\left(24c_1x^3 - 36c_1^2 - 4x^6 + 9x^2 + 18x + 9\right)\right\}\right\}$$

Maple: cpu = 0.188 (sec), leaf count = 26

$$\left\{\_C1 - \frac{2\,x^3}{3} - \sqrt{x^2 + 2\,x + 1 - 4\,y\left(x\right)} = 0\right\}$$

2.663 ODE No. 663

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{2\,a + x^2\sqrt{-\left(y\left(x\right)\right)^2 + 4\,a x}}{y\left(x\right)} = 0}$$

Mathematica: cpu = 2.294291 (sec), leaf count = 101

$$\left\{\left\{y(x) \to -\frac{\sqrt{147456a^7x - 4096a^6x^6 + 128a^3e^{c_1}x^3 - e^{2c_1}}}{192a^3}\right\}, \left\{y(x) \to \frac{\sqrt{147456a^7x - 4096a^6x^6 + 128a^3}}{192a^3}\right.\right.$$

Maple: cpu = 0.125 (sec), leaf count = 27

$$\left\{-\sqrt{-\left(y\left(x\right)\right)^2 + 4\,a x} - \frac{x^3}{3} - \_C1 = 0\right\}$$

2.664 ODE No. 664

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = -x/2 + 1 + x^2\sqrt{x^2 - 4\,x + 4\,y\left(x\right)} = 0}$$

Mathematica: cpu = 0.191024 (sec), leaf count = 36

$$\left\{\left\{y(x) \to \frac{1}{36}\left(-24c_1x^3 + 36c_1^2 + 4x^6 - 9x^2 + 36x\right)\right\}\right\}$$

Maple: cpu = 0.171 (sec), leaf count = 25

$$\left\{\_C1 + \frac{2\,x^3}{3} - \sqrt{x^2 - 4\,x + 4\,y\left(x\right)} = 0\right\}$$

2.665 ODE No. 665

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = -1/2\,\frac{\left(\sqrt{a}x^4+\sqrt{a}x^3-2\,\sqrt{ax^4+8\,y\left(x\right)}\right)\sqrt{a}}{1+x} = 0}$$

Mathematica: cpu = 0.272035 (sec), leaf count = 41

$$\left\{\left\{y(x)\to \frac{1}{8}\left(-32ac_1\log(x+1)+16ac_1^2-ax^4+16a\log^2(x+1)\right)\right\}\right\}$$

Maple: cpu = 0.343 (sec), leaf count = 28

$$\left\{-\frac{1}{4}\sqrt{ax^4+8\,y\left(x\right)}\frac{1}{\sqrt{a}}+\ln\left(1+x\right)-\_C1=0\right\}$$

2.666 ODE No. 666

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \left(-\ln\left(y(x)\right)+1+x^2+x^3\right)y(x) = 0}$$

Mathematica: cpu = 0.075510 (sec), leaf count = 29

$$\left\{\left\{y(x)\to e^{-c_1e^{-x}+x^3-2x^2+4x-3}\right\}\right\}$$

Maple: cpu = 0.156 (sec), leaf count = 24

$$\left\{y(x)=\mathrm{e}^{\frac{-C1}{\mathrm{e}^x}+x^3-2\,x^2+4\,x-3}\right\}$$

2.667 ODE No. 667

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{\left(y(x)\right)^3\mathrm{e}^{-2\,bx}}{y\left(x\right)\mathrm{e}^{-bx}+1} = 0}$$

Mathematica: cpu = 1.021630 (sec), leaf count = 90

$$\text{Solve}\left[\frac{\log(y(x))}{b}+\frac{1}{2}\left(-\frac{\log\left(y(x)^2-be^{bx}\left(e^{bx}+y(x)\right)\right)}{b}+\frac{2\tanh^{-1}\left(\frac{\sqrt{\frac{b}{b+4}}\left(2e^{bx}+y(x)\right)}{y(x)}\right)}{\sqrt{b}\sqrt{b+4}}+2x\right)=c_1,y(x)\right]$$

Maple: cpu = 0.172 (sec), leaf count = 83

$$\left\{bx+bArtanh\left(\left(2\,y\left(x\right)\mathrm{e}^{-bx}-b\right)\frac{1}{\sqrt{b^2+4\,b}}\right)\frac{1}{\sqrt{b^2+4\,b}}+\ln\left(y\left(x\right)\mathrm{e}^{-bx}\right)-\frac{\ln\left(-by\left(x\right)\mathrm{e}^{-bx}+\left(y\left(x\right)\right)^2\left(\mathrm{e}^{-b}\right.\right.\right.$$

2.668 ODE No. 668

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{(y(x))^3 \, \mathrm{e}^{-2\,x}}{y\,(x)\,\mathrm{e}^{-x}+1} = 0}$$

Mathematica: cpu = 0.536568 (sec), leaf count = 78

$$\text{Solve}\left[\log(y(x)) + y(x)^2\left(\frac{x}{y(x)^2} - \frac{\log\left(-y(x)^2 + e^x y(x) + e^{2x}\right)}{2y(x)^2} + \frac{\tanh^{-1}\left(\frac{y(x)+2e^x}{\sqrt{5}y(x)}\right)}{\sqrt{5}y(x)^2}\right) = c_1, y(x)\right]$$

Maple: cpu = 0.546 (sec), leaf count = 58

$$\left\{y(x) = \mathrm{e}^{RootOf\left(2\sqrt{5}Artanh\left(1/5\,\frac{\left(\mathrm{e}^{x}-2\,\mathrm{e}^{\_Z}\right)\sqrt{5}}{\mathrm{e}^{x}}\right)+5\,\ln\left(\left(\mathrm{e}^{\_Z}\right)^2-\mathrm{e}^{x+\_Z}-\left(\mathrm{e}^{x}\right)^2\right)+10\,\_C1-10\,\_Z-10\,x\right)}\right\}$$

2.669 ODE No. 669

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = 1/4\,\frac{\left(-2\,(y(x))^{3/2}+3\,\mathrm{e}^{x}\right)^2\mathrm{e}^{x}}{\sqrt{y\,(x)}} = 0}$$

Mathematica: cpu = 0.884112 (sec), leaf count = 264

$$\left\{\left\{y(x) \to \frac{\left(3e^{3c_1+x}+2e^{3c_1}-2e^{3e^x}+3e^{x+3e^x}\right)^{2/3}}{\sqrt[3]{8e^{3c_1+3e^x}+4e^{6c_1}+4e^{6e^x}}}\right\}, \left\{y(x) \to -\frac{\sqrt[3]{-1}\left(3e^{3c_1+x}+2e^{3c_1}-2e^{3e^x}+3e^{x+3e^x}\right)}{\sqrt[3]{8e^{3c_1+3e^x}+4e^{6c_1}+4e^{6e^x}}}\right.$$

Maple: cpu = 0.203 (sec), leaf count = 72

$$\left\{\_C1 + 1\mathrm{e}^{-\frac{3\,\mathrm{e}^{x}}{2}-\frac{9\,\mathrm{e}^{2\,x}}{8}}\left(2\,(y(x))^{3/2}\,\mathrm{e}^{x}-2\,\mathrm{e}^{x}-3\,\mathrm{e}^{2\,x}\right)\left(\mathrm{e}^{\frac{3\,\mathrm{e}^{x}}{2}-\frac{9\,\mathrm{e}^{2\,x}}{8}}\right)^{-1}\left(2\,(y(x))^{3/2}\,\mathrm{e}^{x}+2\,\mathrm{e}^{x}-3\,\mathrm{e}^{2\,x}\right)^{-1} = 0\right\}$$

2.670 ODE No. 670

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = i/2x\left(i-2\,\sqrt{-x^2+4\,\ln\left(a\right)+4\,\ln\left(y\left(x\right)\right)}\right)y(x) = 0}$$

Mathematica: cpu = 0.370047 (sec), leaf count = 99

$$\text{Solve}\left[-\log(y(x)) + \frac{1}{4}\left(-\frac{1}{2}\log\left(4\log(a) - x^2 + 4\log(y(x)) + 1\right) + i\sqrt{4\log(a) - x^2 + 4\log(y(x))} - i\tan^{-1}\right.\right.$$

Maple: cpu = 0.250 (sec), leaf count = 70

$$\left\{\frac{1}{2}\sqrt{-x^2+4\,\ln\left(a\right)+4\,\ln\left(y\left(x\right)\right)}-\frac{1}{2}\arctan\left(\sqrt{-x^2+4\,\ln\left(a\right)+4\,\ln\left(y\left(x\right)\right)}\right)+\frac{i}{4}\ln\left(x^2-4\,\ln\left(a\right)-4\right.\right.$$

2.671 ODE No. 671

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{\left(x(y(x))^2+1\right)^2}{y\left(x\right)x^4} = 0}$$

Mathematica: cpu = 0.426054 (sec), leaf count = 192

$$\left\{\left\{y(x)\to -\frac{\sqrt{\sqrt{2}e^{\frac{2\sqrt{2}(c_1x+1)}{x}}-\frac{2e^{\frac{2\sqrt{2}(c_1x+1)}{x}}}{x}-\frac{2}{x}-\sqrt{2}}}{\sqrt{2e^{\frac{2\sqrt{2}(c_1x+1)}{x}}+2}}\right\},\left\{y(x)\to \frac{\sqrt{\sqrt{2}e^{\frac{2\sqrt{2}(c_1x+1)}{x}}-\frac{2e^{\frac{2\sqrt{2}(c_1x+1)}{x}}}{x}-\frac{2}{x}-\sqrt{}}}{\sqrt{2e^{\frac{2\sqrt{2}(c_1x+1)}{x}}+2}}\right.\right.$$

Maple: cpu = 0.156 (sec), leaf count = 237

$$\left\{y(x)=-\frac{\sqrt{2}}{2x}\sqrt{-\left(\_C1\,\mathrm{e}^{\frac{-1-\sqrt{2}x}{x^2}}+\mathrm{e}^{\frac{-1+\sqrt{2}x}{x^2}}\right)\left(\_C1\,\left(\sqrt{2}x+2\right)\mathrm{e}^{\frac{-1-\sqrt{2}x}{x^2}}+\left(2-\sqrt{2}x\right)\mathrm{e}^{\frac{-1+\sqrt{2}x}{x^2}}\right)x}\left(\_C1\,\mathrm{e}\right.\right.$$

2.672 ODE No. 672

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{x^2\left(3\,x+\sqrt{-9\,x^4+4\,\left(y\left(x\right)\right)^3}\right)}{\left(y\left(x\right)\right)^2} = 0}$$

Mathematica: cpu = 0 (sec), leaf count = 0

Hanged

Maple: cpu = 0.156 (sec), leaf count = 36

$$\left\{\int_{\_b}^{y(x)}\_a^2\frac{1}{\sqrt{-9\,x^4+4\,\_a^3}}\,\mathrm{d}\_a-\frac{x^3}{3}-\_C1=0\right\}$$

2.673 ODE No. 673

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = 1/2\,\frac{-\sin\left(2\,y(x)\right)+\cos\left(2\,y(x)\right)x^2+x^2}{x} = 0}$$

Mathematica: cpu = 0.084011 (sec), leaf count = 23

$$\left\{\left\{y(x)\to \tan^{-1}\left(\frac{3c_1+2x^3}{6x}\right)\right\}\right\}$$

Maple: cpu = 0.359 (sec), leaf count = 17

$$\left\{y(x)=\arctan\left(\frac{x^3+6\,\_C1}{3\,x}\right)\right\}$$

2.674 ODE No. 674

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = -1/2\,\frac{x^2 - x - 2 - 2\,\sqrt{x^2 - 4\,x + 4\,y\left(x\right)}}{1 + x} = 0}$$

Mathematica: cpu = 0.233530 (sec), leaf count = 40

$$\left\{\left\{y(x) \to \frac{1}{4}\left(-8c_1\log(x+1) + 4c_1^2 - x^2 + 4x + 4\log^2(x+1)\right)\right\}\right\}$$

Maple: cpu = 0.234 (sec), leaf count = 27

$$\left\{\_C1 + 2\,\ln\left(1 + x\right) - 1 - \sqrt{x^2 - 4\,x + 4\,y\left(x\right)} = 0\right\}$$

2.675 ODE No. 675

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{y(x) + x^3 a\mathrm{e}^x + ax^4 + ax^3 - x\left(y(x)\right)^2\mathrm{e}^x - x^2\left(y(x)\right)^2 - x\left(y(x)\right)^2}{x} = 0}$$

Mathematica: cpu = 0.057007 (sec), leaf count = 48

$$\left\{\left\{y(x) \to \sqrt{a}x\tanh\left(\frac{1}{6}\sqrt{a}\left(6c_1 + 2x^3 + 3x^2 + 6e^x x - 6e^x\right)\right)\right\}\right\}$$

Maple: cpu = 0.031 (sec), leaf count = 46

$$\left\{y(x) = \tanh\left(\frac{x^3}{3}\sqrt{a} + x\mathrm{e}^x\sqrt{a} + \frac{x^2}{2}\sqrt{a} - \mathrm{e}^x\sqrt{a} + \_C1\,\sqrt{a}\right)x\sqrt{a}\right\}$$

2.676 ODE No. 676

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = 1/2\,\frac{x + 1 + 2\,x^6\sqrt{4\,x^2 y\left(x\right) + 1}}{x^3\left(1 + x\right)} = 0}$$

Mathematica: cpu = 0.323541 (sec), leaf count = 144

$$\left\{\left\{y(x) \to \frac{-72c_1x^6 + 96c_1x^5 - 144c_1x^4 + 288c_1x^3 + 144c_1^2x^2 - 288c_1x^2\log(x+1) + 9x^{10} - 24x^9 + 52x^8}{}\right.\right.$$

Maple: cpu = 0.374 (sec), leaf count = 43

$$\left\{\_C1 + 2\,\ln\left(1 + x\right) - 2\,x + x^2 - \frac{2\,x^3}{3} + \frac{x^4}{2} - \frac{1}{x}\sqrt{4\,x^2 y\left(x\right) + 1} = 0\right\}$$

2.677 ODE No. 677

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{y(x) + x^3 a \ln(1+x) + ax^4 + ax^3 - x(y(x))^2 \ln(1+x) - x^2(y(x))^2 - x(y(x))^2}{x} = 0}$$

Mathematica: cpu = 0.037505 (sec), leaf count = 80

$$\left\{\left\{y(x) \to \sqrt{a}x \tanh\left(\frac{1}{12}\left(12\sqrt{a}c_1 + 4\sqrt{a}x^3 + 3\sqrt{a}x^2 + 6\sqrt{a}x^2\log(x+1) + 6\sqrt{a}x - 6\sqrt{a}\log(x+1)\right)\right)\right\}\right\}$$

Maple: cpu = 0.047 (sec), leaf count = 64

$$\left\{y(x) = \tanh\left(\frac{\ln(1+x)\,x^2}{2}\sqrt{a} + \frac{x^3}{3}\sqrt{a} + \frac{x^2}{4}\sqrt{a} - \frac{\ln(1+x)}{2}\sqrt{a} + \_C1\sqrt{a} + \frac{x}{2}\sqrt{a} + \frac{3}{4}\sqrt{a}\right)x\sqrt{a}\right\}$$

2.678 ODE No. 678

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = 1/2\,\frac{x^2\left(x + 1 + 2\,x\sqrt{x^3 - 6\,y\left(x\right)}\right)}{1+x} = 0}$$

Mathematica: cpu = 0.250532 (sec), leaf count = 101

$$\left\{\left\{y(x) \to \frac{1}{24}\left(24c_1x^3 - 36c_1x^2 + 72c_1x - 72c_1\log(x+1) - 36c_1^2 - 4x^6 + 12x^5 - 33x^4 + 40x^3 + 24x^3\log\right.\right.\right.$$

Maple: cpu = 0.234 (sec), leaf count = 37

$$\left\{\_C1 - x^3 + \frac{3\,x^2}{2} - 3\,x + 3\,\ln(1+x) - \frac{1}{2} - \sqrt{x^3 - 6\,y\left(x\right)} = 0\right\}$$

2.679 ODE No. 679

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{y(x) + x^3\ln(x) + x^4 + x^3 + 7\,x(y(x))^2\ln(x) + 7\,x^2(y(x))^2 + 7\,x(y(x))^2}{x} = 0}$$

Mathematica: cpu = 0.035505 (sec), leaf count = 59

$$\left\{\left\{y(x) \to \frac{x\tan\left(\frac{1}{12}\left(12\sqrt{7}c_1 + 4\sqrt{7}x^3 + 3\sqrt{7}x^2 + 6\sqrt{7}x^2\log(x)\right)\right)}{\sqrt{7}}\right\}\right\}$$

Maple: cpu = 0.031 (sec), leaf count = 37

$$\left\{y(x) = \frac{x\sqrt{7}}{7}\tan\left(\frac{\left(6\,x^2\ln(x) + 4\,x^3 + 3\,x^2 + 12\,\_C1\right)\sqrt{7}}{12}\right)\right\}$$

2.680 ODE No. 680

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = 1/2\,\frac{x^2+2\,x+1+2\,\sqrt{x^2+2\,x+1-4\,y\left(x\right)}}{1+x} = 0}$$

Mathematica: cpu = 0.235530 (sec), leaf count = 39

$$\left\{\left\{y(x)\to \frac{1}{4}\left(8c_1\log(x+1)-4c_1^2+x^2+2x-4\log^2(x+1)+1\right)\right\}\right\}$$

Maple: cpu = 0.218 (sec), leaf count = 28

$$\left\{\_C1-2\,\ln\left(1+x\right)-\frac{1}{2}-\sqrt{x^2+2\,x+1-4\,y\left(x\right)}=0\right\}$$

2.681 ODE No. 681

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{y(x)+x^3b\ln\left(x^{-1}\right)+x^4b+bx^3+xa(y(x))^2\ln\left(x^{-1}\right)+ax^2(y(x))^2+ax(y(x))^2}{x} = 0}$$

Mathematica: cpu = 0.045006 (sec), leaf count = 84

$$\left\{\left\{y(x)\to \frac{\sqrt{b}x\tan\left(\frac{1}{12}\left(12\sqrt{a}\sqrt{b}c_1+4\sqrt{a}\sqrt{b}x^3+9\sqrt{a}\sqrt{b}x^2-6\sqrt{a}\sqrt{b}x^2\log(x)\right)\right)}{\sqrt{a}}\right\}\right\}$$

Maple: cpu = 0.031 (sec), leaf count = 57

$$\left\{y(x)=\frac{x}{a}\tan\left(\frac{x^2\ln\left(x^{-1}\right)}{2}\sqrt{ab}+\frac{x^3}{3}\sqrt{ab}+\frac{3\,x^2}{4}\sqrt{ab}+\_C1\,\sqrt{ab}\right)\sqrt{ab}\right\}$$

2.682 ODE No. 682

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = 2\,\frac{a}{x\left(-xy\left(x\right)+2\,ax\left(y\left(x\right)\right)^2-8\,a^2\right)} = 0}$$

Mathematica: cpu = 0.091012 (sec), leaf count = 39

$$\text{Solve}\left[\frac{y(x)^2e^{-4ay(x)}}{8a}-\frac{e^{-4ay(x)}}{2x}=c_1,y(x)\right]$$

Maple: cpu = 0.218 (sec), leaf count = 28

$$\left\{\_C1+\frac{-x(y(x))^2+4\,a}{\mathrm{e}^{4\,ay(x)}x}=0\right\}$$

2.683 ODE No. 683

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{y(x)\left(-1+\ln\left(x(1+x)\right)y(x)\,x^4-\ln\left(x(1+x)\right)x^3\right)}{x} = 0}$$

Mathematica: cpu = 0.361046 (sec), leaf count = 84

$$\left\{\left\{y(x)\to \frac{e^{\frac{2x^3}{9}+\frac{x}{3}}}{c_1 e^{\frac{x^2}{6}}x\sqrt[3]{x+1}(x(x+1))^{\frac{x^3}{3}}+e^{\frac{x^2}{6}+\frac{1}{18}(4x^2-3x+6)x}x}\right\}\right\}$$

Maple: cpu = 0.109 (sec), leaf count = 166

$$\left\{y(x)=\frac{1}{x}(x(1+x))^{-\frac{x^3}{3}}\,\mathrm{e}^{\frac{2x^3}{9}}\mathrm{e}^{-\frac{x^2}{6}}\mathrm{e}^{\frac{x}{3}}\left(x^{-\frac{x^3}{3}}(1+x)^{-\frac{x^3}{3}}\,\mathrm{e}^{\frac{x\left(3\,ix^2(csgn(ix(1+x)))^3\pi-3\,ix^2(csgn(ix(1+x)))^2csgn(ix)\pi-3\,ix^2(csgn(ix(1\right.\right.\right.$$

2.684 ODE No. 684

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{y(x)+\sqrt{\left(y\left(x\right)\right)^2+x^2}x^2}{x} = 0}$$

Mathematica: cpu = 0.027003 (sec), leaf count = 20

$$\left\{\left\{y(x)\to x\sinh\left(\frac{1}{2}\left(2c_1+x^2\right)\right)\right\}\right\}$$

Maple: cpu = 0.920 (sec), leaf count = 30

$$\left\{\ln\left(\sqrt{\left(y\left(x\right)\right)^2+x^2}+y(x)\right)-\frac{x^2}{2}-\ln\left(x\right)-\_C1=0\right\}$$

2.685 ODE No. 685

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{y(x)+\ln\left(\left(1+x\right)\left(x-1\right)\right)x^3+7\,\ln\left(\left(1+x\right)\left(x-1\right)\right)x\left(y(x)\right)^2}{x} = 0}$$

Mathematica: cpu = 0.039005 (sec), leaf count = 87

$$\left\{\left\{y(x)\to \frac{x\tan\left(\frac{1}{2}\left(2\sqrt{7}c_1-\sqrt{7}x^2+\sqrt{7}x^2\log(x-1)+\sqrt{7}x^2\log(x+1)-\sqrt{7}\log(1-x)-\sqrt{7}\log(x+\right.\right.\right.}{\sqrt{7}}$$

Maple: cpu = 0.047 (sec), leaf count = 48

$$\left\{y(x)=\frac{x\sqrt{7}}{7}\tan\left(\frac{\left(x^2\ln\left(\left(1+x\right)\left(x-1\right)\right)-x^2-\ln\left(\left(1+x\right)\left(x-1\right)\right)+2\,\_C1+1\right)\sqrt{7}}{2}\right)\right\}$$

2.686 ODE No. 686

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{x(y(x))^3 \,\mathrm{e}^{2\,x^2}}{y\left(x\right)\mathrm{e}^{x^2}+1} = 0}$$

Mathematica: cpu = 9.256675 (sec), leaf count = 68

$$\text{Solve}\left[\log(y(x)) - 2y(x)^2\left(\frac{\log\left(e^{2x^2}y(x)^2 + 2e^{x^2}y(x) + 2\right)}{4y(x)^2} - \frac{\tan^{-1}\left(e^{x^2}y(x)+1\right)}{2y(x)^2}\right) = c_1, y(x)\right]$$

Maple: cpu = 1.482 (sec), leaf count = 85

$$\left\{y(x) = \frac{1}{\mathrm{e}^{x^2}}\left(-\tan\left(\mathit{RootOf}\left(-2\,x^2 - \ln\left(\frac{81\left(\tan\left(\_Z\right)\right)^2}{10} + \frac{81}{10}\right) + 2\,\ln\left(9/2\,\tan\left(\_Z\right) - 9/2\right) + 6\,\_C\right.\right.\right.\right.$$

2.687 ODE No. 687

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{1}{x}\left(y(x) - \ln\left(\frac{1+x}{x-1}\right)x^3 + \ln\left(\frac{1+x}{x-1}\right)x(y(x))^2\right) = 0}$$

Mathematica: cpu = 0.064008 (sec), leaf count = 130

$$\left\{\left\{y(x) \to \frac{-x^2(x+1)^{x^2}e^{2c_1+2x} + x(x+1)^{x^2}e^{2c_1+2x} - x^2(x-1)^{x^2} - x(x-1)^{x^2}}{-(x+1)^{x^2}e^{2c_1+2x} + x(x+1)^{x^2}e^{2c_1+2x} - x(x-1)^{x^2} - (x-1)^{x^2}}\right\}\right\}$$

Maple: cpu = 0.063 (sec), leaf count = 39

$$\left\{y(x) = -\tanh\left(\frac{x^2}{2}\ln\left(\frac{1+x}{x-1}\right) - \frac{1}{2}\ln\left(\frac{1+x}{x-1}\right) + \_C1 + x - 1\right)x\right\}$$

2.688 ODE No. 688

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{1}{x}\left(y(x) + \mathrm{e}^{\frac{1+x}{x-1}}x^3 + \mathrm{e}^{\frac{1+x}{x-1}}x(y(x))^2\right) = 0}$$

Mathematica: cpu = 0.116515 (sec), leaf count = 78

$$\left\{\left\{y(x) \to x\tan\left(\frac{1}{2}\left(2c_1 - 8e\mathrm{Ei}\left(\frac{2}{x-1}\right) + e^{\frac{x}{x-1}+\frac{1}{x-1}}x^2 + 2e^{\frac{x}{x-1}+\frac{1}{x-1}}x - 3e^{\frac{2}{x-1}+1}\right)\right)\right\}\right\}$$

Maple: cpu = 0.062 (sec), leaf count = 61

$$\left\{y(x) = \tan\left(\frac{x^2}{2}\mathrm{e}^{\frac{1+x}{x-1}} + x\mathrm{e}^{\frac{1+x}{x-1}} + 4\,\mathrm{e}\mathit{Ei}\left(1, -2\left(x-1\right)^{-1}\right) - \frac{3}{2}\mathrm{e}^{\frac{1+x}{x-1}} + \_C1\right)x\right\}$$

2.689 ODE No. 689

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{xy(x) - y(x) - \mathrm{e}^{1+x}x^3 + \mathrm{e}^{1+x}x(y(x))^2}{x\left(x-1\right)} = 0}$$

Mathematica: cpu = 0.075010 (sec), leaf count = 60

$$\left\{\left\{y(x) \to -\frac{x\left(e^{2c_1+2e^2\mathrm{Ei}(x-1)+2e^{x+1}}-1\right)}{e^{2c_1+2e^2\mathrm{Ei}(x-1)+2e^{x+1}}+1}\right\}\right\}$$

Maple: cpu = 0.047 (sec), leaf count = 25

$$\left\{y(x) = -\tanh\left(\mathrm{e}^{1+x} - \mathrm{e}^2 Ei(1, 1-x) + \_C1\right)x\right\}$$

2.690 ODE No. 690

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = 1/4\,\frac{-x^2 + 1 + 4\,x^3\sqrt{x^2 - 2\,x + 1 + 8\,y\left(x\right)}}{1+x} = 0}$$

Mathematica: cpu = 0.319041 (sec), leaf count = 127

$$\left\{\left\{y(x) \to \frac{1}{72}\left(-96c_1x^3 + 144c_1x^2 - 288c_1x + 288c_1\log(4x+4) + 144c_1^2 - 528c_1 + 16x^6 - 48x^5 + 132x^4\right.\right.\right.$$

Maple: cpu = 0.265 (sec), leaf count = 40

$$\left\{\_C1 + \frac{4\,x^3}{3} - 2\,x^2 + 4\,x - 4\,\ln\left(1+x\right) - \sqrt{x^2 - 2\,x + 1 + 8\,y\left(x\right)} = 0\right\}$$

2.691 ODE No. 691

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = 1/2\,\frac{-\sin\left(2\,y(x)\right) + \cos\left(2\,y(x)\right)x^3 + x^3}{x} = 0}$$

Mathematica: cpu = 0.080010 (sec), leaf count = 21

$$\left\{\left\{y(x) \to \tan^{-1}\left(\frac{2c_1 + x^4}{4x}\right)\right\}\right\}$$

Maple: cpu = 0.499 (sec), leaf count = 17

$$\left\{y(x) = \arctan\left(\frac{x^4 + 8\,\_C1}{4\,x}\right)\right\}$$

2.692 ODE No. 692

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{y(x) + x^3\sqrt{\left(y\left(x\right)\right)^2 + x^2}}{x} = 0}$$

Mathematica: cpu = 0.027003 (sec), leaf count = 20

$$\left\{\left\{y(x) \to x \sinh\left(\frac{1}{3}\left(3c_1 + x^3\right)\right)\right\}\right\}$$

Maple: cpu = 1.186 (sec), leaf count = 30

$$\left\{\ln\left(\sqrt{\left(y\left(x\right)\right)^2 + x^2} + y(x)\right) - \frac{x^3}{3} - \ln\left(x\right) - \_C1 = 0\right\}$$

2.693 ODE No. 693

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \left(1 + \left(y(x)\right)^2 \mathrm{e}^{-2\,bx} + \left(y(x)\right)^3 \mathrm{e}^{-3\,bx}\right) \mathrm{e}^{bx} = 0}$$

Mathematica: cpu = 0.173022 (sec), leaf count = 146

$$\text{Solve}\left[-\frac{1}{3}(9b+29)^{2/3}\text{RootSum}\left[\#1^3(9b+29)^{2/3} - 9\#1b - 3\#1 + (9b+29)^{2/3}\&, \frac{\log\left(\frac{3e^{-2bx}y(x)+e^{-bx}}{\sqrt[3]{(9b+29)e^{-3bx}}} - \right.}{\#1^2\left(-(9b+29)^{2/3}\right) +}\right.$$

Maple: cpu = 0.078 (sec), leaf count = 40

$$\left\{y(x) = \frac{1}{\mathrm{e}^{-bx}} \mathit{RootOf}\left(-x - \int^{\_Z} -\left(\_a^3 + \_a^2 - \_a\,b + 1\right)^{-1} d\_a + \_C1\right)\right\}$$

2.694 ODE No. 694

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = 1/2\,\frac{x + 1 + 2\,\sqrt{4\,x^2 y\left(x\right) + 1}x^3}{x^3\left(1 + x\right)} = 0}$$

Mathematica: cpu = 0.299538 (sec), leaf count = 66

$$\left\{\left\{y(x) \to \frac{-8c_1x^3 + 4c_1^2x^2 + 8c_1x^2\log(x+1) + 4x^4 - 8x^3\log(x+1) + 4x^2\log^2(x+1) - 1}{4x^2}\right\}\right\}$$

Maple: cpu = 0.234 (sec), leaf count = 30

$$\left\{-2\,\ln\left(1 + x\right) + 2\,x - \frac{1}{x}\sqrt{4\,x^2 y\left(x\right) + 1} + \_C1 = 0\right\}$$

2.695 ODE No. 695

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{y(x)\ln(x-1) + x^4 + x^3 + x^2(y(x))^2 + x(y(x))^2}{\ln(x-1)\,x} = 0}$$

Mathematica: cpu = 0.052007 (sec), leaf count = 34

$$\{\{y(x) \to x\tan(c_1 + 2\mathrm{Ei}(\log(x-1)) + 3\mathrm{Ei}(2\log(x-1)) + \mathrm{Ei}(3\log(x-1)))\}\}$$

Maple: cpu = 0.047 (sec), leaf count = 39

$$\{y(x) = \tan(-Ei(1,-3\ln(x-1)) - 3\,Ei(1,-2\ln(x-1)) - 2\,Ei(1,-\ln(x-1)) + \_C1)\,x\}$$

2.696 ODE No. 696

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{y(x)\ln(x-1) + \mathrm{e}^{1+x}x^3 + 7\,\mathrm{e}^{1+x}x(y(x))^2}{\ln(x-1)\,x} = 0}$$

Mathematica: cpu = 121.909981 (sec), leaf count = 50

$$\left\{\left\{y(x) \to \frac{x\tan\left(\sqrt{7}\int_1^x \frac{e^{K[1]+1}K[1]}{\log(K[1]-1)}\,dK[1] + \sqrt{7}c_1\right)}{\sqrt{7}}\right\}\right\}$$

Maple: cpu = 0.047 (sec), leaf count = 32

$$\left\{y(x) = \frac{x\sqrt{7}}{7}\tan\left(\left(\mathrm{e}\int\frac{x\mathrm{e}^x}{\ln(x-1)}\,\mathrm{d}x + \_C1\right)\sqrt{7}\right)\right\}$$

2.697 ODE No. 697

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \left(1 + (y(x))^2\,\mathrm{e}^{-4/3\,x} + (y(x))^3\,\mathrm{e}^{-2\,x}\right)\mathrm{e}^{2/3\,x} = 0}$$

Mathematica: cpu = 0.129016 (sec), leaf count = 114

$$\mathrm{Solve}\left[-\frac{35}{3}\mathrm{RootSum}\left[-35\#1^3 + 9\sqrt[3]{35}\#1 - 35\&, \frac{\log\left(\frac{3e^{-4x/3}y(x)+e^{-2x/3}}{\sqrt[3]{35}\sqrt[3]{e^{-2x}}} - \#1\right)}{3\sqrt[3]{35} - 35\#1^2}\&\right] = c_1 + \frac{1}{9}35^{2/3}e^{4x/3}\left(e^{-}\right.\right.$$

Maple: cpu = 0.078 (sec), leaf count = 40

$$\left\{y(x) = RootOf\left(-x + 3\int^{\_Z}\left(3\_a^3 + 3\_a^2 - 2\_a + 3\right)^{-1}d\_a + \_C1\right)\left(\mathrm{e}^{-\frac{2x}{3}}\right)^{-1}\right\}$$

2.698 ODE No. 698

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \left(1 + (y(x))^2 \,\mathrm{e}^{-2\,x} + (y(x))^3 \,\mathrm{e}^{-3\,x}\right) \mathrm{e}^{x} = 0}$$

Mathematica: cpu = 0.132517 (sec), leaf count = 108

$$\text{Solve}\left[-\frac{19}{3}\text{RootSum}\left[-19\#1^3 + 6\sqrt[3]{38}\#1 - 19\&, \frac{\log\left(\frac{3e^{-2x}y(x)+e^{-x}}{\sqrt[3]{38}\sqrt[3]{e^{-3x}}} - \#1\right)}{2\sqrt[3]{38} - 19\#1^2}\&\right] = c_1 + \frac{1}{9}38^{2/3}e^{2x}\left(e^{-3x}\right)^{2/}$$

Maple: cpu = 0.062 (sec), leaf count = 34

$$\left\{y(x) = \frac{\mathit{RootOf}\left(-x + \int^{-Z}(\_a^3 + \_a^2 - \_a + 1)^{-1}\,d\_a + \_C1\right)}{\mathrm{e}^{-x}}\right\}$$

2.699 ODE No. 699

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = 1/3\,\frac{x\left(-2\,x - 2 + 3\,x^2\sqrt{x^2 + 3\,y\,(x)}\right)}{1 + x} = 0}$$

Mathematica: cpu = 0.243531 (sec), leaf count = 101

$$\left\{\left\{y(x) \to \frac{1}{48}(-24c_1x^3 + 36c_1x^2 - 72c_1x + 72c_1\log(x+1) + 36c_1^2 + 4x^6 - 12x^5 + 33x^4 - 36x^3 - 24x^3\,\text{lo}\right.\right.$$

Maple: cpu = 0.265 (sec), leaf count = 36

$$\left\{\_C1 + \frac{x^3}{2} - \frac{3\,x^2}{4} + \frac{3\,x}{2} - \frac{3\,\ln\left(1 + x\right)}{2} - \sqrt{x^2 + 3\,y\,(x)} = 0\right\}$$

2.700 ODE No. 700

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{1}{x\left(x\left(y\left(x\right)\right)^2 + 1 + x\right)y\left(x\right)} = 0}$$

Mathematica: cpu = 0.071009 (sec), leaf count = 76

$$\left\{\left\{y(x) \to -\frac{\sqrt{2xW\left(c_1e^{\frac{1}{2x}-\frac{1}{2}}\right) + x - 1}}{\sqrt{x}}\right\}, \left\{y(x) \to \frac{\sqrt{2xW\left(c_1e^{\frac{1}{2x}-\frac{1}{2}}\right) + x - 1}}{\sqrt{x}}\right\}\right\}$$

Maple: cpu = 0.094 (sec), leaf count = 62

$$\left\{y(x)=\frac{1}{x}\sqrt{x\left(2\,lambertW\left(1/2\_C1\,\mathrm{e}^{-1/2\,\frac{x-1}{x}}\right)x+x-1\right)},y(x)=-\frac{1}{x}\sqrt{x\left(2\,lambertW\left(1/2\_C1\,\mathrm{e}^{-1/}\right.\right.\right.$$

2.701 ODE No. 701

$$\frac{\mathrm{d}}{\mathrm{d}x}y(x)=\frac{2\,x\mathrm{e}^{x}-2\,x-\ln\left(x\right)-1+x^{4}\ln\left(x\right)+x^{4}-2\,y(x)\,x^{2}\ln\left(x\right)-2\,x^{2}y(x)+\left(y(x)\right)^{2}\ln\left(x\right)+\left(y(x)\right)}{\mathrm{e}^{x}-1}$$

Mathematica: cpu = 0 (sec), leaf count = 0

Hanged

Maple: cpu = 4.727 (sec), leaf count = 100

$$\left\{y(x)=1\left(x^{2}\_C1\left(\mathrm{e}^{\int\left(\frac{\mathrm{e}^{x}}{\ln(x)+1}-(\ln(x)+1)^{-1}\right)^{-1}\mathrm{d}x}\right)^{-2}-x^{2}+\_C1\left(\mathrm{e}^{\int\left(\frac{\mathrm{e}^{x}}{\ln(x)+1}-(\ln(x)+1)^{-1}\right)^{-1}\mathrm{d}x}\right)^{-2}+1\right)\left(\_C\right.\right.$$

2.702 ODE No. 702

$$\frac{\mathrm{d}}{\mathrm{d}x}y(x)=\frac{-y(x)\,\mathrm{e}^{x}+xy(x)-x^{3}\ln\left(x\right)-x^{3}-x\left(y(x)\right)^{2}\ln\left(x\right)-x\left(y(x)\right)^{2}}{\left(-\mathrm{e}^{x}+x\right)x}=0$$

Mathematica: cpu = 197.340559 (sec), leaf count = 36

$$\left\{\left\{y(x)\to x\tan\left(\int_{1}^{x}\frac{K[1](\log(K[1])+1)}{e^{K[1]}-K[1]}\,dK[1]+c_1\right)\right\}\right\}$$

Maple: cpu = 0.063 (sec), leaf count = 35

$$\left\{y(x)=\tan\left(\int\frac{x\ln\left(x\right)}{\mathrm{e}^{x}-x}\,\mathrm{d}x+\int\frac{x}{\mathrm{e}^{x}-x}\,\mathrm{d}x+\_C1\right)x\right\}$$

2.703 ODE No. 703

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{y(x)\left(1 - x + y(x)\, x^2 \ln\left(x\right) + x^3 y(x) - x \ln\left(x\right) - x^2\right)}{\left(x - 1\right) x} = 0}$$

Mathematica: cpu = 0 (sec), leaf count = 0

Hanged

Maple: cpu = 0.172 (sec), leaf count = 68

$$\left\{y(x) = \frac{\mathrm{e}^{dilog(x)}}{x \mathrm{e}^{x}} \left(\int -\frac{\mathrm{e}^{dilog(x)} (x + \ln\left(x\right))}{\mathrm{e}^{x} \left(x - 1\right)^2} \,\mathrm{d}x x + \_C1\, x - \int -\frac{\mathrm{e}^{dilog(x)} (x + \ln\left(x\right))}{\mathrm{e}^{x} \left(x - 1\right)^2} \,\mathrm{d}x - \_C1\right)^{-1}\right\}$$

2.704 ODE No. 704

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{y(x) \ln\left(x\right) x - y(x) + 2\, x^5 b + 2\, x^3 a \left(y(x)\right)^2}{\left(x \ln\left(x\right) - 1\right) x} = 0}$$

Mathematica: cpu = 240.336019 (sec), leaf count = 65

$$\left\{\left\{y(x) \to \frac{\sqrt{b} x \tan\left(\sqrt{a} \sqrt{b} \int_1^x \frac{2K[1]^3}{K[1] \log(K[1]) - 1}\, dK[1] + \sqrt{a} \sqrt{b} c_1\right)}{\sqrt{a}}\right\}\right\}$$

Maple: cpu = 0.047 (sec), leaf count = 45

$$\left\{y(x) = \frac{x}{a} \tan\left(2 \int \frac{x^3}{x \ln\left(x\right) - 1} \,\mathrm{d}x \sqrt{ab} + 2\, \_C1 \sqrt{ab}\right) \sqrt{ab}\right\}$$

2.705 ODE No. 705

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{\left(\ln\left(y(x)\right) + x + x^3 + x^4\right) y(x)}{x} = 0}$$

Mathematica: cpu = 0.061508 (sec), leaf count = 30

$$\left\{\left\{y(x) \to x^x e^{c_1 x + \frac{x^4}{3} + \frac{x^3}{2}}\right\}\right\}$$

Maple: cpu = 0.172 (sec), leaf count = 24

$$\left\{y(x) = \mathrm{e}^{\frac{x^4}{3}} \mathrm{e}^{\frac{x^3}{2}} \mathrm{e}^{-\_C1\, x} x^x\right\}$$

2.706 ODE No. 706

$$\frac{\mathrm{d}}{\mathrm{d}x}y(x) = -1/8\left(-\ln\left(-1+y(x)\right)+\ln\left(1+y(x)\right)+2\,\ln\left(x\right)\right)x(1+y(x))^2 = 0$$

Mathematica: cpu = 0 (sec), leaf count = 0

Hanged

Maple: cpu = 0.405 (sec), leaf count = 65

$$\left\{\int_{\_b}^{y(x)}\frac{1}{2\_a+2}\left(-\frac{x^2(\_a+1)\ln\left(\_a-1\right)}{2}+\frac{x^2(\_a+1)\ln\left(\_a+1\right)}{2}+x^2(\_a+1)\ln\left(x\right)+4\,\_a-4\right)^{-1}$$

2.707 ODE No. 707

$$\frac{\mathrm{d}}{\mathrm{d}x}y(x) = 1/16\left(-\ln\left(-1+y(x)\right)+\ln\left(1+y(x)\right)+2\,\ln\left(x\right)\right)^2 x(1+y(x))^2 = 0$$

Mathematica: cpu = 480.133469 (sec), leaf count = 334

$$\text{Solve}\left[\int_1^{y(x)}\left(\frac{1}{2(K[2]+1)}+\frac{-\log^2(K[2]-1)-\log^2(K[2]+1)}{2\left(\log^2(K[2]-1)+\log^2(K[2]+1)+K[2]\left(\log^2(K[2]-1)+\log^2(K[2]+1)\right.\right.\right.$$

Maple: cpu = 0.468 (sec), leaf count = 105

$$\left\{\int_{\_b}^{y(x)}\frac{1}{4\_a+4}\left(\frac{x^2(\_a+1)\left(\ln\left(\_a-1\right)\right)^2}{4}-\left(\ln\left(x\right)+\frac{\ln\left(\_a+1\right)}{2}\right)x^2(\_a+1)\ln\left(\_a-1\right)+\frac{x^2(\_a\right.\right.$$

2.708 ODE No. 708

$$\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{\left(-(y(x))^2+4\,ax\right)^3}{\left(-\left(y\left(x\right)\right)^2+4\,ax-1\right)y\left(x\right)} = 0$$

Mathematica: cpu = 0.299038 (sec), leaf count = 89

$$\text{Solve}\left[2a\left(x-\frac{\text{RootSum}\left[-\#1^3+2\#1a-2a\&,\frac{\#1a\log\left(-\#1+4ax-y(x)^2\right)-a\log\left(-\#1+4ax-y(x)^2\right)}{2a-3\#1^2}\&\right]}{2a}\right)=c_1,y(x)\right.$$

Maple: cpu = 0.656 (sec), leaf count = 308

$$\left\{\int_{\_b}^{x}-\frac{\left(4\,\_a\,a-(y(x))^2\right)^3}{64\,\_a^3a^3-48\,\_a^2a^2\left(y\left(x\right)\right)^2+12\,\_a\,a\left(y\left(x\right)\right)^4-\left(y\left(x\right)\right)^6-8\,\_a\,a^2+2\,a\left(y\left(x\right)\right)^2+2\,a}\,\mathrm{d}\_a+\int^{y}\right.$$

2.709 ODE No. 709

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{2\,ax + 2\,a + x^3\sqrt{-\left(y\left(x\right)\right)^2 + 4\,ax}}{\left(1+x\right)y\left(x\right)} = 0}$$

Mathematica: cpu = 5.563707 (sec), leaf count = 217

$$\left\{\left\{y(x) \to -\frac{1}{6}\sqrt{144ax - 24c_1x^3 + 36c_1x^2 - 72c_1x + 72c_1\log(x+1) - 36c_1^2 - 4x^6 + 12x^5 - 33x^4 + 36x^3}\right.\right.$$

Maple: cpu = 0.203 (sec), leaf count = 39

$$\left\{-\sqrt{-\left(y\left(x\right)\right)^2 + 4\,ax} - \frac{x^3}{3} + \frac{x^2}{2} - x + \ln\left(1+x\right) - \_C1 = 0\right\}$$

2.710 ODE No. 710

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{-\ln\left(x\right) + \mathrm{e}^{x^{-1}} + 4\,x^2y(x) + 2\,x + 2\,x\left(y(x)\right)^2 + 2\,x^3}{\ln\left(x\right) - \mathrm{e}^{x^{-1}}} = 0}$$

Mathematica: cpu = 1910.257572 (sec), leaf count = 37

$$\left\{\left\{y(x) \to \tan\left(\int_1^x -\frac{2K[5]}{e^{\frac{1}{K[5]}} - \log(K[5])}\,dK[5] + c_1\right) - x\right\}\right\}$$

Maple: cpu = 1.685 (sec), leaf count = 35

$$\left\{y(x) = -x + \tan\left(2\_C1 - 2\int\left(-\frac{\ln\left(x\right)}{x} + \frac{\mathrm{e}^{x^{-1}}}{x}\right)^{-1}\mathrm{d}x\right)\right\}$$

2.711 ODE No. 711

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = -\frac{\left(\ln\left(y(x)\right)x + \ln\left(y(x)\right) - 1\right)y(x)}{1+x} = 0}$$

Mathematica: cpu = 0.073509 (sec), leaf count = 28

$$\left\{\left\{y(x) \to e^{c_1e^{-x} + e^{-x-1}\mathrm{Ei}(x+1)}\right\}\right\}$$

Maple: cpu = 0.109 (sec), leaf count = 31

$$\left\{y(x) = 1\mathrm{e}^{\frac{\_C1}{\mathrm{e}^x}}\left(\mathrm{e}^{\frac{Ei(1,-1-x)}{\mathrm{e}^x\mathrm{e}}}\right)^{-1}\right\}$$

2.712 ODE No. 712

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = 1/2\,\frac{x^2+2\,x+1+2\,x^3\sqrt{x^2+2\,x+1-4\,y\left(x\right)}}{1+x} = 0}$$

Mathematica: cpu = 0.296038 (sec), leaf count = 115

$$\left\{\left\{y(x) \to \frac{1}{36}\left(24c_1x^3 - 36c_1x^2 + 72c_1x - 72c_1\log(x+1) - 36c_1^2 + 132c_1 - 4x^6 + 12x^5 - 33x^4 - 8x^3 + 2\right.\right.\right.$$

Maple: cpu = 0.265 (sec), leaf count = 38

$$\left\{\_C1 - \frac{2\,x^3}{3} + x^2 - 2\,x + 2\,\ln\left(1+x\right) - \sqrt{x^2+2\,x+1-4\,y\left(x\right)} = 0\right\}$$

2.713 ODE No. 713

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{-by(x)\,a + b^2 + ab + b^2x - ba\sqrt{x} - a^2}{a\left(-ay\left(x\right) + b + a + bx - a\sqrt{x}\right)} = 0}$$

Mathematica: cpu = 0.134517 (sec), leaf count = 649

$$\left\{\left\{y(x) \to \frac{1}{a^2\text{Root}\left[\#1^6\left(16e^{12c_1} + 16x^3\right) - \frac{24\#1^4x^2}{a^4} + \frac{8\#1^3x^{3/2}}{a^6} + \frac{9\#1^2x}{a^8} - \frac{6\#1\sqrt{x}}{a^{10}} + \frac{1}{a^{12}}\&, 1\right]} - \frac{a\sqrt{x} - a -\right.\right.$$

Maple: cpu = 0.297 (sec), leaf count = 86

$$\left\{y(x) = \frac{1}{2\,a}\left(3\,\tanh\left(RootOf\left(729\,x^3(\tanh\left(\_Z\right))^6\,a^6 - 2187\,x^3(\tanh\left(\_Z\right))^4\,a^6 + 2187\,x^3(\tanh\left(\_Z\right))^2\,a^{6}\right.\right.\right.\right.$$

2.714 ODE No. 714

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = -\frac{y(x)\left(-\ln\left(x^{-1}\right) + \mathrm{e}^x + y(x)\,x^2\ln\left(x\right) + x^3y(x) - x\ln\left(x\right) - x^2\right)}{\left(-\ln\left(x^{-1}\right) + \mathrm{e}^x\right)x} = 0}$$

Mathematica: cpu = 0 (sec), leaf count = 0

Hanged

Maple: cpu = 0.327 (sec), leaf count = 104

$$\left\{y(x) = 1\mathrm{e}^{\int -\frac{-x\ln(x) - x^2 + \mathrm{e}^x - \ln\left(x^{-1}\right)}{\left(-\ln\left(x^{-1}\right) + \mathrm{e}^x\right)x}\,\mathrm{d}x}\left(\int \frac{x(x+\ln\left(x\right))}{-\ln\left(x^{-1}\right) + \mathrm{e}^x}\mathrm{e}^{\int -\frac{-x\ln(x) - x^2 + \mathrm{e}^x - \ln\left(x^{-1}\right)}{\left(-\ln\left(x^{-1}\right) + \mathrm{e}^x\right)x}\,\mathrm{d}x}\,\mathrm{d}x + \_C1\right)^{-1}\right\}$$

2.715 ODE No. 715

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = 1/2\,\frac{-x^2+x+2+2\,x^3\sqrt{x^2-4\,x+4\,y\left(x\right)}}{1+x} = 0}$$

Mathematica: cpu = 0.273035 (sec), leaf count = 104

$$\left\{\left\{y(x) \to \frac{1}{36}\left(-24c_1x^3+36c_1x^2-72c_1x+72c_1\log(x+1)+36c_1^2+4x^6-12x^5+33x^4-36x^3-24x^3\,\mathrm{lo}\right.\right.\right.$$

Maple: cpu = 0.249 (sec), leaf count = 39

$$\left\{\_C1+\frac{2\,x^3}{3}-x^2+2\,x-2\,\ln\left(1+x\right)-\sqrt{x^2-4\,x+4\,y\left(x\right)}=0\right\}$$

2.716 ODE No. 716

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{3\,x^4+3\,x^3+\sqrt{9\,x^4-4\,\left(y\left(x\right)\right)^3}}{\left(1+x\right)\left(y\left(x\right)\right)^2} = 0}$$

Mathematica: cpu = 5.769733 (sec), leaf count = 133

$$\left\{\left\{y(x) \to \left(-\frac{3}{2}\right)^{2/3}\sqrt[3]{8c_1\log(x+1)-4c_1^2+x^4-4\log^2(x+1)}\right\},\left\{y(x) \to \left(\frac{3}{2}\right)^{2/3}\sqrt[3]{8c_1\log(x+1)-}\right.\right.$$

Maple: cpu = 0.249 (sec), leaf count = 37

$$\left\{\int_{\_b}^{y(x)}\_a^2\,\frac{1}{\sqrt{9\,x^4-4\,\_a^3}}\,\mathrm{d}\_a-\ln\left(1+x\right)-\_C1=0\right\}$$

2.717 ODE No. 717

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = -1/2\,\frac{x^2+x+ax+a-2\,\sqrt{x^2+2\,ax+a^2+4\,y\left(x\right)}}{1+x} = 0}$$

Mathematica: cpu = 0.337543 (sec), leaf count = 46

$$\left\{\left\{y(x) \to \frac{1}{4}\left(-a^2-2ax-8c_1\log(x+1)+4c_1^2-x^2+4\log^2(x+1)\right)\right\}\right\}$$

Maple: cpu = 0.281 (sec), leaf count = 33

$$\left\{\_C1+\frac{a}{2}+2\,\ln\left(1+x\right)-\sqrt{x^2+2\,ax+a^2+4\,y\left(x\right)}=0\right\}$$

2.718 ODE No. 718

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \left(1 + (y(x))^2\,\mathrm{e}^{2\,x^2} + (y(x))^3\,\mathrm{e}^{3\,x^2}\right)\mathrm{e}^{-x^2}x = 0}$$

Mathematica: cpu = 0.129517 (sec), leaf count = 127

$$\text{Solve}\left[\frac{11}{3}\text{RootSum}\left[11\#1^3 + 15\sqrt[3]{11}\#1 + 11\&,\ \frac{\log\left(\frac{3e^{2x^2}xy(x)+e^{x^2}x}{\sqrt[3]{11}\sqrt[3]{e^{3x^2}x^3}} - \#1\right)}{11\#1^2 + 5\sqrt[3]{11}}\&\right] = c_1 + \frac{11^{2/3}e^{x^2}x^3}{18\sqrt[3]{e^{3x^2}x^3}}, y(x)\right]$$

Maple: cpu = 0.063 (sec), leaf count = 44

$$\left\{y(x) = -\frac{11\,RootOf\left(-5\,x^2 + 20250\int^{-Z}(121\_a^3 + 3375\_a - 3375)^{-1}\,d\_a + 6\,\_C1\right) + 15}{45\,\mathrm{e}^{x^2}}\right\}$$

2.719 ODE No. 719

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{y(x)\left(-\mathrm{e}^x + \ln(2\,x)\,x^2y(x) - \ln(2\,x)\,x\right)}{x\mathrm{e}^x} = 0}$$

Mathematica: cpu = 0.100013 (sec), leaf count = 49

$$\left\{\left\{y(x) \to \frac{2^{e^{-x}}x^{e^{-x}-1}}{c_1e^{\mathrm{Ei}(-x)} + 2^{e^{-x}}x^{e^{-x}}}\right\}\right\}$$

Maple: cpu = 0.110 (sec), leaf count = 57

$$\left\{y(x) = -\frac{x^{\mathrm{e}^{-x}}2^{\mathrm{e}^{-x}}\mathrm{e}^{Ei(1,x)}}{x\left(\int x^{\mathrm{e}^{-x}}2^{\mathrm{e}^{-x}}\mathrm{e}^{Ei(1,x)}\mathrm{e}^{-x}\left(\ln(2) + \ln(x)\right)\mathrm{d}x + \_C1\right)}\right\}$$

2.720 ODE No. 720

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{x^3\left(3\,x + 3 + \sqrt{9\,x^4 - 4\,\left(y\left(x\right)\right)^3}\right)}{\left(1 + x\right)\left(y\left(x\right)\right)^2} = 0}$$

Mathematica: cpu = 6.127778 (sec), leaf count = 314

$$\left\{\left\{y(x) \to \sqrt[3]{6c_1x^3 - 9c_1x^2 + 18c_1x - 18c_1\log(x+1) - 9c_1^2 - x^6 + 3x^5 - 6x^4 + 9x^3 + 6x^3\log(x+1) - 9\right.$$

Maple: cpu = 0.171 (sec), leaf count = 48

$$\left\{\int_{\_b}^{y(x)} \_a^2 \frac{1}{\sqrt{9\,x^4-4\,\_a^3}}\,\mathrm{d}\_a - \frac{x^3}{3}+\frac{x^2}{2}-x+\ln\left(1+x\right)-\_C1=0\right\}$$

2.721 ODE No. 721

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x)=1/36\left(18\,x^{3/2}+36\left(y(x)\right)^2-12\,x^3y(x)+x^6\right)\sqrt{x}=0}$$

Mathematica: cpu = 0.021003 (sec), leaf count = 27

$$\left\{\left\{y(x)\to\frac{1}{c_1-\frac{2x^{3/2}}{3}}+\frac{x^3}{6}\right\}\right\}$$

Maple: cpu = 0.062 (sec), leaf count = 19

$$\left\{y(x)=\frac{x^3}{6}+\left(\_C1-\frac{2}{3}x^{\frac{3}{2}}\right)^{-1}\right\}$$

2.722 ODE No. 722

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x)=-\frac{\left(y(x)\right)^3}{\left(-1+2\,y\left(x\right)\ln\left(x\right)-y\left(x\right)\right)x}=0}$$

Mathematica: cpu = 63.894114 (sec), leaf count = 491

$$\text{Solve}\left[\frac{\sqrt[3]{-2}\left((-2)^{2/3}-\frac{(1-2\log(x))^2\left(-\frac{1}{(2\log(x)-1)^3}\right)^{2/3}(y(x)(5-4\log(x))+2)}{2\sqrt[3]{2}(y(x)(2\log(x)-1)-1)}\right)\left(\frac{y(x)(4\log(x)-5)-2}{\sqrt[3]{2}\sqrt[3]{-\frac{1}{(2\log(x)-1)^3}}(2\log(x)-1)(y(x)(2\log(x)-\right.}\right.$$

Maple: cpu = 0.281 (sec), leaf count = 96

$$\left\{y(x)=1\mathrm{e}^{\mathit{RootOf}\left(-\mathrm{e}^{\_Z}\ln\left(\frac{\mathrm{e}^{\_Z}+2}{2\,x^4}\right)+3\,\mathrm{e}^{\_Z}\_C1+\_Z\,\mathrm{e}^{\_Z}+2\right)}\left(2\,\mathrm{e}^{\mathit{RootOf}\left(-\mathrm{e}^{\_Z}\ln\left(1/2\,\frac{\mathrm{e}^{\_Z}+2}{x^4}\right)+3\,\mathrm{e}^{\_Z}\_C1+\_Z\,\mathrm{e}^{\_Z}+2\right)}\ln\left(x\right)\right.\right.$$

2.723 ODE No. 723

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = 2\,\frac{a}{y\left(x\right) + 2\,a\left(y\left(x\right)\right)^{4} - 16\,a^{2}x\left(y\left(x\right)\right)^{2} + 32\,a^{3}x^{2}} = 0}$$

Mathematica: cpu = 0.064508 (sec), leaf count = 663

$$\left\{\left\{y(x) \to -\frac{\sqrt[3]{-1024a^6c_1^3 + 9216a^5c_1x - 432a^2 + \sqrt{4\left(-64a^4c_1^2 - 192a^3x\right)^3 + \left(-1024a^6c_1^3 + 9216a^5c_1x\right.}}}{12\sqrt[3]{2}a}\right.\right.$$

Maple: cpu = 0.046 (sec), leaf count = 864

$$\left\{y(x) = \frac{1}{6\,a}\sqrt[3]{\left(64\,\_C1^{3}a^{4} - 576\,\_C1\,a^{3}x + 3\,\sqrt{-12288\,\_C1^{4}a^{7}x + 24576\,\_C1^{2}a^{6}x^{2} - 12288\,a^{5}x^{3} + 38}\right.}\right.$$

2.724 ODE No. 724

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = -\frac{\left(y(x)\right)^{3}}{\left(-1 + y\left(x\right)\ln\left(x\right) - y\left(x\right)\right)x} = 0}$$

Mathematica: cpu = 64.507191 (sec), leaf count = 420

$$\text{Solve}\left[\frac{\sqrt[3]{-2}\left(\frac{1-y(x)(\log(x)-4)}{\sqrt[3]{2}\sqrt[3]{-\frac{1}{(\log(x)-1)^3}}(\log(x)-1)(y(x)(\log(x)-1)-1)} + (-2)^{2/3}\right)\left(\frac{2^{2/3}(y(x)(\log(x)-4)-1)}{\sqrt[3]{-\frac{1}{(\log(x)-1)^3}}(\log(x)-1)(y(x)(\log(x)-1)-1)} + (-\right.}{}\right.$$

Maple: cpu = 0.047 (sec), leaf count = 18

$$\left\{y(x) = \left(-lambertW\left(\_C1\,\mathrm{e}^{-2}x\right) + \ln\left(x\right) - 2\right)^{-1}\right\}$$

2.725 ODE No. 725

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{-\ln(x) + 2\ln(2x)\,xy(x) + \ln(2x) + \ln(2x)\,(y(x))^2 + \ln(2x)\,x^2}{\ln(x)} = 0}$$

Mathematica: cpu = 0.265034 (sec), leaf count = 19

$$\{\{y(x) \to \tan(c_1 + \log(2)\mathrm{li}(x) + x) - x\}\}$$

Maple: cpu = 0.561 (sec), leaf count = 25

$$\{y(x) = -x - \tan(\ln(2)\,Ei(1, -\ln(x)) + \_C1 - x)\}$$

2.726 ODE No. 726

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = -\frac{by(x)\,a - bc + b^2x + ba\sqrt{x} - a^2}{a\left(ay(x) - c + bx + a\sqrt{x}\right)} = 0}$$

Mathematica: cpu = 0.082010 (sec), leaf count = 625

$$\left\{\left\{y(x) \to \frac{1}{a^2\mathrm{Root}\left[\#1^6\left(16e^{12c_1} + 16x^3\right) - \frac{24\#1^4x^2}{a^4} + \frac{8\#1^3x^{3/2}}{a^6} + \frac{9\#1^2x}{a^8} - \frac{6\#1\sqrt{x}}{a^{10}} + \frac{1}{a^{12}}\&, 1\right]} - \frac{a\sqrt{x} + bx -}{a}\right.\right.$$

Maple: cpu = 0.202 (sec), leaf count = 83

$$\left\{y(x) = \frac{1}{2a}\left(3\tanh\left(RootOf\left(-729\,x^3(\tanh(\_Z))^6\,a^6 + 2187\,x^3(\tanh(\_Z))^4\,a^6 - 2187\,x^3(\tanh(\_Z))^2\right.\right.\right.\right.$$

2.727 ODE No. 727

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{(2x + 2 + y(x))\,y(x)}{(\ln(y(x)) + 2x - 1)\,(1 + x)} = 0}$$

Mathematica: cpu = 0.495063 (sec), leaf count = 29

$$\left\{\left\{y(x) \to \frac{W(e^{-2x}(c_1 + \log(x+1)))}{c_1 + \log(x+1)}\right\}\right\}$$

Maple: cpu = 0.187 (sec), leaf count = 25

$$\left\{y(x) = \mathrm{e}^{-lambertW\left((\ln(1+x) - \_C1)\mathrm{e}^{-2x}\right) - 2x}\right\}$$

2.728 ODE No. 728

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x)=\frac{\left(x^3+3\left(y(x)\right)^2\right)y(x)}{\left(6\left(y\left(x\right)\right)^2+x\right)x}=0}$$

Mathematica: cpu = 0.434555 (sec), leaf count = 72

$$\left\{\left\{y(x)\to -\frac{\sqrt{x}\sqrt{W\left(\frac{6e^{2c_1+x^2}}{x}\right)}}{\sqrt{6}}\right\},\left\{y(x)\to \frac{\sqrt{x}\sqrt{W\left(\frac{6e^{2c_1+x^2}}{x}\right)}}{\sqrt{6}}\right\}\right\}$$

Maple: cpu = 0.234 (sec), leaf count = 50

$$\left\{\left(\left(y(x)\right)^{-2}+6\,x^{-1}\right)^{-1}=\frac{x}{54}\left(\mathrm{e}^{RootOf\left(\mathrm{e}^{-Z}x^2-\mathrm{e}^{-Z}\ln\left(\frac{\left(\mathrm{e}^{-Z}+9\right)x}{2}\right)+3\,\mathrm{e}^{-Z}\_C1+\_Z\,\mathrm{e}^{-Z}+9\right)}+9\right)\right\}$$

2.729 ODE No. 729

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x)=\frac{y(x)\left(x-y(x)\right)}{x\left(x-\left(y\left(x\right)\right)^3\right)}=0}$$

Mathematica: cpu = 0.355045 (sec), leaf count = 327

$$\left\{\left\{y(x)\to \frac{\sqrt[3]{2}(6c_1-6\log(x))}{3\sqrt[3]{\sqrt{4\left(6c_1-6\log(x)\right)^3+2916x^2}+54x}}-\frac{\sqrt[3]{\sqrt{4\left(6c_1-6\log(x)\right)^3+2916x^2}+54x}}{3\sqrt[3]{2}}\right\},\left\{y(\right.\right.$$

Maple: cpu = 0.093 (sec), leaf count = 497

$$\left\{y(x)=\frac{1}{3}\sqrt[3]{-27\,x+3\sqrt{-24\left(\ln\left(x\right)\right)^3+72\left(\ln\left(x\right)\right)^2\_C1-72\ln\left(x\right)\_C1^2+24\_C1^3+81\,x^2}}-3\,\frac{}{\sqrt[3]{-}}\right.$$

2.730 ODE No. 730

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = 1/4\,\frac{\left(2\left(y(x)\right)^{3/2} - 3\,\mathrm{e}^{x}\right)^{3}\mathrm{e}^{x}}{\left(2\,\left(y\left(x\right)\right)^{3/2} - 3\,\mathrm{e}^{x} + 2\right)\sqrt{y\left(x\right)}} = 0}$$

Mathematica: cpu = 33.979315 (sec), leaf count = 55

$$\text{DSolve}\left[y'(x) = \frac{e^{x}\left(2y(x)^{3/2} - 3e^{x}\right)^{3}}{4\sqrt{y(x)}\left(2y(x)^{3/2} - 3e^{x} + 2\right)}, y(x), x\right]$$

Maple: cpu = 1.342 (sec), leaf count = 49

$$\left\{\mathrm{e}^{x} - \int^{\left(y(x)\right)^{\frac{3}{2}} - \frac{3\,\mathrm{e}^{x}}{2}} \frac{2\_a}{3\_a^{3} - 3\_a - 3} + \frac{2}{3\_a^{3} - 3\_a - 3}d\_a - \_C1 = 0\right\}$$

2.731 ODE No. 731

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{1 + 2\,y(x)}{x\left(-2 + x\left(y\left(x\right)\right)^{2} + 2\,x\left(y\left(x\right)\right)^{3}\right)} = 0}$$

Mathematica: cpu = 0.197525 (sec), leaf count = 47

$$\text{Solve}\left[\frac{1}{64}\left(-4y(x)^{2} + 4y(x) - 2\log(8y(x) + 4) + 3\right) - \frac{1}{4x(2y(x) + 1)} = c_1, y(x)\right]$$

Maple: cpu = 0.125 (sec), leaf count = 42

$$\left\{y(x) = \frac{\mathrm{e}^{RootOf\left(x\left(\mathrm{e}^{\_Z}\right)^{3} - 4\,x\left(\mathrm{e}^{\_Z}\right)^{2} + 16\,\_C1\,x\mathrm{e}^{\_Z} + 2\,\_Z\,x\mathrm{e}^{\_Z} + 3\,x\mathrm{e}^{\_Z} + 16\right)}}{2} - \frac{1}{2}\right\}$$

2.732 ODE No. 732

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = 1/2\,\frac{-x^{2} - x - ax - a + 2\,x^{3}\sqrt{x^{2} + 2\,ax + a^{2} + 4\,y\left(x\right)}}{1 + x} = 0}$$

Mathematica: cpu = 0.497563 (sec), leaf count = 110

$$\left\{\left\{y(x) \to \frac{1}{36}\left(-9a^{2} - 18ax - 24c_1x^{3} + 36c_1x^{2} - 72c_1x + 72c_1\log(x + 1) + 36c_1^{2} + 4x^{6} - 12x^{5} + 33x^{4} -\right.\right.$$

Maple: cpu = 0.281 (sec), leaf count = 43

$$\left\{\_C1 + \frac{2\,x^{3}}{3} - x^{2} + 2\,x - 2\,\ln\left(1 + x\right) - \sqrt{x^{2} + 2\,ax + a^{2} + 4\,y\left(x\right)} = 0\right\}$$

2.733 ODE No. 733

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{2\,x\sin\left(x\right) - \ln\left(2\,x\right) + \ln\left(2\,x\right)x^4 - 2\,\ln\left(2\,x\right)x^2 y(x) + \ln\left(2\,x\right)\left(y(x)\right)^2}{\sin\left(x\right)} = 0}$$

Mathematica: cpu = 0 (sec), leaf count = 0

Hanged

Maple: cpu = 0 (sec), leaf count = 0

hanged

2.734 ODE No. 734

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{\left(-\ln\left(y(x)\right)x - \ln\left(y(x)\right) + x^3\right)y(x)}{1+x} = 0}$$

Mathematica: cpu = 0.121515 (sec), leaf count = 37

$$\left\{\left\{y(x) \to \exp\left(-c_1 e^{-x} - e^{-x-1}\mathrm{Ei}(x+1) + x^2 - 3x + 4\right)\right\}\right\}$$

Maple: cpu = 0.125 (sec), leaf count = 39

$$\left\{y(x) = \frac{\mathrm{e}^{x^2}\mathrm{e}^4}{\left(\mathrm{e}^x\right)^3}\mathrm{e}^{\frac{C1}{\mathrm{e}^x}}\mathrm{e}^{\frac{Ei(1,-1-x)}{\mathrm{e}^x\mathrm{e}}}\right\}$$

2.735 ODE No. 735

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{\left(2\,y(x)\ln\left(x\right) - 1\right)^3}{\left(-1 + 2\,y\left(x\right)\ln\left(x\right) - y\left(x\right)\right)x} = 0}$$

Mathematica: cpu = 0 (sec), leaf count = 0

Hanged

Maple: cpu = 0.062 (sec), leaf count = 104

$$\left\{y(x) = \frac{71\,RootOf\left(-82944\int^{-Z}(5041\_a^3 - 276\right.}{142\,\ln\left(x\right)RootOf\left(-82944\int^{-Z}\left(5041\_a^3 - 27648\_a + 27648\right)^{-1}d\_a - 16\,\ln\left(x\right) + 3\,\_C1\right) -}$$

2.736 ODE No. 736

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{2\,x^2 + 2\,x + x^4 - 2\,x^2 y(x) - 1 + (y(x))^2}{1 + x} = 0}$$

Mathematica: cpu = 0.106514 (sec), leaf count = 31

$$\left\{\left\{y(x) \to \frac{(x+1)^2}{c_1 - \frac{x^2}{2} - x} + x^2 + 1\right\}\right\}$$

Maple: cpu = 0.140 (sec), leaf count = 47

$$\left\{y(x) = \frac{\_C1\,x^4 + 2\,\_C1\,x^3 - x^2\_C1 - 2\,\_C1\,x + x^2 - 2\,\_C1 + 1}{x^2\_C1 + 2\,\_C1\,x + 1}\right\}$$

2.737 ODE No. 737

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{x(-1 + x - 2\,x y(x) + 2\,x^3)}{x^2 - y\,(x)} = 0}$$

Mathematica: cpu = 0.033504 (sec), leaf count = 36

$$\left\{\left\{y(x) \to \frac{1}{2}\left(W\left(-e^{c_1 + \frac{4x^3}{3} - 2x^2 - 1}\right) + 1\right) + x^2\right\}\right\}$$

Maple: cpu = 0.062 (sec), leaf count = 29

$$\left\{y(x) = x^2 + \frac{1}{2}\mathit{lambertW}\left(-2\,\frac{\mathrm{e}^{4/3\,x^3}\_C1\,\mathrm{e}^{-1}}{\left(\mathrm{e}^{x^2}\right)^2}\right) + \frac{1}{2}\right\}$$

2.738 ODE No. 738

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = 2\,\frac{a}{-x^2 y\,(x) + 2\,a\,(y\,(x))^4\,x^2 - 16\,a^2 x\,(y\,(x))^2 + 32\,a^3} = 0}$$

Mathematica: cpu = 0.515566 (sec), leaf count = 1347

$$\left\{\left\{y(x) \to -\frac{4a + e^{c_1}}{12a} + \frac{\sqrt[3]{4608x^2a^4 - 128x^3a^3 + 1152e^{c_1}x^2a^3 - 96e^{c_1}x^3a^2 - 432x^3a^2 - 24e^{2c_1}x^3a - 2e^{3c}}\right.\right.$$

Maple: cpu = 0.561 (sec), leaf count = 1096

$$\left\{ y(x) = \frac{1}{12\_C1\,ax}\sqrt[3]{\left(-216\,\_C1^{3}a^{2}x+576\,a^{3}\_C1^{2}+12\sqrt{-\frac{49152\,\_C1^{4}a^{7}-324\,\_C1^{4}a^{2}x^{3}+1728\right.}\right.}\right.$$

2.739 ODE No. 739

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{1+2\,y(x)}{x\left(-2+xy\left(x\right)+2\,x\left(y\left(x\right)\right)^{2}\right)} = 0}$$

Mathematica: cpu = 0.131517 (sec), leaf count = 39

$$\text{Solve}\left[\frac{1}{8}(-2y(x)+\log(4y(x)+2)-1)-\frac{1}{2x(2y(x)+1)}=c_1,y(x)\right]$$

Maple: cpu = 0.140 (sec), leaf count = 35

$$\left\{ y(x) = \frac{\mathrm{e}^{RootOf\left(x\left(\mathrm{e}^{\_Z}\right)^{2}+2\,\_C1\,x\mathrm{e}^{\_Z}-\_Z\,x\mathrm{e}^{\_Z}-x\mathrm{e}^{\_Z}+4\right)}}{2}-\frac{1}{2} \right\}$$

2.740 ODE No. 740

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{x+\left(y(x)\right)^{4}-2\,x^{2}\left(y(x)\right)^{2}+x^{4}}{y\left(x\right)} = 0}$$

Mathematica: cpu = 0.067509 (sec), leaf count = 74

$$\left\{\left\{y(x)\to -\frac{\sqrt{2c_1x^2+2x^3-1}}{\sqrt{2}\sqrt{c_1+x}}\right\},\left\{y(x)\to \frac{\sqrt{2c_1x^2+2x^3-1}}{\sqrt{2}\sqrt{c_1+x}}\right\}\right\}$$

Maple: cpu = 0.093 (sec), leaf count = 72

$$\left\{ y(x) = \frac{\sqrt{2}}{2\,x+2\,\_C1}\sqrt{\left(x+\_C1\right)\left(2\,x^{2}\_C1+2\,x^{3}-1\right)}, y(x) = -\frac{\sqrt{2}}{2\,x+2\,\_C1}\sqrt{\left(x+\_C1\right)\left(2\,x^{2}\_C1+\right.} \right.$$

2.741 ODE No. 741

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{\left(a(y(x))^2 + bx^2\right)^3 x}{a^{5/2}\left(a\left(y\left(x\right)\right)^2 + bx^2 + a\right) y\left(x\right)} = 0}$$

Mathematica: cpu = 3.705971 (sec), leaf count = 175

$$\text{Solve}\left[\frac{1}{2}\left(x^2 - a^{3/2}\text{RootSum}\left[\#1^3 b^3 + 3\#1^2 a b^2 y(x)^2 + \#1 a^{3/2} b^2 + 3\#1 a^2 b y(x)^4 + a^{5/2} b y(x)^2 + a^{5/2} b + a^{\right.}\right.\right.$$

Maple: cpu = 0.749 (sec), leaf count = 400

$$\left\{\int_{\_b}^{x} \frac{\left(b\_a^2 + a(y(x))^2\right)^3 \_a}{a^3}\left(\left(y(x)\right)^6 a^3 + 3\,a^2 b\_a^2 (y(x))^4 + 3\,a b^2 \_a^4 (y(x))^2 + b^3 \_a^6 + a^{\frac{5}{2}} b (y(x))^2 + a^{\frac{3}{2}}\right.\right.$$

2.742 ODE No. 742

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = -\frac{\cos\left(y(x)\right)\left(x - \cos\left(y(x)\right) + 1\right)}{\left(x\sin\left(y\left(x\right)\right) - 1\right)\left(1 + x\right)} = 0}$$

Mathematica: cpu = 5.755231 (sec), leaf count = 3913

$$\left\{\left\{y(x) \to -\sec^{-1}\left(\frac{c_1 x^3}{x^2-1} + \frac{\log(x+1)x^3}{x^2-1} - \frac{c_1^3 x^3}{(x^2-1)\left(c_1^2 + 2\log(x+1)c_1 + \log^2(x+1) + 1\right)} - \frac{}{(x^2 -\right.\right.\right.$$

Maple: cpu = 1.185 (sec), leaf count = 259

$$\left\{y(x) = \arctan\left(-\frac{-\ln\left(1+x\right) + \_C1}{\_C1^{\,2} - 2\,\_C1\,\ln\left(1+x\right) + \left(\ln\left(1+x\right)\right)^2 + 1}\left(-\ln\left(1+x\right)x + \_C1\,x + \sqrt{(\ln(1+x\right.\right.\right.$$

2.743 ODE No. 743

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{-i/32\left(8\,ix + 16\left(y(x)\right)^4 + 8\,x^2(y(x))^2 + x^4\right)}{y\left(x\right)} = 0}$$

Mathematica: cpu = 32.841170 (sec), leaf count = 43

$$\text{DSolve}\left[y'(x) = -\frac{i(x^4 + 8x^2 y(x)^2 + 16y(x)^4 + 8ix)}{32y(x)}, y(x), x\right]$$

Maple: cpu = 0.328 (sec), leaf count = 269

$$\left\{y(x) = -i\sqrt{-i\left(-2\left(-\sqrt{3}+i\right)\_C1\,\mathrm{Ai}^{(1)}\left(-1/2\left(\sqrt{3}-i\right)x\right) + \left(-2\,i+2\sqrt{3}\right)\mathrm{Bi}^{(1)}\left(-\frac{\left(\sqrt{3}-i\right)x}{2}\right.\right.\right.$$

2.744 ODE No. 744

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{x}{-y\left(x\right) + x^4 + 2\,x^2\left(y\left(x\right)\right)^2 + \left(y\left(x\right)\right)^4} = 0}$$

Mathematica: cpu = 0.043006 (sec), leaf count = 510

$$\left\{\left\{y(x) \to \frac{\sqrt[3]{144c_1x^2 + \sqrt{4\left(12x^2 - 4c_1^2\right)^3 + \left(144c_1x^2 + 16c_1^3 - 108\right)^2} + 16c_1^3 - 108}}{6\sqrt[3]{2}} - \frac{}{3\ 2^{2/3}\sqrt[3]{144c_1x^2 -}}\right.\right.$$

Maple: cpu = 0.156 (sec), leaf count = 621

$$\left\{y(x) = \frac{1}{12}\left(-2\_C1\ \sqrt[3]{-36\,x^2\_C1 - 54 - \_C1^3 + 6\,\sqrt{48\,x^6 + 24\,x^4\_C1^2 + \left(3\,\_C1^4 + 108\,\_C1\right)x^2 +}}\right.\right.$$

2.745 ODE No. 745

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{\left(-1 + y(x)\ln\left(x\right)\right)^3}{\left(-1 + y\left(x\right)\ln\left(x\right) - y\left(x\right)\right)x} = 0}$$

Mathematica: cpu = 0 (sec), leaf count = 0

Hanged

Maple: cpu = 0.063 (sec), leaf count = 104

$$\left\{y(x) = \frac{47\ RootOf\left(-27783\int^{-Z}(2209\_a^3 - 9261\_}{47\ln\left(x\right)RootOf\left(-27783\int^{-Z}\left(2209\_a^3 - 9261\_a + 9261\right)^{-1}d\_a - 7\ln\left(x\right) + 3\_C1\right) - 84}\right.$$

2.746 ODE No. 746

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{-i\left(ix + x^4 + 2\,x^2(y(x))^2 + (y(x))^4\right)}{y\left(x\right)} = 0}$$

Mathematica: cpu = 31.239967 (sec), leaf count = 39

$$\text{DSolve}\left[y'(x) = -\frac{i(x^4 + 2x^2y(x)^2 + y(x)^4 + ix)}{y(x)}, y(x), x\right]$$

Maple: cpu = 0.312 (sec), leaf count = 243

$$\left\{y(x)=\frac{-i\sqrt{2}}{2\operatorname{Ai}\left(-\sqrt[3]{-8\,i}x\right)\_C1+2\operatorname{Bi}\left(-\sqrt[3]{-8\,i}x\right)}\sqrt{-2\,i\left(\operatorname{Ai}\left(-\sqrt[3]{-8\,i}x\right)\_C1+\operatorname{Bi}\left(-\sqrt[3]{-8\,i}x\right)\right)\left(-\_C\right.}\right.$$

2.747 ODE No. 747

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x)=-\frac{y(x)\left(\tan\left(x\right)+\ln\left(2\,x\right)x-\ln\left(2\,x\right)x^2y(x)\right)}{x\tan\left(x\right)}=0}$$

Mathematica: cpu = 0 (sec), leaf count = 0

Hanged

Maple: cpu = 0.281 (sec), leaf count = 69

$$\left\{y(x)=1\mathrm{e}^{\int-\frac{x\ln(x)+x\ln(2)+\tan(x)}{x\tan(x)}\,\mathrm{d}x}\left(\int-\frac{x(\ln\left(2\right)+\ln\left(x\right))}{\tan\left(x\right)}\mathrm{e}^{\int-\frac{x\ln(x)+x\ln(2)+\tan(x)}{x\tan(x)}\,\mathrm{d}x}\,\mathrm{d}x+\_C1\right)^{-1}\right\}$$

2.748 ODE No. 748

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x)=\frac{y(x)\left(y(x)+x\right)}{x\left(x+\left(y\left(x\right)\right)^3\right)}=0}$$

Mathematica: cpu = 0.382549 (sec), leaf count = 285

$$\left\{\left\{y(x)\to\frac{2\sqrt[3]{2}(c_1+\log(x))}{\sqrt[3]{\sqrt{2916x^2-864\left(c_1+\log(x)\right)^3}+54x}}+\frac{\sqrt[3]{\sqrt{2916x^2-864\left(c_1+\log(x)\right)^3}+54x}}{3\sqrt[3]{2}}\right\},\left\{y(x)\right.\right.$$

Maple: cpu = 0.078 (sec), leaf count = 497

$$\left\{y(x)=\frac{1}{3}\sqrt[3]{27\,x+3\sqrt{-24\,\_C1^3-72\,\ln\left(x\right)\_C1^2-72\,\left(\ln\left(x\right)\right)^2\_C1-24\,\left(\ln\left(x\right)\right)^3+81\,x^2}}-3\,\frac{}{\sqrt[3]{27\,x}}\right.$$

2.749 ODE No. 749

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{(x-y(x))^2\,(y(x)+x)^2\,x}{y\,(x)} = 0}$$

Mathematica: cpu = 0.106013 (sec), leaf count = 126

$$\left\{\left\{y(x) \to -\frac{\sqrt{x^2 e^{4c_1+2x^2} - e^{4c_1+2x^2} + x^2 + 1}}{\sqrt{e^{4c_1+2x^2}+1}}\right\}, \left\{y(x) \to \frac{\sqrt{x^2 e^{4c_1+2x^2} - e^{4c_1+2x^2} + x^2 + 1}}{\sqrt{e^{4c_1+2x^2}+1}}\right\}\right\}$$

Maple: cpu = 0.109 (sec), leaf count = 192

$$\left\{y(x) = 1\sqrt{\left(\_C1\,\mathrm{e}^{-\frac{x^2\left(x^2-2\right)}{2}} + \mathrm{e}^{-\frac{x^2\left(x^2+2\right)}{2}}\right)\left(\left(x^2+1\right)\mathrm{e}^{-\frac{x^2\left(x^2+2\right)}{2}} + \_C1\ \left(x^2-1\right)\mathrm{e}^{-\frac{x^2\left(x^2-2\right)}{2}}\right)}\left(\_C1\,\mathrm{e}^{-\frac{x^2}{}}\right.\right.$$

2.750 ODE No. 750

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{\left(x^2+3\left(y(x)\right)^2\right)y(x)}{\left(6\ \left(y\left(x\right)\right)^2+x\right)x} = 0}$$

Mathematica: cpu = 0.422554 (sec), leaf count = 72

$$\left\{\left\{y(x) \to -\frac{\sqrt{x}\sqrt{W\left(\frac{6e^{2c_1+2x}}{x}\right)}}{\sqrt{6}}\right\}, \left\{y(x) \to \frac{\sqrt{x}\sqrt{W\left(\frac{6e^{2c_1+2x}}{x}\right)}}{\sqrt{6}}\right\}\right\}$$

Maple: cpu = 0.234 (sec), leaf count = 49

$$\left\{\left(\left(y(x)\right)^{-2}+6\,x^{-1}\right)^{-1} = \frac{x}{54}\left(\mathrm{e}^{RootOf\left(-\mathrm{e}^{-Z}\ln\left(\frac{\left(\mathrm{e}^{-Z}+9\right)x}{2}\right)+3\,\mathrm{e}^{-Z}\_C1+\_Z\,\mathrm{e}^{-Z}+2\,x\mathrm{e}^{-Z}+9\right)}+9\right)\right\}$$

2.751 ODE No. 751

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{\left(\ln\left(y(x)\right)x+\ln\left(y(x)\right)+x^4\right)y(x)}{x\,(1+x)} = 0}$$

Mathematica: cpu = 0.078010 (sec), leaf count = 30

$$\left\{\left\{y(x) \to (x+1)^x e^{c_1 x+\frac{x^3}{2}-x^2}\right\}\right\}$$

Maple: cpu = 0.093 (sec), leaf count = 26

$$\left\{y(x) = \frac{(1+x)^x \mathrm{e}^{-C1\,x}}{\mathrm{e}^{x^2}} \mathrm{e}^{\frac{x^3}{2}}\right\}$$

2.752 ODE No. 752

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{\cos\left(y(x)\right)\left(\cos\left(y(x)\right)x^3 - x - 1\right)}{\left(x\sin\left(y\left(x\right)\right) - 1\right)\left(1+x\right)} = 0}$$

Mathematica: cpu = 19.954034 (sec), leaf count = 39

$$\text{DSolve}\left[y'(x) = \frac{\cos(y(x))\left(x^3\cos(y(x)) - x - 1\right)}{(x+1)(x\sin(y(x)) - 1)}, y(x), x\right]$$

Maple: cpu = 1.060 (sec), leaf count = 874

$$\left\{y(x) = \arctan\left(-\frac{-2\,x^3 + 3\,x^2 -}{4\,x^6 - 12\,x^5 + 24\,\_C1\,x^3 + 33\,x^4 - 24\,\ln\left(1+x\right)x^3 - 36\,x^2\,\_C1 - 36\,x^3 + 36\,\ln\left(1+\right.\right.\right.$$

2.753 ODE No. 753

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{\left(x + 1 + x^4\ln\left(y(x)\right)\right)y(x)\ln\left(y(x)\right)}{x\left(1+x\right)} = 0}$$

Mathematica: cpu = 0.109014 (sec), leaf count = 41

$$\left\{\left\{y(x) \to \exp\left(-\frac{12x}{-12c_1 + 3x^4 - 4x^3 + 6x^2 - 12x + 12\log(x+1)}\right)\right\}\right\}$$

Maple: cpu = 0.125 (sec), leaf count = 38

$$\left\{y(x) = \mathrm{e}^{-12\,\frac{x}{3\,x^4 - 4\,x^3 + 6\,x^2 + 12\,\ln(1+x) - 12\,\_C1 - 12\,x}}\right\}$$

2.754 ODE No. 754

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{xy(x) + x^3 + x(y(x))^2 + (y(x))^3}{x^2} = 0}$$

Mathematica: cpu = 0.027003 (sec), leaf count = 47

$$\text{Solve}\left[\text{RootSum}\left[\#1^3 + \#1^2 + 1\&, \frac{\log\left(\frac{y(x)}{x} - \#1\right)}{3\#1^2 + 2\#1}\&\right] = c_1 + x, y(x)\right]$$

Maple: cpu = 0.016 (sec), leaf count = 26

$$\left\{y(x) = RootOf\left(-\int^{\_Z} \left(\_a^3 + \_a^2 + 1\right)^{-1} d\_a + x + \_C1\right) x\right\}$$

2.755 ODE No. 755

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{(y(x))^{3/2}}{(y(x))^{3/2} + x^2 - 2xy(x) + (y(x))^2} = 0}$$

Mathematica: cpu = 0.178023 (sec), leaf count = 2633

$$\left\{\left\{y(x) \to \frac{2}{3}\left(x + e^{c_1} + 2e^{2c_1}\right) - \frac{1}{3}\sqrt[3]{x^3 + 3e^{c_1}x^2 - 12e^{2c_1}x^2 + 3e^{2c_1}x + 12e^{3c_1}x + 48e^{4c_1}x + e^{3c_1} - 30e^{4c_1}\right.$$

Maple: cpu = 0.094 (sec), leaf count = 44

$$\left\{2\frac{\sqrt{y(x)}}{y(x) - x} + (y(x) - x)^{-1} - 2\frac{x}{\sqrt{y(x)}(y(x) - x)} - \_C1 = 0\right\}$$

2.756 ODE No. 756

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{2x^3y(x) + x^6 + x^2(y(x))^2 + (y(x))^3}{x^4} = 0}$$

Mathematica: cpu = 0.080010 (sec), leaf count = 95

$$\text{Solve}\left[-\frac{29}{3}\text{RootSum}\left[-29\#1^3 + 3\sqrt[3]{29}\#1 - 29\&, \frac{\log\left(\frac{\frac{3y(x)}{x^4} + \frac{1}{x^2}}{\sqrt[3]{29}\sqrt[3]{\frac{1}{x^6}}} - \#1\right)}{\sqrt[3]{29} - 29\#1^2}\&\right] = c_1 + \frac{1}{9}29^{2/3}\left(\frac{1}{x^6}\right)^{2/3}x^5, y(\right.$$

Maple: cpu = 0.031 (sec), leaf count = 37

$$\left\{ y(x) = \frac{\left(-3+29\,\mathit{RootOf}\left(-81\,\int^{-Z}\left(841\,\_a^3-27\,\_a+27\right)^{-1}d\_a+x+3\,\_C1\right)\right)x^2}{9} \right\}$$

2.757 ODE No. 757

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{-4\,xy(x)+x^3+2\,x^2-4\,x-8}{-8\,y\left(x\right)+2\,x^2+4\,x-8} = 0}$$

Mathematica: cpu = 0.030004 (sec), leaf count = 36

$$\left\{\left\{y(x)\to 2\left(W\left(-e^{c_1-\frac{x}{4}-1}\right)+1\right)+\frac{1}{4}\left(x^2+2x-4\right)\right\}\right\}$$

Maple: cpu = 0.062 (sec), leaf count = 26

$$\left\{ y(x) = \frac{x^2}{4}+2\,\mathit{lambertW}\left(1/2\,\_C1\,\mathrm{e}^{-x/4}\mathrm{e}^{-1/2}\right)+\frac{x}{2}+1 \right\}$$

2.758 ODE No. 758

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{\left(2\,x+2+x^3y(x)\right)y(x)}{\left(\ln\left(y\left(x\right)\right)+2\,x-1\right)\left(1+x\right)} = 0}$$

Mathematica: cpu = 1.093639 (sec), leaf count = 459

$$\left\{\left\{y(x)\to \frac{6W\left(-\frac{1}{6}\sqrt[6]{e^{-12x}\left(6c_1+2x^3-3x^2+6x-6\log(x+1)\right)^6}\right)}{6c_1+2x^3-3x^2+6x-6\log(x+1)}\right\},\left\{y(x)\to \frac{6W\left(\frac{1}{6}\sqrt[6]{e^{-12x}\left(6c_1+\right.\right.}\right.$$

Maple: cpu = 0.187 (sec), leaf count = 41

$$\left\{ y(x) = \mathrm{e}^{-\mathit{lambertW}\left(-\frac{\left(-2\,x^3+3\,x^2+6\,\ln(1+x)+6\,\_C1-6\,x\right)\mathrm{e}^{-2\,x}}{6}\right)-2\,x} \right\}$$

2.759 ODE No. 759

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{-\frac{i}{243}\left(54\,ix^2 + 81\left(y(x)\right)^4 + 18\,x^4(y(x))^2 + x^8\right)x}{y\left(x\right)} = 0}$$

Mathematica: cpu = 40.967202 (sec), leaf count = 46

$$\text{DSolve}\left[y'(x) = -\frac{ix(x^8 + 18x^4y(x)^2 + 54ix^2 + 81y(x)^4)}{243y(x)}, y(x), x\right]$$

Maple: cpu = 0.452 (sec), leaf count = 315

$$\left\{y(x) = \frac{-\frac{1}{6} - \frac{i}{6}}{x}\sqrt{(1-i)\left(J_{\frac{1}{3}}\left(\left(\frac{2}{27} - \frac{2\,i}{27}\right)\sqrt{6}x^3\right)\_C1 + Y_{\frac{1}{3}}\left(\left(\frac{2}{27} - \frac{2\,i}{27}\right)\sqrt{6}x^3\right)\right)\left(\_C1\ (-27-27\right.\right.$$

2.760 ODE No. 760

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{\left(x(y(x))^2 + 1\right)^3}{x^4\left(x\left(y\left(x\right)\right)^2 + 1 + x\right)y\left(x\right)} = 0}$$

Mathematica: cpu = 1.559198 (sec), leaf count = 112

$$\text{Solve}\left[2\left(\frac{1}{10}\log\left(2x^2y(x)^4 + 2x^2y(x)^2 + x^2 + 4xy(x)^2 + 2x + 2\right) - \frac{1}{5}\log\left(xy(x)^2 - x + 1\right) - \frac{1}{10}\tan^{-1}\left(2x\right.\right.\right.$$

Maple: cpu = 1.685 (sec), leaf count = 475

$$\left\{\frac{\ln\left(x(y(x))^2 - x + 1\right)(y(x))^2}{5\ (y\left(x\right))^2 - 5} - \frac{\ln\left(x(y(x))^2 - x + 1\right)}{5\ (y\left(x\right))^2 - 5} + \frac{1}{2\,x} - \frac{\ln\left(2\,x^2(y(x))^4 + 2\,x^2(y(x))^2 + 4\,x(y(x)\right.\right.}{10\ (y\left(x\right))^4 + 10\ (y\left(x\right.}$$

2.761 ODE No. 761

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{-4\,xy(x) - x^3 + 4\,x^2 - 4\,x + 8}{8\,y\left(x\right) + 2\,x^2 - 8\,x + 8} = 0}$$

Mathematica: cpu = 0.027504 (sec), leaf count = 33

$$\left\{\left\{y(x) \to W\left(-e^{c_1 - x - 1}\right) + \frac{1}{4}\left(-x^2 + 4x - 4\right) + 1\right\}\right\}$$

Maple: cpu = 0.062 (sec), leaf count = 18

$$\left\{y(x) = -\frac{x^2}{4} + lambertW\left(\frac{\_C1}{\mathrm{e}^x}\right) + x\right\}$$

2.762 ODE No. 762

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = -\frac{(\ln(y(x))\,x + \ln(y(x)) - x)\,y(x)}{x\,(1+x)} = 0}$$

Mathematica: cpu = 0.060508 (sec), leaf count = 26

$$\left\{\left\{y(x) \to (x+1)^{-1/x} e^{1-\frac{c_1}{x}}\right\}\right\}$$

Maple: cpu = 0.093 (sec), leaf count = 22

$$\left\{y(x) = \frac{\mathrm{e}}{\sqrt[x]{1+x}} \mathrm{e}^{\frac{-C1}{x}}\right\}$$

2.763 ODE No. 763

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{(\ln(y(x))\,x + \ln(y(x)) + x)\,y(x)}{x\,(1+x)} = 0}$$

Mathematica: cpu = 0.063508 (sec), leaf count = 22

$$\left\{\left\{y(x) \to x^x (x+1)^{-x} e^{c_1 x}\right\}\right\}$$

Maple: cpu = 0.093 (sec), leaf count = 14

$$\left\{y(x) = \left(\frac{-C1\,x}{1+x}\right)^x\right\}$$

2.764 ODE No. 764

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{(-\ln(y(x))\,x - \ln(y(x)) + x^4)\,y(x)}{x\,(1+x)} = 0}$$

Mathematica: cpu = 0.104013 (sec), leaf count = 50

$$\left\{\left\{y(x) \to (x+1)^{\frac{1}{x}} e^{-\frac{c_1}{x} + \frac{x^3}{4} - \frac{x^2}{3} + \frac{x}{2} - \frac{25}{12x} - 1}\right\}\right\}$$

Maple: cpu = 0.093 (sec), leaf count = 36

$$\left\{y(x) = \mathrm{e}^{\frac{x^3}{4}} \mathrm{e}^{-\frac{x^2}{3}} \mathrm{e}^{\frac{x}{2}} \sqrt[x]{1+x} \mathrm{e}^{\frac{-C1}{x}} \mathrm{e}^{-1}\right\}$$

2.765 ODE No. 765

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x)=\frac{y(x)}{x}\left(-1-\ln\left(\frac{(1+x)\,(x-1)}{x}\right)+\ln\left(\frac{(1+x)\,(x-1)}{x}\right)xy(x)\right)=0}$$

Mathematica: cpu = 135.603219 (sec), leaf count = 128

$$\left\{\left\{y(x)\to \frac{e^{\mathrm{Li}_2(-x)+\mathrm{Li}_2(x)}x^{\log(1-x)-\frac{\log(x)}{2}+\log(x+1)-\mathrm{lo}}}{c_1-\int_1^x \log\left(\frac{(K[1]-1)(K[1]+1)}{K[1]}\right)\exp\left(\mathrm{Li}_2(-K[1])+\mathrm{Li}_2(K[1])-\frac{1}{2}\log(K[1])\left(-2\log(1-K[1])+\right.\right.\right.\right.$$

Maple: cpu = 0.110 (sec), leaf count = 106

$$\left\{y(x)=\frac{\mathrm{e}^{dilog(1+x)}x^{\ln(1+x)}}{\mathrm{e}^{dilog(x)}x}\mathrm{e}^{-\frac{(\ln(x))^2}{2}}\left(\int-\frac{\mathrm{e}^{dilog(1+x)}x^{\ln(1+x)}}{\mathrm{e}^{dilog(x)}x}\mathrm{e}^{-\frac{(\ln(x))^2}{2}}\ln\left(\frac{(1+x)\,(x-1)}{x}\right)\left(x^{\ln\left(\frac{(1+x)(x-1)}{x}\right)}\right)^{-}\right.\right.$$

2.766 ODE No. 766

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x)=\frac{y(x)}{x\ln(x)}\left(-\ln(x)-x\ln\left(\frac{(1+x)\,(x-1)}{x}\right)+\ln\left(\frac{(1+x)\,(x-1)}{x}\right)x^2y(x)\right)=0}$$

Mathematica: cpu = 0 (sec), leaf count = 0

Hanged

Maple: cpu = 0.234 (sec), leaf count = 85

$$\left\{y(x)=1\mathrm{e}^{\int-\frac{1}{x\ln(x)}\left(x\ln\left(\frac{(1+x)(x-1)}{x}\right)+\ln(x)\right)\mathrm{d}x}\left(\int-\frac{x}{\ln(x)}\mathrm{e}^{\int-\frac{1}{x\ln(x)}\left(x\ln\left(\frac{(1+x)(x-1)}{x}\right)+\ln(x)\right)\mathrm{d}x}\ln\left(\frac{(1+x)\,(x-1)}{x}\right)\right.\right.$$

2.767 ODE No. 767

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x)=\frac{-8\,xy(x)-x^3+2\,x^2-8\,x+32}{32\,y\,(x)+4\,x^2-8\,x+32}=0}$$

Mathematica: cpu = 0.753096 (sec), leaf count = 38

$$\left\{\left\{y(x)\to 4\left(W\left(-e^{c_1-\frac{x}{16}-1}\right)+1\right)+\frac{1}{8}\left(-x^2+2x-8\right)\right\}\right\}$$

Maple: cpu = 0.062 (sec), leaf count = 26

$$\left\{y(x)=-\frac{x^2}{8}+4\,lambertW\left(1/4\_C1\,\mathrm{e}^{-x/16}\mathrm{e}^{-3/4}\right)+\frac{x}{4}+3\right\}$$

2.768 ODE No. 768

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{y(x)\left(1+y(x)\right)}{x\left(-y\left(x\right)-1+xy\left(x\right)\right)} = 0}$$

Mathematica: cpu = 0.977124 (sec), leaf count = 70

$$\text{Solve}\left[-\frac{2^{2/3}\left(xy(x)\left(\log\left(\frac{xy(x)}{(x-1)y(x)-1}\right)-\log\left(\frac{y(x)+1}{-xy(x)+y(x)+1}\right)-\log(x)-1+\log(2)\right)+1\right)}{9xy(x)} = c_1, y(x)\right]$$

Maple: cpu = 0.062 (sec), leaf count = 26

$$\left\{y(x) = -\left(x\mathit{lambertW}\left(\frac{1}{x\_C1\,\mathrm{e}^{x^{-1}}}\right)+1\right)^{-1}\right\}$$

2.769 ODE No. 769

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{-i/32\left(16\,ix^2+16\left(y(x)\right)^4+8\,x^4(y(x))^2+x^8\right)x}{y\left(x\right)} = 0}$$

Mathematica: cpu = 42.445390 (sec), leaf count = 46

$$\text{DSolve}\left[y'(x) = -\frac{ix(x^8+8x^4y(x)^2+16ix^2+16y(x)^4)}{32y(x)}, y(x), x\right]$$

Maple: cpu = 0.359 (sec), leaf count = 251

$$\left\{y(x) = -\frac{\sqrt{4}}{2\,x}\sqrt{\left(-2\,\left(1/8\,x^6+i\right)\_C1\,J_{1/3}\left(\left(1/3-i/3\right)x^3\right)+\left(-\frac{x^6}{4}-2\,i\right)Y_{\frac{1}{3}}\left(\left(\frac{1}{3}-\frac{i}{3}\right)x^3\right)+(1+i\right.\right.$$

2.770 ODE No. 770

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = 2\,\frac{\left(y(x)\right)^6}{\left(y\left(x\right)\right)^3+2+16\,x\left(y\left(x\right)\right)^2+32\,x^2\left(y\left(x\right)\right)^4} = 0}$$

Mathematica: cpu = 0.105513 (sec), leaf count = 705

$$\left\{\left\{y(x) \to \frac{\sqrt[3]{18432c_1^2x^2+\sqrt{4\left(192c_1^2x-12c_1-256x^2\right)^3+\left(18432c_1^2x^2-2880c_1x+8192x^3+108\right)^2}-2}}{3\sqrt[3]{2}\left(1-16c_1x\right)}\right.\right.$$

Maple: cpu = 0.094 (sec), leaf count = 1345

$$\left\{ y(x) = \frac{1}{3\_C1 + 48\,x} \sqrt[3]{4096\,\_C1^{3}x^{3} + 6\,\sqrt{3}\sqrt{4096\,\_C1^{4}x^{3} + 27\,\_C1^{4} + 576\,x\_C1^{3} + 2048\,\_C1^{2}x^{2} +} \right.$$

2.771 ODE No. 771

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{-4\,axy(x) - a^{2}x^{3} - 2\,ax^{2}b - 4\,ax + 8}{8\,y\left(x\right) + 2\,ax^{2} + 4\,bx + 8} = 0}$$

Mathematica: cpu = 0.053007 (sec), leaf count = 46

$$\left\{ \left\{ y(x) \to \frac{1}{4}\left(-ax^{2} - 2bx - 4\right) - \frac{2\left(W\left(-e^{-\frac{b^{2}x}{4} + c_{1} - 1}\right) + 1\right)}{b} \right\} \right\}$$

Maple: cpu = 0.078 (sec), leaf count = 84

$$\left\{ y(x) = \frac{1}{4\,b}\left(-ax^{2}b - 2\,b^{2}x - 4\,b + 4\,\mathrm{e}^{-1/4\,\frac{1}{a}\left(ab^{2}x + 2\,\_C1\,b^{2} + 4\,lambertW\left(-1/2\,\mathrm{e}^{-1/4\,b^{2}x}\mathrm{e}^{-1/2\,\frac{-C1\,b^{2}}{a}}\mathrm{e}^{-b/2}\mathrm{e}^{-1}\right)a + 2\,ab + 4\,a\right.\right.} \right.$$

2.772 ODE No. 772

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{\left(x + 1 + \ln\left(y(x)\right)x\right)\ln\left(y(x)\right)y(x)}{x\left(1 + x\right)} = 0}$$

Mathematica: cpu = 0.108514 (sec), leaf count = 21

$$\left\{ \left\{ y(x) \to e^{\frac{x}{c_{1} - x + \log(x+1)}} \right\} \right\}$$

Maple: cpu = 0.093 (sec), leaf count = 18

$$\left\{ y(x) = \mathrm{e}^{\frac{x}{\ln(1+x) + \_C1 - x}} \right\}$$

2.773 ODE No. 773

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{xy(x) + x + (y(x))^2}{(x-1)(y(x)+x)} = 0}$$

Mathematica: cpu = 0.053007 (sec), leaf count = 61

$$\text{Solve}\left[\frac{1}{2}\log\left(\frac{y(x)^2}{x^2} + \frac{y(x)}{x} + 1\right) + \frac{\tan^{-1}\left(\frac{\frac{2y(x)}{x}+1}{\sqrt{3}}\right)}{\sqrt{3}} = c_1 + \log(1-x) - \log(x), y(x)\right]$$

Maple: cpu = 0.218 (sec), leaf count = 48

$$\left\{y(x) = \frac{\sqrt{3}x}{2}\tan\left(\mathit{RootOf}\left(-\sqrt{3}\ln\left(\frac{3x^2\left(\left(\tan\left(\_Z\right)\right)^2+1\right)}{4\left(x-1\right)^2}\right) + 2\sqrt{3}\_C1 - 2\_Z\right)\right) - \frac{x}{2}\right\}$$

2.774 ODE No. 774

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{-4xy(x) - x^3 - 2ax^2 - 4x + 8}{8y(x) + 2x^2 + 4ax + 8} = 0}$$

Mathematica: cpu = 0.027003 (sec), leaf count = 45

$$\left\{\left\{y(x) \to \frac{1}{4}\left(-2ax - x^2 - 4\right) - \frac{2\left(W\left(-e^{-\frac{a^2x}{4}+c_1-1}\right)+1\right)}{a}\right\}\right\}$$

Maple: cpu = 0.078 (sec), leaf count = 50

$$\left\{y(x) = -\frac{1}{4a}\left(2a^2x + ax^2 + 8\,\mathit{lambertW}\left(-1/2\,\mathrm{e}^{-1/4\,a^2x}\mathrm{e}^{-a/2}\mathrm{e}^{-1}\mathrm{e}^{1/4\,\_C1\,a^2}\right) + 4a + 8\right)\right\}$$

2.775 ODE No. 775

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{x - y(x) + \sqrt{y(x)}}{x - y(x) + \sqrt{y(x)} + 1} = 0}$$

Mathematica: cpu = 0.094512 (sec), leaf count = 943

$$\{\{y(x) \to \text{Root}\left[x^6 - 2e^{3c_1}x^3 + e^{6c_1} + \#1^6 + (-6x-6)\#1^5 + \left(15x^2+24x+9\right)\#1^4 + \left(-20x^3 - 36x^2 -\right.\right.$$

Maple: cpu = 0.078 (sec), leaf count = 60

$$\left\{\sqrt{y(x) - 2\sqrt{y(x)} - x}y(x) + \sqrt{y(x) - 2\sqrt{y(x)} - x}\sqrt{y(x)} - \sqrt{y(x) - 2\sqrt{y(x)} - x}x - \_C1 = 0\right\}$$

2.776 ODE No. 776

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x)=\frac{y(x)}{x\ln\left(x^{-1}\right)}\left(-\ln\left(x^{-1}\right)-\ln\left(\frac{x^2+1}{x}\right)x+\ln\left(\frac{x^2+1}{x}\right)x^2y(x)\right)=0}$$

Mathematica: cpu = 0 (sec), leaf count = 0

Hanged

Maple: cpu = 0.234 (sec), leaf count = 92

$$\left\{y(x)=1\mathrm{e}^{\int-\frac{1}{x\ln\left(x^{-1}\right)}\left(\ln\left(\frac{x^2+1}{x}\right)x+\ln\left(x^{-1}\right)\right)\mathrm{d}x}\left(\int-\frac{x}{\ln\left(x^{-1}\right)}\mathrm{e}^{\int-\frac{1}{x\ln\left(x^{-1}\right)}\left(\ln\left(\frac{x^2+1}{x}\right)x+\ln\left(x^{-1}\right)\right)\mathrm{d}x}\ln\left(\frac{x^2+1}{x}\right)\mathrm{d}x+\right.\right.$$

2.777 ODE No. 777

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x)=\frac{y(x)\left(1+y(x)\right)}{x\left(-y\left(x\right)-1+x\left(y\left(x\right)\right)^4\right)}=0}$$

Mathematica: cpu = 0.086011 (sec), leaf count = 39

$$\text{Solve}\left[-\frac{1}{2}(y(x)+1)^2+2(y(x)+1)-\frac{1}{xy(x)}-\log(y(x)+1)=c_1,y(x)\right]$$

Maple: cpu = 0.125 (sec), leaf count = 51

$$\left\{y(x)=\mathrm{e}^{RootOf\left(x\left(\mathrm{e}^{-Z}\right)^3-5x\left(\mathrm{e}^{-Z}\right)^2+2\_C1\,x\mathrm{e}^{-Z}+2\_Z\,x\mathrm{e}^{-Z}+7x\mathrm{e}^{-Z}-2\_C1\,x-2x\_Z-3x+2\right)}-1\right\}$$

2.778 ODE No. 778

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x)=\frac{-3x^2y(x)+1+x^6(y(x))^2+(y(x))^3x^9}{x^3}=0}$$

Mathematica: cpu = 0.063008 (sec), leaf count = 95

$$\text{Solve}\left[-\frac{29}{3}\text{RootSum}\left[-29\#1^3+3\sqrt[3]{29}\#1-29\&,\frac{\log\left(\frac{3x^6y(x)+x^3}{\sqrt[3]{29}\sqrt[3]{x^9}}-\#1\right)}{\sqrt[3]{29}-29\#1^2}\&\right]=c_1+\frac{29^{2/3}\left(x^9\right)^{2/3}}{9x^5},y(x)\right]$$

Maple: cpu = 0.031 (sec), leaf count = 37

$$\left\{y(x)=\frac{-3+29\,RootOf\left(-81\int^{-Z}\left(841\_a^3-27\_a+27\right)^{-1}d\_a+x+3\_C1\right)}{9x^3}\right\}$$

2.779 ODE No. 779

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{x^3 y(x) + x^3 + x(y(x))^2 + (y(x))^3}{(x-1)\,x^3} = 0}$$

Mathematica: cpu = 0.028504 (sec), leaf count = 57

$$\text{Solve}\left[-\frac{1}{4}\log\left(\frac{y(x)^2}{x^2}+1\right)+\frac{1}{2}\log\left(\frac{y(x)}{x}+1\right)+\frac{1}{2}\tan^{-1}\left(\frac{y(x)}{x}\right) = c_1 + \log(1-x) - \log(x), y(x)\right]$$

Maple: cpu = 0.078 (sec), leaf count = 50

$$\left\{\frac{1}{2}\ln\left(\frac{y(x)+x}{x}\right)-\frac{1}{4}\ln\left(\frac{(y(x))^2+x^2}{x^2}\right)+\frac{1}{2}\arctan\left(\frac{y(x)}{x}\right)+\ln(x)-\ln(x-1)-\_C1 = 0\right\}$$

2.780 ODE No. 780

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{xy(x)+y(x)+x\sqrt{(y(x))^2+x^2}}{x\,(1+x)} = 0}$$

Mathematica: cpu = 0.023003 (sec), leaf count = 15

$$\{\{y(x) \to x\sinh(c_1 + \log(x+1))\}\}$$

Maple: cpu = 0.280 (sec), leaf count = 27

$$\left\{\_C1 + \frac{1}{x\,(1+x)}\left(\sqrt{(y(x))^2+x^2}+y(x)\right) = 0\right\}$$

2.781 ODE No. 781

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{\left(x^4+x^3+x+3\,(y(x))^2\right)y(x)}{\left(6\,(y(x))^2+x\right)x} = 0}$$

Mathematica: cpu = 0.495563 (sec), leaf count = 82

$$\left\{\left\{y(x) \to -\frac{\sqrt{x}\sqrt{W\left(6xe^{2c_1+\frac{2x^3}{3}+x^2}\right)}}{\sqrt{6}}\right\}, \left\{y(x) \to \frac{\sqrt{x}\sqrt{W\left(6xe^{2c_1+\frac{2x^3}{3}+x^2}\right)}}{\sqrt{6}}\right\}\right\}$$

Maple: cpu = 0.249 (sec), leaf count = 61

$$\left\{\left((y(x))^{-2}+6\,x^{-1}\right)^{-1} = \frac{x}{54}\left(\mathrm{e}^{RootOf\left(2\,x^3\mathrm{e}^{-Z}+3\,\mathrm{e}^{-Z}x^2-3\,\mathrm{e}^{-Z}\ln\left(1/2\,\frac{\mathrm{e}^{-Z}+9}{x}\right)+9\,\mathrm{e}^{-Z}\_C1+3\,\_Z\,\mathrm{e}^{-Z}+27\right)}+9\right)\right\}$$

2.782 ODE No. 782

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{y(x)}{x\tanh\left(x^{-1}\right)}\left(-\tanh\left(x^{-1}\right) - \ln\left(\frac{x^2+1}{x}\right)x + \ln\left(\frac{x^2+1}{x}\right)x^2 y(x)\right) = 0}$$

Mathematica: cpu = 0 (sec), leaf count = 0

Hanged

Maple: cpu = 0.530 (sec), leaf count = 92

$$\left\{y(x) = 1\mathrm{e}^{\int -\frac{1}{x\tanh\left(x^{-1}\right)}\left(\ln\left(\frac{x^2+1}{x}\right)x+\tanh\left(x^{-1}\right)\right)\mathrm{d}x}\left(\int -\frac{x}{\tanh\left(x^{-1}\right)}\mathrm{e}^{\int -\frac{1}{x\tanh\left(x^{-1}\right)}\left(\ln\left(\frac{x^2+1}{x}\right)x+\tanh\left(x^{-1}\right)\right)\mathrm{d}x}\ln\left(\frac{x^2+\right.\right.\right.$$

2.783 ODE No. 783

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = -\frac{y(x)\left(\tanh\left(x\right) + \ln\left(2\,x\right)x - \ln\left(2\,x\right)x^2 y(x)\right)}{x\tanh\left(x\right)} = 0}$$

Mathematica: cpu = 0 (sec), leaf count = 0

Hanged

Maple: cpu = 0.203 (sec), leaf count = 69

$$\left\{y(x) = 1\mathrm{e}^{\int -\frac{x\ln(x)+x\ln(2)+\tanh(x)}{x\tanh(x)}\mathrm{d}x}\left(\int -\frac{x(\ln\left(2\right)+\ln\left(x\right))}{\tanh\left(x\right)}\mathrm{e}^{\int -\frac{x\ln(x)+x\ln(2)+\tanh(x)}{x\tanh(x)}\mathrm{d}x}\,\mathrm{d}x + \_C1\right)^{-1}\right\}$$

2.784 ODE No. 784

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{-\sinh\left(x\right) + x^2\ln\left(x\right) + 2\,y(x)\ln\left(x\right)x + \ln\left(x\right) + \left(y(x)\right)^2\ln\left(x\right)}{\sinh\left(x\right)} = 0}$$

Mathematica: cpu = 0 (sec), leaf count = 0

Hanged

Maple: cpu = 26.208 (sec), leaf count = 24

$$\left\{y(x) = -x - \tan\left(\_C1 - \int \frac{\ln\left(x\right)}{\sinh\left(x\right)}\,\mathrm{d}x\right)\right\}$$

2.785 ODE No. 785

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = -\frac{\ln(x) - \sinh(x)\,x^2 - 2\,\sinh(x)\,xy(x) - \sinh(x) - \sinh(x)\,(y(x))^2}{\ln(x)} = 0}$$

Mathematica: cpu = 0 (sec), leaf count = 0

Hanged

Maple: cpu = 96.767 (sec), leaf count = 24

$$\left\{y(x) = -x - \tan\left(\_C1 - \int \frac{\sinh(x)}{\ln(x)}\,\mathrm{d}x\right)\right\}$$

2.786 ODE No. 786

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{y(x)\ln(x) + \cosh(x)\,xa(y(x))^2 + \cosh(x)\,x^3 b}{x\ln(x)} = 0}$$

Mathematica: cpu = 0 (sec), leaf count = 0

Hanged

Maple: cpu = 0.047 (sec), leaf count = 39

$$\left\{y(x) = \frac{x}{a}\tan\left(\int \frac{x\cosh(x)}{\ln(x)}\,\mathrm{d}x\sqrt{ab} + \_C1\,\sqrt{ab}\right)\sqrt{ab}\right\}$$

2.787 ODE No. 787

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{x(-x - 1 + x^2 - 2\,x^2 y(x) + 2\,x^4)}{(x^2 - y(x))\,(1 + x)} = 0}$$

Mathematica: cpu = 19.683499 (sec), leaf count = 487

$$\text{Solve}\left[-\frac{2\;2^{2/3}\left(2 - \frac{x(x^2-x-1)\,(2x^2-2y(x)+3)}{\sqrt[3]{x^3(x^2-x-1)^3}(x^2-y(x))}\right)\left(\frac{x(x^2-x-1)\,(2x^2-2y(x)+3)}{\sqrt[3]{x^3(x^2-x-1)^3}(x^2-y(x))} + 4\right)\left(\left(1 - \frac{x(x^2-x-1)\,(2x^2-2y(x)+3)}{2\sqrt[3]{x^3(x^2-x-1)^3}(x^2-y(x))}\right)\text{lo}\right.}{9\left(-\frac{(2x^2-2y(x)+3)^3}{(x^2-y(x))^3} + \frac{12x(x}{\sqrt[3]{x^3}}\right.}\right.$$

Maple: cpu = 0.437 (sec), leaf count = 191

$$\left\{ y(x) = 1\left(4\,x^{2}{\mathrm{e}}^{RootOf\left(8\,x^{3}{\mathrm{e}}^{-Z}-24\,{\mathrm{e}}^{-Z}x^{2}-36\,x^{3}+6\,\ln\left(\frac{2\,{\mathrm{e}}^{-Z}-9}{(1+x)^{4}} \right){\mathrm{e}}^{-Z}+18\,\_C1\,{\mathrm{e}}^{-Z}-6\,\_Z\,{\mathrm{e}}^{-Z}+24\,x{\mathrm{e}}^{-Z}+108\,x^{2}-27\,\ln\left(\frac{2\,{\mathrm{e}}^{-Z}-9}{(1+x)^{4}} \right)- \right.} \right.$$

2.788 ODE No. 788

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = -\frac{y(x)\left(\ln\left(x-1\right)+\coth\left(1+x\right)x-\coth\left(1+x\right)x^{2}y(x)\right)}{\ln\left(x-1\right)x} = 0}$$

Mathematica: cpu = 0 (sec), leaf count = 0

Hanged

Maple: cpu = 0 (sec), leaf count = 0

hanged

2.789 ODE No. 789

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = -\frac{\ln\left(x-1\right)-\coth\left(1+x\right)x^{2}-2\,\coth\left(1+x\right)xy(x)-\coth\left(1+x\right)-\coth\left(1+x\right)\left(y(x)\right)^{2}}{\ln\left(x-1\right)} =}$$

Mathematica: cpu = 0 (sec), leaf count = 0

Hanged

Maple: cpu = 0 (sec), leaf count = 0

hanged

2.790 ODE No. 790

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{1}{\ln\left(\left(x-1\right)^{-1}\right)}\left(2\,x\ln\left(\left(x-1\right)^{-1}\right)-\coth\left(\frac{1+x}{x-1}\right)+\coth\left(\frac{1+x}{x-1}\right)\left(y(x)\right)^{2}-2\,\coth\left(\frac{1+x}{x-1}\right.\right.}$$

Mathematica: cpu = 1267.680975 (sec), leaf count = 95

$$\left\{\left\{ y(x) \to \frac{\exp\left(\int_{1}^{x}\frac{2\coth\left(\frac{K[5]}{K[5]-1}+\frac{1}{K[5]-1}\right)}{\log\left(\frac{1}{K[5]-1}\right)}\,dK[5]\right)}{c_{1}-\frac{1}{2}\exp\left(\text{Integrate}\left[\frac{2\coth\left(\frac{K[5]}{K[5]-1}+\frac{1}{K[5]-1}\right)}{\log\left(\frac{1}{K[5]-1}\right)},\{K[5],1,x\},\text{Assumptions}\to\text{True}\right]\right)}+x^{2}+1 \right\}\right.$$

Maple: cpu = 0 (sec), leaf count = 0

hanged

2.791 ODE No. 791

$$\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{2\,x^2\cosh\left((x-1)^{-1}\right) - 2\,x\cosh\left((x-1)^{-1}\right) - 1 + (y(x))^2 - 2\,x^2 y(x) + x^4 - x + x(y(x))^2 - 2}{(x-1)\cosh\left((x-1)^{-1}\right)}$$

Mathematica: cpu = 1670.398114 (sec), leaf count = 87

$$\left\{\left\{y(x) \to \frac{\exp\left(\int_1^x \frac{2(K[5]+1)\operatorname{sech}\left(\frac{1}{K[5]-1}\right)}{K[5]-1}\,dK[5]\right)}{c_1 - \frac{1}{2}\exp\left(\text{Integrate}\left[\frac{2(K[5]+1)\operatorname{sech}\left(\frac{1}{K[5]-1}\right)}{K[5]-1}, \{K[5], 1, x\}, \text{Assumptions} \to \text{True}\right]\right)} + \frac{x^3+x^2}{x+1} +\right.\right.$$

Maple: cpu = 12.699 (sec), leaf count = 634

$$\left\{y(x) = 1\left(x^2\left(\mathrm{e}^{\frac{\_C1}{\left(\mathrm{e}^{(x-1)^{-1}}\right)^2+1}\mathrm{e}^{2(x-1)^{-1}}}\right)^4\left(\mathrm{e}^{\frac{\_C1}{\left(\mathrm{e}^{(x-1)^{-1}}\right)^2+1}}\right)^4\left(\mathrm{e}^{\frac{1}{\left(\mathrm{e}^{(x-1)^{-1}}\right)^2+1}\int\left(\frac{\mathrm{e}^{(x-1)^{-1}}x}{1+x}+\frac{x}{\mathrm{e}^{(x-1)^{-1}}(1+x)}-\frac{\mathrm{e}^{(x-1)^{-1}}}{1+x}\right.\right.\right.\right.$$

2.792 ODE No. 792

$$\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{y(x)\left(-\cosh\left((1+x)^{-1}\right)x + \cosh\left((1+x)^{-1}\right) - x + x^2 y(x) - x^2 + x^3 y(x)\right)}{(x-1)\,x\cosh\left((1+x)^{-1}\right)} = 0$$

Mathematica: cpu = 0 (sec), leaf count = 0

can not solve

Maple: cpu = 0.312 (sec), leaf count = 114

$$\left\{y(x) = 1\mathrm{e}^{\int -\frac{\cosh\left((1+x)^{-1}\right)x+x^2-\cosh\left((1+x)^{-1}\right)+x}{x(x-1)\cosh\left((1+x)^{-1}\right)}\,\mathrm{d}x}\left(\int -\frac{x(1+x)}{(x-1)\cosh\left((1+x)^{-1}\right)}\mathrm{e}^{\int -\frac{\cosh\left((1+x)^{-1}\right)x+x^2-\cosh\left((1+x)^{-1}\right)+}{x(x-1)\cosh\left((1+x)^{-1}\right)}}\right.\right.$$

2.793 ODE No. 793

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = -\frac{y(x)\left(xy(x)+1\right)}{x\left(xy\left(x\right)+1-y\left(x\right)\right)} = 0}$$

Mathematica: cpu = 13.841758 (sec), leaf count = 397

$$\text{Solve}\left[\frac{\sqrt[3]{-2}\left(\frac{2^{2/3}((x-1)y(x)-2)}{\sqrt[3]{-\frac{1}{(x-1)^3}}(x-1)((x-1)y(x)+1)}+(-2)^{2/3}\right)\left(\frac{-xy(x)+y(x)+2}{\sqrt[3]{2}\sqrt[3]{-\frac{1}{(x-1)^3}}(x-1)((x-1)y(x)+1)}+(-2)^{2/3}\right)\left(\left(\frac{\sqrt[3]{-1}(-}{\sqrt[3]{-\frac{1}{(x-1)^3}}(}\right.\right.\right.}{9}$$

Maple: cpu = 0.078 (sec), leaf count = 32

$$\left\{y(x) = -2\,\frac{1}{x}\mathrm{e}^{-lambertW\left(-2\,\frac{(x-1)\left(\mathrm{e}^{-C1}\right)^3\mathrm{e}^{-1}}{x}\right)+3\_C1-1}\right\}$$

2.794 ODE No. 794

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{y(x)}{x\left(-1+y\left(x\right)+x^2\left(y\left(x\right)\right)^3+\left(y\left(x\right)\right)^4x^3\right)} = 0}$$

Mathematica: cpu = 0.091512 (sec), leaf count = 67

$$\text{Solve}\left[\text{RootSum}\left[\#1^3y(x)^3+\#1^2y(x)^2+1\&,\frac{\#1y(x)\log(x-\#1)+\log(x-\#1)}{3\#1y(x)+2}\&\right]+y(x)-\log(x) = c\right.$$

Maple: cpu = 0.390 (sec), leaf count = 32

$$\left\{-y(x)+\int^{xy(x)}\frac{1}{\_a\left(\_a^3+\_a^2+1\right)}d\_a-\_C1 = 0\right\}$$

2.795 ODE No. 795

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{x^3+3\,ax^2+3\,a^2x+a^3+x(y(x))^2+a(y(x))^2+(y(x))^3}{(x+a)^3} = 0}$$

Mathematica: cpu = 0.156520 (sec), leaf count = 111

$$\text{Solve}\left[-\frac{19}{3}\text{RootSum}\left[-19\#1^3+6\sqrt[3]{38}\#1-19\&,\frac{\log\left(\frac{\frac{3y(x)}{(a+x)^3}+\frac{1}{(a+x)^2}}{\sqrt[3]{38}\sqrt[3]{\frac{1}{(a+x)^6}}}-\#1\right)}{2\sqrt[3]{38}-19\#1^2}\&\right]\right]=\frac{1}{9}38^{2/3}\left(\frac{1}{(a+x)^6}\right)^{2/3}$$

Maple: cpu = 0.032 (sec), leaf count = 37

$$\left\{y(x)=-RootOf\left(-\int^{\_Z}\left(\_a^3-\_a^2-\_a-1\right)^{-1}d\_a+\ln\left(x+a\right)+\_C1\right)(x+a)\right\}$$

2.796 ODE No. 796

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x)=1/3\,\frac{x(y(x))^3\,\mathrm{e}^{3x^2}}{\left(3\,\mathrm{e}^{3/2\,x^2}+\mathrm{e}^{3/2\,x^2}y\left(x\right)+3\,y\left(x\right)\right)\mathrm{e}^{9/2\,x^2}}=0}$$

Mathematica: cpu = 9.404194 (sec), leaf count = 102

$$\text{Solve}\left[\frac{1}{62}\left(-31\log\left(9e^{\frac{3x^2}{2}}(y(x)+3)y(x)+3e^{3x^2}(y(x)+3)^2-y(x)^2\right)+6\sqrt{93}\tanh^{-1}\left(\frac{\sqrt{\frac{3}{31}}\left(2e^{\frac{3x^2}{2}}(y(x)\right.\right.\right.$$
$$\left.\left.\left.y(x\right.\right.\right.$$

Maple: cpu = 1.155 (sec), leaf count = 143

$$\left\{y(x)=RootOf\left(\left(7\,\mathrm{e}^{3x^2+RootOf\left(\left(\mathrm{e}^{3/2\,x^2}\right)^2\left(42\sqrt{93}\tanh\left(\frac{(\_C1-5\_Z)\sqrt{93}}{90}\right)\mathrm{e}^{3x^2+\_Z}+217\left(\tanh\left(\frac{(\_C1-5\_Z)\sqrt{93}}{90}\right)\right)^2\mathrm{e}^{3x^2+\_Z}+1\right.\right.\right.\right.\right.$$

2.797 ODE No. 797

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x)=\frac{y(x)}{x}\left(-1-\cosh\left(\frac{1+x}{x-1}\right)x+\cosh\left(\frac{1+x}{x-1}\right)x^2y(x)-\cosh\left(\frac{1+x}{x-1}\right)x^2+\cosh\left(\frac{1+x}{x-1}\right)x^3y\right.}$$

Mathematica: cpu = 2.027757 (sec), leaf count = 349

$$\left\{\left\{y(x)\to\frac{\exp\left(\frac{(3e^2-1)\text{Chi}\left(\frac{2}{x-1}\right)}{e}+\frac{(1+3e^2)\text{Shi}\left(\frac{2}{x-1}\right)}{e}-\frac{1}{4}ex^2\sinh\left(\frac{2}{x-1}\right)+\frac{x^2\sinh\left(\frac{2}{x-1}\right)}{4e}-\frac{1}{4}ex^2\cosh\left(\frac{2}{x-1}\right)-\frac{x^2}{}\right.\right.\right.$$
$$\left.\left.\left.x\left(c_1\exp\left(\frac{(x-1)\left((-x+e^2\right.\right.\right.\right.\right.$$

Maple: cpu = 0.141 (sec), leaf count = 281

$$\left\{y(x)=\frac{1}{x}\mathrm{e}^{-\frac{\mathrm{e}x^2}{4}\mathrm{e}^{2(x-1)^{-1}}}\mathrm{e}^{\frac{5\,\mathrm{e}}{4}\mathrm{e}^{2(x-1)^{-1}}}\mathrm{e}^{-\frac{\mathrm{e}^{-1}x^2}{4}\mathrm{e}^{-2(x-1)^{-1}}}\mathrm{e}^{\frac{\mathrm{e}^{-1}}{4}\mathrm{e}^{-2(x-1)^{-1}}}\mathrm{e}^{\mathrm{e}^{-1}Ei\left(1,2(x-1)^{-1}\right)}\left(\mathrm{e}^{\mathrm{e}\mathrm{e}^{2(x-1)^{-1}}x}\right)^{-1}\left(\mathrm{e}^{\mathrm{e}Ei\left(1,\right.}\right.\right.$$

2.798 ODE No. 798

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{(x+y(x)+1)\,y(x)}{\left(2\,(y\,(x))^3+y\,(x)+x\right)(1+x)} = 0}$$

Mathematica: cpu = 0.552070 (sec), leaf count = 27

$$\text{Solve}\left[y(x)^2-\frac{x}{y(x)}+\log(y(x))-\log(x+1)=c_1,y(x)\right]$$

Maple: cpu = 0.109 (sec), leaf count = 30

$$\left\{y(x)=\mathrm{e}^{RootOf\left(-\left(\mathrm{e}^{-Z}\right)^3+\ln(1+x)\mathrm{e}^{-Z}+\_C1\,\mathrm{e}^{-Z}-\_Z\,\mathrm{e}^{-Z}+x\right)}\right\}$$

2.799 ODE No. 799

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{y(x)}{x}\left(-1-x\mathrm{e}^{\frac{1+x}{x-1}}+x^2\mathrm{e}^{\frac{1+x}{x-1}}y(x)-x^2\mathrm{e}^{\frac{1+x}{x-1}}+x^3\mathrm{e}^{\frac{1+x}{x-1}}y(x)\right) = 0}$$

Mathematica: cpu = 0.300538 (sec), leaf count = 70

$$\left\{\left\{y(x)\to\frac{e^{6e\text{Ei}\left(\frac{2}{x-1}\right)}}{x\left(c_1e^{\frac{1}{2}e^{\frac{x}{x-1}+\frac{1}{x-1}}(x^2+4x-5)}+e^{6e\text{Ei}\left(\frac{2}{x-1}\right)}\right)}\right\}\right\}$$

Maple: cpu = 0.234 (sec), leaf count = 147

$$\left\{y(x)=\frac{1}{x}\mathrm{e}^{\frac{5}{2}}\mathrm{e}^{\frac{1+x}{x-1}}\mathrm{e}^{-\frac{x^2}{2}}\mathrm{e}^{\frac{1+x}{x-1}}\left(\mathrm{e}^{eEi\left(1,-2\,(x-1)^{-1}\right)}\right)^{-6}\left(\mathrm{e}^{x\mathrm{e}^{\frac{1+x}{x-1}}}\right)^{-2}\left(\int-(1+x)\mathrm{e}^{\frac{1+x}{x-1}}\mathrm{e}^{\frac{5}{2}}\mathrm{e}^{\frac{1+x}{x-1}}\mathrm{e}^{-\frac{x^2}{2}}\mathrm{e}^{\frac{1+x}{x-1}}\left(\mathrm{e}^{eEi\left(1,-2\,(x\right.\right.\right.\right.$$

2.800 ODE No. 800

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{-b^3+6\,b^2x-12\,bx^2+8\,x^3-4\,b(y(x))^2+8\,x(y(x))^2+8\,(y(x))^3}{(2\,x-b)^3} = 0}$$

Mathematica: cpu = 0.176022 (sec), leaf count = 128

$$\text{Solve}\left[-\frac{19}{3}\text{RootSum}\left[-19\#1^3+6\sqrt[3]{38}\#1-19\&,\frac{\log\left(\frac{\frac{4}{(b-2x)^2}-\frac{24y(x)}{(b-2x)^3}}{4\sqrt[3]{38}\sqrt[3]{\frac{1}{(b-2x)^6}}}-\#1\right)}{2\sqrt[3]{38}-19\#1^2}\&\right]=\frac{1}{9}38^{2/3}\left(\frac{1}{(b-2x)^6}\right)^{2/}$$

Maple: cpu = 0.015 (sec), leaf count = 41

$$\left\{ y(x) = \frac{RootOf\left(- \int^{-Z} (\_a^3 - \_a^2 - \_a - 1)^{-1} d\_a + \ln\left(-2\,x + b\right) + \_C1 \right) (-2\,x + b)}{2} \right\}$$

2.801 ODE No. 801

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x} y(x) = 1/2 \left(y(x)\, \mathrm{e}^{-1/4\,x^2} x + 2 + 2\,(y(x))^2\, \mathrm{e}^{-1/2\,x^2} + 2\,(y(x))^3\, \mathrm{e}^{-3/4\,x^2} \right) \mathrm{e}^{1/4\,x^2} = 0}$$

Mathematica: cpu = 0.101013 (sec), leaf count = 126

$$\text{Solve}\left[-\frac{29}{3} \text{RootSum}\left[-29\#1^3 + 3\sqrt[3]{29}\#1 - 29\&, \frac{\log\left(\frac{3e^{-\frac{x^2}{2}} y(x) + e^{-\frac{x^2}{4}}}{\sqrt[3]{29} \sqrt[3]{e^{-\frac{3x^2}{4}}}} - \#1 \right)}{\sqrt[3]{29} - 29\#1^2} \& \right] = c_1 + \frac{1}{9} 29^{2/3} e^{\frac{x^2}{2}} \left(e^{-\frac{3x}{4}} \right.$$

Maple: cpu = 0.047 (sec), leaf count = 63

$$\left\{ y(x) = -\frac{1}{9} \left(3\, \mathrm{e}^{-1/4\,x^2} \mathrm{e}^{1/4\,x^2} - 29\, RootOf\left(-81 \int^{-Z} \left(841\,\_a^3 - 27\,\_a + 27\right)^{-1} d\_a + x + 3\,\_C1 \right) \right) \left(\mathrm{e} \right. \right.$$

2.802 ODE No. 802

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x} y(x) = -\frac{1}{x} \left(-x^{-1} - \_F1\left(y(x) + x^{-1} \right) \right) = 0}$$

Mathematica: cpu = 0.075510 (sec), leaf count = 98

$$\text{Solve}\left[\int_1^{y(x)} -\frac{\_\text{F1}\left(K[2] + \frac{1}{x}\right) \left(\int_1^x -\frac{\_\text{F1}'\left(K[2] + \frac{1}{K[1]}\right)}{K[1]^2 \left(\_\text{F1}\left(K[2] + \frac{1}{K[1]}\right)\right)^2} dK[1] \right) + 1}{\_\text{F1}\left(K[2] + \frac{1}{x}\right)} dK[2] + \int_1^x \left(\frac{1}{K[1]^2 \_\text{F1}\left(\frac{1}{K[1]} + \right.} \right.$$

Maple: cpu = 0.125 (sec), leaf count = 27

$$\left\{ y(x) = \frac{RootOf\left(-\ln(x) + \int^{-Z} (\_F1(\_a))^{-1} d\_a + \_C1 \right) x - 1}{x} \right\}$$

2.803 ODE No. 803

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{\_F1\left(\left(y(x)\right)^2 - 2\,\ln\left(x\right)\right)}{\sqrt{\left(y\left(x\right)\right)^2}x} = 0}$$

Mathematica: cpu = 0.080010 (sec), leaf count = 386

$$\text{Solve}\left[\int_1^{y(x)}\left(-\int_1^x\left(\frac{4K[2]\left(\_\text{F1}(K[2]^2-2\log(K[1]))\right)^3\_\text{F1}'(K[2]^2-2\log(K[1]))}{K[1]\left(\left(\_\text{F1}\left(K[2]^2-2\log(K[1])\right)\right)^2-1\right)^2}+\frac{4\sqrt{K[2]^2}(\_\text{F1}(K\right.\right.\right.$$

Maple: cpu = 0.327 (sec), leaf count = 65

$$\left\{y(x) = \sqrt{2\,\ln\left(x\right) + 2\,\mathit{RootOf}\left(\ln\left(x\right) - \int^{\_Z}\left(\_F1\left(2\,\_a\right) - 1\right)^{-1}d\_a + \_C1\right)}, y(x) = -\sqrt{2\,\ln\left(x\right)+2\right.}\right.$$

2.804 ODE No. 804

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = 1/2\,\frac{-\sin\left(2\,y(x)\right)x - \sin\left(2\,y(x)\right) + \cos\left(2\,y(x)\right)x^4 + x^4}{x\left(1+x\right)} = 0}$$

Mathematica: cpu = 0.493063 (sec), leaf count = 43

$$\left\{\left\{y(x) \to \tan^{-1}\left(\frac{-12c_1 + 3x^4 - 4x^3 + 6x^2 - 12x + 12\log(x+1) - 25}{12x}\right)\right\}\right\}$$

Maple: cpu = 0.827 (sec), leaf count = 38

$$\left\{y(x) = \arctan\left(\frac{3\,x^4 - 4\,x^3 + 6\,x^2 + 12\,\ln\left(1+x\right) - 12\,\_C1 - 12\,x}{12\,x}\right)\right\}$$

2.805 ODE No. 805

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{xy(x) + y(x) + x^4\sqrt{\left(y\left(x\right)\right)^2 + x^2}}{x\left(1+x\right)} = 0}$$

Mathematica: cpu = 0.055507 (sec), leaf count = 37

$$\left\{\left\{y(x) \to x\sinh\left(\frac{1}{6}\left(6c_1 + 2x^3 - 3x^2 + 6x - 6\log(x+1) + 11\right)\right)\right\}\right\}$$

Maple: cpu = 0.422 (sec), leaf count = 42

$$\left\{\ln\left(y(x) + \sqrt{\left(y\left(x\right)\right)^2 + x^2}\right) - \frac{x^3}{3} + \frac{x^2}{2} - x - \ln\left(x\right) + \ln\left(1+x\right) - \_C1 = 0\right\}$$

2.806 ODE No. 806

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = 1/2\,\frac{-\sin\left(2\,y(x)\right)x - \sin\left(2\,y(x)\right) + x\cos\left(2\,y(x)\right) + x}{x\left(1+x\right)} = 0}$$

Mathematica: cpu = 0.269534 (sec), leaf count = 23

$$\left\{\left\{y(x) \to \tan^{-1}\left(\frac{-c_1 + x - \log(x+1) + 1}{x}\right)\right\}\right\}$$

Maple: cpu = 0.468 (sec), leaf count = 22

$$\left\{y(x) = -\arctan\left(\frac{\ln\left(1+x\right) - x - \_C1}{x}\right)\right\}$$

2.807 ODE No. 807

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = -\left(-x - \_F1\left(y(x) - \ln\left(x\right)\right)y(x)\,\mathrm{e}^{y(x)}\right)^{-1} = 0}$$

Mathematica: cpu = 1.852735 (sec), leaf count = 34

$$\text{DSolve}\left[y'(x) = -\frac{1}{-e^{y(x)}y(x)\_\text{F1}(y(x) - \log(x)) - x}, y(x), x\right]$$

Maple: cpu = 0.468 (sec), leaf count = 43

$$\left\{\frac{\left(\ln\left(x\right)\right)^2}{2} - y(x)\ln\left(x\right) - \int^{y(x)-\ln(x)}\frac{\_F1\left(\_a\right)\_a + \mathrm{e}^{-\_a}}{\_F1\left(\_a\right)}d\_a + \_C1 = 0\right\}$$

2.808 ODE No. 808

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{\left(1+2\,y(x)\right)\left(1+y(x)\right)}{x\left(-2\,y\left(x\right) - 2 + x + 2\,xy\left(x\right)\right)} = 0}$$

Mathematica: cpu = 1.137644 (sec), leaf count = 127

$$\text{Solve}\left[\frac{2^{2/3}\left(x\log\left(-\frac{y(x)+1}{2(x-1)y(x)+x-2}\right) - x\log\left(\frac{2xy(x)+x}{2(x-1)y(x)+x-2}\right) + 2xy(x)\left(\log\left(-\frac{y(x)+1}{2(x-1)y(x)+x-2}\right) - \log\left(\frac{2x}{2(x-1\right.\right.\right.\right.}{9(2xy(x)+x)}$$

Maple: cpu = 0.062 (sec), leaf count = 44

$$\left\{y(x) = -\frac{1}{2}\left(x\mathit{lambertW}\left(\frac{1}{x\mathrm{e}^{x^{-1}}\_C1}\right) + 2\right)\left(x\mathit{lambertW}\left(\frac{1}{x\mathrm{e}^{x^{-1}}\_C1}\right) + 1\right)^{-1}\right\}$$

2.809 ODE No. 809

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{-125 + 300\,x - 240\,x^2 + 64\,x^3 - 80\,(y(x))^2 + 64\,x(y(x))^2 + 64\,(y(x))^3}{(4\,x-5)^3} = 0}$$

Mathematica: cpu = 0.153020 (sec), leaf count = 128

$$\text{Solve}\left[-\frac{19}{3}\text{RootSum}\left[-19\#1^3 + 6\sqrt[3]{38}\#1 - 19\&, \frac{\log\left(\frac{\frac{192y(x)}{(4x-5)^3} + \frac{16}{(4x-5)^2}}{16\sqrt[3]{38}\sqrt[3]{\frac{1}{(4x-5)^6}}} - \#1\right)}{2\sqrt[3]{38} - 19\#1^2}\&\right] = c_1 + \frac{1}{9}38^{2/3}\left(\frac{1}{(5-4x\right.\right.$$

Maple: cpu = 0.015 (sec), leaf count = 41

$$\left\{y(x) = -\frac{RootOf\left(-\int^{-Z}(\_a^3 - \_a^2 - \_a - 1)^{-1}\,d\_a + \ln(4\,x-5) + \_C1\right)(4\,x-5)}{4}\right\}$$

2.810 ODE No. 810

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{x + y(x) + (y(x))^2 - 2\,y(x)\ln(x)\,x + x^2(\ln(x))^2}{x} = 0}$$

Mathematica: cpu = 0.015002 (sec), leaf count = 40

$$\left\{\left\{y(x) \to \frac{1}{\frac{c_1}{x} - 1} - \frac{1}{2}x^2\left(\frac{1 - 2x\log(x)}{x^2} - \frac{1}{x^2}\right)\right\}\right\}$$

Maple: cpu = 0.062 (sec), leaf count = 16

$$\left\{y(x) = \left(\ln(x) + (\_C1 - x)^{-1}\right)x\right\}$$

2.811 ODE No. 811

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{x^3\mathrm{e}^{y(x)} + x^4 + \mathrm{e}^{y(x)}y(x) - \mathrm{e}^{y(x)}\ln\left(\mathrm{e}^{y(x)} + x\right) + xy(x) - \ln\left(\mathrm{e}^{y(x)} + x\right)x + x}{x^2} = 0}$$

Mathematica: cpu = 2.217281 (sec), leaf count = 33

$$\left\{\left\{y(x) \to -\log\left(\frac{e^{-c_1 x - \frac{x^3}{2}}}{x} - \frac{1}{x}\right)\right\}\right\}$$

Maple: cpu = 1.544 (sec), leaf count = 32

$$\left\{y(x) = \frac{x^3}{2} + x\_C1 + \ln\left(-x\left(-1 + \mathrm{e}^{\frac{x^3}{2}}\mathrm{e}^{x\_C1}\right)^{-1}\right)\right\}$$

2.812 ODE No. 812

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = 1/2\,x^2 + \sqrt{x^3 - 6\,y\left(x\right)} + x^2\sqrt{x^3 - 6\,y\left(x\right)} + x^3\sqrt{x^3 - 6\,y\left(x\right)} = 0}$$

Mathematica: cpu = 0.326541 (sec), leaf count = 70

$$\left\{\left\{y(x) \to \frac{1}{96}\left(72c_1x^4 + 96c_1x^3 + 288c_1x - 144c_1^2 - 9x^8 - 24x^7 - 16x^6 - 72x^5 - 96x^4 + 16x^3 - 144x^2\right)\right\}\right\}$$

Maple: cpu = 0.312 (sec), leaf count = 32

$$\left\{-\frac{1}{3}\sqrt{x^3 - 6\,y\left(x\right)} - \frac{x^4}{4} - \frac{x^3}{3} - x - \_C1 = 0\right\}$$

2.813 ODE No. 813

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = 1/2\left(-\sqrt{a}x^3 + 2\sqrt{ax^4 + 8\,y\left(x\right)} + 2\,x^2\sqrt{ax^4 + 8\,y\left(x\right)} + 2\,x^3\sqrt{ax^4 + 8\,y\left(x\right)}\right)\sqrt{a} = 0}$$

Mathematica: cpu = 0.493063 (sec), leaf count = 66

$$\left\{\left\{y(x) \to \frac{1}{72}a\left(-72c_1x^4 - 96c_1x^3 - 288c_1x + 144c_1^2 + 9x^8 + 24x^7 + 16x^6 + 72x^5 + 87x^4 + 144x^2\right)\right\}\right\}$$

Maple: cpu = 0.327 (sec), leaf count = 38

$$\left\{\frac{1}{4}\sqrt{ax^4 + 8\,y\left(x\right)} - \sqrt{a}\left(\frac{x^4}{4} + \frac{x^3}{3} + x\right) - \_C1 = 0\right\}$$

2.814 ODE No. 814

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{y(x)\left(-3\,x^3y(x) - 3 + \left(y(x)\right)^2x^7\right)}{x\left(x^3y\left(x\right) + 1\right)} = 0}$$

Mathematica: cpu = 0.013502 (sec), leaf count = 72

$$\left\{\left\{y(x) \to \frac{x}{\frac{\sqrt{x(c_1 - 2x) + x}}{\sqrt{\frac{1}{x^7}}} - x^4}\right\}, \left\{y(x) \to -\frac{x}{\frac{\sqrt{x(c_1 - 2x) + x}}{\sqrt{\frac{1}{x^7}}} + x^4}\right\}\right\}$$

Maple: cpu = 0.016 (sec), leaf count = 38

$$\left\{y(x) = \frac{1}{x^3}\left(\sqrt{\_C1 - 2\,x} - 1\right)^{-1}, y(x) = -\frac{1}{x^3}\left(\sqrt{\_C1 - 2\,x} + 1\right)^{-1}\right\}$$

2.815 ODE No. 815

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{(3+y(x))^3\,\mathrm{e}^{9/2\,x^2}x\mathrm{e}^{3/2\,x^2}}{(243\,\mathrm{e}^{3/2\,x^2}+81\,\mathrm{e}^{3/2\,x^2}y\,(x)+243\,y\,(x))\,\mathrm{e}^{3\,x^2}} = 0}$$

Mathematica: cpu = 10.172792 (sec), leaf count = 103

$$\text{Solve}\left[\frac{1}{186}\left(31\log\left(-81e^{\frac{3x^2}{2}}(y(x)+3)y(x)+e^{3x^2}(y(x)+3)^2-243y(x)^2\right)-6\sqrt{93}\tanh^{-1}\left(\frac{2e^{\frac{3x^2}{2}}(y(x)+\right.\right.\right.$$
$$\left.\left.\left.9\sqrt{93}\right.\right.\right.$$

Maple: cpu = 1.326 (sec), leaf count = 202

$$\left\{5\,\ln\left(\frac{100\left(\mathrm{e}^{3/2\,x^2}\right)^2(y(x))^2+600\left(\mathrm{e}^{3/2\,x^2}\right)^2y(x)-8100\,(y(x))^2\,\mathrm{e}^{3/2\,x^2}+900\left(\mathrm{e}^{3/2\,x^2}\right)^2-24300\,\mathrm{e}^{3/2\,x^2}y(\right.\right.$$
$$\left.\left.189\,\left(3\,\mathrm{e}^{3/2\,x^2}+\mathrm{e}^{3/2\,x^2}y\,(x)+3\,y\,(x)\right)^2\right.\right.$$

2.816 ODE No. 816

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{(x-y(x))^3\,(y(x)+x)^3\,x}{\left(-\left(y\,(x)\right)^2+x^2-1\right)y\,(x)} = 0}$$

Mathematica: cpu = 0.141018 (sec), leaf count = 74

$$\text{Solve}\left[\frac{1}{2}\left(\text{RootSum}\left[\#1^3-\#1+1\&,\frac{\#1\log\left(-\#1+x^2-y(x)^2\right)-\log\left(-\#1+x^2-y(x)^2\right)}{3\#1^2-1}\&\right]+x^2\right)=$$

Maple: cpu = 0.624 (sec), leaf count = 307

$$\left\{\int_{\_b}^{x}\frac{(\_a-y(x))^3\,(y(x)+\_a)^3\,\_a}{\_a^6-3\,\_a^4\left(y\,(x)\right)^2+3\,\_a^2\left(y\,(x)\right)^4-\left(y\,(x)\right)^6-\_a^2+\left(y\,(x)\right)^2+1}\,\mathrm{d}\_a+\int^{y(x)}-\frac{(}{-\_f^6+3\,\_f^4x}\right.$$

2.817 ODE No. 817

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = 1/2\,\frac{-2\,\cos\left(y(x)\right)+x^3\cos\left(2\,y(x)\right)\ln\left(x\right)+x^3\ln\left(x\right)}{\sin\left(y\,(x)\right)\ln\left(x\right)x} = 0}$$

Mathematica: cpu = 0.384049 (sec), leaf count = 63

$$\left\{\left\{y(x)\to-\sec^{-1}\left(\frac{-9c_1-x^3+3x^3\log(x)}{9\log(x)}\right)\right\},\left\{y(x)\to\sec^{-1}\left(\frac{-9c_1-x^3+3x^3\log(x)}{9\log(x)}\right)\right\}\right\}$$

Maple: cpu = 0.500 (sec), leaf count = 27

$$\left\{y(x)=\arccos\left(9\,\frac{\ln\left(x\right)}{3\,x^3\ln\left(x\right)-x^3+9\,\_C1}\right)\right\}$$

2.818 ODE No. 818

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{y(x)}{x\left(-1+xy\left(x\right)+x\left(y\left(x\right)\right)^{3}+x\left(y\left(x\right)\right)^{4}\right)} = 0}$$

Mathematica: cpu = 0.047006 (sec), leaf count = 34

$$\text{Solve}\left[\frac{y(x)^3}{3}+\frac{y(x)^2}{2}+\frac{1}{xy(x)}+\log(y(x))=c_1,y(x)\right]$$

Maple: cpu = 0.109 (sec), leaf count = 34

$$\left\{y(x) = \mathrm{e}^{RootOf\left(-2\,x\left(\mathrm{e}^{-Z}\right)^{4}-3\,x\left(\mathrm{e}^{-Z}\right)^{3}+6\_C1\,\mathrm{e}^{-Z}x-6\,\mathrm{e}^{-Z}\_Z\,x-6\right)}\right\}$$

2.819 ODE No. 819

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = -2/3\,x+\sqrt{x^{2}+3\,y\left(x\right)}+x^{2}\sqrt{x^{2}+3\,y\left(x\right)}+x^{3}\sqrt{x^{2}+3\,y\left(x\right)} = 0}$$

Mathematica: cpu = 0.230029 (sec), leaf count = 65

$$\left\{\left\{y(x)\to \frac{1}{192}\left(-72c_1x^4-96c_1x^3-288c_1x+144c_1^2+9x^8+24x^7+16x^6+72x^5+96x^4+80x^2\right)\right\}\right\}$$

Maple: cpu = 0.265 (sec), leaf count = 32

$$\left\{\frac{2}{3}\sqrt{x^{2}+3\,y\left(x\right)}-\frac{x^{4}}{4}-\frac{x^{3}}{3}-x-\_C1 = 0\right\}$$

2.820 ODE No. 820

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = 1/2\,\frac{-2\,\cos\left(y(x)\right)+x^{2}\cos\left(2\,y(x)\right)\ln\left(x\right)+x^{2}\ln\left(x\right)}{\sin\left(y\left(x\right)\right)\ln\left(x\right)x} = 0}$$

Mathematica: cpu = 0.340543 (sec), leaf count = 63

$$\left\{\left\{y(x)\to -\sec^{-1}\left(\frac{-4c_1-x^2+2x^2\log(x)}{4\log(x)}\right)\right\},\left\{y(x)\to \sec^{-1}\left(\frac{-4c_1-x^2+2x^2\log(x)}{4\log(x)}\right)\right\}\right\}$$

Maple: cpu = 0.530 (sec), leaf count = 27

$$\left\{y(x) = \arccos\left(4\,\frac{\ln\left(x\right)}{2\,x^{2}\ln\left(x\right)-x^{2}+4\_C1}\right)\right\}$$

2.821 ODE No. 821

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{y(x)\left(xy(x)+1\right)}{x\left(-xy\left(x\right)-1+\left(y\left(x\right)\right)^{4}x^{3}\right)} = 0}$$

Mathematica: cpu = 0.034004 (sec), leaf count = 2093

$$\left\{\left\{y(x)\to \frac{c_1}{4}-\frac{1}{2}\sqrt{\frac{c_1^2}{4}+\frac{\sqrt[3]{1944c_1^2x^6+1458x^5+\sqrt{\left(1944c_1^2x^6+1458x^5\right)^2-4\left(54c_1x^4+144x^3\right)^3}}}{18\sqrt[3]{2}x^3}+\frac{}{x^3}}\right.\right.$$

Maple: cpu = 0.124 (sec), leaf count = 27

$$\left\{-\frac{1}{2\,x^{2}\left(y\left(x\right)\right)^{2}}-\frac{1}{3\,x^{3}\left(y\left(x\right)\right)^{3}}-y(x)+\_C1=0\right\}$$

2.822 ODE No. 822

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = 1/4\left(4\,\mathrm{e}^{-x^{2}}-4\,x^{2}\mathrm{e}^{-x^{2}}+4\left(y(x)\right)^{2}-4\,x^{2}\mathrm{e}^{-x^{2}}y(x)+x^{4}\left(\mathrm{e}^{-x^{2}}\right)^{2}\right)x = 0}$$

Mathematica: cpu = 0.042005 (sec), leaf count = 32

$$\left\{\left\{y(x)\to \frac{1}{c_1-\frac{x^2}{2}}+\frac{1}{2}e^{-x^2}x^2\right\}\right\}$$

Maple: cpu = 0.109 (sec), leaf count = 25

$$\left\{y(x)=\frac{x^{2}\mathrm{e}^{-x^{2}}}{2}+\left(\_C1-\frac{x^{2}}{2}\right)^{-1}\right\}$$

2.823 ODE No. 823

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{y(x)\left(y(x)+x\right)}{x\left(x+y\left(x\right)+\left(y\left(x\right)\right)^{3}+\left(y\left(x\right)\right)^{4}\right)} = 0}$$

Mathematica: cpu = 0.383049 (sec), leaf count = 39

$$\text{Solve}\left[\frac{y(x)^3}{3}+\frac{y(x)^2}{2}+\log(y(x))-\frac{y(x)\log(x)+x}{y(x)}=c_1,y(x)\right]$$

Maple: cpu = 0.109 (sec), leaf count = 38

$$\left\{y(x) = \mathrm{e}^{\mathit{RootOf}\left(-2\left(\mathrm{e}^{-Z}\right)^{4}-3\left(\mathrm{e}^{-Z}\right)^{3}+6\ln(x)\mathrm{e}^{-Z}+6\_C1\,\mathrm{e}^{-Z}-6\_Z\,\mathrm{e}^{-Z}+6x\right)}\right\}$$

2.824 ODE No. 824

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{y(x)\left(x^{3}+x^{2}y(x)+\left(y(x)\right)^{2}\right)}{x^{2}\left(x-1\right)\left(y\left(x\right)+x\right)} = 0}$$

Mathematica: cpu = 0.055007 (sec), leaf count = 68

$$\text{Solve}\left[-\frac{1}{2}\log\left(\frac{y(x)^2}{x^2}+\frac{y(x)}{x}+1\right)+\log\left(\frac{y(x)}{x}\right)+\frac{\tan^{-1}\left(\frac{\frac{2y(x)}{x}+1}{\sqrt{3}}\right)}{\sqrt{3}}=c_1+\log(1-x)-\log(x),y(x)\right]$$

Maple: cpu = 0.280 (sec), leaf count = 61

$$\left\{\ln\left(\frac{y(x)}{x}\right)-\frac{1}{2}\ln\left(\frac{\left(y(x)\right)^{2}+xy(x)+x^{2}}{x^{2}}\right)+\frac{\sqrt{3}}{3}\arctan\left(\frac{\left(x+2\,y(x)\right)\sqrt{3}}{3\,x}\right)+\ln\left(x\right)-\ln\left(x-1\right)-\_C\right.$$

2.825 ODE No. 825

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{\left(\left(x^{2}+1\right)^{3/2}x^{2}+\left(x^{2}+1\right)^{3/2}+\left(y(x)\right)^{2}\left(x^{2}+1\right)^{3/2}+x^{2}\left(y(x)\right)^{3}+\left(y(x)\right)^{3}\right)x}{\left(x^{2}+1\right)^{3}} = 0}$$

Mathematica: cpu = 0.183023 (sec), leaf count = 148

$$\text{Solve}\left[-\frac{19}{3}\text{RootSum}\left[-19\#1^3+6\sqrt[3]{38}\#1-19\&,\frac{\log\left(\frac{\frac{3xy(x)}{\left(x^2+1\right)^2}+\frac{x}{\left(x^2+1\right)^{3/2}}}{\sqrt[3]{38}\sqrt[3]{\frac{x^3}{\left(x^2+1\right)^{9/2}}}}-\#1\right)}{2\sqrt[3]{38}-19\#1^2}\&\right]\right]=c_1+\frac{19^{2/3}\left(\frac{x^3}{(x^2+1)^9}\right.}{}$$

Maple: cpu = 0.062 (sec), leaf count = 89

$$\left\{y(x)=\frac{19\,RootOf\left(-1296\int^{-Z}(361\_a^3-432\_a+432)^{-1}d\_a+2\ln\left(x^2+1\right)+3\_C1\right)x^2-6x^2+1}{18}\right\}$$

2.826 ODE No. 826

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x)=\frac{\left(3\,x(y(x))^2+x+3\left(y(x)\right)^2\right)y(x)}{\left(6\,\left(y\left(x\right)\right)^2+x\right)x\left(1+x\right)}=0}$$

Mathematica: cpu = 0.570072 (sec), leaf count = 70

$$\left\{\left\{y(x)\to-\frac{\sqrt{x}\sqrt{W\left(\frac{6e^{2c_1}x}{(x+1)^2}\right)}}{\sqrt{6}}\right\},\left\{y(x)\to\frac{\sqrt{x}\sqrt{W\left(\frac{6e^{2c_1}x}{(x+1)^2}\right)}}{\sqrt{6}}\right\}\right\}$$

Maple: cpu = 0.234 (sec), leaf count = 51

$$\left\{\left(\left(y(x)\right)^{-2}+6\,x^{-1}\right)^{-1}=\frac{x}{54}\left(\mathrm{e}^{RootOf\left(-\mathrm{e}^{-Z}\ln\left(\frac{(1+x)^2\left(\mathrm{e}^{-Z}+9\right)}{2\,x}\right)+3\_C1\,\mathrm{e}^{-Z}+\_Z\,\mathrm{e}^{-Z}+9\right)}+9\right)\right\}$$

2.827 ODE No. 827

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x)=-\frac{-y(x)+x^3\sqrt{\left(y\left(x\right)\right)^2+x^2}-x^2\sqrt{\left(y\left(x\right)\right)^2+x^2}y(x)}{x}=0}$$

Mathematica: cpu = 0.124516 (sec), leaf count = 111

$$\left\{\left\{y(x)\to\frac{x\left(-2e^{\sqrt{2}c_1+\frac{\sqrt{2}x^3}{3}}+e^{2\sqrt{2}c_1+\frac{2\sqrt{2}x^3}{3}}-1\right)}{2e^{\sqrt{2}c_1+\frac{\sqrt{2}x^3}{3}}+e^{2\sqrt{2}c_1+\frac{2\sqrt{2}x^3}{3}}-1}\right\}\right\}$$

Maple: cpu = 0.156 (sec), leaf count = 49

$$\left\{ \ln \left(2\,{\frac {x \left(\sqrt {2\, \left(y \left(x \right) \right) ^{2}+2\,x^{2}}+y \left(x \right) +x \right) }{y \left(x \right) -x}} \right) +{\frac {\sqrt {2}{x}^{3}}{3}}-\ln \left(x \right) -\_C1 =0 \right\}$$

2.828 ODE No. 828

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{(1+2\,y(x))\,(1+y(x))}{x\left(-2\,y\left(x\right)-2+x\left(y\left(x\right)\right)^{3}+2\,x\left(y\left(x\right)\right)^{4}\right)} = 0}$$

Mathematica: cpu = 0.208027 (sec), leaf count = 56

$$\text{Solve}\left[-\frac{1}{8}y(x)^2+\frac{3y(x)}{8}-\frac{1}{2x(2y(x)+1)}-\frac{1}{2}\log(y(x)+1)+\frac{1}{16}\log(2y(x)+1)=c_1,y(x)\right]$$

Maple: cpu = 0.202 (sec), leaf count = 54

$$\left\{ y(x) = \frac{1}{2}\mathrm{e}^{RootOf\left(x\left(\mathrm{e}^{-Z}\right)^{3}-8\,x\left(\mathrm{e}^{-Z}\right)^{2}+16\,\ln\left(1/2\,\mathrm{e}^{-Z}+1/2\right)x\mathrm{e}^{-Z}+16\,\_C1\,\mathrm{e}^{-Z}x-2\,\mathrm{e}^{-Z}\_Z\,x+7\,x\mathrm{e}^{-Z}+16\right)} - \frac{1}{2} \right\}$$

2.829 ODE No. 829

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = 1/2\,\frac{1+2\,\sqrt{4\,x^{2}y\left(x\right)+1}x^{3}+2\,x^{5}\sqrt{4\,x^{2}y\left(x\right)+1}+2\,x^{6}\sqrt{4\,x^{2}y\left(x\right)+1}}{x^{3}} = 0}$$

Mathematica: cpu = 0.388549 (sec), leaf count = 74

$$\left\{ \left\{ y(x) \to \frac{-160c_1x^7-200c_1x^6-400c_1x^4+400c_1^2x^2+16x^{12}+40x^{11}+25x^{10}+80x^9+100x^8+100x^6-}{400x^2} \right. \right.$$

Maple: cpu = 0.297 (sec), leaf count = 40

$$\left\{ -\_C1+\frac{1}{x}\left(-4\,x^{6}-5\,x^{5}-10\,x^{3}+10\,\sqrt{4\,x^{2}y\left(x\right)+1}\right)=0 \right\}$$

2.830 ODE No. 830

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{y(x)\left(x - y(x)\right)}{x\left(x - y\left(x\right) - \left(y\left(x\right)\right)^3 - \left(y\left(x\right)\right)^4\right)} = 0}$$

Mathematica: cpu = 0.433555 (sec), leaf count = 37

$$\text{Solve}\left[-\frac{1}{3}y(x)^3 - \frac{y(x)^2}{2} - \frac{x}{y(x)} - \log(y(x)) + \log(x) = c_1, y(x)\right]$$

Maple: cpu = 0.109 (sec), leaf count = 38

$$\left\{y(x) = \mathrm{e}^{RootOf\left(2\left(\mathrm{e}^{-Z}\right)^4+3\left(\mathrm{e}^{-Z}\right)^3-6\ln(x)\mathrm{e}^{-Z}+6\_C1\,\mathrm{e}^{-Z}+6\_Z\,\mathrm{e}^{-Z}+6x\right)}\right\}$$

2.831 ODE No. 831

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{2a + \sqrt{-\left(y\left(x\right)\right)^2 + 4ax} + x^2\sqrt{-\left(y\left(x\right)\right)^2 + 4ax} + x^3\sqrt{-\left(y\left(x\right)\right)^2 + 4ax}}{y\left(x\right)} = 0}$$

Mathematica: cpu = 4.434063 (sec), leaf count = 145

$$\left\{\left\{y(x) \to -\frac{1}{12}\sqrt{576ax - 72c_1x^4 - 96c_1x^3 - 288c_1x - 144c_1^2 - 9x^8 - 24x^7 - 16x^6 - 72x^5 - 96x^4 - 144}\right.\right.$$

Maple: cpu = 0.234 (sec), leaf count = 35

$$\left\{-\sqrt{-\left(y\left(x\right)\right)^2 + 4ax} - \frac{x^4}{4} - \frac{x^3}{3} - x - \_C1 = 0\right\}$$

2.832 ODE No. 832

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{\left(x + y(x) + 1\right)y(x)}{\left(\left(y\left(x\right)\right)^4 + \left(y\left(x\right)\right)^3 + \left(y\left(x\right)\right)^2 + x\right)\left(1 + x\right)} = 0}$$

Mathematica: cpu = 0.580574 (sec), leaf count = 2497

$$\left\{\left\{y(x) \to -\frac{1}{2}\sqrt{\frac{3\sqrt[3]{2}\left(-8x + 3c_1\right.}{\sqrt[3]{1944\left(c_1 + \log(x+1)\right)^2 + 972\left(c_1 + \log(x+1)\right) + 3726x + \sqrt{\left(1944\left(c_1 + \log(x+1)\right)\right.}}}\right.\right.$$

Maple: cpu = 0.125 (sec), leaf count = 31

$$\left\{\ln\left(1+x\right)+\frac{x}{y\left(x\right)}-\frac{\left(y(x)\right)^{3}}{3}-\frac{\left(y(x)\right)^{2}}{2}-y(x)+\_C1=0\right\}$$

2.833 ODE No. 833

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x)=-\frac{-y(x)+x^{4}\sqrt{\left(y\left(x\right)\right)^{2}+x^{2}}-x^{3}\sqrt{\left(y\left(x\right)\right)^{2}+x^{2}}y(x)}{x}=0}$$

Mathematica: cpu = 0.119015 (sec), leaf count = 105

$$\left\{\left\{y(x)\to\frac{x\left(-2e^{\sqrt{2}c_1+\frac{x^4}{2\sqrt{2}}}+e^{2\sqrt{2}c_1+\frac{x^4}{\sqrt{2}}}-1\right)}{2e^{\sqrt{2}c_1+\frac{x^4}{2\sqrt{2}}}+e^{2\sqrt{2}c_1+\frac{x^4}{\sqrt{2}}}-1}\right\}\right\}$$

Maple: cpu = 0.125 (sec), leaf count = 49

$$\left\{\ln\left(2\frac{x\left(\sqrt{2\left(y\left(x\right)\right)^{2}+2x^{2}}+y(x)+x\right)}{y\left(x\right)-x}\right)+\frac{\sqrt{2}x^{4}}{4}-\ln\left(x\right)-\_C1=0\right\}$$

2.834 ODE No. 834

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x)=\frac{\left(x^{4}+3\,x(y(x))^{2}+3\left(y(x)\right)^{2}\right)y(x)}{\left(6\,\left(y\left(x\right)\right)^{2}+x\right)x\left(1+x\right)}=0}$$

Mathematica: cpu = 0.696088 (sec), leaf count = 90

$$\left\{\left\{y(x)\to-\frac{\sqrt{x}\sqrt{W\left(\frac{6(x+1)^2e^{2c_1+x^2-2x-3}}{x}\right)}}{\sqrt{6}}\right\},\left\{y(x)\to\frac{\sqrt{x}\sqrt{W\left(\frac{6(x+1)^2e^{2c_1+x^2-2x-3}}{x}\right)}}{\sqrt{6}}\right\}\right\}$$

Maple: cpu = 0.234 (sec), leaf count = 60

$$\left\{\left(\left(y(x)\right)^{-2}+6\,x^{-1}\right)^{-1}=\frac{x}{54}\left(\mathrm{e}^{RootOf\left(\mathrm{e}^{\_Z}x^{2}-\mathrm{e}^{\_Z}\ln\left(\frac{x\left(\mathrm{e}^{\_Z}+9\right)}{2\left(1+x\right)^{2}}\right)+3\,\_C1\,\mathrm{e}^{\_Z}+\_Z\,\mathrm{e}^{\_Z}-2\,x\mathrm{e}^{\_Z}+9\right)}+9\right)\right\}$$

2.835 ODE No. 835

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = -\left(-\left(\left(y(x)\right)^3\right)^{2/3}x - \_F1\left(\left(y(x)\right)^3 - 3\ln\left(x\right)\right)\sqrt[3]{\left(y\left(x\right)\right)^3}x\right)^{-1} = 0}$$

Mathematica: cpu = 2.560325 (sec), leaf count = 47

$$\text{DSolve}\left[y'(x) = -\frac{1}{x\left(-\sqrt[3]{y(x)^3}\right)\_\text{F1}\left(y(x)^3 - 3\log(x)\right) - x\left(y(x)^3\right)^{2/3}}, y(x), x\right]$$

Maple: cpu = 1.638 (sec), leaf count = 0

could not solve

2.836 ODE No. 836

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{y(x)\left(x - y(x)\right)\left(1 + y(x)\right)}{x\left(xy\left(x\right) + x - y\left(x\right)\right)} = 0}$$

Mathematica: cpu = 12.338567 (sec), leaf count = 386

$$\text{Solve}\left[\frac{2^{2/3}(x-1)^2\left(\frac{x^6}{(x-1)^3}\right)^{2/3}}{9x^3} = c_1 + \frac{2^{2/3}\left(1 - \frac{(x-1)^2\left(\frac{x^6}{(x-1)^3}\right)^{2/3}((x+2)y(x)+x)}{x^4((x-1)y(x)+x)}\right)\left(\frac{\left(\frac{x^6}{(x-1)^3}\right)^{2/3}(x-1)^2((x+2)y(x)+x}{x^4((x-1)y(x)+x)}\right.}{}\right.$$

Maple: cpu = 0.156 (sec), leaf count = 102

$$\left\{y(x) = -x\mathrm{e}^{RootOf\left(-\ln\left(\frac{\mathrm{e}^{\_Z}}{2}+\frac{9}{2}\right)\mathrm{e}^{\_Z}+3\_C1\,\mathrm{e}^{\_Z}+\_Z\,\mathrm{e}^{\_Z}-x\mathrm{e}^{\_Z}+9\right)}\left(\mathrm{e}^{RootOf\left(-\ln\left(\frac{\mathrm{e}^{\_Z}}{2}+\frac{9}{2}\right)\mathrm{e}^{\_Z}+3\_C1\,\mathrm{e}^{\_Z}+\_Z\,\mathrm{e}^{\_Z}-x\mathrm{e}^{\_Z}+9\right.}\right.\right.$$

2.837 ODE No. 837

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = -\left(-\ln\left(x\right)\left(\left(y(x)\right)^{3}\right)^{2/3} - \_F1\left(\left(y(x)\right)^{3} + 3\,Ei(1,-\ln\left(x\right))\right)\ln\left(x\right)\sqrt[3]{\left(y\left(x\right)\right)^{3}}\right)^{-1} = 0}$$

Mathematica: cpu = 3.085892 (sec), leaf count = 52

$$\text{DSolve}\left[y'(x) = -\frac{1}{-\sqrt[3]{y(x)^3}\log(x)\_\text{F1}\left(3\text{Ei}(-\log(x)) + y(x)^3\right) - \left(y(x)^3\right)^{2/3}\log(x)}, y(x), x\right]$$

Maple: cpu = 1.700 (sec), leaf count = 0

could not solve

2.838 ODE No. 838

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = 1/25\,\frac{30\,x^3 + 25\,\sqrt{x} + 25\left(y(x)\right)^2 - 20\,x^3 y(x) - 100\,y(x)\,\sqrt{x} + 4\,x^6 + 40\,x^{7/2} + 100\,x}{x} = 0}$$

Mathematica: cpu = 0.027003 (sec), leaf count = 31

$$\left\{\left\{y(x) \to \frac{1}{c_1 - \log(x)} + \frac{2}{5}\sqrt{x}\left(x^{5/2} + 5\right)\right\}\right\}$$

Maple: cpu = 0.078 (sec), leaf count = 27

$$\left\{y(x) = -\frac{x}{2}\left(-\frac{4\,x^2}{5} - 4\,\frac{1}{\sqrt{x}}\right) + \left(\_C1 - \ln\left(x\right)\right)^{-1}\right\}$$

2.839 ODE No. 839

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{1}{x}\left(\mathrm{e}^{-\frac{y(x)}{x}}y(x) + \mathrm{e}^{-\frac{y(x)}{x}}x + x^2\right)\mathrm{e}^{\frac{y(x)}{x}} = 0}$$

Mathematica: cpu = 0.068009 (sec), leaf count = 28

$$\left\{\left\{y(x) \to -x\log\left(\frac{e^{2c_1}}{2x} - \frac{x}{2}\right)\right\}\right\}$$

Maple: cpu = 0.062 (sec), leaf count = 19

$$\left\{y(x) = \ln\left(2\,\frac{x}{-x^2 + \_C1}\right)x\right\}$$

2.840 ODE No. 840

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x)=\frac{1}{x}\left(\mathrm{e}^{-\frac{y(x)}{x}}y(x)+\mathrm{e}^{-\frac{y(x)}{x}}x+x^3\right)\mathrm{e}^{\frac{y(x)}{x}}=0}$$

Mathematica: cpu = 0.096012 (sec), leaf count = 30

$$\left\{\left\{y(x)\to -x\log\left(\frac{e^{3c_1}}{3x}-\frac{x^2}{3}\right)\right\}\right\}$$

Maple: cpu = 0.063 (sec), leaf count = 19

$$\left\{y(x)=\ln\left(3\,\frac{x}{-x^3+\_C1}\right)x\right\}$$

2.841 ODE No. 841

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x)=\frac{bx^3+c^2\sqrt{a}-2\,cbx^2\sqrt{a}+2\,c(y(x))^2\,a^{3/2}+b^2x^4\sqrt{a}-2\,(y(x))^2\,a^{3/2}bx^2+a^{5/2}(y(x))^4}{ax^2y\,(x)}=0}$$

Mathematica: cpu = 1.255659 (sec), leaf count = 236

$$\left\{\left\{y(x)\to -\frac{\sqrt{2a^{5/2}bx^2-2a^{5/2}c+4a^3b^2x^3-4a^3bcx+a^2x+4\sqrt{a}b^2c_1x^2-4\sqrt{a}bcc_1+2bc_1x}}{\sqrt{2}\sqrt{2a^{3/2}bc_1+a^{7/2}+2a^4bx}}\right\},\left\{y(x)\to\right.\right.$$

Maple: cpu = 0.234 (sec), leaf count = 97

$$\left\{y(x)=\frac{1}{\_C1+1}\sqrt{\left(\left(\_C1+1\right)\left(bx^2-c\right)\sqrt{a}+\frac{x}{2}\right)\left(\_C1+1\right)a^{\frac{3}{2}}a^{-\frac{3}{2}}},y(x)=-2\,\frac{\sqrt{\left(\left(\_C1+1\right)(b\right.}{}\right.$$

2.842 ODE No. 842

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x)=\frac{y(x)+x^2(\ln(x))^3+2\,x^2(\ln(x))^2\,y(x)+x^2\ln(x)\,(y(x))^2}{x\ln(x)}=0}$$

Mathematica: cpu = 0.122015 (sec), leaf count = 186

$$\left\{\left\{y(x)\to -\frac{c_1e^{\frac{1}{4}x^2(2\log(x)-1)}\left(\frac{x}{2}+\frac{1}{2}x(2\log(x)-1)\right)+\frac{1}{4}x^2e^{\frac{1}{4}x^2(2\log(x)-1)}(2\log(x)-1)\left(\frac{x}{2}+\frac{1}{2}x(2\log(x)-\right.\right.}{x\left(c_1e^{\frac{1}{4}x^2(2\log(x)-1)}+\frac{1}{4}x^2e^{\frac{1}{4}x^2(2\log(x)-1)}(2\log(\right.}$$

Maple: cpu = 0.047 (sec), leaf count = 43

$$\left\{y(x)=-\frac{\ln(x)\,(2\,x^2\ln(x)-x^2+2\,\_C1+4)}{2\,x^2\ln(x)-x^2+2\,\_C1}\right\}$$

2.843 ODE No. 843

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{y(x) + x^3(\ln(x))^3 + 2\,x^3(\ln(x))^2\,y(x) + x^3\ln(x)\,(y(x))^2}{x\ln(x)} = 0}$$

Mathematica: cpu = 0.124016 (sec), leaf count = 198

$$\left\{\left\{y(x) \to -\frac{c_1 e^{\frac{1}{9}x^3(3\log(x)-1)}\left(\frac{x^2}{3} + \frac{1}{3}x^2(3\log(x)-1)\right) + \frac{1}{9}x^3 e^{\frac{1}{9}x^3(3\log(x)-1)}(3\log(x)-1)\left(\frac{x^2}{3} + \frac{1}{3}x^2(3\log(\right.\right.\right.}{x^2\left(c_1 e^{\frac{1}{9}x^3(3\log(x)-1)} + \frac{1}{9}x^3 e^{\frac{1}{9}x^3(3\log(x)-1)}(3\right.}$$

Maple: cpu = 0.015 (sec), leaf count = 43

$$\left\{y(x) = -\frac{\ln(x)\,(6\,x^3\ln(x) - 2\,x^3 + 9\_C1 + 18)}{6\,x^3\ln(x) - 2\,x^3 + 9\_C1}\right\}$$

2.844 ODE No. 844

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{y(x)\,(y(x)+x)\,(1+y(x))}{x\,(xy(x)+x+y(x))} = 0}$$

Mathematica: cpu = 16.574105 (sec), leaf count = 386

$$\text{Solve}\left[\left[-\frac{2^{2/3}\left(1 - \frac{\left(\frac{x^6}{(x+1)^3}\right)^{2/3}(x+1)^2((x-2)y(x)+x)}{x^4((x+1)y(x)+x)}\right)\left(\frac{\left(\frac{x^6}{(x+1)^3}\right)^{2/3}(x+1)^2((x-2)y(x)+x)}{x^4((x+1)y(x)+x)} + 2\right)\left(\left(1 - \frac{\left(\frac{x^6}{(x+1)^3}\right)^{2/3}(x+1)^2}{x^4((x+1)y(x)}\right.\right.}{9\left(\frac{3(}{}\right.}\right]\right.$$

Maple: cpu = 0.140 (sec), leaf count = 97

$$\left\{y(x) = -x\mathrm{e}^{RootOf\left(-\ln\left(\frac{\mathrm{e}^{-Z}}{2}+\frac{9}{2}\right)\mathrm{e}^{-Z}+3\_C1\,\mathrm{e}^{-Z}+\_Z\,\mathrm{e}^{-Z}+x\mathrm{e}^{-Z}+9\right)}\left(\mathrm{e}^{RootOf\left(-\ln\left(\frac{\mathrm{e}^{-Z}}{2}+\frac{9}{2}\right)\mathrm{e}^{-Z}+3\_C1\,\mathrm{e}^{-Z}+\_Z\,\mathrm{e}^{-Z}+x\mathrm{e}^{-Z}+9\right.}\right.\right.\right.$$

2.845 ODE No. 845

$$\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{3\,x^3 + \sqrt{-9\,x^4 + 4\,\left(y\left(x\right)\right)^3} + x^2\sqrt{-9\,x^4 + 4\,\left(y\left(x\right)\right)^3} + x^3\sqrt{-9\,x^4 + 4\,\left(y\left(x\right)\right)^3}}{\left(y\left(x\right)\right)^2} = 0$$

Mathematica: cpu = 4.914124 (sec), leaf count = 227

$$\left\{\left\{y(x) \to -\frac{1}{2}\sqrt[3]{-\frac{1}{2}}\sqrt[3]{72c_1x^4 + 96c_1x^3 + 288c_1x + 144c_1^2 + 9x^8 + 24x^7 + 16x^6 + 72x^5 + 132x^4 + 144x^2}\right.\right.$$

Maple: cpu = 0.187 (sec), leaf count = 44

$$\left\{\int_{\_b}^{y(x)} \_a^2 \frac{1}{\sqrt{-9\,x^4 + 4\,\_a^3}}\,\mathrm{d}\_a - \frac{x^4}{4} - \frac{x^3}{3} - x - \_C1 = 0\right\}$$

2.846 ODE No. 846

$$\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \left(-x + \left(\left(y(x)\right)^{-1} + 1\right)x + \_F1\left(\left(\left(y(x)\right)^{-1} + 1\right)x\right)x^2 - \_F1\left(\left(\left(y(x)\right)^{-1} + 1\right)x\right)x^2\left(\left(y(x)\right)^{-1} +\right.\right.$$

Mathematica: cpu = 1.356672 (sec), leaf count = 362

$$\text{Solve}\left[\int_1^{y(x)} \left(\frac{x\_\text{F1}\left(x\left(\frac{1}{K[2]}+1\right)\right) - 1}{xK[2]\_\text{F1}\left(x\left(\frac{1}{K[2]}+1\right)\right) + x\_\text{F1}\left(x\left(\frac{1}{K[2]}+1\right)\right) - K[2]} - \int_1^x \left(\frac{-\frac{K[1]\_\text{F1}'\left(K[1]\left(\frac{1}{K[2]}+1\right)\right)}{K[2]}}{K[1]\left(K[2]\_\text{F1}\left(K[1]\right.\right.\right.\right.\right.\right.$$

Maple: cpu = 0.141 (sec), leaf count = 40

$$\left\{y(x) = \mathrm{e}^{\mathit{RootOf}\left(-\_Z - \int^{\frac{x\mathrm{e}^{\_Z}}{\mathrm{e}^{\_Z}-1}} \frac{1}{(\_F1(\_a)\_a - 1)\_a}\,d\_a + \_C1\right)} - 1\right\}$$

2.847 ODE No. 847

$$\frac{\mathrm{d}}{\mathrm{d}x}y(x) = x/2 + 1/2 + \sqrt{x^2 + 2\,x + 1 - 4\,y\,(x)} + x^2\sqrt{x^2 + 2\,x + 1 - 4\,y\,(x)} + x^3\sqrt{x^2 + 2\,x + 1 - 4\,y\,(x$$

Mathematica: cpu = 0.365046 (sec), leaf count = 69

$$\left\{\left\{y(x) \to \frac{1}{144}(72c_1x^4 + 96c_1x^3 + 288c_1x - 144c_1^2 - 9x^8 - 24x^7 - 16x^6 - 72x^5 - 96x^4 - 108x^2 + 72x +\right.\right.$$

Maple: cpu = 0.265 (sec), leaf count = 36

$$\left\{-\frac{1}{2}\sqrt{x^2 + 2\,x + 1 - 4\,y\,(x)} - \frac{x^4}{4} - \frac{x^3}{3} - x - \_C1 = 0\right\}$$

2.848 ODE No. 848

$$\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{\cosh\,(x)}{\sinh\,(x)} + \_F1\,(y(x) - \ln\,(\sinh\,(x))) = 0$$

Mathematica: cpu = 0.109014 (sec), leaf count = 154

$$\text{Solve}\left[\int_1^{y(x)} -\frac{\_\text{F1}(K[2] - \log(\sinh(x)))\left(\int_1^x\left(\frac{\_\text{F1}'(K[2]-\log(\sinh(K[1])))(\_\text{F1}(K[2]-\log(\sinh(K[1])))+\coth(K[1]))}{(\_\text{F1}(K[2]-\log(\sinh(K[1]))))^2} - \frac{\_\text{F}}{\_\text{F}}\right.\right.}{\_\text{F1}(K[2] - \log(\sinh(x)))}\right.$$

Maple: cpu = 0.405 (sec), leaf count = 27

$$\left\{\int_{\_b}^{y(x)}(\_F1\,(\_a - \ln\,(\sinh\,(x))))^{-1}\,\mathrm{d}\_a - x - \_C1 = 0\right\}$$

2.849 ODE No. 849

$$\frac{\mathrm{d}}{\mathrm{d}x}y(x) = -x/2 + 1 + \sqrt{x^2 - 4\,x + 4\,y\,(x)} + x^2\sqrt{x^2 - 4\,x + 4\,y\,(x)} + x^3\sqrt{x^2 - 4\,x + 4\,y\,(x)} = 0$$

Mathematica: cpu = 0.323541 (sec), leaf count = 68

$$\left\{\left\{y(x) \to \frac{1}{144}(-72c_1x^4 - 96c_1x^3 - 288c_1x + 144c_1^2 + 9x^8 + 24x^7 + 16x^6 + 72x^5 + 96x^4 + 108x^2 + 144x\right.\right.$$

Maple: cpu = 0.265 (sec), leaf count = 35

$$\left\{\frac{1}{2}\sqrt{x^2 - 4\,x + 4\,y\,(x)} - \frac{x^4}{4} - \frac{x^3}{3} - x - \_C1 = 0\right\}$$

2.850 ODE No. 850

$$\frac{\mathrm{d}}{\mathrm{d}x}y(x) = (\sin(x))^{-1} + \_F1(y(x) - \ln(\sin(x)) + \ln(\cos(x)+1)) = 0$$

Mathematica: cpu = 0.197025 (sec), leaf count = 1478

$$\text{Solve}\left[\int_1^{y(x)} -\frac{\sin(x)\left(\left(\int_1^x \left(\frac{(\cot^2(K[1])+\csc(K[1])\cot(K[1])+1)\sin(K[1])(\csc(K[1])+\_\text{F1}(K[2]+\log(\cos(K[1])+1)-\log(\sin(K[1])))}{(-\cot^2(K[1])+\_\text{F1}(K[2]+\log(\cos(K[1])+1)-\log(\sin(K[1])))\cot(K\right.\right.\right.\right.$$

Maple: cpu = 0.795 (sec), leaf count = 32

$$\left\{\int_{\_b}^{y(x)} (\_F1(\_a - \ln(\sin(x)) + \ln(\cos(x)+1)))^{-1}\,\mathrm{d}\_a - x - \_C1 = 0\right\}$$

2.851 ODE No. 851

$$\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{b^3 + (y(x))^2 b^3 + 2\,y(x)\,b^2 ax + x^2 ba^2 + (y(x))^3 b^3 + 3\,(y(x))^2 b^2 ax + 3\,y(x)\,ba^2x^2 + a^3x^3}{b^3} = 0$$

Mathematica: cpu = 0.155520 (sec), leaf count = 145

$$\text{Solve}\left[-\frac{1}{3}(27a+29b)^{2/3}\text{RootSum}\left[\#1^3(27a+29b)^{2/3} - 3\#1b^{2/3} + (27a+29b)^{2/3}\&, \frac{\log\left(\frac{\frac{3ax+b}{b}+3y(x)}{\sqrt[3]{\frac{27a+29b}{b}}} - \right.\right.\right.$$

Maple: cpu = 0.047 (sec), leaf count = 42

$$\left\{y(x) = \frac{RootOf\left(\int^{-Z} (\_a^3 b + \_a^2 b + a + b)^{-1}\,d\_ab - x + \_C1\right)b - ax}{b}\right\}$$

2.852 ODE No. 852

$$\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{\alpha^3 + (y(x))^2\alpha^3 + 2\,y(x)\,\alpha^2\beta\,x + \alpha\,\beta^2x^2 + (y(x))^3\alpha^3 + 3\,(y(x))^2\alpha^2\beta\,x + 3\,y(x)\,\alpha\,\beta^2x^2 + \beta^3x^3}{\alpha^3}$$

Mathematica: cpu = 0.149019 (sec), leaf count = 145

$$\text{Solve}\left[-\frac{1}{3}(29\alpha+27\beta)^{2/3}\text{RootSum}\left[\#1^3(29\alpha+27\beta)^{2/3}-3\#1\alpha^{2/3}+(29\alpha+27\beta)^{2/3}\&,\frac{\log\left(\frac{\frac{\alpha+3\beta x}{\alpha}+3y(x)}{\frac{3\sqrt{\frac{29\alpha+27\beta}{\alpha}}}{\alpha}}\right.}{\alpha^{2/3}-\#1^2(29\alpha-\right.\right.\right.$$

Maple: cpu = 0.047 (sec), leaf count = 42

$$\left\{y(x)=\frac{RootOf\left(\int^{-Z}(\_a^3\alpha+\_a^2\alpha+\alpha+\beta)^{-1}d\_a\alpha-x+\_C1\right)\alpha-\beta x}{\alpha}\right\}$$

2.853 ODE No. 853

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x)=\frac{14xy(x)+12+2x+x^3(y(x))^3+6x^2(y(x))^2}{x^2\left(xy\left(x\right)+2+x\right)}=0}$$

Mathematica: cpu = 0.016502 (sec), leaf count = 76

$$\left\{\left\{y(x)\to\frac{1}{x^3\left(\frac{1}{x^3}-\frac{1}{x^3\sqrt{c_1-2x}}\right)}-\frac{x+2}{x}\right\},\left\{y(x)\to\frac{1}{x^3\left(\frac{1}{x^3\sqrt{c_1-2x}}+\frac{1}{x^3}\right)}-\frac{x+2}{x}\right\}\right\}$$

Maple: cpu = 0.031 (sec), leaf count = 65

$$\left\{y(x)=-\frac{1}{x}\left(2\sqrt{\_C1-2x}-x-2\right)\left(\sqrt{\_C1-2x}-1\right)^{-1},y(x)=-\frac{1}{x}\left(2\sqrt{\_C1-2x}+x+2\right)\left(\sqrt{\_\right.\right.$$

2.854 ODE No. 854

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x)=\frac{y(x)\left(\ln\left(x\right)+\ln\left(y(x)\right)-1+x^2(\ln\left(x\right))^2+2x^2\ln\left(y(x)\right)\ln\left(x\right)+x^2(\ln\left(y(x)\right))^2\right)}{x}=0}$$

Mathematica: cpu = 0.623579 (sec), leaf count = 49

$$\text{DSolve}\left[y'(x)=\frac{y(x)\left(x^2\log^2(y(x))+2x^2\log(x)\log(y(x))+x^2\log^2(x)+\log(y(x))+\log(x)-1\right)}{x},y(x),x\right.$$

Maple: cpu = 0.156 (sec), leaf count = 51

$$\left\{y(x)=1\left(x^{\frac{x^3}{x^3+3\_C1}}\right)^{-1}\left(x^{\frac{\_C1}{x^3+3\_C1}}\right)^{-3}\left(\mathrm{e}^{\frac{x}{x^3+3\_C1}}\right)^{-3}\right\}$$

2.855 ODE No. 855

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{y(x)\left(\ln\left(y(x)\right) - 1 + \ln\left(x\right) + x^3(\ln\left(x\right))^2 + 2\,x^3\ln\left(y(x)\right)\ln\left(x\right) + x^3(\ln\left(y(x)\right))^2\right)}{x} = 0}$$

Mathematica: cpu = 0.671585 (sec), leaf count = 49

$$\text{DSolve}\left[y'(x) = \frac{y(x)\left(x^3\log^2(y(x)) + 2x^3\log(x)\log(y(x)) + x^3\log^2(x) + \log(y(x)) + \log(x) - 1\right)}{x}, y(x), x\right.$$

Maple: cpu = 0.156 (sec), leaf count = 51

$$\left\{y(x) = 1\left(x^{\frac{x^4}{x^4+4\_C1}}\right)^{-1}\left(x^{\frac{\_C1}{x^4+4\_C1}}\right)^{-4}\left(\mathrm{e}^{\frac{x}{x^4+4\_C1}}\right)^{-4}\right\}$$

2.856 ODE No. 856

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = -\frac{x}{\sqrt{\left(y\left(x\right)\right)^2}}\left(-x^{-1} - \_F1\left(\left(y(x)\right)^2 - 2\,x\right)\right) = 0}$$

Mathematica: cpu = 0.894114 (sec), leaf count = 100

$$\text{Solve}\left[\int_1^{y(x)}\left(\frac{\sqrt{K[2]^2}}{\_\text{F1}\left(K[2]^2 - 2x\right)} - \int_1^x \frac{2K[2]\_\text{F1}'(K[2]^2 - 2K[1])}{\left(\_\text{F1}\left(K[2]^2 - 2K[1]\right)\right)^2}\,dK[1]\right)\,dK[2] + \int_1^x \left(-\frac{1}{\_\text{F1}\left(y(x)^2 -\right.\right.\right.$$

Maple: cpu = 0.218 (sec), leaf count = 65

$$\left\{y(x) = \sqrt{2\,RootOf\left(x^2 - 2\int^{\_Z}\left(\_F1\left(2\,\_a\right)\right)^{-1}d\_a + 4\,\_C1\right) + 2\,x}, y(x) = -\sqrt{2\,RootOf\left(x^2 - 2\right.\right.\right.$$

2.857 ODE No. 857

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = -x/4 + 1/4 + \sqrt{x^2 - 2\,x + 1 + 8\,y\left(x\right)} + x^2\sqrt{x^2 - 2\,x + 1 + 8\,y\left(x\right)} + x^3\sqrt{x^2 - 2\,x + 1 + 8\,y}$$

Mathematica: cpu = 0.341543 (sec), leaf count = 69

$$\left\{\left\{y(x) \to \frac{1}{72}\left(-72c_1x^4 - 96c_1x^3 - 288c_1x + 144c_1^2 + 9x^8 + 24x^7 + 16x^6 + 72x^5 + 96x^4 + 135x^2 + 18x -\right.\right.\right.$$

Maple: cpu = 0.265 (sec), leaf count = 36

$$\left\{\frac{1}{4}\sqrt{x^2 - 2\,x + 1 + 8\,y\left(x\right)} - \frac{x^4}{4} - \frac{x^3}{3} - x - \_C1 = 0\right\}$$

2.858 ODE No. 858

$$\frac{\mathrm{d}}{\mathrm{d}x}y(x)=\frac{a^3+\left(y(x)\right)^2a^3+2\,y(x)\,a^2bx+ab^2x^2+\left(y(x)\right)^3a^3+3\left(y(x)\right)^2a^2bx+3\,y(x)\,ab^2x^2+b^3x^3}{a^3}=0$$

Mathematica: cpu = 0.160520 (sec), leaf count = 145

$$\text{Solve}\left[-\frac{1}{3}(29a+27b)^{2/3}\text{RootSum}\left[\#1^3(29a+27b)^{2/3}-3\#1a^{2/3}+(29a+27b)^{2/3}\&,\frac{\log\left(\frac{\frac{a+3bx}{a}+3y(x)}{\sqrt[3]{\frac{29a+27b}{a}}}-\right.\right.\right.$$
$$\left.\left.\left.\frac{}{a^{2/3}-\#1^2(29a+2\right.\right.\right.$$

Maple: cpu = 0.047 (sec), leaf count = 42

$$\left\{y(x)=\frac{RootOf\left(\int^{-Z}\left(\_a^3a+\_a^2a+a+b\right)^{-1}d\_aa-x+\_C1\right)a-bx}{a}\right\}$$

2.859 ODE No. 859

$$\frac{\mathrm{d}}{\mathrm{d}x}y(x)=-\frac{-x-\_F1\left(\left(y(x)\right)^2-2\,x\right)}{\sqrt{\left(y\left(x\right)\right)^2}x}=0$$

Mathematica: cpu = 1.297665 (sec), leaf count = 102

$$\text{Solve}\left[\int_1^{y(x)}\left(\frac{\sqrt{K[2]^2}}{\_\text{F1}\left(K[2]^2-2x\right)}-\int_1^x\frac{2K[2]\_\text{F1}'(K[2]^2-2K[1])}{\left(\_\text{F1}\left(K[2]^2-2K[1]\right)\right)^2}\,dK[1]\right)dK[2]+\int_1^x\left(-\frac{1}{\_\text{F1}\left(y(x)^2-\right.}\right.\right.$$

Maple: cpu = 0.218 (sec), leaf count = 63

$$\left\{y(x)=\sqrt{2\,RootOf\left(\ln\left(x\right)-\int^{-Z}\left(\_F1\left(2\,\_a\right)\right)^{-1}d\_a+2\,\_C1\right)+2\,x},y(x)=-\sqrt{2\,RootOf\left(\ln\left(x\right)-\right.}\right\}$$

2.860 ODE No. 860

$$\frac{\mathrm{d}}{\mathrm{d}x}y(x) = 1/2\,\frac{-\sin\left(2\,y(x)\right) + x\cos\left(2\,y(x)\right) + \cos\left(2\,y(x)\right)x^3 + \cos\left(2\,y(x)\right)x^4 + x + x^3 + x^4}{x} = 0$$

Mathematica: cpu = 0.150519 (sec), leaf count = 33

$$\left\{\left\{y(x) \to \tan^{-1}\left(\frac{10c_1 + 4x^5 + 5x^4 + 10x^2}{20x}\right)\right\}\right\}$$

Maple: cpu = 1.669 (sec), leaf count = 29

$$\left\{y(x) = \arctan\left(\frac{4\,x^5 + 5\,x^4 + 10\,x^2 + 40\,\_C1}{20\,x}\right)\right\}$$

2.861 ODE No. 861

$$\frac{\mathrm{d}}{\mathrm{d}x}y(x) = -\frac{1}{x}\left(-\frac{y(x)}{x}\left(\mathrm{e}^{-x^{-1}}\right)^{-1} - \_F1\left(y(x)\left(\mathrm{e}^{-x^{-1}}\right)^{-1}\right)\right)\mathrm{e}^{-x^{-1}} = 0$$

Mathematica: cpu = 1.815230 (sec), leaf count = 155

$$\text{Solve}\left[\int_1^{y(x)} -\frac{\_\mathrm{F1}\left(e^{\frac{1}{x}}K[2]\right)\left(\int_1^x\left(\frac{e^{\frac{1}{K[1]}}}{K[1]^2\_\mathrm{F1}\left(e^{\frac{1}{K[1]}}K[2]\right)} - \frac{e^{\frac{2}{K[1]}}K[2]\_\mathrm{F1}'\left(e^{\frac{1}{K[1]}}K[2]\right)}{K[1]^2\left(\_\mathrm{F1}\left(e^{\frac{1}{K[1]}}K[2]\right)\right)^2}\right)dK[1]\right) + e^{\frac{1}{x}}}{\_\mathrm{F1}\left(e^{\frac{1}{x}}K[2]\right)}dK[2] + \right.$$

Maple: cpu = 0.125 (sec), leaf count = 26

$$\left\{y(x) = \frac{RootOf\left(-\ln(x) + \int^{-Z}(\_F1(\_a))^{-1}\,d\_a + \_C1\right)}{\mathrm{e}^{x^{-1}}}\right\}$$

2.862 ODE No. 862

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = -\left(\frac{Ei(1,-\ln\left(-1+y(x)\right))}{x} - \_F1(x)\right)\ln\left(-1+y(x)\right) = 0}$$

Mathematica: cpu = 1.114141 (sec), leaf count = 32

$$\text{DSolve}\left[y'(x) = \log(y(x)-1)\left(\_\text{F1}(x) - \frac{\text{Ei}(-\log(y(x)-1))}{x}\right), y(x), x\right]$$

Maple: cpu = 0.172 (sec), leaf count = 27

$$\left\{y(x) = \mathrm{e}^{RootOf\left(\int^{\frac{\_F1(x)}{x}} \mathrm{d}x x + x\_C1 + Ei(1,-\_Z)\right)} + 1\right\}$$

2.863 ODE No. 863

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{y(x) + x\sqrt{\left(y\left(x\right)\right)^2 + x^2} + x^3\sqrt{\left(y\left(x\right)\right)^2 + x^2} + x^4\sqrt{\left(y\left(x\right)\right)^2 + x^2}}{x} = 0}$$

Mathematica: cpu = 0.034504 (sec), leaf count = 30

$$\left\{\left\{y(x) \to x\sinh\left(\frac{1}{12}\left(12c_1 + 3x^4 + 4x^3 + 12x\right)\right)\right\}\right\}$$

Maple: cpu = 2.355 (sec), leaf count = 38

$$\left\{\ln\left(y(x) + \sqrt{\left(y\left(x\right)\right)^2 + x^2}\right) - \frac{x^4}{4} - \frac{x^3}{3} - x - \ln\left(x\right) - \_C1 = 0\right\}$$

2.864 ODE No. 864

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{y(x)\left(\left(\mathrm{e}^{-1/4\,x^2}\right)^2 x y(x) + \mathrm{e}^{-1/4\,x^2}x + 2\left(y(x)\right)^2\mathrm{e}^{-3/4\,x^2}\right)\mathrm{e}^{1/4\,x^2}}{2\,y\left(x\right)\mathrm{e}^{-1/4\,x^2} + 2} = 0}$$

Mathematica: cpu = 0.041005 (sec), leaf count = 137

$$\left\{\left\{y(x) \to \frac{2e^{\frac{x^2}{2}}}{\sqrt{2}\sqrt{2e^{\frac{x^2}{2}}\left(c_1 - 2x\right) + 2e^{\frac{x^2}{2}}} - 2e^{\frac{x^2}{4}}}\right\}, \left\{y(x) \to -\frac{2e^{\frac{x^2}{2}}}{\sqrt{2}\sqrt{2e^{\frac{x^2}{2}}\left(c_1 - 2x\right) + 2e^{\frac{x^2}{2}}} + 2e^{\frac{x^2}{4}}}\right\}\right\}$$

Maple: cpu = 0.062 (sec), leaf count = 186

$$\left\{y(x) = 1\left(\mathrm{e}^{-\frac{x^2}{4}}\sqrt{\_C1 - 2x}\mathrm{e}^{\frac{x^2}{2}} - \mathrm{e}^{-\frac{x^2}{4}}\mathrm{e}^{\frac{x^2}{2}} - \mathrm{e}^{\frac{x^2}{4}}\sqrt{\_C1 - 2x}\right)\left(\mathrm{e}^{-\frac{x^2}{4}}\right)^{-1}\left(\mathrm{e}^{-\frac{x^2}{4}}\mathrm{e}^{\frac{x^2}{2}} + \mathrm{e}^{\frac{x^2}{4}}\sqrt{\_C1 - 2x}\right)\right.$$

2.865 ODE No. 865

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \left(\frac{\ln\left(-1+y(x)\right)y(x)}{\left(1-y\left(x\right)\right)\ln\left(x\right)x} - \frac{\ln\left(-1+y(x)\right)}{\left(1-y\left(x\right)\right)\ln\left(x\right)x} - f(x)\right)\left(1-y(x)\right) = 0}$$

Mathematica: cpu = 150.792648 (sec), leaf count = 84

$$\text{Solve}\left[\int_1^x \left(-\frac{f(K[1])}{\log(K[1])} - \frac{\log(y(x)-1)}{K[1]\log^2(K[1])}\right) dK[1] + \int_1^{y(x)} \left(\frac{1}{\log(x)(K[2]-1)} - \int_1^x -\frac{1}{K[1](K[2]-1)\text{lo}\right.$$

Maple: cpu = 0.156 (sec), leaf count = 23

$$\left\{y(x) = \mathrm{e}^{\int \frac{f(x)}{\ln(x)}\,\mathrm{d}x \ln(x)} x^{\_C1} + 1\right\}$$

2.866 ODE No. 866

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = -x/2 - a/2 + \sqrt{x^2+2\,ax+a^2+4\,y\left(x\right)} + x^2\sqrt{x^2+2\,ax+a^2+4\,y\left(x\right)} + x^3\sqrt{x^2+2\,ax+a^}$$

Mathematica: cpu = 0.500063 (sec), leaf count = 74

$$\left\{\left\{y(x) \to \frac{1}{144}(-36a^2 - 72ax - 72c_1x^4 - 96c_1x^3 - 288c_1x + 144c_1^2 + 9x^8 + 24x^7 + 16x^6 + 72x^5 + 96x^4 \right.\right.$$

Maple: cpu = 0.437 (sec), leaf count = 39

$$\left\{\frac{1}{2}\sqrt{x^2+2\,ax+a^2+4\,y\left(x\right)} - \frac{x^4}{4} - \frac{x^3}{3} - x - \_C1 = 0\right\}$$

2.867 ODE No. 867

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = -2/3\,x + 1 + \left(y(x)\right)^2 + 2/3\,x^2y(x) + 1/9\,x^4 + \left(y(x)\right)^3 + x^2\left(y(x)\right)^2 + 1/3\,y(x)\,x^4 + 1/27\,x^6 =}$$

Mathematica: cpu = 0.059508 (sec), leaf count = 77

$$\text{Solve}\left[-\frac{29}{3}\text{RootSum}\left[-29\#1^3 + 3\sqrt[3]{29}\#1 - 29\&, \frac{\log\left(\frac{x^2+3y(x)+1}{\sqrt[3]{29}} - \#1\right)}{\sqrt[3]{29} - 29\#1^2}\&\right] = c_1 + \frac{1}{9}29^{2/3}x, y(x)\right]$$

Maple: cpu = 0.046 (sec), leaf count = 30

$$\left\{y(x) = -\frac{x^2}{3} + \mathit{RootOf}\left(-x + \int^{\_Z} \left(\_a^3 + \_a^2 + 1\right)^{-1} d\_a + \_C1\right)\right\}$$

2.868 ODE No. 868

$$\frac{\mathrm{d}}{\mathrm{d}x}y(x) = 2\,x + 1 + (y(x))^2 - 2\,x^2 y(x) + x^4 + (y(x))^3 - 3\,x^2 (y(x))^2 + 3\,y(x)\,x^4 - x^6 = 0$$

Mathematica: cpu = 0.042005 (sec), leaf count = 79

$$\text{Solve}\left[-\frac{29}{3}\text{RootSum}\left[-29\#1^3 + 3\sqrt[3]{29}\#1 - 29\&, \frac{\log\left(\frac{-3x^2+3y(x)+1}{\sqrt[3]{29}} - \#1\right)}{\sqrt[3]{29} - 29\#1^2}\&\right] = c_1 + \frac{1}{9}29^{2/3}x, y(x)\right]$$

Maple: cpu = 0.047 (sec), leaf count = 28

$$\left\{y(x) = x^2 + RootOf\left(-x + \int^{\_Z} \left(\_a^3 + \_a^2 + 1\right)^{-1} d\_a + \_C1\right)\right\}$$

2.869 ODE No. 869

$$\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{-x + 1 - 2\,y(x) + 3\,x^2 - 2\,x^2 y(x) + 2\,x^4 + x^3 - 2\,x^3 y(x) + 2\,x^5}{x^2 - y\,(x)} = 0$$

Mathematica: cpu = 0.035005 (sec), leaf count = 42

$$\left\{\left\{y(x) \to \frac{1}{2}\left(W\left(-e^{c_1 + x^4 + \frac{4x^3}{3} - 2x^2 + 4x - 1}\right) + 1\right) + x^2\right\}\right\}$$

Maple: cpu = 0.047 (sec), leaf count = 37

$$\left\{y(x) = x^2 + \frac{1}{2}lambertW\left(-2\,\frac{\mathrm{e}^{x^4}\mathrm{e}^{4/3\,x^3}\_C1\,\left(\mathrm{e}^x\right)^4\mathrm{e}^{-1}}{\left(\mathrm{e}^{x^2}\right)^2}\right) + \frac{1}{2}\right\}$$

2.870 ODE No. 870

$$\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{1}{x}\left(\mathrm{e}^{-\frac{y(x)}{x}}\,y(x) + \mathrm{e}^{-\frac{y(x)}{x}}\,x + x + x^3 + x^4\right)\mathrm{e}^{\frac{y(x)}{x}} = 0$$

Mathematica: cpu = 1.681213 (sec), leaf count = 35

$$\left\{\left\{y(x) \to -x\log\left(\frac{-c_1 - \frac{x^4}{4} - \frac{x^3}{3} - x}{x}\right)\right\}\right\}$$

Maple: cpu = 0.702 (sec), leaf count = 30

$$\left\{y(x) = -\ln\left(-\frac{3\,x^4 + 4\,x^3 + 12\,\_C1 + 12\,x}{12\,x}\right)x\right\}$$

2.871 ODE No. 871

$$\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{2\,x(y(x))^2 + 4\,y(x)\ln(2\,x+1)\,x + 2\,(\ln(2\,x+1))^2\,x + (y(x))^2 - 2 + (\ln(2\,x+1))^2 + 2\,y(x)\,l}{2\,x+1}$$

Mathematica: cpu = 0.022503 (sec), leaf count = 22

$$\left\{\left\{y(x) \to \frac{1}{c_1 - x} - \log(2x+1)\right\}\right\}$$

Maple: cpu = 0.062 (sec), leaf count = 66

$$\left\{y(x) = -\frac{1}{2}\left(4\,\frac{\ln(2\,x+1)\,x}{2\,x+1} + 2\,\frac{\ln(2\,x+1)}{2\,x+1}\right)\left(2\,\frac{x}{2\,x+1} + (2\,x+1)^{-1}\right)^{-1} + (\_C1 - x)^{-1}\right\}$$

2.872 ODE No. 872

$$\frac{\mathrm{d}}{\mathrm{d}x}y(x) = 1/5\,\frac{-30\,x^3 y(x) + 12\,x^6 + 70\,x^{7/2} - 30\,x^3 - 25\,y(x)\sqrt{x} + 50\,x - 25\sqrt{x} - 25}{\left(-5\,y(x) + 2\,x^3 + 10\sqrt{x} - 5\right)x} = 0$$

Mathematica: cpu = 0.045506 (sec), leaf count = 215

$$\left\{\left\{y(x) \to \frac{1}{5}\left(2x^3 + 10\sqrt{x} - 5\right) - \frac{\sqrt{-25c_1 x - x\left(2x^3 + 10\sqrt{x} - 5\right)^2 - 50x\left(-\frac{4x^{7/2}}{5} - \frac{2x^6}{25} + \frac{2x^3}{5} - 2x + 2\right.}}{5\sqrt{-\frac{1}{x}}x}\right.\right.$$

Maple: cpu = 0.047 (sec), leaf count = 49

$$\left\{y(x) = \frac{2\,x^3}{5} - \sqrt{\_C1 + 2\,\ln(x)} + 2\sqrt{x} - 1, y(x) = \frac{2\,x^3}{5} + \sqrt{\_C1 + 2\,\ln(x)} + 2\sqrt{x} - 1\right\}$$

2.873 ODE No. 873

$$\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{1 + 2\,y(x)}{x\left(-2 + x + x\,(y(x))^2 + 3\,x\,(y(x))^3 + 2\,x y(x) + 2\,x\,(y(x))^4\right)} = 0$$

Mathematica: cpu = 0.345044 (sec), leaf count = 53

$$\text{Solve}\left[\frac{1}{192}\left(-16y(x)^3 - 12y(x)^2 + 12y(x) - 54\log(4y(x)+2) + 7\right) - \frac{1}{2x(2y(x)+1)} = c_1, y(x)\right]$$

Maple: cpu = 0.187 (sec), leaf count = 50

$$\left\{y(x) = \frac{\mathrm{e}^{RootOf\left(2\,x\left(\mathrm{e}^{-Z}\right)^4 - 3\,x\left(\mathrm{e}^{-Z}\right)^3 - 6\,x\left(\mathrm{e}^{-Z}\right)^2 + 48\,\_C1\,\mathrm{e}^{-Z}x + 54\,\mathrm{e}^{-Z}\_Z\,x + 7\,x\mathrm{e}^{-Z} + 96\right)}}{2} - \frac{1}{2}\right\}$$

2.874 ODE No. 874

$$\frac{\mathrm{d}}{\mathrm{d}x}y(x)=\frac{\left(-256\,ax^{2}+512+512\left(y(x)\right)^{2}+128\,y(x)\,ax^{4}+8\,a^{2}x^{8}+512\left(y(x)\right)^{3}+192\,x^{4}a(y(x))^{2}+24\,y\right.}{512}$$

Mathematica: cpu = 0.067509 (sec), leaf count = 101

$$\text{Solve}\left[-\frac{29}{3}\text{RootSum}\left[-29\#1^{3}+3\sqrt[3]{29}\#1-29\&,\frac{\log\left(\frac{\frac{1}{8}\left(3ax^{5}+8x\right)+3xy(x)}{\sqrt[3]{29}\sqrt[3]{x^{3}}}-\#1\right)}{\sqrt[3]{29}-29\#1^{2}}\&\right]=c_{1}+\frac{1}{18}29^{2/3}\left(x^{3}\right)^{2/}\right.$$

Maple: cpu = 0.047 (sec), leaf count = 40

$$\left\{y(x)=-\frac{ax^{4}}{8}-\frac{1}{3}+\frac{29\,RootOf\left(x^{2}-162\int^{-Z}\left(841\_a^{3}-27\_a+27\right)^{-1}d\_a+6\_C1\right)}{9}\right\}$$

2.875 ODE No. 875

$$\frac{\mathrm{d}}{\mathrm{d}x}y(x)=-\frac{-xy(x)-y(x)+x^{5}\sqrt{\left(y\left(x\right)\right)^{2}+x^{2}}-x^{4}\sqrt{\left(y\left(x\right)\right)^{2}+x^{2}}y(x)}{x\left(1+x\right)}=0$$

Mathematica: cpu = 0.293537 (sec), leaf count = 285

$$\left\{\left\{y(x)\to\frac{x\left(2(x+1)^{\sqrt{2}}\exp\left(\sqrt{2}c_{1}+\frac{x^{4}}{2\sqrt{2}}+\frac{x^{2}}{\sqrt{2}}+\frac{1}{3}\sqrt{2}(x^{2}+3)\,x+\frac{25}{6\sqrt{2}}\right)+(x+1)^{2\sqrt{2}}\left(-e^{2\sqrt{2}c_{1}+\frac{x^{4}}{\sqrt{2}}+\sqrt{2}}\right.\right.\right.}{-2(x+1)^{\sqrt{2}}\exp\left(\sqrt{2}c_{1}+\frac{x^{4}}{2\sqrt{2}}+\frac{x^{2}}{\sqrt{2}}+\frac{1}{3}\sqrt{2}\left(x^{2}+3\right)x+\frac{25}{6\sqrt{2}}\right)+(x+1)^{2\sqrt{2}}\left(-e^{2\sqrt{2}c_{1}+\frac{x^{4}}{\sqrt{2}}+\sqrt{2}}\right.}\right\}$$

Maple: cpu = 0.187 (sec), leaf count = 79

$$\left\{\ln\left(2\frac{x\left(\sqrt{2\,\left(y\left(x\right)\right)^{2}+2\,x^{2}}+y(x)+x\right)}{y\left(x\right)-x}\right)+\frac{\sqrt{2}x^{4}}{4}-\frac{\sqrt{2}x^{3}}{3}+\frac{\sqrt{2}x^{2}}{2}-x\sqrt{2}-\ln\left(x\right)+\sqrt{2}\ln\left(1+x\right)-\right.$$

2.876 ODE No. 876

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = -1/2\,\frac{\left(y(x)\right)^2\left(x^2y(x) - 2\,x - 2\,xy(x) + y(x)\right)}{\left(-2 + xy\left(x\right) - 2\,y\left(x\right)\right)x} = 0}$$

Mathematica: cpu = 0.017002 (sec), leaf count = 135

$$\left\{\left\{y(x) \to -\frac{4x}{\frac{2\sqrt{-4x\left(c_1 - 2\left(\frac{x^2}{8} - \frac{x}{2} + \frac{\log(x)}{4}\right)\right) - x(x-2)^2}}{\sqrt{-\frac{1}{x}}} - 2(x-2)x}\right\}, \left\{y(x) \to \frac{4x}{\frac{2\sqrt{-4x\left(c_1 - 2\left(\frac{x^2}{8} - \frac{x}{2} + \frac{\log(x)}{4}\right)\right) - x(x-2)^2}}{\sqrt{-\frac{1}{x}}}}\right.$$

Maple: cpu = 0.031 (sec), leaf count = 41

$$\left\{y(x) = -4\left(\sqrt{\_C1 - 8\,\ln\left(x\right)} - 2\,x + 4\right)^{-1}, y(x) = 4\left(\sqrt{\_C1 - 8\,\ln\left(x\right)} + 2\,x - 4\right)^{-1}\right\}$$

2.877 ODE No. 877

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{-2\,xy(x) + 2\,x^3 - 2\,x - \left(y(x)\right)^3 + 3\,x^2\left(y(x)\right)^2 - 3\,y(x)\,x^4 + x^6}{-y\left(x\right) + x^2 - 1} = 0}$$

Mathematica: cpu = 0.016502 (sec), leaf count = 49

$$\left\{\left\{y(x) \to \frac{1}{1 - \frac{1}{\sqrt{c_1 - 2x}}} + x^2 - 1\right\}, \left\{y(x) \to \frac{1}{\frac{1}{\sqrt{c_1 - 2x}} + 1} + x^2 - 1\right\}\right\}$$

Maple: cpu = 0.031 (sec), leaf count = 71

$$\left\{y(x) = -\frac{1}{-2\,x + 2\,\_C1}\left(-2\,\_C1\,x^2 + 2\,x^3 + \sqrt{2\,\_C1 - 2\,x + 1} - 1\right), y(x) = \frac{1}{-2\,x + 2\,\_C1}\left(2\,\_C1\,x\right.\right.$$

2.878 ODE No. 878

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{1 + \left(y(x)\right)^4 - 8\,ax\left(y(x)\right)^2 + 16\,a^2x^2 + \left(y(x)\right)^6 - 12\left(y(x)\right)^4 ax + 48\left(y(x)\right)^2 a^2x^2 - 64\,a^3x^3}{y\left(x\right)} = 0}$$

Mathematica: cpu = 0.262533 (sec), leaf count = 130

$$\text{Solve}\left[2a\left(x - \frac{1}{2}\text{RootSum}\left[64\#1^3a^3 - 48\#1^2a^2y(x)^2 - 16\#1^2a^2 + 12\#1ay(x)^4 + 8\#1ay(x)^2 + 2a - y(x)\right.\right.\right.$$

Maple: cpu = 0.359 (sec), leaf count = 75

$$\left\{ \int_{\_b}^{y(x)} \frac{\_a}{-\_a^6 + 12\,\_a^4 a x - 48\,\_a^2 a^2 x^2 + 64\,a^3 x^3 - \_a^4 + 8\,\_a^2 a x - 16\,a^2 x^2 + 2\,a - 1}\,\mathrm{d}\_a + x - \_C1 \right.$$

2.879 ODE No. 879

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = -\frac{-xy(x) - y(x) + \sqrt{(y(x))^2 + x^2}\,x^2 - x\sqrt{(y(x))^2 + x^2}\,y(x)}{x\,(1+x)} = 0}$$

Mathematica: cpu = 0.152519 (sec), leaf count = 135

$$\left\{ \left\{ y(x) \to \frac{x\left(-2(x+1)^{\sqrt{2}} e^{\sqrt{2}c_1 + \sqrt{2}x} + e^{2\sqrt{2}c_1 + 2\sqrt{2}x} - (x+1)^{2\sqrt{2}}\right)}{2(x+1)^{\sqrt{2}} e^{\sqrt{2}c_1 + \sqrt{2}x} + e^{2\sqrt{2}c_1 + 2\sqrt{2}x} - (x+1)^{2\sqrt{2}}} \right\} \right\}$$

Maple: cpu = 0.172 (sec), leaf count = 55

$$\left\{ \ln\left(2\,\frac{x\left(\sqrt{2\,(y(x))^2 + 2\,x^2} + y(x) + x\right)}{y(x) - x} \right) + x\sqrt{2} - \ln(x) - \sqrt{2}\ln(1+x) - \_C1 = 0 \right\}$$

2.880 ODE No. 880

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = -2\,\frac{a}{-y(x) - 2\,a - 2\,a\,(y(x))^4 + 16\,a^2 x\,(y(x))^2 - 32\,a^3 x^2 - 2\,a\,(y(x))^6 + 24\,(y(x))^4\,a^2 x - 96}}$$

Mathematica: cpu = 0.127516 (sec), leaf count = 131

$$\text{Solve}\left[\frac{\text{RootSum}\left[-64\#1^3 a^3 + 48\#1^2 a^2 y(x)^2 + 16\#1^2 a^2 - 12\#1 a y(x)^4 - 8\#1 a y(x)^2 + y(x)^6 + y(x)^4 + 1\right.}{8a^2} \right.$$

Maple: cpu = 0.063 (sec), leaf count = 41

$$\left\{ \frac{y(x)}{2\,a} + \frac{\int^{(y(x))^2 - 4\,a x} (\_a^3 + \_a^2 + 1)^{-1}\,d\_a}{8\,a^2} - \_C1 = 0 \right\}$$

2.881 ODE No. 881

$$\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{-18\,xy(x) - 6\,x^3 - 18\,x + 27\,(y(x))^3 + 27\,x^2(y(x))^2 + 9\,y(x)\,x^4 + x^6}{27\,y\,(x) + 9\,x^2 + 27} = 0$$

Mathematica: cpu = 0.017502 (sec), leaf count = 75

$$\left\{\left\{y(x) \to \frac{1}{27\left(\frac{1}{27} - \frac{1}{\sqrt{c_1 - 1458x}}\right)} + \frac{1}{3}\left(-x^2 - 3\right)\right\}, \left\{y(x) \to \frac{1}{27\left(\frac{1}{\sqrt{c_1 - 1458x}} + \frac{1}{27}\right)} + \frac{1}{3}\left(-x^2 - 3\right)\right\}\right\}$$

Maple: cpu = 0.047 (sec), leaf count = 75

$$\left\{y(x) = \frac{1}{-6\,x + 6\,\_C1}\left(-2\,\_C1\,x^2 + 2\,x^3 + 3\,\sqrt{2\,\_C1 - 2\,x + 1} + 3\right), y(x) = -\frac{1}{-6\,x + 6\,\_C1}\left(2\,\_C1\right.\right.$$

2.882 ODE No. 882

$$\frac{\mathrm{d}}{\mathrm{d}x}y(x) = -\frac{\left(-108\,x^{3/2} - 216 - 216\,(y(x))^2 + 72\,x^3y(x) - 6\,x^6 - 216\,(y(x))^3 + 108\,x^3(y(x))^2 - 18\,y(x)\right.}{216}$$

Mathematica: cpu = 0.068009 (sec), leaf count = 119

$$\text{Solve}\left[-\frac{29}{3}\text{RootSum}\left[-29\#1^3 + 3\sqrt[3]{29}\#1 - 29\&, \frac{\log\left(\frac{\frac{1}{2}\left(2\sqrt{x} - x^{7/2}\right) + 3\sqrt{x}y(x)}{\sqrt[3]{29}\sqrt[3]{x^{3/2}}} - \#1\right)}{\sqrt[3]{29} - 29\#1^2}\&\right] = c_1 + \frac{2}{27}29^{2/3}\sqrt{x}\right.$$

Maple: cpu = 0.047 (sec), leaf count = 41

$$\left\{y(x) = \frac{x^3}{6} - \frac{1}{3} + \frac{29}{9}RootOf\left(2\,x^{3/2} - 243\int^{\_Z}\left(841\,\_a^3 - 27\,\_a + 27\right)^{-1}d\_a + 9\,\_C1\right)\right\}$$

2.883 ODE No. 883

$$\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{\left(a^3 + (y(x))^4\,a^3 + 2\,(y(x))^2\,a^2bx^2 + ax^4b^2 + (y(x))^6\,a^3 + 3\,(y(x))^4\,a^2bx^2 + 3\,(y(x))^2\,ab^2x^4 + b\right.}{a^{7/2}y\,(x)}$$

Mathematica: cpu = 1.403178 (sec), leaf count = 164

$$\text{Solve}\left[\frac{x^2}{2} - \frac{1}{2}a^{5/2}\text{RootSum}\left[\#1^3b^3 + 3\#1^2ab^2y(x)^2 + \#1^2ab^2 + 3\#1a^2by(x)^4 + 2\#1a^2by(x)^2 + a^{5/2}b + a^3\right.\right.$$

Maple: cpu = 0.592 (sec), leaf count = 595

$$\left\{\int_{\_b}^{x}\left(b^3\_a^6 + 3\,(y(x))^2\,ab^2\_a^4 + 3\,(y(x))^4\,a^2b\_a^2 + (y(x))^6\,a^3 + a\_a^4b^2 + 2\,(y(x))^2\,a^2b\_a^2 + (y(x))^4\,a^3\right.\right.$$

2.884 ODE No. 884

$$\frac{\mathrm{d}}{\mathrm{d}x}y(x) = -\frac{\left(-1-(y(x))^4+2\,x^2(y(x))^2-x^4-(y(x))^6+3\,x^2(y(x))^4-3\,x^4(y(x))^2+x^6\right)x}{y\left(x\right)} = 0$$

Mathematica: cpu = 0.364546 (sec), leaf count = 71

$$\text{Solve}\left[\frac{1}{4}\left(2\log\left(-x^2+y(x)^2+1\right)-2x^2-\frac{1}{y(x)(y(x)+x)}+\frac{1}{xy(x)-y(x)^2}-2\log(x-y(x))-2\log(y(x\right.\right.\right.$$

Maple: cpu = 0.265 (sec), leaf count = 107

$$\left\{y(x) = \mathrm{e}^{RootOf\left(-3\,x^2\left(\mathrm{e}^{-Z}\right)^2+6\,x^3\mathrm{e}^{-Z}+3\left(\mathrm{e}^{-Z}\right)^2\ln\left(\frac{\left(\mathrm{e}^{-Z}\right)^2-2\,x\mathrm{e}^{-Z}+1}{\mathrm{e}^{-Z}-2\,x}\right)-2\_C1\left(\mathrm{e}^{-Z}\right)^2-3\_Z\left(\mathrm{e}^{-Z}\right)^2-6\,\mathrm{e}^{-Z}\ln\left(\frac{\left(\mathrm{e}^{-Z}\right)^2-2\,x\mathrm{e}^{-Z}+1}{\mathrm{e}^{-Z}-2\,x}\right)\right.}\right.$$

2.885 ODE No. 885

$$\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{-\frac{i}{128}\left(32\,ix+64+64\left(y(x)\right)^4+32\,x^2(y(x))^2+4\,x^4+64\left(y(x)\right)^6+48\,x^2(y(x))^4+12\,x^4(y(x))^2\right.}{y\left(x\right)}$$

Mathematica: cpu = 40.741674 (sec), leaf count = 73

$$\text{DSolve}\left[y'(x) = -\frac{i(x^6+12x^4y(x)^2+4x^4+48x^2y(x)^4+32x^2y(x)^2+64y(x)^6+64y(x)^4+32ix+64)}{128y(x)}, y(\right.$$

Maple: cpu = 0.858 (sec), leaf count = 0

could not solve

2.886 ODE No. 886

$$\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{2\,x^2-4\,x^3y(x)+1+x^4(y(x))^2+x^6(y(x))^3-3\left(y(x)\right)^2x^5+3\,y(x)\,x^4-x^3}{x^4} = 0$$

Mathematica: cpu = 0.054507 (sec), leaf count = 82

$$\text{Solve}\left[-\frac{29}{3}\text{RootSum}\left[-29\#1^3+3\sqrt[3]{29}\#1-29\&, \frac{\log\left(\frac{3x^2y(x)-3x+1}{\sqrt[3]{29}}-\#1\right)}{\sqrt[3]{29}-29\#1^2}\&\right] = c_1-\frac{29^{2/3}}{9x}, y(x)\right]$$

Maple: cpu = 0.016 (sec), leaf count = 42

$$\left\{y(x) = \frac{9\,x-3+29\,RootOf\left(-81\int^{-Z}\left(841\_a^3-27\_a+27\right)^{-1}d\_ax+3\,x\_C1-1\right)}{9\,x^2}\right\}$$

2.887 ODE No. 887

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{y(x)\,a^2x + a + a^2x + (y(x))^3\,a^3x^3 + 3\,(y(x))^2\,a^2x^2 + 3\,axy(x) + 1}{a^2x^2\,(axy\,(x) + 1 + ax)} = 0}$$

Mathematica: cpu = 0.049006 (sec), leaf count = 106

$$\left\{\left\{y(x) \to \frac{1}{a^3x^3\left(\frac{1}{a^3x^3} - \frac{1}{x^3\sqrt{c_1 - 2a^6x}}\right)} - \frac{ax+1}{ax}\right\}, \left\{y(x) \to \frac{1}{a^3x^3\left(\frac{1}{x^3\sqrt{c_1 - 2a^6x}} + \frac{1}{a^3x^3}\right)} - \frac{ax+1}{ax}\right\}\right\}$$

Maple: cpu = 0.046 (sec), leaf count = 70

$$\left\{y(x) = -\frac{1}{ax}\left(-ax + \sqrt{\_C1 - 2\,x} - 1\right)\left(\sqrt{\_C1 - 2\,x} - 1\right)^{-1}, y(x) = -\frac{1}{ax}\left(ax + \sqrt{\_C1 - 2\,x} + 1\right)\left(\right.\right.$$

2.888 ODE No. 888

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{6\,x^2y(x) - 2\,x + 1 - 5\,x^3(y(x))^2 - 2\,xy(x) + (y(x))^3\,x^4}{x^2\,(x^2y\,(x) - x + 1)} = 0}$$

Mathematica: cpu = 0.020003 (sec), leaf count = 78

$$\left\{\left\{y(x) \to \frac{1}{x^4\left(\frac{1}{x^2} - \frac{1}{x^2\sqrt{c_1 + \frac{2}{x}}}\right)} + \frac{x-1}{x^2}\right\}, \left\{y(x) \to \frac{1}{x^4\left(\frac{1}{x^2\sqrt{c_1 + \frac{2}{x}}} + \frac{1}{x^2}\right)} + \frac{x-1}{x^2}\right\}\right\}$$

Maple: cpu = 0.031 (sec), leaf count = 79

$$\left\{y(x) = \frac{1}{x^2}\left(\sqrt{\frac{x\_C1 + 2}{x}}x - x + 1\right)\left(\sqrt{\frac{x\_C1 + 2}{x}} - 1\right)^{-1}, y(x) = \frac{1}{x^2}\left(\sqrt{\frac{x\_C1 + 2}{x}}x + x - 1\right)\left(\sqrt{\right.\right.$$

2.889 ODE No. 889

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = -1/8\,\frac{\left(-8 - 8\,(y(x))^3 + 24\,(y(x))^{3/2}\,\mathrm{e}^x - 18\,(\mathrm{e}^x)^2 - 8\,(y(x))^{9/2} + 36\,(y(x))^3\,\mathrm{e}^x - 54\,(y(x))^{3/2}\right.}{\sqrt{y\,(x)}}$$

Mathematica: cpu = 0 (sec), leaf count = 0

Hanged

Maple: cpu = 0.858 (sec), leaf count = 47

$$\left\{ \mathrm{e}^{x}+\frac{2}{3}\ln\left((y(x))^{\frac{3}{2}}-\frac{3\,\mathrm{e}^{x}}{2}\right)+\frac{2}{3}\left((y(x))^{\frac{3}{2}}-\frac{3\,\mathrm{e}^{x}}{2}\right)^{-1}-\frac{2}{3}\ln\left((y(x))^{\frac{3}{2}}-\frac{3\,\mathrm{e}^{x}}{2}+1\right)-\_C1=0\right\}$$

2.890 ODE No. 890

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x)=\frac{x}{-y\left(x\right)+1+\left(y\left(x\right)\right)^{4}+2\,x^{2}\left(y\left(x\right)\right)^{2}+x^{4}+\left(y\left(x\right)\right)^{6}+3\,x^{2}\left(y\left(x\right)\right)^{4}+3\,x^{4}\left(y\left(x\right)\right)^{2}+x^{6}}=0}$$

Mathematica: cpu = 0.140518 (sec), leaf count = 103

$$\text{Solve}\left[y(x)-\frac{1}{2}\text{RootSum}\left[\#1^3+3\#1^2y(x)^2+\#1^2+3\#1y(x)^4+2\#1y(x)^2+y(x)^6+y(x)^4+1\&,\frac{}{3\#1^2}\right.\right.$$

Maple: cpu = 0.686 (sec), leaf count = 34

$$\left\{ -y(x)+\frac{\int^{(y(x))^{2}+x^{2}}\left(\_a^{3}+\_a^{2}+1\right)^{-1}d\_a}{2}-\_C1=0\right\}$$

2.891 ODE No. 891

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x)=\frac{\left(y(x)\right)^{2}\left(-2\,y(x)+2\,x^{2}+2\,x^{2}y(x)+y(x)\,x^{4}\right)}{x^{3}\left(x^{2}-y\left(x\right)+x^{2}y\left(x\right)\right)}=0}$$

Mathematica: cpu = 0.020503 (sec), leaf count = 135

$$\left\{\left\{y(x)\to\frac{x^5}{\frac{\sqrt{x^5\left(c_1-2\left(\frac{1}{2x^4}-\frac{1}{x^2}+\log(x)\right)\right)+(x^2-1)^2x}}{\sqrt{\frac{1}{x^5}}}-x^3\left(x^2-1\right)}\right\},\left\{y(x)\to-\frac{x^5}{\frac{\sqrt{x^5\left(c_1-2\left(\frac{1}{2x^4}-\frac{1}{x^2}+\log(x)\right)\right)+(x^2-1)^2}}{\sqrt{\frac{1}{x^5}}}}\right.\right.$$

Maple: cpu = 0.047 (sec), leaf count = 56

$$\left\{ y(x)=x^{2}\left(\sqrt{\_C1-2\,\ln\left(x\right)}x^{2}-x^{2}+1\right)^{-1},y(x)=-x^{2}\left(\sqrt{\_C1-2\,\ln\left(x\right)}x^{2}+x^{2}-1\right)^{-1}\right\}$$

2.892 ODE No. 892

$$\frac{\mathrm{d}}{\mathrm{d}x}y(x) = 1\left((y(x))^2 + 2\,xy(x) + x^2 + \mathrm{e}^{-2\left(-(y(x))^2+x^2-1\right)^{-1}}\right)\left((y(x))^2 + 2\,xy(x) + x^2 - \mathrm{e}^{-2\left(-(y(x))^2+x^2-1\right.}\right.$$

Mathematica: cpu = 0 (sec), leaf count = 0

Hanged

Maple: cpu = 0.452 (sec), leaf count = 40

$$\left\{y(x) = \mathrm{e}^{RootOf\left(-\_Z+\int^{\left(\mathrm{e}^{-\_Z}\right)^2-2\,x\mathrm{e}^{-\_Z}\left(\mathrm{e}^{2\left(\_a+1\right)^{-1}}+\_a\right)^{-1}}d\_a+\_C1\right)} - x\right\}$$

2.893 ODE No. 893

$$\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{6\,x + x^3 + x^3(y(x))^2 + 4\,x^2y(x) + x^3(y(x))^3 + 6\,x^2(y(x))^2 + 12\,xy(x) + 8}{x^3} = 0$$

Mathematica: cpu = 0.048006 (sec), leaf count = 80

$$\text{Solve}\left[-\frac{29}{3}\text{RootSum}\left[-29\#1^3 + 3\sqrt[3]{29}\#1 - 29\&, \frac{\log\left(\frac{3y(x)+\frac{x+6}{x}}{\sqrt[3]{29}} - \#1\right)}{\sqrt[3]{29} - 29\#1^2}\&\right] = c_1 + \frac{1}{9}29^{2/3}x, y(x)\right]$$

Maple: cpu = 0.031 (sec), leaf count = 41

$$\left\{y(x) = \frac{29\,RootOf\left(-81\int^{-Z}\left(841\,\_a^3 - 27\,\_a + 27\right)^{-1}d\_a + x + 3\,\_C1\right)x - 3\,x - 18}{9\,x}\right\}$$

2.894 ODE No. 894

$$\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{-i\left(ix + 1 + x^4 + 2\,x^2(y(x))^2 + (y(x))^4 + x^6 + 3\,x^4(y(x))^2 + 3\,x^2(y(x))^4 + (y(x))^6\right)}{y\,(x)} = 0$$

Mathematica: cpu = 40.654663 (sec), leaf count = 65

$$\text{DSolve}\left[y'(x) = -\frac{i(x^6 + 3x^4y(x)^2 + x^4 + 3x^2y(x)^4 + 2x^2y(x)^2 + y(x)^6 + y(x)^4 + ix + 1)}{y(x)}, y(x), x\right]$$

Maple: cpu = 0.734 (sec), leaf count = 0

could not solve

2.895 ODE No. 895

$$\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{\left(-256\,ax^2y(x) - 32\,a^2x^6 - 256\,ax^2 + 512\,(y(x))^3 + 192\,x^4a(y(x))^2 + 24\,y(x)\,a^2x^8 + a^3x^{12}\right)x}{512\,y\,(x) + 64\,ax^4 + 512}$$

Mathematica: cpu = 0.022503 (sec), leaf count = 81

$$\left\{\left\{y(x) \to \frac{1}{8}\left(-ax^4 - 8\right) + \frac{1}{512\left(\frac{1}{512} - \frac{1}{\sqrt{c_1 - 262144x^2}}\right)}\right\}, \left\{y(x) \to \frac{1}{8}\left(-ax^4 - 8\right) + \frac{1}{512\left(\frac{1}{\sqrt{c_1 - 262144x^2}} + \frac{1}{5}\right.}\right.$$

Maple: cpu = 0.047 (sec), leaf count = 80

$$\left\{y(x) = -\frac{1}{8}\left(\sqrt{-x^2 + \_C1}\,ax^4 - ax^4 - 8\right)\left(-1 + \sqrt{-x^2 + \_C1}\right)^{-1}, y(x) = -\frac{1}{8}\left(\sqrt{-x^2 + \_C1}\,ax^4 + a\right.\right.$$

2.896 ODE No. 896

$$\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{x + 1 + (y(x))^4 - 2\,x^2(y(x))^2 + x^4 + (y(x))^6 - 3\,x^2(y(x))^4 + 3\,x^4(y(x))^2 - x^6}{y\,(x)} = 0$$

Mathematica: cpu = 0.201026 (sec), leaf count = 106

$$\text{Solve}\left[\frac{1}{2}\text{RootSum}\left[-\#1^3 + 3\#1^2y(x)^2 + \#1^2 - 3\#1y(x)^4 - 2\#1y(x)^2 + y(x)^6 + y(x)^4 + 1\&, \frac{}{3\#1^2 - 6\#}\right.\right.$$

Maple: cpu = 0.296 (sec), leaf count = 63

$$\left\{\int_{\_b}^{y(x)} \frac{\_a}{-\_a^6 + 3\,\_a^4x^2 - 3\,\_a^2x^4 + x^6 - \_a^4 + 2\,\_a^2x^2 - x^4 - 1}\,\mathrm{d}\_a + x - \_C1 = 0\right\}$$

2.897 ODE No. 897

$$\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{\left(-108\,x^{3/2}y(x) + 18\,x^{9/2} - 108\,x^{3/2} - 216\,(y(x))^3 + 108\,x^3(y(x))^2 - 18\,y(x)\,x^6 + x^9\right)\sqrt{x}}{-216\,y\,(x) + 36\,x^3 - 216} = 0$$

Mathematica: cpu = 0.027003 (sec), leaf count = 79

$$\left\{\left\{y(x) \to \frac{1}{6}\left(x^3 - 6\right) - \frac{1}{216\left(-\frac{1}{\sqrt{c_1 - 62208x^{3/2}}} - \frac{1}{216}\right)}\right\}, \left\{y(x) \to \frac{1}{6}\left(x^3 - 6\right) - \frac{1}{216\left(\frac{1}{\sqrt{c_1 - 62208x^{3/2}}} - \frac{1}{216}\right)}\right.\right.$$

Maple: cpu = 0.062 (sec), leaf count = 85

$$\left\{y(x) = \frac{1}{6}\left(\sqrt{9\,\_C1 - 12\,x^{3/2}}x^3 - 3\,x^3 + 18\right)\left(-3 + \sqrt{9\,\_C1 - 12\,x^{3/2}}\right)^{-1}, y(x) = \frac{1}{6}\left(\sqrt{9\,\_C1 - 12\,x^3}\right.\right.$$

2.898 ODE No. 898

$$\frac{\mathrm{d}}{\mathrm{d}x}y(x) = 1/16\,\frac{32\,x^5y(x)+8\,x^3+32\,x^5+64\,x^6(y(x))^3+48\,x^4(y(x))^2+12\,x^2y(x)+1}{x^6\left(4\,x^2y\left(x\right)+1+4\,x^2\right)} = 0$$

Mathematica: cpu = 0.021503 (sec), leaf count = 106

$$\left\{\left\{y(x)\to \frac{1}{64x^8\left(\frac{1}{64x^8}-\frac{1}{x^8\sqrt{c_1+\frac{8192}{x}}}\right)}-\frac{4x^2+1}{4x^2}\right\},\left\{y(x)\to \frac{1}{64x^8\left(\frac{1}{x^8\sqrt{c_1+\frac{8192}{x}}}+\frac{1}{64x^8}\right)}-\frac{4x^2+1}{4x^2}\right\}\right\}$$

Maple: cpu = 0.031 (sec), leaf count = 83

$$\left\{y(x) = -\frac{1}{4\,x^2}\left(-4\,x^2+\sqrt{\frac{x\_C1+2}{x}}-1\right)\left(\sqrt{\frac{x\_C1+2}{x}}-1\right)^{-1}, y(x) = -\frac{1}{4\,x^2}\left(4\,x^2+\sqrt{\frac{x\_C1+2}{x}}\right.\right.$$

2.899 ODE No. 899

$$\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{32\,x^5+64\,x^6+64\,x^6(y(x))^2+32\,y(x)\,x^4+4\,x^2+64\,x^6(y(x))^3+48\,x^4(y(x))^2+12\,x^2y(x)+1}{64\,x^8}$$

Mathematica: cpu = 0.062008 (sec), leaf count = 106

$$\text{Solve}\left[-\frac{29}{3}\text{RootSum}\left[-29\#1^3+3\sqrt[3]{29}\#1-29\&,\frac{\log\left(\frac{\frac{3y(x)}{x^2}+\frac{4x^2+3}{4x^4}}{\sqrt[3]{29}\sqrt[3]{\frac{1}{x^6}}}-\#1\right)}{\sqrt[3]{29}-29\#1^2}\&\right]\right. = c_1-\frac{1}{9}29^{2/3}\left(\frac{1}{x^6}\right)^{2/3}x^3,$$

Maple: cpu = 0.015 (sec), leaf count = 47

$$\left\{y(x) = \frac{116\,RootOf\left(-81\int^{-Z}\left(841\_a^3-27\_a+27\right)^{-1}d\_ax+3\,x\_C1-1\right)x^2-12\,x^2-9}{36\,x^2}\right\}$$

2.900 ODE No. 900

$$\frac{\mathrm{d}}{\mathrm{d}x}y(x) = 2\,\frac{a\left(-(y(x))^2 + 4\,ax - 1\right)}{-(y(x))^3 + 4\,axy(x) - y(x) - 2\,a\,(y(x))^6 + 24\,(y(x))^4\,a^2x - 96\,(y(x))^2\,a^3x^2 + 128\,a^4x^3} =$$

Mathematica: cpu = 0.091011 (sec), leaf count = 381

$$\{\{y(x) \to \text{Root}\left[8\#1^5a - 16\#1^4a^2c_1 - 64\#1^3a^2x + \#1^2\left(128a^3c_1x - 2\right) + 128\#1a^3x^2 - 256a^4c_1x^2 + 8ax\right.$$

Maple: cpu = 0.063 (sec), leaf count = 46

$$\left\{\frac{y(x)}{2\,a} - \frac{1}{8\,a^2\left((y(x))^2 - 4\,ax\right)} - \frac{1}{16\,a^2\left((y(x))^2 - 4\,ax\right)^2} - \_C1 = 0\right\}$$

2.901 ODE No. 901

$$\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{\left(y(x) - a\ln(y(x))\,x + x^2\right)y(x)}{\left(-y(x)\ln(y(x)) - y(x)\ln(x) - y(x) + ax\right)x} = 0$$

Mathematica: cpu = 0.089511 (sec), leaf count = 33

$$\text{Solve}\left[ax\log(y(x)) - \frac{x^2}{2} - y(x)\log(x) - y(x)\log(y(x)) = c_1, y(x)\right]$$

Maple: cpu = 0.343 (sec), leaf count = 30

$$\left\{y(x) = \mathrm{e}^{RootOf\left(-2\_Z\,ax + 2\,\ln(x)\mathrm{e}^{-\_Z} + 2\_Z\,\mathrm{e}^{-\_Z} + 2\_C1\,a + x^2\right)}\right\}$$

2.902 ODE No. 902

$$\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{-x(y(x))^2 + x^3 - x - (y(x))^6 + 3\,x^2(y(x))^4 - 3\,x^4(y(x))^2 + x^6}{\left(-(y(x))^2 + x^2 - 1\right)y(x)} = 0$$

Mathematica: cpu = 0.109514 (sec), leaf count = 295

$$\left\{\left\{y(x) \to -\frac{1}{2}\sqrt{\frac{4x^3}{x - c_1} - \frac{4c_1x^2}{x - c_1} - \frac{\sqrt{4c_1 - 4x + 1}}{x - c_1} - \frac{1}{x - c_1}}\right\}, \left\{y(x) \to \frac{1}{2}\sqrt{\frac{4x^3}{x - c_1} - \frac{4c_1x^2}{x - c_1} - \frac{\sqrt{4c_1}}{x}\right.\right.$$

Maple: cpu = 0.171 (sec), leaf count = 175

$$\left\{y(x) = -\frac{1}{2\_C1 + 6\,x}\sqrt{(\_C1 + 3\,x)\left(4\_C1\,x^2 + 12\,x^3 + \sqrt{-12\_C1 - 36\,x + 9} - 3\right)}, y(x) = \frac{1}{2\_C1}\right.$$

2.903 ODE No. 903

$$\frac{\mathrm{d}}{\mathrm{d}x}y(x) = 1/2\,\frac{1}{x}\sin\left(\frac{y(x)}{x}\right)\left(y(x)+2\,x^2\sin\left(1/2\,\frac{y(x)}{x}\right)\cos\left(1/2\,\frac{y(x)}{x}\right)\right)\left(\sin\left(1/2\,\frac{y(x)}{x}\right)\right)^{-1}\left(\cos\right.$$

Mathematica: cpu = 0.050006 (sec), leaf count = 19

$$\left\{\left\{y(x)\to 2x\cot^{-1}\left(e^{-c_1-x}\right)\right\}\right\}$$

Maple: cpu = 0.047 (sec), leaf count = 48

$$\left\{y(x) = \arctan\left(2\,\frac{\_C1\,\mathrm{e}^{x}}{\_C1^{\,2}\left(\mathrm{e}^{x}\right)^2+1},-\frac{\_C1^{\,2}\left(\mathrm{e}^{x}\right)^2-1}{\_C1^{\,2}\left(\mathrm{e}^{x}\right)^2+1}\right)x\right\}$$

2.904 ODE No. 904

$$\frac{\mathrm{d}}{\mathrm{d}x}y(x) = 1/2\,\frac{1}{x}\sin\left(\frac{y(x)}{x}\right)\left(y(x)+2\,x^3\cos\left(1/2\,\frac{y(x)}{x}\right)\sin\left(1/2\,\frac{y(x)}{x}\right)\right)\left(\sin\left(1/2\,\frac{y(x)}{x}\right)\right)^{-1}\left(\cos\right.$$

Mathematica: cpu = 0.051506 (sec), leaf count = 23

$$\left\{\left\{y(x)\to 2x\cot^{-1}\left(e^{-c_1-\frac{x^2}{2}}\right)\right\}\right\}$$

Maple: cpu = 0.031 (sec), leaf count = 64

$$\left\{y(x) = \arctan\left(2\,\frac{\mathrm{e}^{1/2\,x^2}\_C1}{\left(\mathrm{e}^{1/2\,x^2}\right)^2\_C1^{\,2}+1},-1\left(\left(\mathrm{e}^{\frac{x^2}{2}}\right)^2\_C1^{\,2}-1\right)\left(\left(\mathrm{e}^{\frac{x^2}{2}}\right)^2\_C1^{\,2}+1\right)^{-1}\right)x\right\}$$

2.905 ODE No. 905

$$\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{a^2x+a^3x^3+a^3x^3(y(x))^2+2\,a^2x^2y(x)+ax+(y(x))^3\,a^3x^3+3\,(y(x))^2\,a^2x^2+3\,axy(x)+1}{a^3x^3} =$$

Mathematica: cpu = 0.060508 (sec), leaf count = 85

$$\text{Solve}\left[-\frac{29}{3}\text{RootSum}\left[-29\#1^3+3\sqrt[3]{29}\#1-29\&,\frac{\log\left(\frac{\frac{ax+3}{ax}+3y(x)}{\sqrt[3]{29}}-\#1\right)}{\sqrt[3]{29}-29\#1^2}\&\right]=c_1+\frac{1}{9}29^{2/3}x,y(x)\right]$$

Maple: cpu = 0.031 (sec), leaf count = 46

$$\left\{y(x) = \frac{29\,\mathit{RootOf}\left(-81\int^{-Z}\left(841\_a^3-27\_a+27\right)^{-1}d\_a+x+3\,\_C1\right)ax-3\,ax-9}{9\,ax}\right\}$$

2.906 ODE No. 906

$$\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{x\left(x^2+\left(y(x)\right)^2+1\right)}{-\left(y\left(x\right)\right)^3-x^2y\left(x\right)-y\left(x\right)+\left(y\left(x\right)\right)^6+3\,x^2\left(y\left(x\right)\right)^4+3\,x^4\left(y\left(x\right)\right)^2+x^6} = 0$$

Mathematica: cpu = 0.055007 (sec), leaf count = 326

$$\left\{\left\{y(x)\to \text{Root}\left[4\#1^5-4\#1^4c_1+8\#1^3x^2+\#1^2\left(2-8c_1x^2\right)+4\#1x^4-4c_1x^4+2x^2+1\&,1\right]\right\},\left\{y(x)-\right.\right.$$

Maple: cpu = 0.249 (sec), leaf count = 33

$$\left\{-\frac{1}{4\left(\left(y\left(x\right)\right)^2+x^2\right)^2}-\frac{1}{2\left(y\left(x\right)\right)^2+2\,x^2}-y(x)+\_C1=0\right\}$$

2.907 ODE No. 907

$$\frac{\mathrm{d}}{\mathrm{d}x}y(x) = 1/2\,\frac{-2\,\cos\left(x\right)x+2\,x^2\sin\left(x\right)+2\,x+2\left(y(x)\right)^2+4\,y(x)\cos\left(x\right)x-4\,xy(x)+x^2\cos\left(2\,x\right)+3}{x}$$

Mathematica: cpu = 0.052507 (sec), leaf count = 22

$$\left\{\left\{y(x)\to \frac{1}{c_1-\log(x)}-x(\cos(x)-1)\right\}\right\}$$

Maple: cpu = 0.109 (sec), leaf count = 22

$$\left\{y(x)=-\frac{\left(2\,\cos\left(x\right)-2\right)x}{2}+\left(\_C1-\ln\left(x\right)\right)^{-1}\right\}$$

2.908 ODE No. 908

$$\frac{\mathrm{d}}{\mathrm{d}x}y(x) = 4\,\frac{x(a-1)\left(a+1\right)}{4\,y\left(x\right)+a^2\left(y\left(x\right)\right)^4-2\,a^4\left(y\left(x\right)\right)^2x^2+4\,\left(y\left(x\right)\right)^2a^2x^2+a^6x^4-3\,a^4x^4+3\,a^2x^4-\left(y\left(x\right)\right)^4-}$$

Mathematica: cpu = 1.364673 (sec), leaf count = 1278

$$\left\{\left\{y(x)\to -\frac{c_1}{3\left(1-a^2\right)}+\frac{\sqrt[3]{18x^2c_1a^6-54x^2c_1a^4-54a^4+54x^2c_1a^2+108a^2-2c_1^3-18x^2c_1+\sqrt{4\left(3\left(1\right.\right.\right.}}{}\right.$$

Maple: cpu = 0.312 (sec), leaf count = 1742

$$\left\{ y(x) = -\frac{9^{\frac{2}{3}}}{54\,a^2-54}\left(\left(2\_C1\,a^2-2\_C1\right)\sqrt[3]{9}\sqrt[3]{(a-1)^2\,(a+1)^2\left(\frac{1}{3}\sqrt{-3\,(a-1)^5\,(a+1)^5\,x^6+6\_C1}\right.}\right.\right.$$

2.909 ODE No. 909

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{x^3+(y(x))^4\,x^3+2\,x^2(y(x))^2+x+x^3(y(x))^6+3\,x^2(y(x))^4+3\,x(y(x))^2+1}{x^5y\,(x)} = 0}$$

Mathematica: cpu = 40.683666 (sec), leaf count = 64

$$\text{DSolve}\left[y'(x) = \frac{x^3y(x)^6+x^3y(x)^4+x^3+3x^2y(x)^4+2x^2y(x)^2+3xy(x)^2+x+1}{x^5y(x)}, y(x), x\right]$$

Maple: cpu = 0.390 (sec), leaf count = 84

$$\left\{ y(x) = \frac{1}{x}\sqrt{x\left(RootOf\left(\int^{\_Z}\left(2\_a^3+2\_a^2+1\right)^{-1}d\_ax+x\_C1+1\right)x-1\right)}, y(x) = -\frac{1}{x}\sqrt{x\left(Roo\right.}\right.$$

2.910 ODE No. 910

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{-2\,x-y(x)+1+x^2(y(x))^2+2\,x^3y(x)+x^4+x^3(y(x))^3+3\,x^4(y(x))^2+3\,x^5y(x)+x^6}{x} = 0}$$

Mathematica: cpu = 0.057507 (sec), leaf count = 98

$$\text{Solve}\left[-\frac{29}{3}\text{RootSum}\left[-29\#1^3+3\sqrt[3]{29}\#1-29\&, \frac{\log\left(\frac{3x^3+3x^2y(x)+x}{\sqrt[3]{29}\sqrt[3]{x^3}}-\#1\right)}{\sqrt[3]{29}-29\#1^2}\&\right] = c_1+\frac{29^{2/3}(x^3)^{2/3}}{9x}, y(x)\right.$$

Maple: cpu = 0.016 (sec), leaf count = 42

$$\left\{ y(x) = \frac{-9\,x^2+29\,RootOf\left(-81\int^{\_Z}\left(841\,\_a^3-27\,\_a+27\right)^{-1}d\_a+x+3\,\_C1\right)-3}{9\,x} \right\}$$

2.911 ODE No. 911

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = -\left(-\frac{\ln\left(y(x)\right)}{x} + \frac{\cos\left(x\right)\ln\left(y(x)\right)}{\sin\left(x\right)} - \_F1(x)\right)y(x) = 0}$$

Mathematica: cpu = 4.337551 (sec), leaf count = 56

$$\text{Solve}\left[\int_1^x \left(\frac{2\log(y(x))\sin(K[1])}{K[1]^2} - \frac{2(\log(y(x))\cos(K[1]) - \sin(K[1])\_\text{F1}(K[1]))}{K[1]}\right) dK[1] - 2\sin(1)\log($$

Maple: cpu = 0.374 (sec), leaf count = 30

$$\left\{y(x) = \mathrm{e}^{\frac{x\_C1}{\sin(x)}}\mathrm{e}^{\frac{x}{\sin(x)}\int \frac{-F1(x)\sin(x)}{x}\,\mathrm{d}x}\right\}$$

2.912 ODE No. 912

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = 2\,\frac{ax}{-x^3y\left(x\right) + 2\,ax^3 + 2\,a\left(y\left(x\right)\right)^4x^3 - 16\,\left(y\left(x\right)\right)^2a^2x^2 + 32\,a^3x + 2\,a\left(y\left(x\right)\right)^6x^3 - 24\,\left(y\left(x\right)\right)^4}$$

Mathematica: cpu = 1.400178 (sec), leaf count = 205

$$\text{Solve}\left[-\text{RootSum}\left[-\#1^3y(x)^6 - \#1^3y(x)^4 - \#1^3 + 12\#1^2ay(x)^4 + 8\#1^2ay(x)^2 - 48\#1a^2y(x)^2 - 16\#1a\right.\right.$$

Maple: cpu = 3.026 (sec), leaf count = 43

$$\left\{-\frac{y(x)}{2\,a} + \frac{1}{8\,a^2}\int^{(y(x))^2-4\,\frac{a}{x}}\left(\_a^3 + \_a^2 + 1\right)^{-1}d\_a - \_C1 = 0\right\}$$

2.913 ODE No. 913

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = -\frac{-\left(y(x)\right)^3 - y(x) + 2\left(y(x)\right)^2\ln\left(x\right) - \left(\ln\left(x\right)\right)^2\left(y(x)\right)^3 - 1 + 3\,y(x)\ln\left(x\right) - 3\left(\ln\left(x\right)\right)^2\left(y(x)\right)^2}{xy\left(x\right)}}$$

Mathematica: cpu = 0 (sec), leaf count = 0

Hanged

Maple: cpu = 0.047 (sec), leaf count = 43

$$\left\{y(x) = 9\left(9\,\ln\left(x\right) + 56\,\mathit{RootOf}\left(-81\int^{\_Z}\left(3136\,\_a^3 - 27\,\_a + 27\right)^{-1}d\_a - \ln\left(x\right) + 3\,\_C1\right) - 3\right)^{-1}$$

2.914 ODE No. 914

$$\frac{\mathrm{d}}{\mathrm{d}x}y(x) = 2\,\frac{a\left(x(y(x))^2 - 4\,a + x\right)}{-x^3\left(y\left(x\right)\right)^3 + 4\,ax^2y\left(x\right) - x^3y\left(x\right) + 2\,a\left(y\left(x\right)\right)^6x^3 - 24\,\left(y\left(x\right)\right)^4a^2x^2 + 96\,\left(y\left(x\right)\right)^2xa^3 - 1}$$

Mathematica: cpu = 1.504191 (sec), leaf count = 401

$$\left\{\left\{y(x) \to \text{Root}\left[8\#1^5ax^2 - 8\#1^4ac_1x^2 - 64\#1^3a^2x + \#1^2\left(64a^2c_1x + 2x^2\right) + 128\#1a^3 - 128a^3c_1 - 8ax\right.\right.$$

Maple: cpu = 2.247 (sec), leaf count = 77

$$\left\{-\frac{1}{2\,a}\left(-\frac{(y(x))^2+1}{\left(y\left(x\right)\right)^4\left(x\left(y\left(x\right)\right)^2-4\,a\right)} - 2\,\frac{a}{\left(y\left(x\right)\right)^4\left(x\left(y\left(x\right)\right)^2-4\,a\right)^2}\right) + \frac{1}{4\,a^2}\left(2\,ay(x) + \frac{1}{2\,\left(y\left(x\right)\right)^2} + \frac{}{4\,(y}\right.\right.$$

2.915 ODE No. 915

$$\frac{\mathrm{d}}{\mathrm{d}x}y(x) = -\frac{-(y(x))^3 - y(x) + 4\,(y(x))^2\ln\left(x\right) - 4\,(\ln\left(x\right))^2\,(y(x))^3 - 1 + 6\,y(x)\ln\left(x\right) - 12\,(\ln\left(x\right))^2\,(y(x)}{xy\left(x\right)}$$

Mathematica: cpu = 0 (sec), leaf count = 0

Hanged

Maple: cpu = 0.046 (sec), leaf count = 43

$$\left\{y(x) = 9\left(18\,\ln\left(x\right) + 83\,\mathit{RootOf}\left(-81\int^{\_Z}\left(6889\,\_a^3 - 27\,\_a + 27\right)^{-1}d\_a - \ln\left(x\right) + 3\,\_C1\right) - 3\right)^{-}$$

2.916 ODE No. 916

$$\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{y(x)\left(\ln\left(y(x)\right)x + \ln\left(y(x)\right) - x - 1 + x\ln\left(x\right) + \ln\left(x\right) + x^4(\ln\left(x\right))^2 + 2\,x^4\ln\left(y(x)\right)\ln\left(x\right) + x\right.}{x\left(1+x\right)}$$

Mathematica: cpu = 2.069763 (sec), leaf count = 66

$$\text{DSolve}\left[y'(x) = \frac{y(x)\left(x^4\log^2(y(x)) + 2x^4\log(x)\log(y(x)) + x^4\log^2(x) + x\log(y(x)) + \log(y(x)) - x + x\right.}{x(x+1)}\right.$$

Maple: cpu = 0.219 (sec), leaf count = 80

$$\left\{y(x) = \mathrm{e}^{-\frac{3\,x^4\ln(x) - 4\,x^3\ln(x) + 6\,x^2\ln(x) + 12\,\ln(1+x)\ln(x) - 12\,\_C1\,\ln(x) - 12\,x\ln(x) + 12\,x}{3\,x^4 - 4\,x^3 + 6\,x^2 + 12\,\ln(1+x) - 12\,\_C1 - 12\,x}}\right\}$$

2.917 ODE No. 917

$$\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{y(x)\left(x\ln\left(x\right)+\ln\left(x\right)+\ln\left(y(x)\right)x+\ln\left(y(x)\right)-x-1+x(\ln\left(x\right))^{2}+2\,x\ln\left(y(x)\right)\ln\left(x\right)+x(\right.}{x\left(1+x\right)}$$

Mathematica: cpu = 1.226656 (sec), leaf count = 60

$$\text{DSolve}\left[y'(x) = \frac{y(x)\left(x\log^{2}(y(x))+2x\log(x)\log(y(x))+x\log(y(x))+\log(y(x))-x+x\log^{2}(x)+x\log\right.}{x(x+1)}\right]$$

Maple: cpu = 0.172 (sec), leaf count = 38

$$\left\{y(x) = \mathrm{e}^{-\frac{\ln(1+x)\ln(x)+\_C1\ \ln(x)-x\ln(x)-x}{\ln(1+x)+\_C1-x}}\right\}$$

2.918 ODE No. 918

$$\frac{\mathrm{d}}{\mathrm{d}x}y(x) = 2\,\frac{(y(x))^{8}}{\left(y\left(x\right)\right)^{5}+2\,\left(y\left(x\right)\right)^{6}+2\,\left(y\left(x\right)\right)^{2}+16\,x\left(y\left(x\right)\right)^{4}+32\,\left(y\left(x\right)\right)^{6}x^{2}+2+24\,x\left(y\left(x\right)\right)^{2}+96\,x^{2}(}$$

Mathematica: cpu = 0 (sec), leaf count = 0

Hanged

Maple: cpu = 0.858 (sec), leaf count = 41

$$\left\{x - \mathit{RootOf}\left(\int^{\_Z}\left(64\,\_a^{3}+16\,\_a^{2}+1\right)^{-1}d\_ay(x)+y(x)\,\_C1+1\right)+\frac{1}{4\,\left(y\left(x\right)\right)^{2}} = 0\right\}$$

2.919 ODE No. 919

$$\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{(y(x))^{3/2}\left(x-y(x)+\sqrt{y\left(x\right)}\right)}{\left(y\left(x\right)\right)^{3/2}x-\left(y\left(x\right)\right)^{5/2}+\left(y\left(x\right)\right)^{2}+x^{3}-3\,x^{2}y\left(x\right)+3\,x\left(y\left(x\right)\right)^{2}-\left(y\left(x\right)\right)^{3}} = 0$$

Mathematica: cpu = 0 (sec), leaf count = 0

Hanged

Maple: cpu = 0.140 (sec), leaf count = 120

$$\left\{2\,\frac{(y(x))^{3/2}}{\left(y\left(x\right)-x\right)^{3}}+3\,\frac{y(x)}{\left(y\left(x\right)-x\right)^{3}}-6\,\frac{\sqrt{y\left(x\right)}x}{\left(y\left(x\right)-x\right)^{3}}-6\,\frac{x}{\left(y\left(x\right)-x\right)^{3}}+6\,\frac{x^{2}}{\sqrt{y\left(x\right)}\left(y\left(x\right)-x\right)^{3}}-(y(x)-x)^{-}\right.$$

2.920 ODE No. 920

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = 2\,\frac{(y(x))^6\left(1+4\,x(y(x))^2+(y(x))^2\right)}{(y\,(x))^3+4\,(y\,(x))^5\,x+(y\,(x))^5+2+24\,x\,(y\,(x))^2+96\,x^2\,(y\,(x))^4+128\,x^3\,(y\,(x))^6} = 0}$$

Mathematica: cpu = 0.244531 (sec), leaf count = 301

$$\left\{\left\{y(x)\to \text{Root}\left[\#1^5\left(128c_1x^2-8x-1\right)+128\#1^4x^2+\#1^3(64c_1x-2)+64\#1^2x+8\#1c_1+8\&,1\right]\right\},\{$$

Maple: cpu = 0 (sec), leaf count = 0

hanged

2.921 ODE No. 921

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = -\left(-\frac{\ln(y(x))}{x}+\frac{\ln(y(x))}{x\ln(x)}-\_F1(x)\right)y(x) = 0}$$

Mathematica: cpu = 2.718845 (sec), leaf count = 52

$$\text{Solve}\left[\text{ConditionalExpression}\left[\int_1^x\left(\frac{\log(y(x))-\log(y(x))\log(K[1])}{K[1]^2}-\frac{\log(K[1])\_\text{F1}(K[1])}{K[1]}\right)dK[1]=c_1\right.\right.$$

Maple: cpu = 0.093 (sec), leaf count = 30

$$\left\{y(x) = \mathrm{e}^{\frac{x\_C1}{\ln(x)}}\mathrm{e}^{\frac{x}{\ln(x)}\int\frac{\_F1(x)\ln(x)}{x}\,\mathrm{d}x}\right\}$$

2.922 ODE No. 922

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{(y(x))^2}{(y\,(x))^2+(y\,(x))^{3/2}+\sqrt{y\,(x)}x^2-2\,(y\,(x))^{3/2}\,x+(y\,(x))^{5/2}+x^3-3\,x^2y\,(x)+3\,x\,(y\,(x))^2-}$$

Mathematica: cpu = 0 (sec), leaf count = 0

Hanged

Maple: cpu = 0.110 (sec), leaf count = 47

$$\left\{\frac{\ln(y(x))}{2}-\int^{x\frac{1}{\sqrt{y(x)}}-\sqrt{y(x)}}\left(2\_a^3+2\_a^2-\_a+2\right)^{-1}d\_a-\_C1=0\right\}$$

2.923 ODE No. 923

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{(y(x))^2 + 2\,xy(x) + x^2 + \mathrm{e}^{-2\,(x-y(x))(y(x)+x)}}{(y\,(x))^2 + 2\,xy\,(x) + x^2 - \mathrm{e}^{-2\,(x-y(x))(y(x)+x)}} = 0}$$

Mathematica: cpu = 0 (sec), leaf count = 0

Hanged

Maple: cpu = 0.156 (sec), leaf count = 36

$$\left\{ y(x) = \mathrm{e}^{RootOf\left(-\_Z + \int \left(\mathrm{e}^{-\_Z}\right)^2 - 2\,x\mathrm{e}^{-\_Z} \left(\mathrm{e}^{2\,-\_a} + \_a\right)^{-1} d\_a + \_C1\right)} - x \right\}$$

2.924 ODE No. 924

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = -\frac{y(x)}{\ln\left(y\,(x)\right)}\left(-1/2\,\frac{(\ln\left(y(x)\right))^2}{x} - \_F1\,(x)\right) = 0}$$

Mathematica: cpu = 0.800602 (sec), leaf count = 55

$$\text{Solve}\left[\text{ConditionalExpression}\left[\int_1^x \left(-\frac{\_\text{F1}(K[1])}{K[1]} - \frac{\log^2(y(x))}{2K[1]^2}\right) dK[1] + \frac{1}{2}\log^2(y(x)) = c_1, \Re(x) > 0 \vee \right.\right.$$

Maple: cpu = 0.094 (sec), leaf count = 47

$$\left\{ y(x) = \mathrm{e}^{\sqrt{2\int \frac{\_F1(x)}{x}\,\mathrm{d}x x + 2\,x\_C1}}, y(x) = \mathrm{e}^{-\sqrt{2\int \frac{\_F1(x)}{x}\,\mathrm{d}x x + 2\,x\_C1}} \right\}$$

2.925 ODE No. 925

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{(y(x))^2 + 2\,xy(x) + x^2 + \mathrm{e}^{2\,(x-y(x))^2(y(x)+x)^2}}{(y\,(x))^2 + 2\,xy\,(x) + x^2 - \mathrm{e}^{2\,(x-y(x))^2(y(x)+x)^2}} = 0}$$

Mathematica: cpu = 0 (sec), leaf count = 0

Hanged

Maple: cpu = 0.188 (sec), leaf count = 38

$$\left\{ y(x) = \mathrm{e}^{RootOf\left(-\_Z + \int \left(\mathrm{e}^{-\_Z}\right)^2 - 2\,x\mathrm{e}^{-\_Z} \left(\mathrm{e}^{2\,-\_a^2} + \_a\right)^{-1} d\_a + \_C1\right)} - x \right\}$$

2.926 ODE No. 926

$$\frac{\mathrm{d}}{\mathrm{d}x}y(x) = 1/16\,\frac{-8\,x^2(y(x))^3 + 16\,x(y(x))^2 + 16\,x(y(x))^3 - 8 + 12\,xy(x) - 6\,x^2(y(x))^2 + x^3(y(x))^3}{(-2 + xy\,(x) - 2\,y\,(x))\,x} = 0$$

Mathematica: cpu = 0 (sec), leaf count = 0

Hanged

Maple: cpu = 0.032 (sec), leaf count = 65

$$\left\{y(x) = 2\,\frac{\sqrt{\_C1 + 8\,\ln(x)} - 4}{x\sqrt{\_C1 + 8\,\ln(x)} - 4\,x + 8}, y(x) = 2\,\frac{\sqrt{\_C1 + 8\,\ln(x)} + 4}{x\sqrt{\_C1 + 8\,\ln(x)} + 4\,x - 8}\right\}$$

2.927 ODE No. 927

$$\frac{\mathrm{d}}{\mathrm{d}x}y(x) = -1/8\left(-8\,\mathrm{e}^{-x^2} + 8\,x^2\mathrm{e}^{-x^2} - 8 - 8\,(y(x))^2 + 8\,x^2\mathrm{e}^{-x^2}y(x) - 2\,x^4\left(\mathrm{e}^{-x^2}\right)^2 - 8\,(y(x))^3 + 12\,x^2\mathrm{e}^{-}\right.$$

Mathematica: cpu = 0.139518 (sec), leaf count = 112

$$\text{Solve}\left[-\frac{29}{3}\text{RootSum}\left[-29\#1^3 + 3\sqrt[3]{29}\#1 - 29\&, \frac{\log\left(\frac{\frac{1}{2}e^{-x^2}x\left(2e^{x^2} - 3x^2\right) + 3xy(x)}{\sqrt[3]{29}\sqrt[3]{x^3}} - \#1\right)}{\sqrt[3]{29} - 29\#1^2}\&\right] = c_1 + \frac{1}{18}29^{2/3}\right.$$

Maple: cpu = 0.078 (sec), leaf count = 72

$$\left\{y(x) = -\frac{-9\,x^2\mathrm{e}^{-x^2} + 6\,\mathrm{e}^{-x^2}\mathrm{e}^{x^2} - 58\,RootOf\left(x^2 - 162\int^{-Z}(841\,\_a^3 - 27\,\_a + 27)^{-1}\,d\_a + 6\,\_C1\right)}{18\,\mathrm{e}^{-x^2}\mathrm{e}^{x^2}}\right\}$$

2.928 ODE No. 928

$$\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{1}{x\,(1+x)}\left(\mathrm{e}^{-\frac{y(x)}{x}}y(x)\,x + \mathrm{e}^{-\frac{y(x)}{x}}y(x) + \mathrm{e}^{-\frac{y(x)}{x}}x^2 + \mathrm{e}^{-\frac{y(x)}{x}}x + x\right)\mathrm{e}^{\frac{y(x)}{x}} = 0$$

Mathematica: cpu = 1.365673 (sec), leaf count = 23

$$\left\{\left\{y(x) \to -x\log\left(-\frac{\log(x+1) - c_1}{x}\right)\right\}\right\}$$

Maple: cpu = 0.265 (sec), leaf count = 21

$$\left\{y(x) = -\ln\left(-\frac{\ln(1+x) - \_C1}{x}\right)x\right\}$$

2.929 ODE No. 929

$$\frac{\mathrm{d}}{\mathrm{d}x}y(x) = -1/32\,\frac{16\,x(y(x))^3 - 8\,(y(x))^3 - 8\,y(x) + 8\,x(y(x))^2 - 2\,x^2(y(x))^3 - 8 + 12\,xy(x) - 6\,x^2(y(x)}{xy\,(x)}$$

Mathematica: cpu = 0 (sec), leaf count = 0

Hanged

Maple: cpu = 0.031 (sec), leaf count = 42

$$\left\{y(x) = 18\left(58\,RootOf\left(-324\int^{\_Z}\left(841\,\_a^3 - 27\,\_a + 27\right)^{-1}d\_a - \ln\left(x\right) + 12\,\_C1\right) + 9\,x - 6\right)^{-1}\right\}$$

2.930 ODE No. 930

$$\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{1}{x\,(1+x)}\left(\mathrm{e}^{-\frac{y(x)}{x}}y(x)\,x + \mathrm{e}^{-\frac{y(x)}{x}}y(x) + \mathrm{e}^{-\frac{y(x)}{x}}x^2 + \mathrm{e}^{-\frac{y(x)}{x}}x + x^4\right)\mathrm{e}^{\frac{y(x)}{x}} = 0$$

Mathematica: cpu = 1.567699 (sec), leaf count = 39

$$\left\{\left\{y(x) \to -x\log\left(\frac{-c_1 - \frac{x^3}{3} + \frac{x^2}{2} - x + \log(x+1)}{x}\right)\right\}\right\}$$

Maple: cpu = 0.436 (sec), leaf count = 36

$$\left\{y(x) = -\ln\left(\frac{-2\,x^3 + 3\,x^2 + 6\,\ln\left(1+x\right) - 6\,\_C1 - 6\,x}{6\,x}\right)x\right\}$$

2.931 ODE No. 931

$$\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{-3\,x^2y(x) - 2\,x^3 - 2\,x - x(y(x))^2 - y(x) + x^3(y(x))^3 + 3\,x^4(y(x))^2 + 3\,x^5y(x) + x^6}{x\,(xy\,(x) + x^2 + 1)} = 0$$

Mathematica: cpu = 0.027003 (sec), leaf count = 80

$$\left\{\left\{y(x) \to \frac{1}{x^2\left(\frac{1}{x} - \frac{1}{x\sqrt{c_1 - 2x}}\right)} - \frac{x^2+1}{x}\right\}, \left\{y(x) \to \frac{1}{x^2\left(\frac{1}{x\sqrt{c_1 - 2x}} + \frac{1}{x}\right)} - \frac{x^2+1}{x}\right\}\right\}$$

Maple: cpu = 0.032 (sec), leaf count = 73

$$\left\{y(x) = -\frac{1}{x}\left(\sqrt{\_C1 - 2\,x}x^2 - x^2 - 1\right)\left(\sqrt{\_C1 - 2\,x} - 1\right)^{-1}, y(x) = -\frac{1}{x}\left(\sqrt{\_C1 - 2\,x}x^2 + x^2 + 1\right)\left(\right.\right.$$

2.932 ODE No. 932

$$\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{\left(27\left(y(x)\right)^3 + 27\,\mathrm{e}^{3x^2}y(x) + 18\,\mathrm{e}^{3x^2}\left(y(x)\right)^2 + 3\left(y(x)\right)^3\mathrm{e}^{3x^2} + 27\,\mathrm{e}^{9/2\,x^2} + 27\,\mathrm{e}^{9/2\,x^2}y(x) + 9\,\mathrm{e}^{9/2}\right.}{243\,\mathrm{e}^{9/2\,x^2}y\left(x\right)}$$

Mathematica: cpu = 0 (sec), leaf count = 0

Hanged

Maple: cpu = 0.109 (sec), leaf count = 54

$$\left\{y(x) = -369\,\frac{\mathrm{e}^{3/2\,x^2}}{123 + 123\,\mathrm{e}^{3/2\,x^2} - 136\,\mathit{RootOf}\left(-41\,x^2 - 50243409\int^{-Z}(9248\,\_a^3 - 1860867\,\_a + 18608\right.}\right.$$

2.933 ODE No. 933

$$\frac{\mathrm{d}}{\mathrm{d}x}y(x) = -\frac{-x^2 - xy(x) - x^3 - x\left(y(x)\right)^2 + 2\,y(x)\,x^2\ln\left(x\right) - x^3\left(\ln\left(x\right)\right)^2 - \left(y(x)\right)^3 + 3\,x\left(y(x)\right)^2\ln\left(x\right) -}{x^2}$$

Mathematica: cpu = 0.061008 (sec), leaf count = 99

$$\mathrm{Solve}\left[-\frac{29}{3}\mathrm{RootSum}\left[-29\#1^3 + 3\sqrt[3]{29}\#1 - 29\&,\,\frac{\log\left(\frac{\frac{3y(x)}{x^2} + \frac{1-3\log(x)}{x}}{\sqrt[3]{29}\sqrt[3]{\frac{1}{x^3}}} - \#1\right)}{\sqrt[3]{29} - 29\#1^2}\&\right] = c_1 + \frac{29^{2/3}}{9\sqrt[3]{\frac{1}{x^3}}}, y(x)\right]$$

Maple: cpu = 0.031 (sec), leaf count = 39

$$\left\{y(x) = \frac{x\left(9\,\ln\left(x\right) - 3 + 29\,\mathit{RootOf}\left(-81\int^{-Z}\left(841\,\_a^3 - 27\,\_a + 27\right)^{-1}d\_a + x + 3\,\_C1\right)\right)}{9}\right\}$$

2.934 ODE No. 934

$$\frac{\mathrm{d}}{\mathrm{d}x}y(x) = x/2 + 1 + \left(y(x)\right)^2 + 1/4\,x^2y(x) - xy(x) - 1/8\,x^4 + 1/8\,x^3 + 1/4\,x^2 + \left(y(x)\right)^3 - 3/4\,x^2\left(y(x)\right)^2$$

Mathematica: cpu = 0.099513 (sec), leaf count = 102

$$\mathrm{Solve}\left[-\frac{31}{3}\mathrm{RootSum}\left[-31\#1^3 + 3\,2^{2/3}\sqrt[3]{31}\#1 - 31\&,\,\frac{\log\left(\sqrt[3]{\frac{2}{31}}\left(\frac{1}{4}\left(-3x^2 - 6x + 4\right) + 3y(x)\right) - \#1\right)}{2^{2/3}\sqrt[3]{31} - 31\#1^2}\&\right]$$

Maple: cpu = 0.063 (sec), leaf count = 39

$$\left\{y(x) = \frac{x^2}{4} + \frac{x}{2} + RootOf\left(-x + 2\int^{\_Z} \left(2\_a^3 + 2\_a^2 + 1\right)^{-1} d\_a + \_C1\right)\right\}$$

2.935 ODE No. 935

$$\frac{\mathrm{d}}{\mathrm{d}x}y(x) = -x/2 + 1 + (y(x))^2 + 7/2\,x^2 y(x) - 2\,xy(x) + \frac{13\,x^4}{16} - 3/2\,x^3 + x^2 + (y(x))^3 + 3/4\,x^2(y(x))^2 +$$

Mathematica: cpu = 49.448279 (sec), leaf count = 246

$$\text{Solve}\left[-\frac{\sqrt[3]{2}\left(\frac{\frac{1}{4}\left(3x^2-12x+4\right)+3y(x)}{\sqrt[3]{2}} + 2^{2/3}\right)\left(2^{2/3} - 2^{2/3}\left(\frac{1}{4}(3x^2 - 12x + 4) + 3y(x)\right)\right)\left(\left(\frac{1}{4}(-3x^2 + 12x - 4) - \right.\right.}{9\left(-\left(\frac{1}{4}\left(3x^2 - 12x + \right.\right.\right.}$$

Maple: cpu = 0.156 (sec), leaf count = 55

$$\left\{y(x) = \frac{\mathrm{e}^{RootOf\left(\ln\left(\mathrm{e}^{\_Z}-4\right)\mathrm{e}^{\_Z} + \_C1\,\mathrm{e}^{\_Z} - \_Z\,\mathrm{e}^{\_Z} + x\mathrm{e}^{\_Z} - 4\ln\left(\mathrm{e}^{\_Z}-4\right) - 4\_C1 + 4\_Z - 4x + 4\right)}}{4} - 1 - \frac{x^2}{4} + x\right\}$$

2.936 ODE No. 936

$$\frac{\mathrm{d}}{\mathrm{d}x}y(x) = -x/4 + 1 + (y(x))^2 + \frac{7\,x^2 y(x)}{16} - 1/2\,xy(x) + \frac{5\,x^4}{128} - \frac{5\,x^3}{64} + 1/16\,x^2 + (y(x))^3 + 3/8\,x^2(y(x)$$

Mathematica: cpu = 0.094012 (sec), leaf count = 99

$$\text{Solve}\left[-\frac{89}{3}\text{RootSum}\left[-89\#1^3 + 6\sqrt[3]{178}\#1 - 89\&, \frac{\log\left(\frac{2^{2/3}\left(\frac{1}{8}\left(3x^2-6x+8\right)+3y(x)\right)}{\sqrt[3]{89}} - \#1\right)}{2\sqrt[3]{178} - 89\#1^2}\&\right] = c_1 + \frac{89^{2/3}x}{18\sqrt[3]{2}},\right.$$

Maple: cpu = 0.046 (sec), leaf count = 39

$$\left\{y(x) = -\frac{x^2}{8} + \frac{x}{4} + RootOf\left(-x + 4\int^{\_Z} \left(4\_a^3 + 4\_a^2 + 3\right)^{-1} d\_a + \_C1\right)\right\}$$

2.937 ODE No. 937

$$\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{-2\,y(x) - 2\,\ln\left(2\,x+1\right) - 2 + 2\,x(y(x))^3 + (y(x))^3 + 6\,(y(x))^2\ln\left(2\,x+1\right)x + 3\,(y(x))^2\ln\left(2\,x\right.}{(2\,x+1)\,(y\,(x)+1}$$

Mathematica: cpu = 0.054007 (sec), leaf count = 124

$$\left\{\left\{y(x)\to \frac{1}{(2x+1)\left(\frac{2x+1}{4x^2+4x+1}-\frac{1}{(2x+1)\sqrt{c_1-2x}}\right)}-\log(2x+1)-1\right\},\left\{y(x)\to \frac{1}{(2x+1)\left(\frac{1}{(2x+1)\sqrt{c_1-2x}}+\right.}\right.$$

Maple: cpu = 0.046 (sec), leaf count = 79

$$\left\{y(x) = -1\left(\sqrt{\_C1 - 2\,x}\ln\left(2\,x+1\right) - \ln\left(2\,x+1\right) - 1\right)\left(\sqrt{\_C1 - 2\,x} - 1\right)^{-1}, y(x) = -1\left(\sqrt{\_C1 - 2\right.}\right.$$

2.938 ODE No. 938

$$\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{-x^2 + x + 1 + (y(x))^2 + 5\,x^2y(x) - 2\,xy(x) + 4\,x^4 - 3\,x^3 + (y(x))^3 + 3\,x^2(y(x))^2 - 3\,x(y(x))}{x}$$

Mathematica: cpu = 0.063008 (sec), leaf count = 108

$$\text{Solve}\left[-\frac{29}{3}\text{RootSum}\left[-29\#1^3 + 3\sqrt[3]{29}\#1 - 29\&, \frac{\log\left(\frac{\frac{3x^2-3x+1}{x}+\frac{3y(x)}{x}}{\sqrt[3]{29}\sqrt[3]{\frac{1}{x^3}}} - \#1\right)}{\sqrt[3]{29} - 29\#1^2}\&\right]\right] = c_1 + \frac{1}{9}29^{2/3}\left(\frac{1}{x^3}\right)^{2/3}$$

Maple: cpu = 0.031 (sec), leaf count = 39

$$\left\{y(x) = -x^2 + x - \frac{1}{3} + \frac{29\,RootOf\left(-81\int^{-Z}\left(841\_a^3 - 27\_a + 27\right)^{-1}d\_a + \ln\left(x\right) + 3\,\_C1\right)}{9}\right\}$$

2.939 ODE No. 939

$$\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{-32\,xy(x) + 16\,x^3 + 16\,x^2 - 32\,x - 64\,(y(x))^3 + 48\,x^2(y(x))^2 + 96\,x(y(x))^2 - 12\,y(x)\,x^4 - 48}{-64\,y\,(x) + 16\,x^2 + 32\,x - 64}$$

Mathematica: cpu = 0.380548 (sec), leaf count = 136

$$\text{Solve}\left[\frac{2}{5}\text{RootSum}\left[\#1^4 + 4\#1^3 - 8\#1^2y(x) - 16\#1y(x) - 8\#1 + 16y(x)^2 + 16y(x) + 8\&, \frac{\#1^2(-\log(x -}\right.\right.$$

Maple: cpu = 0.094 (sec), leaf count = 70

$$\left\{x+\frac{2}{5}\ln\left(2\left(y(x)-1/4\,x^2-x/2\right)^2+2\,y(x)-\frac{x^2}{2}-x+1\right)-\frac{2}{5}\arctan\left(-1-2\,y(x)+\frac{x^2}{2}+x\right)-\frac{4}{5}\ln\right.$$

2.940 ODE No. 940

$$\frac{\mathrm{d}}{\mathrm{d}x}y(x)=\frac{y(x)\ln(x)\,x+x^2\ln(x)-2\,xy(x)-x^2-(y(x))^2-(y(x))^3+3\,x(y(x))^2\ln(x)-3\,x^2(\ln(x))^2}{x\left(-y(x)+x\ln(x)-x\right)}$$

Mathematica: cpu = 0.022003 (sec), leaf count = 80

$$\left\{\left\{y(x)\to-\frac{1}{x\left(-\frac{1}{x^2\sqrt{c_1-2x}}-\frac{1}{x^2}\right)}-x+x\log(x)\right\},\left\{y(x)\to-\frac{1}{x\left(\frac{1}{x^2\sqrt{c_1-2x}}-\frac{1}{x^2}\right)}-x+x\log(x)\right\}\right\}$$

Maple: cpu = 0.031 (sec), leaf count = 63

$$\left\{y(x)=x\left(\ln(x)\sqrt{\_C1-2\,x}-\ln(x)+1\right)\left(\sqrt{\_C1-2\,x}-1\right)^{-1},y(x)=x\left(\ln(x)\sqrt{\_C1-2\,x}+\ln(x\right.\right.$$

2.941 ODE No. 941

$$\frac{\mathrm{d}}{\mathrm{d}x}y(x)=\frac{-32\,xy(x)-72\,x^3+32\,x^2-32\,x+64\,(y(x))^3+48\,x^2(y(x))^2-192\,x(y(x))^2+12\,y(x)\,x^4-9}{64\,y(x)+16\,x^2-64\,x+64}$$

Mathematica: cpu = 0.372047 (sec), leaf count = 53

$$\text{Solve}\left[x-8\text{RootSum}\left[11776\#1^3-40\#1-1\&,\#1\log\left(17664\#1^2-1472\#1+11x^2+44y(x)-44x-40\right.\right.\right.$$

Maple: cpu = 0.047 (sec), leaf count = 35

$$\left\{y(x)=-\frac{x^2}{4}+x+RootOf\left(-x+\int^{-Z}\frac{\_a+1}{\_a^3-\_a-1}d\_a+\_C1\right)\right\}$$

2.942 ODE No. 942

$$\frac{\mathrm{d}}{\mathrm{d}x}y(x) = -1\left((y(x))^2 + 2\,xy(x) + x^2 + \mathrm{e}^{2\,\frac{(x-y(x))^3(y(x)+x)^3}{-(y(x))^2+x^2-1}}\right)\left(-(y(x))^2 - 2\,xy(x) - x^2 + \mathrm{e}^{2\,\frac{(x-y(x))^3(y(x)+x)^3}{-(y(x))^2+x^2-1}}\right.$$

Mathematica: cpu = 0 (sec), leaf count = 0

Hanged

Maple: cpu = 0.390 (sec), leaf count = 43

$$\left\{y(x) = \mathrm{e}^{RootOf\left(-\_Z+\int^{\left(\mathrm{e}^{-Z}\right)^2-2\,x\mathrm{e}^{-Z}}\left(\mathrm{e}^{2\,\frac{\_a^3}{-\_a+1}}+\_a\right)^{-1}d\_a+\_C1\right)} - x\right\}$$

2.943 ODE No. 943

$$\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{-128\,xy(x) - 24\,x^3 + 32\,x^2 - 128\,x + 512\,(y(x))^3 + 192\,x^2(y(x))^2 - 384\,x(y(x))^2 + 24\,y(x)\,x^2}{512\,y\,(x) + 64\,x^2 - 128\,x + 512}$$

Mathematica: cpu = 0.394550 (sec), leaf count = 53

$$\mathrm{Solve}\left[x - 16\mathrm{RootSum}\left[6656\#1^3 - 23\#1 - 1\&, \#1\log\left(79872\#1^2 - 18304\#1 + 181x^2 + 1448y(x) - 362x\right.\right.\right.$$

Maple: cpu = 0.047 (sec), leaf count = 40

$$\left\{y(x) = -\frac{x^2}{8} + \frac{x}{4} + RootOf\left(-x + \int^{-Z} 4\,\frac{\_a+1}{4\_a^3 - \_a - 1}d\_a + \_C1\right)\right\}$$

2.944 ODE No. 944

$$\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{-32\,axy(x) - 8\,a^2x^3 - 16\,ax^2b - 32\,ax + 64\,(y(x))^3 + 48\,ax^2(y(x))^2 + 96\,(y(x))^2\,bx + 12\,y(x)}{64\,y\,(x) + 16\,ax^2 + 32\,bx +}$$

Mathematica: cpu = 1.613205 (sec), leaf count = 233

$$\mathrm{Solve}\left[x - 4\mathrm{RootSum}\left[\#1^6a^3 + 6\#1^5a^2b + 12\#1^4a^2y(x) + 12\#1^4ab^2 + 48\#1^3aby(x) + 8\#1^3b^3 + 8\#1^2ab\right.\right.$$

Maple: cpu = 0.062 (sec), leaf count = 47

$$\left\{y(x) = -\frac{ax^2}{4} - \frac{bx}{2} + RootOf\left(bx + 2\int^{-Z} -\frac{b(\_a+1)}{2\_a^3 + \_a\,b + b}d\_a + 2\,\_C1\right)\right\}$$

2.945 ODE No. 945

$$\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{-32\,xy(x) - 8\,x^3 - 16\,ax^2 - 32\,x + 64\,(y(x))^3 + 48\,x^2(y(x))^2 + 96\,ax(y(x))^2 + 12\,y(x)\,x^4 + 4}{64\,y\,(x) + 16\,x^2 + 32\,ax + 64}$$

Mathematica: cpu = 1.213154 (sec), leaf count = 213

$$\text{Solve}\left[x - 4\text{RootSum}\left[\#1^6 + 6\#1^5 a + 12\#1^4 a^2 + 12\#1^4 y(x) + 8\#1^3 a^3 + 48\#1^3 a y(x) + 48\#1^2 a^2 y(x) +\right.\right.$$

Maple: cpu = 0.047 (sec), leaf count = 41

$$\left\{y(x) = -\frac{x^2}{4} - \frac{ax}{2} + \mathit{RootOf}\left(-x + \int^{-Z} 2\,\frac{\_a + 1}{2\,\_a^3 + \_a\,a + a}d\_a + \_C1\right)\right\}$$

2.946 ODE No. 946

$$\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{\left(-8\,\mathrm{e}^{-x^2}y(x) + 4\,x^2\left(\mathrm{e}^{-x^2}\right)^2 - 8\,\mathrm{e}^{-x^2} + 8\,x^2\mathrm{e}^{-x^2}y(x) - 4\,x^4\left(\mathrm{e}^{-x^2}\right)^2 + 8\,x^2\mathrm{e}^{-x^2} - 8\,(y(x))^3 +\right.}{-8\,y\,(x) + 4\,x^2\mathrm{e}^{-x^2} - 8}$$

Mathematica: cpu = 0.081510 (sec), leaf count = 150

$$\left\{\left\{y(x) \to \frac{e^{-3x^2}}{8\left(\frac{1}{8}e^{-3x^2} - \frac{e^{-3x^2}}{\sqrt{c_1 - 64x^2}}\right)} - \frac{1}{2}e^{-x^2}\left(2e^{x^2} - x^2\right)\right\}, \left\{y(x) \to \frac{e^{-3x^2}}{8\left(\frac{e^{-3x^2}}{\sqrt{c_1 - 64x^2}} + \frac{1}{8}e^{-3x^2}\right)} - \frac{1}{2}e^{-x^2}\left(2e\right.\right.$$

Maple: cpu = 0.125 (sec), leaf count = 100

$$\left\{y(x) = \frac{1}{2}\left(\mathrm{e}^{-x^2}\sqrt{-x^2 + \_C1}\,x^2 - x^2\mathrm{e}^{-x^2} + 2\right)\left(-1 + \sqrt{-x^2 + \_C1}\right)^{-1}, y(x) = \frac{1}{2}\left(\mathrm{e}^{-x^2}\sqrt{-x^2 + \_C1}\,x\right.\right.$$

2.947 ODE No. 947

$$\frac{\mathrm{d}}{\mathrm{d}x}y(x) = 1/2\,\frac{2\,x^2\cos(x) + 2\,\sin(x)\,x^3 - 2\,x\sin(x) + 2\,x + 2\,x^2(y(x))^2 - 4\,y(x)\sin(x)\,x + 4\,y(x)\cos(x)}{x^3}$$

Mathematica: cpu = 0.108014 (sec), leaf count = 30

$$\left\{\left\{y(x) \to \frac{1}{c_1 - \log(x)} - \frac{-\sin(x) + x\cos(x) + 1}{x}\right\}\right\}$$

Maple: cpu = 0.171 (sec), leaf count = 36

$$\left\{y(x) = -\frac{x}{2}\left(2\,\frac{\cos(x)}{x} - 2\,\frac{\sin(x)}{x^2} + 2\,x^{-2}\right) + (\_C1 - \ln(x))^{-1}\right\}$$

2.948 ODE No. 948

$$\frac{\mathrm{d}}{\mathrm{d}x}y(x) = -216\,\frac{y(x$$
$$-216\,\left(y\left(x\right)\right)^{4}-252\,\left(y\left(x\right)\right)^{3}-396\,\left(y\left(x\right)\right)^{2}-216\,y\left(x\right)+36\,x^{2}-72\,x y\left(x\right)+60\,\left(y\left(x\right)\right)$$

Mathematica: cpu = 0.259033 (sec), leaf count = 39

$$\text{Solve}\left[\frac{36}{y(x)\left(2y(x)^3+3y(x)^2+6y(x)+6\right)-6x}+\log(y(x))=c_1,y(x)\right]$$

Maple: cpu = 0.140 (sec), leaf count = 68

$$\left\{y(x)=\mathrm{e}^{RootOf\left(-12\_C1\,\left(\mathrm{e}^{-Z}\right)^{4}-2\left(\mathrm{e}^{-Z}\right)^{4}\_Z-18\_C1\,\left(\mathrm{e}^{-Z}\right)^{3}-3\left(\mathrm{e}^{-Z}\right)^{3}\_Z-36\_C1\,\left(\mathrm{e}^{-Z}\right)^{2}-6\_Z\left(\mathrm{e}^{-Z}\right)^{2}-36\_C1\,\mathrm{e}^{-Z}-6\_Z\,\mathrm{e}^{-Z}+3\right.}\right.$$

2.949 ODE No. 949

$$\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{x^2y(x)+x^4+2\,x^3-3\,x^2+xy(x)+x+\left(y(x)\right)^3+3\,x^2\left(y(x)\right)^2-3\,x\left(y(x)\right)^2+3\,y(x)\,x^4-6\,x^3}{x\left(y\left(x\right)+x^2-x+1\right)}$$

Mathematica: cpu = 0.021003 (sec), leaf count = 76

$$\left\{\left\{y(x)\to\frac{1}{x\left(\frac{1}{x}-\frac{1}{x\sqrt{c_1-2\log(x)}}\right)}-x^2+x-1\right\},\left\{y(x)\to\frac{1}{x\left(\frac{1}{x\sqrt{c_1-2\log(x)}}+\frac{1}{x}\right)}-x^2+x-1\right\}\right\}$$

Maple: cpu = 0.031 (sec), leaf count = 97

$$\left\{y(x)=-1\left(\sqrt{\_C1-2\,\ln\left(x\right)}x^2-\sqrt{\_C1-2\,\ln\left(x\right)}x-x^2+x-1\right)\left(-1+\sqrt{\_C1-2\,\ln\left(x\right)}\right)^{-1},y(x)\right.$$

2.950 ODE No. 950

$$\frac{\mathrm{d}}{\mathrm{d}x}y(x) = -1/2\,ax+1+\left(y(x)\right)^2+1/2\,ax^2y(x)+bxy(x)+1/16\,a^2x^4+1/4\,ax^3b+1/4\,b^2x^2+\left(y(x)\right)^3+$$

Mathematica: cpu = 0.167521 (sec), leaf count = 141

$$\text{Solve}\left[-\frac{1}{3}(27b+58)^{2/3}\text{RootSum}\left[\#1^3(27b+58)^{2/3}-3\,2^{2/3}\#1+(27b+58)^{2/3}\&,\frac{\log\left(\frac{\sqrt[3]{2}\left(\frac{1}{4}\left(3ax^2+6bx+4\right)+3\right.}{\sqrt[3]{27b+58}}\right.}{2^{2/3}-\#1^2(27b+}\right.\right.$$

Maple: cpu = 0.078 (sec), leaf count = 42

$$\left\{y(x)=-\frac{ax^2}{4}-\frac{bx}{2}+RootOf\left(-x+2\int^{-Z}\left(2\_a^3+2\_a^2+b+2\right)^{-1}d\_a+\_C1\right)\right\}$$

2.951 ODE No. 951

$$\frac{\mathrm{d}}{\mathrm{d}x}y(x) = -x/2 + 1 + (y(x))^2 + 1/2\,x^2 y(x) + axy(x) + 1/16\,x^4 + 1/4\,ax^3 + 1/4\,a^2x^2 + (y(x))^3 + 3/4\,x^2$$

Mathematica: cpu = 0.144018 (sec), leaf count = 140

$$\text{Solve}\left[-\frac{1}{3}(27a+58)^{2/3}\text{RootSum}\left[\#1^3(27a+58)^{2/3} - 3\ 2^{2/3}\#1 + (27a+58)^{2/3}\&,\ \frac{\log\left(\frac{\sqrt[3]{2}(\frac{1}{4}(6ax+3x^2+4)+3}{\sqrt[3]{27a+58}}\right.\right.\right.$$
$$\left.\left.\left. 2^{2/3} - \#1^2(27a+\right.\right.\right.$$

Maple: cpu = 0.062 (sec), leaf count = 41

$$\left\{y(x) = -\frac{x^2}{4} - \frac{ax}{2} + RootOf\left(-x + 2\int^{\_Z}\left(2\_a^3 + 2\_a^2 + a + 2\right)^{-1} d\_a + \_C1\right)\right\}$$

2.952 ODE No. 952

$$\frac{\mathrm{d}}{\mathrm{d}x}y(x) = -\frac{-y(x) + \sqrt{(y(x))^2 + x^2}x^2 - x\sqrt{(y(x))^2 + x^2}y(x) + x^4\sqrt{(y(x))^2 + x^2} - x^3\sqrt{(y(x))^2 + x^2}}{x}$$

Mathematica: cpu = 0.139018 (sec), leaf count = 189

$$\left\{\left\{y(x) \to \frac{x\left(-2e^{\sqrt{2}c_1 + \frac{\sqrt{2}x^5}{5} + \frac{x^4}{2\sqrt{2}} + \frac{x^2}{\sqrt{2}}} + e^{2\sqrt{2}c_1 + \frac{2\sqrt{2}x^5}{5} + \frac{x^4}{\sqrt{2}} + \sqrt{2}x^2} - 1\right)}{2e^{\sqrt{2}c_1 + \frac{\sqrt{2}x^5}{5} + \frac{x^4}{2\sqrt{2}} + \frac{x^2}{\sqrt{2}}} + e^{2\sqrt{2}c_1 + \frac{2\sqrt{2}x^5}{5} + \frac{x^4}{\sqrt{2}} + \sqrt{2}x^2} - 1}\right\}\right\}$$

Maple: cpu = 0.202 (sec), leaf count = 65

$$\left\{\ln\left(2\frac{x\left(\sqrt{2\ (y(x))^2 + 2x^2} + y(x) + x\right)}{y(x) - x}\right) + \frac{\sqrt{2}x^5}{5} + \frac{\sqrt{2}x^4}{4} + \frac{\sqrt{2}x^2}{2} - \ln(x) - \_C1 = 0\right\}$$

2.953 ODE No. 953

$$\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{y(x)\left(\ln(x)+\ln(y(x))-1+x(\ln(x))^2+2\,x\ln(y(x))\ln(x)+x(\ln(y(x)))^2+x^3(\ln(x))^2+2}{x}$$

Mathematica: cpu = 1.521193 (sec), leaf count = 97

$$\text{DSolve}\left[y'(x) = \frac{y(x)\left(x^4\log^2(y(x))+2x^4\log(x)\log(y(x))+x^4\log^2(x)+x^3\log^2(y(x))+2x^3\log(x)\log(y\right.}{\left.\right.}\right]$$

Maple: cpu = 0.281 (sec), leaf count = 145

$$\left\{y(x) = 1\left(x^{\frac{x^5}{4x^5+5x^4+10x^2+20\_C1}}\right)^{-4}\left(x^{\frac{x^4}{4x^5+5x^4+10x^2+20\_C1}}\right)^{-5}\left(x^{\frac{x^2}{4x^5+5x^4+10x^2+20\_C1}}\right)^{-10}\left(x^{\frac{\_C1}{4x^5+5x^4+10x^2+20\_C1}}\right.\right.$$

2.954 ODE No. 954

$$\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{150\,x^3+125\,\sqrt{x}+125+125\,(y(x))^2-100\,x^3y(x)-500\,y(x)\,\sqrt{x}+20\,x^6+200\,x^{7/2}+500\,x-}{}$$

Mathematica: cpu = 0.087511 (sec), leaf count = 115

$$\text{Solve}\left[-\frac{29}{3}\text{RootSum}\left[-29\#1^3+3\sqrt[3]{29}\#1-29\&,\frac{\log\left(\frac{\frac{-6x^3-30\sqrt{x}+5}{5x}+\frac{3y(x)}{x}}{\sqrt[3]{29}\sqrt[3]{\frac{1}{x^3}}}-\#1\right)}{\sqrt[3]{29}-29\#1^2}\&\right]\right] = c_1+\frac{1}{9}29^{2/3}\left(\frac{1}{x^3}\right)^{}$$

Maple: cpu = 0.031 (sec), leaf count = 53

$$\left\{y(x) = \frac{1}{45}\left(18\,x^{7/2}+145\,RootOf\left(-81\int^{\_Z}\left(841\,\_a^3-27\,\_a+27\right)^{-1}d\_a+\ln(x)+3\,\_C1\right)\sqrt{x}-1\right.\right.$$

2.955 ODE No. 955

$$\frac{\mathrm{d}}{\mathrm{d}x}y(x) = 1/25\,\frac{-150\,x^3y(x)+60\,x^6+350\,x^{7/2}-150\,x^3-125\,y(x)\,\sqrt{x}+250\,x-125\,\sqrt{x}-125\,(y(x))^3}{(-}$$

Mathematica: cpu = 0.043006 (sec), leaf count = 112

$$\left\{\left\{y(x)\to\frac{1}{5}\left(2x^3+10\sqrt{x}-5\right)-\frac{1}{125x\left(-\frac{1}{x\sqrt{c_1-31250\log(x)}}-\frac{1}{125x}\right)}\right\},\left\{y(x)\to\frac{1}{5}\left(2x^3+10\sqrt{x}-5\right)-\right.\right.$$

Maple: cpu = 0.078 (sec), leaf count = 111

$$\left\{y(x) = \frac{1}{5}\left(2\sqrt{\_C1 - 2\ln(x)}x^3 - 2x^3 + 10\sqrt{x}\sqrt{\_C1 - 2\ln(x)} - 10\sqrt{x} + 5\right)\left(-1 + \sqrt{\_C1 - 2\ln(\right.\right.$$

2.956 ODE No. 956

$$\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{y(x)}{(\ln(x)+1)\,x}\left(-1 - x^{2\,(\ln(x)+1)^{-1}}\mathrm{e}^{2\,\frac{(\ln(x))^2}{\ln(x)+1}}x^2 - x^{2\,(\ln(x)+1)^{-1}}\mathrm{e}^{2\,\frac{(\ln(x))^2}{\ln(x)+1}}x^2\ln(x) + x^{2\,(\ln(x)+1)^{-1}}\mathrm{e}^{2\,\frac{(\ln(\right.$$

Mathematica: cpu = 0.210527 (sec), leaf count = 28

$$\left\{\left\{y(x) \to \frac{1}{\left(c_1 e^{\frac{x^4}{4}} + 1\right)(\log(x)+1)}\right\}\right\}$$

Maple: cpu = 0.062 (sec), leaf count = 197

$$\left\{y(x) = 1\mathrm{e}^{-\frac{x^4}{4}}\left((\ln(x))^2\,\mathrm{e}^{\frac{-x^4\ln(x)-x^4+8\,(\ln(x))^2-4\,\ln(\ln(x)+1)\ln(x)-4\,\ln(\ln(x)+1)}{4\,\ln(x)+4}}x^{-2\,\frac{\ln(x)}{\ln(x)+1}} + 2\ln(x)\,\mathrm{e}^{1/4\,\frac{-x^4\ln(x)-x^4+8\,(\ln(x\right.\right.$$

2.957 ODE No. 957

$$\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{y(x)}{(\ln(x)+1)\,x}\left(-1 - x^3x^{2\,(\ln(x)+1)^{-1}}\mathrm{e}^{2\,\frac{(\ln(x))^2}{\ln(x)+1}} - x^3x^{2\,(\ln(x)+1)^{-1}}\mathrm{e}^{2\,\frac{(\ln(x))^2}{\ln(x)+1}}\ln(x) + x^3x^{2\,(\ln(x)+1)^{-1}}\mathrm{e}^{2\right.$$

Mathematica: cpu = 0.198525 (sec), leaf count = 28

$$\left\{\left\{y(x) \to \frac{1}{\left(c_1 e^{\frac{x^5}{5}} + 1\right)(\log(x)+1)}\right\}\right\}$$

Maple: cpu = 0.031 (sec), leaf count = 197

$$\left\{y(x) = 1\mathrm{e}^{-\frac{x^5}{5}}\left((\ln(x))^2\,\mathrm{e}^{\frac{-x^5\ln(x)-x^5+10\,(\ln(x))^2-5\,\ln(\ln(x)+1)\ln(x)-5\,\ln(\ln(x)+1)}{5\,\ln(x)+5}}x^{-2\,\frac{\ln(x)}{\ln(x)+1}} + 2\ln(x)\,\mathrm{e}^{1/5\,\frac{-x^5\ln(x)-x^5+10\,(\ln\right.\right.$$

2.958 ODE No. 958

$$\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{2\,x + 4\,y(x)\ln\left(2\,x+1\right)x + 6\left(y(x)\right)^2\ln\left(2\,x+1\right)x + 6\,y(x)\left(\ln\left(2\,x+1\right)\right)^2 x + 2\left(\ln\left(2\,x+1\right)\right)^3$$

Mathematica: cpu = 0.060508 (sec), leaf count = 82

$$\text{Solve}\left[-\frac{29}{3}\text{RootSum}\left[-29\#1^3 + 3\sqrt[3]{29}\#1 - 29\&, \frac{\log\left(\frac{3y(x)+3\log(2x+1)+1}{\sqrt[3]{29}} - \#1\right)}{\sqrt[3]{29} - 29\#1^2}\&\right] = c_1 + \frac{1}{9}29^{2/3}x, y(x)\right]$$

Maple: cpu = 0.047 (sec), leaf count = 40

$$\left\{y(x) = -\ln\left(2\,x+1\right) - \frac{1}{3} + \frac{29\,RootOf\left(-81\int^{-Z}\left(841\_a^3 - 27\_a + 27\right)^{-1}d\_a + x + 3\_C1\right)}{9}\right\}$$

2.959 ODE No. 959

$$\frac{\mathrm{d}}{\mathrm{d}x}y(x) = 1/2\,\frac{1}{x}\left(-y(x)\sin\left(\frac{y(x)}{x}\right) + y(x)\sin\left(3/2\,\frac{y(x)}{x}\right)\cos\left(1/2\,\frac{y(x)}{x}\right) + y(x)\cos\left(1/2\,\frac{y(x)}{x}\right)\sin\left(\right.\right.$$

Mathematica: cpu = 0.045506 (sec), leaf count = 20

$$\left\{\left\{y(x) \to x\sin^{-1}\left(e^{c_1+\frac{x^2}{2}}\right)\right\}\right\}$$

Maple: cpu = 0.047 (sec), leaf count = 16

$$\left\{y(x) = \frac{\arccos\left(\mathrm{e}^{x^2}\_C1 + 1\right)x}{2}\right\}$$

2.960 ODE No. 960

$$\frac{\mathrm{d}}{\mathrm{d}x}y(x) = 1/2\,\frac{1}{x}\left(-y(x)\sin\left(\frac{y(x)}{x}\right) + y(x)\sin\left(3/2\,\frac{y(x)}{x}\right)\cos\left(1/2\,\frac{y(x)}{x}\right) + y(x)\cos\left(1/2\,\frac{y(x)}{x}\right)\sin\left(\right.\right.$$

Mathematica: cpu = 0.035505 (sec), leaf count = 14

$$\left\{\left\{y(x) \to x\sin^{-1}\left(e^{c_1+x}\right)\right\}\right\}$$

Maple: cpu = 0.031 (sec), leaf count = 16

$$\left\{y(x) = \frac{\arccos\left(\_C1\left(\mathrm{e}^x\right)^2 + 1\right)x}{2}\right\}$$

2.961 ODE No. 961

$$\frac{\mathrm{d}}{\mathrm{d}x}y(x)=\frac{(y(x))^2+2\,xy(x)+x^2+\mathrm{e}^{2+2\,(y(x))^4-4\,x^2(y(x))^2+2\,x^4+2\,(y(x))^6-6\,x^2(y(x))^4+6\,x^4(y(x))^2-2\,x^6}}{(y\,(x))^2+2\,xy\,(x)+x^2-\mathrm{e}^{2+2\,(y(x))^4-4\,x^2(y(x))^2+2\,x^4+2\,(y(x))^6-6\,x^2(y(x))^4+6\,x^4(y(x))^2-2\,x^6}}=0$$

Mathematica: cpu = 0 (sec), leaf count = 0

Hanged

Maple: cpu = 0.312 (sec), leaf count = 45

$$\left\{y(x)=\mathrm{e}^{RootOf\left(-\_Z+\int\left(\mathrm{e}^{-\_Z}\right)^2-2\,x\mathrm{e}^{-\_Z}\left(\mathrm{e}^{2}\_a^3+2\,\_a^2+2+\_a\right)^{-1}d\_a+\_C1\right)}-x\right\}$$

2.962 ODE No. 962

$$\frac{\mathrm{d}}{\mathrm{d}x}y(x)=4\,\frac{x}{-4\,(y\,(x))^3+4\,a^2x^2y\,(x)-4\,x^2y\,(x)-8\,y\,(x)-a^2\,(y\,(x))^6+3\,a^4\,(y\,(x))^4\,x^2-6\,(y\,(x))^4\,a^2}$$

Mathematica: cpu = 5.355180 (sec), leaf count = 1191

$$\left\{\left\{y(x)\to \text{Root}\left[2x^4a^8-8x^4a^6+e^{c_1}x^4a^4+11x^4a^4-2e^{c_1}x^4a^2-6x^4a^2+4x^2a^2+\left(2a^2-2\right)\#1^5+e^{c_1}x^4\right.\right.\right.$$

Maple: cpu = 1.092 (sec), leaf count = 79

$$\left\{-\frac{y(x)}{(a-1)\,(a+1)}+2\,\frac{1}{(a^2-1)^2\left(a^2x^2-x^2-(y\,(x))^2\right)^2}-2\,\frac{1}{(a^2-1)^2\left(a^2x^2-x^2-(y\,(x))^2\right)}+\_C1=0\right.$$

2.963 ODE No. 963

$$\frac{\mathrm{d}}{\mathrm{d}x}y(x)=1/4\,\frac{-4\,\cos(x)\,x+4\,x^2\sin(x)+4\,x+4+4\,(y(x))^2+8\,y(x)\cos(x)\,x-8\,xy(x)+2\,x^2\cos(2\,x}$$

Mathematica: cpu = 0.112014 (sec), leaf count = 108

$$\text{Solve}\left[-\frac{29}{3}\text{RootSum}\left[-29\#1^3+3\sqrt[3]{29}\#1-29\&,\frac{\log\left(\frac{\frac{3y(x)}{x}+\frac{-3x+3x\cos(x)+1}{x}}{\sqrt[3]{29}\sqrt[3]{\frac{1}{x^3}}}-\#1\right)}{\sqrt[3]{29}-29\#1^2}\&\right]\right.=c_1+\frac{1}{9}29^{2/3}\left(\frac{1}{x^3}\right.$$

Maple: cpu = 0.156 (sec), leaf count = 39

$$\left\{y(x)=-\cos(x)\,x+x-\frac{1}{3}+\frac{29\,RootOf\left(-81\int^{-Z}\left(841\,\_a^3-27\,\_a+27\right)^{-1}d\_a+\ln(x)+3\,\_C1\right)}{9}\right\}$$

2.964 ODE No. 964

$$\frac{\mathrm{d}}{\mathrm{d}x}y(x) = -8\,\frac{}{8-8\,y\left(x\right)+2\,x^{4}+3\,x^{4}\left(y\left(x\right)\right)^{2}+4\,x^{2}\left(y\left(x\right)\right)^{2}+2\,\left(y\left(x\right)\right)^{4}+3\,a^{4}\left(y\left(x\right)\right)^{4}x^{2}-3\,a^{6}\left(y\left(x\right)\right)}$$

Mathematica: cpu = 4.810111 (sec), leaf count = 264

$$\text{Solve}\left[\frac{y(x)}{(a-1)(a+1)}-\frac{8\text{RootSum}\left[-\#1^3a^6+3\#1^3a^4-3\#1^3a^2+\#1^3+3\#1^2a^4y(x)^2+2\#1^2a^4-6\#1\right.\right.$$

Maple: cpu = 2.012 (sec), leaf count = 80

$$\left\{\frac{y(x)}{\left(a-1\right)\left(a+1\right)}+4\,\frac{1}{a^{4}-2\,a^{2}+1}\sum_{\_R=RootOf\left(\_Z^{3}+2\_Z^{2}+8\right)}\frac{\ln\left(-a^{2}x^{2}+x^{2}+\left(y(x)\right)^{2}-\_R\right)}{3\,\_R^{2}+4\,\_R}-\_C1=0\right\}$$

2.965 ODE No. 965

$$\frac{\mathrm{d}}{\mathrm{d}x}y(x) = 1/2\,\frac{1}{x}\left(-y(x)\sin\left(\frac{y(x)}{x}\right)+y(x)\sin\left(3/2\,\frac{y(x)}{x}\right)\cos\left(1/2\,\frac{y(x)}{x}\right)+y(x)\cos\left(1/2\,\frac{y(x)}{x}\right)\sin\left(\right.\right.$$

Mathematica: cpu = 0.056007 (sec), leaf count = 29

$$\left\{\left\{y(x)\to x\sin^{-1}\left(xe^{c_1+\frac{x^3}{3}+\frac{x^2}{2}}\right)\right\}\right\}$$

Maple: cpu = 0.093 (sec), leaf count = 25

$$\left\{y(x)=\frac{x}{2}\arccos\left(\mathrm{e}^{\frac{2\,x^{3}}{3}}\mathrm{e}^{x^{2}}\_C1\,x^{2}+1\right)\right\}$$

2.966 ODE No. 966

$$\frac{\mathrm{d}}{\mathrm{d}x}y(x) = -1296\,\frac{}{216-432\,xy\left(x\right)-648\,x^{2}y\left(x\right)+216\,x\left(y\left(x\right)\right)^{2}-1296\,y\left(x\right)+216\,x^{3}+216\,x^{2}-2376\,}$$

Mathematica: cpu = 0.439556 (sec), leaf count = 292

$$\text{Solve}\left[72\text{RootSum}\left[-216\#1^3+216\#1^2y(x)^4+324\#1^2y(x)^3+648\#1^2y(x)^2+648\#1^2y(x)-216\#1^2-\right.\right.$$

Maple: cpu = 0.484 (sec), leaf count = 50

$$\left\{y(x)=\mathrm{e}^{RootOf\left(-\_Z-6\int^{x-1/3\left(\mathrm{e}^{-\_Z}\right)^{4}-1/2\left(\mathrm{e}^{-\_Z}\right)^{3}-\left(\mathrm{e}^{-\_Z}\right)^{2}-\mathrm{e}^{-\_Z}}\left(\_a^{3}+\_a^{2}+1\right)^{-1}d\_a+\_C1\right)}\right\}$$

2.967 ODE No. 967

$$\frac{\mathrm{d}}{\mathrm{d}x}y(x) = -\frac{x\left(-513-432\,x-594\,x^2y(x)+720\,x^3y(x)-378\,y(x)-864\,x^4-756\,x^3-1134\,x^2-540\,(y\right.}{}$$

Mathematica: cpu = 0.128516 (sec), leaf count = 151

$$\text{Solve}\left[-\frac{29}{3}\text{RootSum}\left[-29\#1^3+3\sqrt[3]{29}\#1-29\&,\frac{\log\left(\frac{\frac{3xy(x)}{x^2+1}+\frac{-4x^4+2x^3+5x}{2\left(x^2+1\right)^2}}{\sqrt[3]{29}\sqrt[3]{\frac{x^3}{\left(x^2+1\right)^3}}}-\#1\right)}{\sqrt[3]{29}-29\#1^2}\&\right]\right] = c_1+\frac{29^{2/3}\left(\frac{x^3}{(x^2+1)}\right.}{}$$

Maple: cpu = 0.062 (sec), leaf count = 90

$$\left\{y(x) = \frac{58\,RootOf\left(-162\int^{-Z}\left(841\_a^3-27\_a+27\right)^{-1}d\_a+\ln\left(x^2+1\right)+6\_C1\right)x^2+12\,x^3-6\,x^2+}{18\,x^2+18}\right.$$

2.968 ODE No. 968

$$\frac{\mathrm{d}}{\mathrm{d}x}y(x) = 1/2\,\frac{1}{x\,(1+x)}\left(-\sin\left(\frac{y(x)}{x}\right)y(x)\,x-y(x)\sin\left(\frac{y(x)}{x}\right)+y(x)\sin\left(3/2\,\frac{y(x)}{x}\right)\cos\left(1/2\,\frac{y(x)}{x}\right.\right.$$

Mathematica: cpu = 0.084511 (sec), leaf count = 30

$$\left\{\left\{y(x)\to x\sin^{-1}\left((x+1)e^{c_1+\frac{x^2}{2}-x-\frac{3}{2}}\right)\right\}\right\}$$

Maple: cpu = 0.109 (sec), leaf count = 45

$$\left\{y(x) = \frac{x}{2}\arccos\left(\frac{\mathrm{e}^{x^2}\_C1\,x^2}{\left(\mathrm{e}^x\right)^2}+2\,\frac{\mathrm{e}^{x^2}\_C1\,x}{\left(\mathrm{e}^x\right)^2}+\frac{\mathrm{e}^{x^2}\_C1}{\left(\mathrm{e}^x\right)^2}+1\right)\right\}$$

2.969 ODE No. 969

$$\frac{\mathrm{d}}{\mathrm{d}x}y(x) = 1/2\,\frac{1}{x\,(1+x)}\left(y(x)\sin\left(3/2\,\frac{y(x)}{x}\right)\cos\left(1/2\,\frac{y(x)}{x}\right)x + y(x)\sin\left(3/2\,\frac{y(x)}{x}\right)\cos\left(1/2\,\frac{y(x)}{x}\right)\right.$$

Mathematica: cpu = 0.058507 (sec), leaf count = 19

$$\left\{\left\{y(x) \to x\sin^{-1}\left(\frac{e^{c_1}x}{x+1}\right)\right\}\right\}$$

Maple: cpu = 0.125 (sec), leaf count = 27

$$\left\{y(x) = \frac{x}{2}\arccos\left(\frac{\_C1\,x^2 + x^2 + 2\,x + 1}{(1+x)^2}\right)\right\}$$

2.970 ODE No. 970

$$\frac{\mathrm{d}}{\mathrm{d}x}y(x) = -216\,\frac{}{-1296\,xy\,(x) - 648\,x^2y\,(x) - 1944\,x\,(y\,(x))^2 - 1296\,y\,(x) + 216\,x^3 - 1296\,(y\,(x))^2 + 17}$$

Mathematica: cpu = 0.475060 (sec), leaf count = 66

$$\text{Solve}\left[\frac{36(2y(x)^4 + 3y(x)^3 + 6y(x)^2 + 6y(x) - 6x - 3)}{(y(x)\,(2y(x)^3 + 3y(x)^2 + 6y(x) + 6) - 6x)^2} + \log(y(x)) = c_1, y(x)\right]$$

Maple: cpu = 0.562 (sec), leaf count = 183

$$\left\{x - \frac{1}{-6\,\_C1 + 6\,\ln\left(y\,(x)\right)}\left(2\,\ln\left(y(x)\right)(y(x))^4 - 2\,\_C1\,(y(x))^4 + 3\,\ln\left(y(x)\right)(y(x))^3 - 3\,\_C1\,(y(x))^3 + \right.\right.$$

2.971 ODE No. 971

$$\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{(xy(x)+1)^3}{x^5} = 0$$

Mathematica: cpu = 0.101013 (sec), leaf count = 157

$$\text{Solve}\left[\frac{1}{3}\log\left(\frac{\frac{3}{x^3} + \frac{3y(x)}{x^2}}{3\sqrt[3]{-\frac{1}{x^6}}} + 1\right) - \frac{1}{6}\log\left(\frac{\left(\frac{3}{x^3} + \frac{3y(x)}{x^2}\right)^2}{9\left(-\frac{1}{x^6}\right)^{2/3}} - \frac{\frac{3}{x^3} + \frac{3y(x)}{x^2}}{3\sqrt[3]{-\frac{1}{x^6}}} + 1\right) + \frac{\tan^{-1}\left(\frac{\frac{2\left(\frac{3}{x^3} + \frac{3y(x)}{x^2}\right)}{3\sqrt[3]{-\frac{1}{x^6}}} - 1}{\sqrt{3}}\right)}{\sqrt{3}} = c\right.$$

Maple: cpu = 0.187 (sec), leaf count = 88

$$\left\{y(x)=\frac{\sqrt{3}}{6\,x}\left(\sqrt{3}\sqrt[3]{-x^{-6}}x^3+3\,\tan\left(RootOf\left(-18\,x^3\left(-x^{-6}\right)^{2/3}-6\,\_Z\,\sqrt{3}-\ln\left(\frac{\left(\sqrt{3}+\tan\left(\_Z\right)\right)^6}{\left(\left(\tan\left(\_Z\right)\right)^2+1\right)^3}\right)\right.\right.\right.\right.$$

2.972 ODE No. 972

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x)=\frac{x(-x^2+2\,x^2y(x)-2\,x^4+1)}{y\left(x\right)-x^2}=0}$$

Mathematica: cpu = 0.032004 (sec), leaf count = 32

$$\left\{\left\{y(x)\to\frac{1}{2}\left(W\left(-e^{c_1+x^4-2x^2-1}\right)+1\right)+x^2\right\}\right\}$$

Maple: cpu = 0.062 (sec), leaf count = 27

$$\left\{y(x)=x^2+\frac{1}{2}lambertW\left(-2\,\frac{\mathrm{e}^{x^4}\_C1\,\mathrm{e}^{-1}}{\left(\mathrm{e}^{x^2}\right)^2}\right)+\frac{1}{2}\right\}$$

2.973 ODE No. 973

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x)=\frac{y(x)\left(\left(y(x)\right)^2+y(x)\,\mathrm{e}^{bx}+\left(\mathrm{e}^{bx}\right)^2\right)}{\left(\mathrm{e}^{bx}\right)^2}=0}$$

Mathematica: cpu = 0.163521 (sec), leaf count = 146

$$\text{Solve}\left[-\frac{1}{3}(9b-7)^{2/3}\text{RootSum}\left[\#1^3(9b-7)^{2/3}-9\#1b+6\#1+(9b-7)^{2/3}\&,\frac{\log\left(\frac{3e^{-2bx}y(x)+e^{-bx}}{\sqrt[3]{(9b-7)e^{-3bx}}}-\#1\right.\right.\right.}{\#1^2\left(-(9b-7)^{2/3}\right)+3b-$$

Maple: cpu = 0.234 (sec), leaf count = 136

$$\left\{y(x)=\frac{1}{2}\tan\left(RootOf\left(-2\,\_Z\,\mathrm{e}^{bx}-\ln\left(-\left(4\left(\tan\left(\_Z\right)\right)^2b-3\left(\tan\left(\_Z\right)\right)^2+4\,b-3\right)\left(-\tan\left(\_Z\right)\sqrt{-\right.\right.\right.\right.\right.$$

2.974 ODE No. 974

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = (y(x))^3 - 3\,x^2(y(x))^2 + 3\,y(x)\,x^4 - x^6 + 2\,x = 0}$$

Mathematica: cpu = 0.010001 (sec), leaf count = 39

$$\left\{\left\{y(x) \to x^2 - \frac{1}{\sqrt{c_1 - 2x}}\right\}, \left\{y(x) \to \frac{1}{\sqrt{c_1 - 2x}} + x^2\right\}\right\}$$

Maple: cpu = 0.031 (sec), leaf count = 57

$$\left\{y(x) = 1\left(x^2\sqrt{2\_C1 - 2\,x} - 1\right)\frac{1}{\sqrt{2\_C1 - 2\,x}}, y(x) = 1\left(x^2\sqrt{2\_C1 - 2\,x} + 1\right)\frac{1}{\sqrt{2\_C1 - 2\,x}}\right\}$$

2.975 ODE No. 975

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = (y(x))^3 + x^2(y(x))^2 + 1/3\,y(x)\,x^4 + 1/27\,x^6 - 2/3\,x = 0}$$

Mathematica: cpu = 0.011501 (sec), leaf count = 47

$$\left\{\left\{y(x) \to -\frac{1}{\sqrt{c_1 - 2x}} - \frac{x^2}{3}\right\}, \left\{y(x) \to \frac{1}{\sqrt{c_1 - 2x}} - \frac{x^2}{3}\right\}\right\}$$

Maple: cpu = 0.032 (sec), leaf count = 59

$$\left\{y(x) = -\frac{1}{3}\left(x^2\sqrt{-54\_C1 - 2\,x} - 3\right)\frac{1}{\sqrt{-54\_C1 - 2\,x}}, y(x) = -\frac{1}{3}\left(x^2\sqrt{-54\_C1 - 2\,x} + 3\right)\frac{}{\sqrt{-54\_}}\right.$$

2.976 ODE No. 976

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{y(x)\left((y(x))^2\,x^7 + y(x)\,x^4 + x - 3\right)}{x} = 0}$$

Mathematica: cpu = 0.076010 (sec), leaf count = 101

$$\text{Solve}\left[-\frac{7}{3}\text{RootSum}\left[-7\#1^3 + 6\sqrt[3]{-7}\#1 - 7\&, \frac{\log\left(\frac{3x^6y(x)+x^3}{\sqrt[3]{7}\sqrt[3]{-x^9}} - \#1\right)}{2\sqrt[3]{-7} - 7\#1^2}\&\right] = c_1 + \frac{7^{2/3}\left(-x^9\right)^{2/3}}{9x^5}, y(x)\right]$$

Maple: cpu = 0.172 (sec), leaf count = 57

$$\left\{y(x) = \frac{1}{2\,x^3}\left(\sqrt{3}\tan\left(\mathit{RootOf}\left(-\sqrt{3}\ln\left(\frac{9\left(\tan\left(\_Z\right)\right)^2 + 9}{7\,\left(-3\,\tan\left(\_Z\right) + \sqrt{3}\right)^2}\right) + 3\sqrt{3}\_C1 - 2\sqrt{3}x - 2\_Z\right)\right) -\right.$$

2.977 ODE No. 977

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{y(x)\left((y(x))^2 + \mathrm{e}^{-x^2}y(x) + \left(\mathrm{e}^{-x^2}\right)^2\right)x}{\left(\mathrm{e}^{-x^2}\right)^2} = 0}$$

Mathematica: cpu = 0.171522 (sec), leaf count = 139

$$\text{Solve}\left[-\frac{25}{3}\text{RootSum}\left[-25\#1^3 + 24\sqrt[3]{-1}5^{2/3}\#1 - 25\&, \frac{\log\left(\frac{3e^{2x^2}xy(x)+e^{x^2}x}{5^{2/3}\sqrt[3]{-e^{3x^2}x^3}} - \#1\right)}{8\sqrt[3]{-1}5^{2/3} - 25\#1^2}\&\right] = c_1 - \frac{5\sqrt[3]{5}e^{x^2}x^3}{18\sqrt[3]{-e^{3x^2}x}}\right.$$

Maple: cpu = 0.141 (sec), leaf count = 122

$$\left\{y(x) = \frac{1}{2\,\mathrm{e}^{x^2}}\left(\sqrt{11}\tan\left(\mathit{RootOf}\left(-4\sqrt{11}x^2 + 8\sqrt{11}\ln\left(-\frac{36\sqrt{11}}{11} + 36\tan\left(\_Z\right)\right) - 4\sqrt{11}\ln\left(\frac{2592}{\right.}\right.\right.\right.\right.$$

2.978 ODE No. 978

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{y(x)\left((y(x))^2 + xy(x) + x^2 + x\right)}{x^2} = 0}$$

Mathematica: cpu = 0.048006 (sec), leaf count = 60

$$\text{Solve}\left[-\frac{1}{2}\log\left(\frac{y(x)^2}{x^2} + \frac{y(x)}{x} + 1\right) + \log\left(\frac{y(x)}{x}\right) - \frac{\tan^{-1}\left(\frac{\frac{2y(x)}{x}+1}{\sqrt{3}}\right)}{\sqrt{3}} = c_1 + x, y(x)\right]$$

Maple: cpu = 0.125 (sec), leaf count = 71

$$\left\{y(x) = \frac{\sqrt{3}x}{2}\tan\left(\mathit{RootOf}\left(-\sqrt{3}\ln\left(3\right) - \sqrt{3}\ln\left(\frac{4}{3 + 3\left(\tan\left(\_Z\right)\right)^2}\right) - 2\sqrt{3}\ln\left(-1/6\sqrt{3} + 1/2\tan\left(\_\right.\right.\right.\right.$$

2.979 ODE No. 979

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{(y(x))^3 - 3\,x(y(x))^2 + 3\,x^2 y(x) - x^3 + x}{x} = 0}$$

Mathematica: cpu = 0.011001 (sec), leaf count = 37

$$\left\{\left\{y(x) \to x - \frac{1}{\sqrt{c_1 - 2\log(x)}}\right\}, \left\{y(x) \to \frac{1}{\sqrt{c_1 - 2\log(x)}} + x\right\}\right\}$$

Maple: cpu = 0.047 (sec), leaf count = 57

$$\left\{y(x) = 1\left(x\sqrt{2\_C1 - 2\,\ln(x)} - 1\right)\frac{1}{\sqrt{2\_C1 - 2\,\ln(x)}}, y(x) = 1\left(x\sqrt{2\_C1 - 2\,\ln(x)} + 1\right)\frac{}{\sqrt{2\_C1}}\right.$$

2.980 ODE No. 980

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{x^3(y(x))^3 + 6\,x^2(y(x))^2 + 12\,xy(x) + 8 + 2\,x}{x^3} = 0}$$

Mathematica: cpu = 0.012002 (sec), leaf count = 43

$$\left\{\left\{y(x) \to -\frac{1}{\sqrt{c_1 - 2x}} - \frac{2}{x}\right\}, \left\{y(x) \to \frac{1}{\sqrt{c_1 - 2x}} - \frac{2}{x}\right\}\right\}$$

Maple: cpu = 0.016 (sec), leaf count = 35

$$\left\{y(x) = -\frac{1}{\sqrt{\_C1 - 2\,x}} - 2\,x^{-1}, y(x) = \frac{1}{\sqrt{\_C1 - 2\,x}} - 2\,x^{-1}\right\}$$

2.981 ODE No. 981

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{(y(x))^3\,a^3x^3 + 3\,(y(x))^2\,a^2x^2 + 3\,axy(x) + 1 + a^2x}{a^3x^3} = 0}$$

Mathematica: cpu = 0.017502 (sec), leaf count = 49

$$\left\{\left\{y(x) \to -\frac{1}{ax} - \frac{1}{\sqrt{c_1 - 2x}}\right\}, \left\{y(x) \to \frac{1}{\sqrt{c_1 - 2x}} - \frac{1}{ax}\right\}\right\}$$

Maple: cpu = 0.016 (sec), leaf count = 41

$$\left\{y(x) = -\frac{1}{\sqrt{\_C1 - 2\,x}} - \frac{1}{ax}, y(x) = \frac{1}{\sqrt{\_C1 - 2\,x}} - \frac{1}{ax}\right\}$$

2.982 ODE No. 982

$$\frac{\mathrm{d}}{\mathrm{d}x}y(x) = 1/2\,\frac{y(x)\left(2\left(y(x)\right)^2 + 2\,y(x)\,\mathrm{e}^{1/4\,x^2} + 2\left(\mathrm{e}^{1/4\,x^2}\right)^2 + x\left(\mathrm{e}^{1/4\,x^2}\right)^2\right)}{\left(\mathrm{e}^{1/4\,x^2}\right)^2} = 0$$

Mathematica: cpu = 0.104513 (sec), leaf count = 132

$$\text{Solve}\left[-\frac{7}{3}\text{RootSum}\left[-7\#1^3 + 6\sqrt[3]{-7}\#1 - 7\&,\ \frac{\log\left(\frac{3e^{-\frac{x^2}{2}}y(x)+e^{-\frac{x^2}{4}}}{\sqrt[3]{7}\sqrt[3]{-e^{-\frac{3x^2}{4}}}} - \#1\right)}{2\sqrt[3]{-7} - 7\#1^2}\&\right] = c_1 + \frac{1}{9}7^{2/3}e^{\frac{x^2}{2}}\left(-e^{-\frac{3x^2}{4}}\right.$$

Maple: cpu = 0.312 (sec), leaf count = 187

$$\left\{-\frac{2}{3}\ln\left(18\,y(x)\,\mathrm{e}^{-1/2\,x^2}\mathrm{e}^{1/4\,x^2} + 6\,\mathrm{e}^{-1/4\,x^2}\mathrm{e}^{1/4\,x^2} - 6\right) + \frac{1}{3}\ln\left(\frac{324\left(y(x)\right)^2}{7}\left(\mathrm{e}^{-\frac{x^2}{2}}\right)^2\left(\mathrm{e}^{\frac{x^2}{4}}\right)^2 + \frac{216\,y(x)}{7}\mathrm{e}^{-\frac{x^2}{2}}\right.\right.$$

2.983 ODE No. 983

$$\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{\left(y(x)\right)^3 - 3\,x\left(y(x)\right)^2 + 3\,x^2y(x) - x^3 + x^2}{(1+x)\,(x-1)} = 0$$

Mathematica: cpu = 0.255032 (sec), leaf count = 238

$$\text{Solve}\left[\frac{1}{3}\log\left(\frac{\frac{3y(x)}{x^2-1} - \frac{3x}{x^2-1}}{3\sqrt[3]{\frac{1}{(x-1)^3(x+1)^3}}} + 1\right) - \frac{1}{6}\log\left(\frac{\left(\frac{3y(x)}{x^2-1} - \frac{3x}{x^2-1}\right)^2}{9\left(\frac{1}{(x-1)^3(x+1)^3}\right)^{2/3}} - \frac{\frac{3y(x)}{x^2-1} - \frac{3x}{x^2-1}}{3\sqrt[3]{\frac{1}{(x-1)^3(x+1)^3}}} + 1\right) + \frac{\tan^{-1}\left(\frac{\frac{2\left(\frac{3y(x)}{x^2-1}\right.}{3\sqrt[3]{(x-1)^3(x+1)^3}}\right.}{\sqrt{}}\right.\right.$$

Maple: cpu = 0.203 (sec), leaf count = 469

$$\left\{y(x) = \frac{\sqrt{3}}{6}\left(\sqrt[3]{\frac{1}{(1+x)^3\,(x-1)^3}}\sqrt{3}x^2 + 3\sqrt[3]{\frac{1}{(1+x)^3\,(x-1)^3}}\tan\left(\mathit{RootOf}\left(-18\ln(1+x)\left(\frac{1}{(1+x)^3}\right.\right.\right.\right.$$

2.984 ODE No. 984

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{y(x)\left(x^2(y(x))^2 + y(x)\,x\mathrm{e}^x + \left(\mathrm{e}^x\right)^2\right)(x-1)}{x\left(\mathrm{e}^x\right)^2} = 0}$$

Mathematica: cpu = 3.039386 (sec), leaf count = 426

$$\text{Solve}\left[-\frac{\sqrt[3]{2}\left(\frac{3e^{-2x}x(x-1)y(x)+e^{-x}(x-1)}{\sqrt[3]{2}\sqrt[3]{e^{-3x}(x-1)^3}}+2^{2/3}\right)\left(2^{2/3}-\frac{2^{2/3}\left(3e^{-2x}x(x-1)y(x)+e^{-x}(x-1)\right)}{\sqrt[3]{e^{-3x}(x-1)^3}}\right)\left(\left(1-\frac{3e^{-2x}x(x-1)y(x)+e^{-x}}{\sqrt[3]{e^{-3x}(x-1)^3}}\right.\right.}{9\left(-\frac{e^{3x}\left(3e^{-2x}x(x-1)y(x)\right.}{(x-1)^3}\right.}\right.$$

Maple: cpu = 0.203 (sec), leaf count = 40

$$\left\{y(x) = \frac{1}{9\,x}\mathrm{e}^{RootOf\left(-\mathrm{e}^{-Z}\ln\left(\frac{x\left(\mathrm{e}^{-Z}+9\right)}{2}\right)+3\_C1\,\mathrm{e}^{-Z}+\_Z\,\mathrm{e}^{-Z}+x\mathrm{e}^{-Z}+9\right)+x}\right\}$$

2.985 ODE No. 985

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{(xy(x)+1)\left(x^2(y(x))^2 + x^2y(x) + 2\,xy(x) + 1 + x + x^2\right)}{x^5} = 0}$$

Mathematica: cpu = 0.157520 (sec), leaf count = 103

$$\text{Solve}\left[-\frac{17}{3}\text{RootSum}\left[-17\#1^3 + 3\sqrt[3]{-34}\#1 - 17\&,\ \frac{\log\left(\frac{\frac{x+3}{x^3}+\frac{3y(x)}{x^2}}{\sqrt[3]{34}\sqrt[3]{-\frac{1}{x^6}}} - \#1\right)}{\sqrt[3]{-34} - 17\#1^2}\&\right] = c_1 - \frac{1}{9}34^{2/3}\left(-\frac{1}{x^6}\right)^{2/3}\right.$$

Maple: cpu = 0.031 (sec), leaf count = 43

$$\left\{y(x) = \frac{17\,RootOf\left(162\int^{-Z}(289\_a^3 + 54\_a - 54)^{-1}\,d\_a x + 3\,x\_C1 + 2\right)x - 3\,x - 9}{9\,x}\right\}$$

2.986 ODE No. 986

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{(y(x))^3 - 3\,x(y(x))^2\ln(x) + 3\,x^2(\ln(x))^2\,y(x) - x^3(\ln(x))^3 + x^2 + xy(x)}{x^2} = 0}$$

Mathematica: cpu = 0.014502 (sec), leaf count = 44

$$\left\{\left\{y(x) \to x\log(x) - \frac{x}{\sqrt{c_1 - 2x}}\right\}, \left\{y(x) \to \frac{x}{\sqrt{c_1 - 2x}} + x\log(x)\right\}\right\}$$

Maple: cpu = 0.031 (sec), leaf count = 36

$$\left\{y(x) = -x\frac{1}{\sqrt{\_C1 - 2\,x}} + x\ln(x)\,, y(x) = x\frac{1}{\sqrt{\_C1 - 2\,x}} + x\ln(x)\right\}$$

2.987 ODE No. 987

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = -F(x)\left(-ax^2 + (y(x))^2\right) + \frac{y(x)}{x} = 0}$$

Mathematica: cpu = 0.099513 (sec), leaf count = 40

$$\left\{\left\{y(x) \to \sqrt{a}x\tanh\left(\sqrt{a}\int_1^x K[1]F(K[1])\,dK[1] + \sqrt{a}c_1\right)\right\}\right\}$$

Maple: cpu = 0.047 (sec), leaf count = 26

$$\left\{y(x) = \tanh\left(\int F(x)\,x\,\mathrm{d}x\sqrt{a} + \_C1\,\sqrt{a}\right)x\sqrt{a}\right\}$$

2.988 ODE No. 988

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = -F(x)\left(-x^2 - 2\,xy(x) + (y(x))^2\right) + \frac{y(x)}{x} = 0}$$

Mathematica: cpu = 0.365546 (sec), leaf count = 104

$$\left\{\left\{y(x) \to -\frac{x\left(-\exp\left(2\sqrt{2}\left(\int_1^x K[1](-F(K[1]))\,dK[1] + c_1\right)\right) + \sqrt{2}\exp\left(2\sqrt{2}\left(\int_1^x K[1](-F(K[1]))\,dK[1]\right.\right.\right.}{\exp\left(2\sqrt{2}\left(\int_1^x K[1](-F(K[1]))\,dK[1] + c_1\right)\right) + 1}$$

Maple: cpu = 0.031 (sec), leaf count = 29

$$\left\{y(x) = \frac{x\left(\sqrt{2} + 2\,\tanh\left(\left(\int F(x)\,x\,\mathrm{d}x + \_C1\right)\sqrt{2}\right)\right)\sqrt{2}}{2}\right\}$$

2.989 ODE No. 989

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = -F(x)\left(-a(y(x))^2 - bx^2\right) + \frac{y(x)}{x} = 0}$$

Mathematica: cpu = 0.103513 (sec), leaf count = 55

$$\left\{\left\{y(x) \to \frac{\sqrt{b}x\tan\left(\sqrt{a}\sqrt{b}\int_1^x K[1]F(K[1])\,dK[1] + \sqrt{a}\sqrt{b}c_1\right)}{\sqrt{a}}\right\}\right\}$$

Maple: cpu = 0.031 (sec), leaf count = 35

$$\left\{y(x) = \frac{x}{a}\tan\left(\int F(x)\,x\,\mathrm{d}x\sqrt{ab} + \_C1\,\sqrt{ab}\right)\sqrt{ab}\right\}$$

2.990 ODE No. 990

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = -F(x)\left(-(y(x))^2 + 2\,x^2 y(x) + 1 - x^4\right) + 2\,x = 0}$$

Mathematica: cpu = 0.474060 (sec), leaf count = 49

$$\left\{\left\{y(x) \to \frac{e^{\int_1^x 2F(K[5])\,dK[5]}}{c_1 - \frac{1}{2}e^{\text{Integrate}[2F(K[5]),\{K[5],1,x\},\text{Assumptions}\to\text{True}]}} + x^2 + 1\right\}\right\}$$

Maple: cpu = 0.359 (sec), leaf count = 46

$$\left\{y(x) = 1\left(\frac{\_C1\,x^2}{\left(\mathrm{e}^{\int F(x)\,\mathrm{d}x}\right)^2} - x^2 + \frac{\_C1}{\left(\mathrm{e}^{\int F(x)\,\mathrm{d}x}\right)^2} + 1\right)\left(\frac{\_C1}{\left(\mathrm{e}^{\int F(x)\,\mathrm{d}x}\right)^2} - 1\right)^{-1}\right\}$$

2.991 ODE No. 991

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = -F(x)\left(x^2 + 2\,xy(x) - (y(x))^2\right) + \frac{y(x)}{x} = 0}$$

Mathematica: cpu = 0.306539 (sec), leaf count = 101

$$\left\{\left\{y(x) \to -\frac{x\left(-\exp\left(2\sqrt{2}\left(\int_1^x K[1]F(K[1])\,dK[1] + c_1\right)\right) + \sqrt{2}\exp\left(2\sqrt{2}\left(\int_1^x K[1]F(K[1])\,dK[1] + c_1\right)\right)\right.}{\exp\left(2\sqrt{2}\left(\int_1^x K[1]F(K[1])\,dK[1] + c_1\right)\right) + 1}\right.$$

Maple: cpu = 0.031 (sec), leaf count = 31

$$\left\{y(x) = -\frac{x\left(-\sqrt{2} + 2\,\tanh\left(\left(\int F(x)\,x\,\mathrm{d}x + \_C1\right)\sqrt{2}\right)\right)\sqrt{2}}{2}\right\}$$

2.992 ODE No. 992

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = -F(x)\left(-7\,x(y(x))^2 - x^3\right) + \frac{y(x)}{x} = 0}$$

Mathematica: cpu = 0.106513 (sec), leaf count = 42

$$\left\{\left\{y(x) \to \frac{x\tan\left(\sqrt{7}\int_1^x K[1]^2 F(K[1])\,dK[1] + \sqrt{7}c_1\right)}{\sqrt{7}}\right\}\right\}$$

Maple: cpu = 0.031 (sec), leaf count = 25

$$\left\{y(x) = \frac{\tan\left(\left(\int F(x)\,x^2\,\mathrm{d}x + \_C1\right)\sqrt{7}\right)x\sqrt{7}}{7}\right\}$$

2.993 ODE No. 993

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = -F(x)\left(-(y(x))^2 - 2\,y(x)\ln(x) - (\ln(x))^2\right) + \frac{y(x)}{x\ln(x)} = 0}$$

Mathematica: cpu = 5232.495943 (sec), leaf count = 71

$$\left\{\left\{y(x) \to \frac{\int_1^x \frac{F(K[5])}{\sqrt{\frac{1}{\log^2(K[5])}}}\,dK[5] + c_1 - 1}{\sqrt{\frac{1}{\log^2(x)}}\left(\int_1^x \frac{F(K[5])}{\sqrt{\frac{1}{\log^2(K[5])}}}\,dK[5]\right) + c_1\sqrt{\frac{1}{\log^2(x)}}}\right\}\right\}$$

Maple: cpu = 0.016 (sec), leaf count = 35

$$\left\{y(x) = -\frac{\ln(x)\left(\int -2\,\ln(x)\,F(x)\,\mathrm{d}x - \_C1 - 2\right)}{\int -2\,\ln(x)\,F(x)\,\mathrm{d}x - \_C1}\right\}$$

2.994 ODE No. 994

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = -x^3\left(-(y(x))^2 - 2\,y(x)\ln(x) - (\ln(x))^2\right) + \frac{y(x)}{x\ln(x)} = 0}$$

Mathematica: cpu = 0.122515 (sec), leaf count = 198

$$\left\{\left\{y(x) \to -\frac{c_1 e^{\frac{1}{16}x^4(4\log(x)-1)}\left(\frac{x^3}{4} + \frac{1}{4}x^3(4\log(x)-1)\right) + \frac{1}{16}x^4 e^{\frac{1}{16}x^4(4\log(x)-1)}(4\log(x)-1)\left(\frac{x^3}{4} + \frac{1}{4}x^3(4\log(x)-1)\right)}{x^3\left(c_1 e^{\frac{1}{16}x^4(4\log(x)-1)} + \frac{1}{16}x^4 e^{\frac{1}{16}x^4(4\log(x)-1)}\right)}\right.\right.$$

Maple: cpu = 0.031 (sec), leaf count = 43

$$\left\{y(x) = -\frac{\ln(x)\left(4x^4\ln(x) - x^4 + 8\_C1 + 16\right)}{4x^4\ln(x) - x^4 + 8\_C1}\right\}$$

2.995 ODE No. 995

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \left(y(x) - \mathrm{e}^x\right)^2 + \mathrm{e}^x = 0}$$

Mathematica: cpu = 0.017002 (sec), leaf count = 17

$$\left\{\left\{y(x) \to \frac{1}{c_1 - x} + e^x\right\}\right\}$$

Maple: cpu = 0.094 (sec), leaf count = 14

$$\left\{y(x) = \mathrm{e}^x + \left(\_C1 - x\right)^{-1}\right\}$$

2.996 ODE No. 996

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{\left(y(x) - Si(x)\right)^2 + \sin(x)}{x} = 0}$$

Mathematica: cpu = 56.731204 (sec), leaf count = 25

$$\text{DSolve}\left[y'(x) = \frac{(y(x) - \text{Si}(x))^2 + \sin(x)}{x}, y(x), x\right]$$

Maple: cpu = 0.047 (sec), leaf count = 15

$$\left\{y(x) = Si(x) + \left(\_C1 - \ln(x)\right)^{-1}\right\}$$

2.997 ODE No. 997

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \left(y(x) + \cos(x)\right)^2 + \sin(x) = 0}$$

Mathematica: cpu = 0.029004 (sec), leaf count = 18

$$\left\{\left\{y(x) \to \frac{1}{c_1 - x} - \cos(x)\right\}\right\}$$

Maple: cpu = 0.047 (sec), leaf count = 16

$$\left\{y(x) = -\cos(x) + \left(\_C1 - x\right)^{-1}\right\}$$

2.998 ODE No. 998

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{\left(y(x) - \ln\left(x\right) - Ci(x)\right)^2 + \cos\left(x\right)}{x} = 0}$$

Mathematica: cpu = 0.472560 (sec), leaf count = 27

$$\left\{\left\{y(x) \to \frac{x^2}{c_1 - \frac{x^2}{2}} + \mathrm{Ci}(x) + \log(x) + 1\right\}\right\}$$

Maple: cpu = 0.281 (sec), leaf count = 27

$$\left\{y(x) = \ln\left(x\right) + Ci(x) + \frac{-\_C1\, x^2 + 1}{\_C1\, x^2 + 1}\right\}$$

2.999 ODE No. 999

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{\left(y(x) - x + \ln\left(1 + x\right)\right)^2 + x}{1 + x} = 0}$$

Mathematica: cpu = 0.023503 (sec), leaf count = 24

$$\left\{\left\{y(x) \to \frac{1}{c_1 - \log(x + 1)} + x - \log(x + 1)\right\}\right\}$$

Maple: cpu = 0.047 (sec), leaf count = 39

$$\left\{y(x) = -\frac{\left(\ln\left(1 + x\right)\right)^2 + \_C1\, \ln\left(1 + x\right) - x \ln\left(1 + x\right) - x\_C1 + 1}{\ln\left(1 + x\right) + \_C1}\right\}$$

2.1000 ODE No. 1000

$$\boxed{\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{2\, x^2 y(x) + x^3 + y(x) \ln\left(x\right) x - \left(y(x)\right)^2 - x y(x)}{x^2 \left(x + \ln\left(x\right)\right)} = 0}$$

Mathematica: cpu = 0 (sec), leaf count = 0

Hanged

Maple: cpu = 0.109 (sec), leaf count = 19

$$\left\{y(x) = \frac{x(x\_C1 - 1)}{\_C1\, \ln\left(x\right) + 1}\right\}$$

3 Kamke chapter 2. Linear second order

3.1 ODE No. 1001

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) = 0}$$

Mathematica: cpu = 0.003000 (sec), leaf count = 12

$$\{\{y(x) \to c_2 x + c_1\}\}$$

Maple: cpu = 0.0 (sec), leaf count = 9

$$\{y(x) = x\_C1 + \_C2\}$$

3.2 ODE No. 1002

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) + y(x) = 0}$$

Mathematica: cpu = 0.004000 (sec), leaf count = 16

$$\{\{y(x) \to c_2 \sin(x) + c_1 \cos(x)\}\}$$

Maple: cpu = 0.031 (sec), leaf count = 13

$$\{y(x) = \_C1\ \sin(x) + \_C2\ \cos(x)\}$$

3.3 ODE No. 1003

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) + y(x) - \sin(nx) = 0}$$

Mathematica: cpu = 0.115515 (sec), leaf count = 45

$$\left\{\left\{y(x) \to c_2 \sin(x) + c_1 \cos(x) + \frac{\cos^2(x)(-\sin(nx)) - \sin^2(x)\sin(nx)}{n^2 - 1}\right\}\right\}$$

Maple: cpu = 0.032 (sec), leaf count = 26

$$\left\{y(x) = \sin(x)\ \_C2 + \cos(x)\ \_C1 - \frac{\sin(nx)}{n^2 - 1}\right\}$$

3.4 ODE No. 1004

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+y(x)-a\cos\left(bx\right)=0}$$

Mathematica: cpu = 0.097012 (sec), leaf count = 47

$$\left\{\left\{y(x)\to \frac{-a\cos^2(x)\cos(bx)-a\sin^2(x)\cos(bx)}{b^2-1}+c_2\sin(x)+c_1\cos(x)\right\}\right\}$$

Maple: cpu = 0.031 (sec), leaf count = 27

$$\left\{y(x)=\sin\left(x\right)\_C2+\cos\left(x\right)\_C1-\frac{a\cos\left(bx\right)}{b^2-1}\right\}$$

3.5 ODE No. 1005

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+y(x)-\sin\left(ax\right)\sin\left(bx\right)=0}$$

Mathematica: cpu = 0.532068 (sec), leaf count = 1163

$$\left\{\left\{y(x)\to c_1\cos(x)+c_2\sin(x)+\frac{-\cos(x)\cos((a-b-1)x)a^3+\cos(x)\cos((a-b+1)x)a^3+\cos(x)\cos\right.\right.$$

Maple: cpu = 0.047 (sec), leaf count = 82

$$\left\{y(x)=\sin\left(x\right)\_C2+\cos\left(x\right)\_C1+\frac{-(a+b+1)\left(a+b-1\right)\cos\left(x(a-b)\right)+\cos\left(\left(a+b\right)x\right)\left(a-b+1\right)}{2\,a^4+\left(-4\,b^2-4\right)a^2+2\,b^4-4\,b^2+2}\right\}$$

3.6 ODE No. 1006

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)-y(x)=0}$$

Mathematica: cpu = 0.003501 (sec), leaf count = 20

$$\left\{\left\{y(x)\to c_1e^x+c_2e^{-x}\right\}\right\}$$

Maple: cpu = 0.016 (sec), leaf count = 15

$$\left\{y(x)=\_C1\,\mathrm{e}^{-x}+\_C2\,\mathrm{e}^{x}\right\}$$

3.7 ODE No. 1007

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) - 2\,y(x) - 4\,x^2\mathrm{e}^{x^2} = 0}$$

Mathematica: cpu = 0.057007 (sec), leaf count = 135

$$\left\{\left\{y(x) \to c_1 e^{\sqrt{2}x} + c_2 e^{-\sqrt{2}x} + \frac{e^{-\sqrt{2}x}\left(-2e^{x\left(x+\sqrt{2}\right)}x + 2e^{\left(x-\sqrt{2}\right)x+2\sqrt{2}x}x + \sqrt{2}e^{x\left(x+\sqrt{2}\right)} + \sqrt{2}e^{\left(x-\sqrt{2}\right)x+2\sqrt{}\right.}}{2\sqrt{2}}\right.\right.$$

Maple: cpu = 0.016 (sec), leaf count = 26

$$\left\{y(x) = \mathrm{e}^{x\sqrt{2}}\_C2 + \mathrm{e}^{-x\sqrt{2}}\_C1 + \mathrm{e}^{x^2}\right\}$$

3.8 ODE No. 1008

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) + a^2 y(x) - \cot(ax) = 0}$$

Mathematica: cpu = 0 (sec), leaf count = 0

Hanged

Maple: cpu = 0.032 (sec), leaf count = 39

$$\left\{y(x) = \sin(ax)\,\_C2 + \cos(ax)\,\_C1 + \frac{\sin(ax)}{a^2}\ln\left(\frac{\sin(ax)}{\cos(ax)+1}\right)\right\}$$

3.9 ODE No. 1009

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) + l y(x) = 0}$$

Mathematica: cpu = 0.004001 (sec), leaf count = 28

$$\left\{\left\{y(x) \to c_2 \sin\left(\sqrt{l}x\right) + c_1 \cos\left(\sqrt{l}x\right)\right\}\right\}$$

Maple: cpu = 0.016 (sec), leaf count = 21

$$\left\{y(x) = \_C1\ \sin\left(\sqrt{l}x\right) + \_C2\ \cos\left(\sqrt{l}x\right)\right\}$$

3.10 ODE No. 1010

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+(ax+b)\,y(x)=0}$$

Mathematica: cpu = 0.006001 (sec), leaf count = 46

$$\left\{\left\{y(x)\to c_1\mathrm{Ai}\left(\frac{-b-ax}{(-a)^{2/3}}\right)+c_2\mathrm{Bi}\left(\frac{-b-ax}{(-a)^{2/3}}\right)\right\}\right\}$$

Maple: cpu = 0.062 (sec), leaf count = 31

$$\left\{y(x)=\_C1\,\mathrm{Ai}\left(-(ax+b)a^{-\frac{2}{3}}\right)+\_C2\,\mathrm{Bi}\left(-(ax+b)a^{-\frac{2}{3}}\right)\right\}$$

3.11 ODE No. 1011

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)-\left(x^2+1\right)y(x)=0}$$

Mathematica: cpu = 0.006001 (sec), leaf count = 33

$$\left\{\left\{y(x)\to c_1D_{-1}\left(\sqrt{2}x\right)+c_2D_0\left(i\sqrt{2}x\right)\right\}\right\}$$

Maple: cpu = 0.031 (sec), leaf count = 23

$$\left\{y(x)=\_C1\,\mathrm{e}^{\frac{x^2}{2}}+\_C2\,\mathrm{e}^{\frac{x^2}{2}}\mathit{Erf}(x)\right\}$$

3.12 ODE No. 1012

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)-\left(x^2+a\right)y(x)=0}$$

Mathematica: cpu = 0.007501 (sec), leaf count = 47

$$\left\{\left\{y(x)\to c_1D_{\frac{1}{2}(-a-1)}\left(\sqrt{2}x\right)+c_2D_{\frac{a-1}{2}}\left(i\sqrt{2}x\right)\right\}\right\}$$

Maple: cpu = 0.062 (sec), leaf count = 31

$$\left\{y(x)=\_C1\,M_{-\frac{a}{4},\frac{1}{4}}\left(x^2\right)\frac{1}{\sqrt{x}}+\_C2W_{-\frac{a}{4},\frac{1}{4}}\left(x^2\right)\frac{1}{\sqrt{x}}\right\}$$

3.13 ODE No. 1013

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) - \left(a^2x^2 + a\right)y(x) = 0}$$

Mathematica: cpu = 0.019502 (sec), leaf count = 43

$$\left\{\left\{y(x) \to c_1 D_{-1}\left(\sqrt{2}\sqrt{a}x\right) + c_2 D_0\left(i\sqrt{2}\sqrt{a}x\right)\right\}\right\}$$

Maple: cpu = 0.031 (sec), leaf count = 29

$$\left\{y(x) = \_C1\, \mathrm{e}^{\frac{ax^2}{2}} + \_C2\, \mathrm{e}^{\frac{ax^2}{2}}\, Erf\left(\sqrt{a}x\right)\right\}$$

3.14 ODE No. 1014

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) - cx^a y(x) = 0}$$

Mathematica: cpu = 0.029004 (sec), leaf count = 170

$$\left\{\left\{y(x) \to (a+2)^{-\frac{1}{a+2}} c_1 c^{\frac{1}{2(a+2)}} x^{\frac{\frac{a}{2}+1}{a+2}} \Gamma\left(1 - \frac{1}{a+2}\right) I_{-\frac{1}{a+2}}\left(\frac{2\sqrt{c}x^{\frac{a+2}{2}}}{a+2}\right) + (-1)^{\frac{1}{a+2}}(a+2)^{-\frac{1}{a+2}} c_2 c^{\frac{1}{2(a+2)}} x^{1-}\right.\right.$$

Maple: cpu = 0.078 (sec), leaf count = 65

$$\left\{y(x) = \_C1\, \sqrt{x} J_{(a+2)^{-1}}\left(2\,\frac{\sqrt{-c}x^{a/2+1}}{a+2}\right) + \_C2\, \sqrt{x} Y_{(a+2)^{-1}}\left(2\,\frac{\sqrt{-c}x^{a/2+1}}{a+2}\right)\right\}$$

3.15 ODE No. 1015

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) - \left(a^2x^{2\,n} - 1\right)y(x) = 0}$$

Mathematica: cpu = 0.344544 (sec), leaf count = 26

$$\text{DSolve}\left[y(x)\left(1 - a^2x^{2n}\right) + y''(x) = 0, y(x), x\right]$$

Maple: cpu = 0.156 (sec), leaf count = 31

$$\left\{y(x) = DESol\left(\left\{\frac{\mathrm{d}^2}{\mathrm{d}x^2}\_Y(x) + \left(-a^2x^{2\,n} + 1\right)\_Y(x)\right\}, \{\_Y(x)\}\right)\right\}$$

3.16 ODE No. 1016

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+\left(ax^{2\,c}+bx^{c-1}\right)y(x)=0}$$

Mathematica: cpu = 0.126016 (sec), leaf count = 312

$$\left\{\left\{y(x)\to 2^{\frac{c}{2(c+1)}}c_1\left(x^{c+1}\right)^{\frac{c}{2(c+1)}}x^{-c/2}e^{-\frac{\sqrt{a}x^{c+1}}{\sqrt{-c^2-2c-1}}}U\left(\frac{\frac{\sqrt{a}cb}{\sqrt{-(c+1)^2}}+\frac{\sqrt{a}b}{\sqrt{-(c+1)^2}}+ac}{2(ca+a)},\frac{c}{c+1},\frac{2\sqrt{a}x^{c+1}}{\sqrt{-c^2-2c-1}}\right)+\right.\right.$$

Maple: cpu = 0.141 (sec), leaf count = 95

$$\left\{y(x)=\_C1\,x^{-\frac{c}{2}}M_{\frac{-ib}{2\,c+2}\,\frac{1}{\sqrt{a}},(2\,c+2)^{-1}}\left(\frac{2\,ix^{c+1}}{c+1}\sqrt{a}\right)+\_C2\,x^{-\frac{c}{2}}W_{\frac{-ib}{2\,c+2}\,\frac{1}{\sqrt{a}},(2\,c+2)^{-1}}\left(\frac{2\,ix^{c+1}}{c+1}\sqrt{a}\right)\right\}$$

3.17 ODE No. 1017

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+\left(\mathrm{e}^{2\,x}-v^2\right)y(x)=0}$$

Mathematica: cpu = 0.027504 (sec), leaf count = 46

$$\left\{\left\{y(x)\to c_1\Gamma(1-v)J_{-v}\left(\sqrt{e^{2x}}\right)+c_2\Gamma(v+1)J_v\left(\sqrt{e^{2x}}\right)\right\}\right\}$$

Maple: cpu = 0.063 (sec), leaf count = 17

$$\{y(x)=\_C1\,J_v(\mathrm{e}^x)+\_C2\,Y_v(\mathrm{e}^x)\}$$

3.18 ODE No. 1018

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+a\mathrm{e}^{bx}y(x)=0}$$

Mathematica: cpu = 0.021503 (sec), leaf count = 55

$$\left\{\left\{y(x)\to c_1J_0\left(\frac{2\sqrt{a}\sqrt{e^{bx}}}{b}\right)+2c_2Y_0\left(\frac{2\sqrt{a}\sqrt{e^{bx}}}{b}\right)\right\}\right\}$$

Maple: cpu = 0.047 (sec), leaf count = 39

$$\left\{y(x)=\_C1\,J_0\left(2\,\frac{\sqrt{a}\mathrm{e}^{1/2\,bx}}{b}\right)+\_C2\,Y_0\left(2\,\frac{\sqrt{a}\mathrm{e}^{1/2\,bx}}{b}\right)\right\}$$

3.19 ODE No. 1019

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)-\left(4\,a^2b^2x^2\mathrm{e}^{2\,bx^2}-1\right)y(x)=0}$$

Mathematica: cpu = 0.780099 (sec), leaf count = 35

$$\text{DSolve}\left[y(x)\left(1-4a^2b^2x^2e^{2bx^2}\right)+y''(x)=0,y(x),x\right]$$

Maple: cpu = 0.531 (sec), leaf count = 39

$$\left\{y(x)=DESol\left(\left\{\frac{\mathrm{d}^2}{\mathrm{d}x^2}\_Y(x)+\left(-4\,a^2b^2x^2\mathrm{e}^{2\,bx^2}+1\right)\_Y(x)\right\},\{\_Y(x)\}\right)\right\}$$

3.20 ODE No. 1020

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+\left(a\mathrm{e}^{2\,x}+b\mathrm{e}^{x}+c\right)y(x)=0}$$

Mathematica: cpu = 0.680586 (sec), leaf count = 180

$$\left\{\left\{y(x)\to c_1e^{i\left(\sqrt{c}\log\left(e^x\right)-\sqrt{a}e^x\right)}U\left(\frac{i\left(b-i\sqrt{a}+2\sqrt{a}\sqrt{c}\right)}{2\sqrt{a}},2i\sqrt{c}+1,2i\sqrt{a}e^x\right)+c_2e^{i\left(\sqrt{c}\log\left(e^x\right)-\sqrt{a}e^x\right)}L^{2i\sqrt{c}}_{-\frac{i\left(2\sqrt{a}\sqrt{}\right.}}\right.\right.$$

Maple: cpu = 0.141 (sec), leaf count = 61

$$\left\{y(x)=\_C1\,\mathrm{e}^{-\frac{x}{2}}M_{-\frac{i}{2}b\frac{1}{\sqrt{a}},i\sqrt{c}}\left(2\,i\sqrt{a}\mathrm{e}^{x}\right)+\_C2\,\mathrm{e}^{-\frac{x}{2}}W_{-\frac{i}{2}b\frac{1}{\sqrt{a}},i\sqrt{c}}\left(2\,i\sqrt{a}\mathrm{e}^{x}\right)\right\}$$

3.21 ODE No. 1021

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+\left(a(\cosh\left(x\right))^2+b\right)y(x)=0}$$

Mathematica: cpu = 0.053507 (sec), leaf count = 44

$$\left\{\left\{y(x)\to c_1\text{MathieuC}\left[\frac{1}{2}(a+2b),-\frac{a}{4},x\right]+c_2\text{MathieuS}\left[\frac{1}{2}(a+2b),-\frac{a}{4},x\right]\right\}\right\}$$

Maple: cpu = 0.140 (sec), leaf count = 39

$$\left\{y(x)=\_C1\,MathieuC\left(-\frac{a}{2}-b,\frac{a}{4},ix\right)+\_C2\,MathieuS\left(-\frac{a}{2}-b,\frac{a}{4},ix\right)\right\}$$

3.22 ODE No. 1022

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+\left(a\cos\left(2\,x\right)+b\right)y(x)=0}$$

Mathematica: cpu = 0.027003 (sec), leaf count = 28

$$\left\{\left\{y(x)\to c_1\text{MathieuC}\left[b,-\frac{a}{2},x\right]+c_2\text{MathieuS}\left[b,-\frac{a}{2},x\right]\right\}\right\}$$

Maple: cpu = 0.156 (sec), leaf count = 21

$$\left\{y(x)=\_C1\ MathieuC\left(b,-\frac{a}{2},x\right)+\_C2\ MathieuS\left(b,-\frac{a}{2},x\right)\right\}$$

3.23 ODE No. 1023

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+\left(a(\cos\left(x\right))^2+b\right)y(x)=0}$$

Mathematica: cpu = 0.014502 (sec), leaf count = 44

$$\left\{\left\{y(x)\to c_1\text{MathieuC}\left[\frac{1}{2}(a+2b),-\frac{a}{4},x\right]+c_2\text{MathieuS}\left[\frac{1}{2}(a+2b),-\frac{a}{4},x\right]\right\}\right\}$$

Maple: cpu = 0.141 (sec), leaf count = 29

$$\left\{y(x)=\_C1\ MathieuC\left(\frac{a}{2}+b,-\frac{a}{4},x\right)+\_C2\ MathieuS\left(\frac{a}{2}+b,-\frac{a}{4},x\right)\right\}$$

3.24 ODE No. 1024

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)-\left(1+2\left(\tan\left(x\right)\right)^2\right)y(x)=0}$$

Mathematica: cpu = 0.162021 (sec), leaf count = 84

$$\left\{\left\{y(x)\to\frac{c_1\sqrt[4]{1-\cos^2(x)}\sec(x)}{\sqrt[4]{\cos^2(x)-1}}-\frac{c_2\sqrt[4]{1-\cos^2(x)}\sec(x)\left(\cos(x)\sqrt{1-\cos^2(x)}-\sin^{-1}(\cos(x))\right)}{2\sqrt[4]{\cos^2(x)-1}}\right\}\right\}$$

Maple: cpu = 0.109 (sec), leaf count = 34

$$\left\{y(x)=\frac{\_C1}{\cos\left(x\right)}+\frac{\_C2\left(i\cos\left(x\right)\sin\left(x\right)+\ln\left(\cos\left(x\right)+i\sin\left(x\right)\right)\right)}{\cos\left(x\right)}\right\}$$

3.25 ODE No. 1025

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)-\left(\frac{m(m-1)}{(\cos(x))^2}+\frac{n(n-1)}{(\sin(x))^2}+a\right)y(x)=0}$$

Mathematica: cpu = 0.954121 (sec), leaf count = 615

$$\left\{\left\{y(x)\to \frac{c_2(-1)^{\frac{1}{2}(-2m-1)+1}\cos^2(x)^{\frac{1}{4}(-2m-1)+1}\left(\cos^2(x)-1\right)^{\frac{1}{2}\left(\frac{4am+4\sqrt{-a}n^2+4an-4\sqrt{-a}n+4(-a)^{3/2}+8\sqrt{-a}a+\sqrt{-a}+4mn}{8a+8n^2-8n+2}\right.}}{\right.\right.$$

Maple: cpu = 0.140 (sec), leaf count = 105

$$\left\{y(x)=\_C1\,(\cos(x))^m\,(\sin(x))^n\,{}_2\mathrm{F}_1(\frac{n}{2}+\frac{m}{2}+\frac{i}{2}\sqrt{a},\frac{n}{2}+\frac{m}{2}-\frac{i}{2}\sqrt{a};\,\frac{1}{2}+m;\,(\cos(x))^2)+\_C2\,(\cos(x\right.$$

3.26 ODE No. 1026

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)-\left(n(n+1)\,\mathit{WeierstrassP}(x,g2,g3)+B\right)y(x)=0}$$

Mathematica: cpu = 0.184023 (sec), leaf count = 27

$$\text{DSolve}[y''(x)-y(x)(B+n(n+1)\wp(x;\text{g2},\text{g3}))=0,y(x),x]$$

Maple: cpu = 0.280 (sec), leaf count = 33

$$\left\{y(x)=\mathit{DESol}\left(\left\{\frac{\mathrm{d}^2}{\mathrm{d}x^2}\_Y(x)+\left(-n(n+1)\,\mathit{WeierstrassP}(x,g2,g3)-B\right)\_Y(x)\right\},\{\_Y(x)\}\right)\right\}$$

3.27 ODE No. 1027

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)-\left(n(n+1)\,k^2(\mathit{JacobiSN}(x,k))^2+b\right)y(x)=0}$$

Mathematica: cpu = 0.995126 (sec), leaf count = 23

$$\text{DSolve}\left[y(x)\left(a\text{sn}(x|k)^2+b\right)+y''(x)=0,y(x),x\right]$$

Maple: cpu = 0.265 (sec), leaf count = 69

$$\left\{y(x)=\_C1\,\mathit{HeunG}\left(k^{-2},\frac{b}{4\,k^2},-\frac{n}{2},\frac{n}{2}+\frac{1}{2},\frac{1}{2},\frac{1}{2},(\mathit{JacobiSN}(x,k))^2\right)+\_C2\,\mathit{HeunG}\left(k^{-2},\frac{k^2+b+1}{4\,k^2},\right.\right.$$

3.28 ODE No. 1028

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) - \left(1/30\,\frac{\mathrm{d}^4}{\mathrm{d}x^4}p(x) + 7/3\,\frac{\mathrm{d}^2}{\mathrm{d}x^2}p(x) + ap(x) + b\right)y(x) = 0}$$

Mathematica: cpu = 0.258033 (sec), leaf count = 37

$$\text{DSolve}\left[y''(x) - y(x)\left(ap(x) + b + \frac{p^4(x)}{30} + \frac{7p''(x)}{3}\right) = 0, y(x), x\right]$$

Maple: cpu = 0.172 (sec), leaf count = 48

$$\left\{y(x) = \mathit{DESol}\left(\left\{\frac{\mathrm{d}^2}{\mathrm{d}x^2}\_Y(x) + \left(-\frac{\frac{\mathrm{d}^4}{\mathrm{d}x^4}p(x)}{30} - \frac{7\,\frac{\mathrm{d}^2}{\mathrm{d}x^2}p(x)}{3} - ap(x) - b\right)\_Y(x)\right\}, \{\_Y(x)\}\right)\right\}$$

3.29 ODE No. 1029

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) - \left(\left(f(x)\right)^2 + \frac{\mathrm{d}}{\mathrm{d}x}f(x)\right)y(x) = 0}$$

Mathematica: cpu = 0.177022 (sec), leaf count = 24

$$\text{DSolve}\left[y''(x) - y(x)\left(f'(x) + f(x)^2\right) = 0, y(x), x\right]$$

Maple: cpu = 0.125 (sec), leaf count = 22

$$\left\{y(x) = \left(\int \mathrm{e}^{\int -2\,f(x)\,\mathrm{d}x}\,\mathrm{d}x + \_C1\right)\mathrm{e}^{\int f(x)\,\mathrm{d}x}\_C2\right\}$$

3.30 ODE No. 1030

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) + \left(P(x) + l\right)y(x) = 0}$$

Mathematica: cpu = 0.157020 (sec), leaf count = 18

$$\text{DSolve}[y(x)(l + P(x)) + y''(x) = 0, y(x), x]$$

Maple: cpu = 0.0 (sec), leaf count = 23

$$\left\{y(x) = \mathit{DESol}\left(\left\{\left(P(x) + l\right)\_Y(x) + \frac{\mathrm{d}^2}{\mathrm{d}x^2}\_Y(x)\right\}, \{\_Y(x)\}\right)\right\}$$

3.31 ODE No. 1031

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) - f(x)\,y(x) = 0}$$

Mathematica: cpu = 0.126516 (sec), leaf count = 17

$$\text{DSolve}[y''(x) - f(x)y(x) = 0, y(x), x]$$

Maple: cpu = 0.0 (sec), leaf count = 22

$$\left\{y(x) = DESol\left(\left\{-f(x)\_Y(x) + \frac{\mathrm{d}^2}{\mathrm{d}x^2}\_Y(x)\right\}, \{\_Y(x)\}\right)\right\}$$

3.32 ODE No. 1032

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) + \left(1/2\,\frac{\frac{\mathrm{d}^3}{\mathrm{d}x^3}g(x)}{\frac{\mathrm{d}}{\mathrm{d}x}g\left(x\right)} - 3/4\,\frac{\left(\frac{\mathrm{d}^2}{\mathrm{d}x^2}g(x)\right)^2}{\left(\frac{\mathrm{d}}{\mathrm{d}x}g\left(x\right)\right)^2} + \frac{\left(1/4 - v^2\right)\left(\frac{\mathrm{d}}{\mathrm{d}x}g(x)\right)^2}{g\left(x\right)} + \left(\frac{\mathrm{d}}{\mathrm{d}x}g(x)\right)^2\right)y(x) = 0}$$

Mathematica: cpu = 0.478061 (sec), leaf count = 71

$$\text{DSolve}\left[y(x)\left(\frac{\left(\frac{1}{4} - v^2\right)g'(x)^2}{g(x)} + g'(x)^2 + \frac{g^3(x)}{2g'(x)} - \frac{3g''(x)^2}{4g'(x)^2}\right) + y''(x) = 0, y(x), x\right]$$

Maple: cpu = 0.156 (sec), leaf count = 53

$$\left\{y(x) = \_C1\,M_{\frac{i}{2}v^2 - \frac{i}{8}, \frac{1}{2}}(2\,ig(x))\frac{1}{\sqrt{\frac{\mathrm{d}}{\mathrm{d}x}g\left(x\right)}} + \_C2W_{\frac{i}{2}v^2 - \frac{i}{8}, \frac{1}{2}}(2\,ig(x))\frac{1}{\sqrt{\frac{\mathrm{d}}{\mathrm{d}x}g\left(x\right)}}\right\}$$

3.33 ODE No. 1033

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) + \frac{\mathrm{d}}{\mathrm{d}x}y(x) + a\mathrm{e}^{-2\,x}y(x) = 0}$$

Mathematica: cpu = 0.016502 (sec), leaf count = 37

$$\left\{\left\{y(x) \to c_1 \cos\left(\sqrt{a}e^{-x}\right) - c_2 \sin\left(\sqrt{a}e^{-x}\right)\right\}\right\}$$

Maple: cpu = 0.032 (sec), leaf count = 27

$$\left\{y(x) = \_C1\ \sin\left(\mathrm{e}^{-x}\sqrt{a}\right) + \_C2\ \cos\left(\mathrm{e}^{-x}\sqrt{a}\right)\right\}$$

3.34 ODE No. 1034

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) - \frac{\mathrm{d}}{\mathrm{d}x}y(x) + \mathrm{e}^{2\,x}y(x) = 0}$$

Mathematica: cpu = 0.011001 (sec), leaf count = 20

$$\{\{y(x) \to c_2 \sin\left(e^x\right) + c_1 \cos\left(e^x\right)\}\}$$

Maple: cpu = 0.015 (sec), leaf count = 15

$$\{y(x) = \_C1\ \sin\left(\mathrm{e}^x\right) + \_C2\ \cos\left(\mathrm{e}^x\right)\}$$

3.35 ODE No. 1035

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) + a\frac{\mathrm{d}}{\mathrm{d}x}y(x) + by(x) = 0}$$

Mathematica: cpu = 0.004501 (sec), leaf count = 58

$$\left\{\left\{y(x) \to c_1 e^{\frac{1}{2}x\left(-\sqrt{a^2-4b}-a\right)} + c_2 e^{\frac{1}{2}x\left(\sqrt{a^2-4b}-a\right)}\right\}\right\}$$

Maple: cpu = 0.0 (sec), leaf count = 45

$$\left\{y(x) = \_C1\ \mathrm{e}^{\left(-\frac{a}{2}+\frac{1}{2}\sqrt{a^2-4\,b}\right)x} + \_C2\ \mathrm{e}^{\left(-\frac{a}{2}-\frac{1}{2}\sqrt{a^2-4\,b}\right)x}\right\}$$

3.36 ODE No. 1036

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) + a\frac{\mathrm{d}}{\mathrm{d}x}y(x) + by(x) - f(x) = 0}$$

Mathematica: cpu = 0 (sec), leaf count = 0

Hanged

Maple: cpu = 0.078 (sec), leaf count = 128

$$\left\{y(x) = \mathrm{e}^{\left(-\frac{a}{2}+\frac{1}{2}\sqrt{a^2-4\,b}\right)x}\_C2 + \mathrm{e}^{\left(-\frac{a}{2}-\frac{1}{2}\sqrt{a^2-4\,b}\right)x}\_C1 + 1\left(\int f(x)\,\mathrm{e}^{-\frac{x}{2}\left(-a+\sqrt{a^2-4\,b}\right)}\,\mathrm{d}x\mathrm{e}^{x\sqrt{a^2-4\,b}} - \int f(x)\,\mathrm{e}\right.$$

3.37 ODE No. 1037

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+a\frac{\mathrm{d}}{\mathrm{d}x}y(x)-\left(b^2x^2+c\right)y(x)=0}$$

Mathematica: cpu = 0.029504 (sec), leaf count = 101

$$\left\{\left\{y(x)\to c_1e^{-\frac{ax}{2}-\frac{bx^2}{2}}H_{\frac{-a^2-4b-4c}{8b}}\left(\sqrt{b}x\right)+c_2e^{-\frac{ax}{2}-\frac{bx^2}{2}}\,{}_1F_1\left(-\frac{-a^2-4b-4c}{16b};\frac{1}{2};bx^2\right)\right\}\right\}$$

Maple: cpu = 0.078 (sec), leaf count = 73

$$\left\{y(x)=\_C1\,M\left(\frac{a^2+12\,b+4\,c}{16\,b},\frac{3}{2},bx^2\right)x\mathrm{e}^{-\frac{x(bx+a)}{2}}+\_C2\,U\left(\frac{a^2+12\,b+4\,c}{16\,b},\frac{3}{2},bx^2\right)x\mathrm{e}^{-\frac{x(bx+a)}{2}}\right\}$$

3.38 ODE No. 1038

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+2\,a\frac{\mathrm{d}}{\mathrm{d}x}y(x)+f(x)\,y(x)=0}$$

Mathematica: cpu = 0.329542 (sec), leaf count = 23

$$\text{DSolve}[2ay'(x)+f(x)y(x)+y''(x)=0,y(x),x]$$

Maple: cpu = 0.0 (sec), leaf count = 28

$$\left\{y(x)=DESol\left(\left\{f(x)\_Y(x)+2\,a\frac{\mathrm{d}}{\mathrm{d}x}\_Y(x)+\frac{\mathrm{d}^2}{\mathrm{d}x^2}\_Y(x)\right\},\{\_Y(x)\}\right)\right\}$$

3.39 ODE No. 1039

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+x\frac{\mathrm{d}}{\mathrm{d}x}y(x)+y(x)=0}$$

Mathematica: cpu = 0.011501 (sec), leaf count = 47

$$\left\{\left\{y(x)\to\sqrt{\frac{\pi}{2}}c_1e^{-\frac{x^2}{2}}\text{erfi}\left(\frac{x}{\sqrt{2}}\right)+c_2e^{-\frac{x^2}{2}}\right\}\right\}$$

Maple: cpu = 0.015 (sec), leaf count = 33

$$\left\{y(x)=Erf\left(\frac{i}{2}\sqrt{2}x\right)\_C1\left(\mathrm{e}^{\frac{x^2}{2}}\right)^{-1}+\_C2\left(\mathrm{e}^{\frac{x^2}{2}}\right)^{-1}\right\}$$

3.40 ODE No. 1040

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+x\frac{\mathrm{d}}{\mathrm{d}x}y(x)-y(x)=0}$$

Mathematica: cpu = 0.030004 (sec), leaf count = 53

$$\left\{\left\{y(x)\to c_1 x-\frac{1}{2}c_2 e^{-\frac{x^2}{2}}\left(\sqrt{2\pi}e^{\frac{x^2}{2}}x\text{erf}\left(\frac{x}{\sqrt{2}}\right)+2\right)\right\}\right\}$$

Maple: cpu = 0.031 (sec), leaf count = 34

$$\left\{y(x)=x\_C1+\_C2\left(\pi\, Erf\left(\frac{x\sqrt{2}}{2}\right)x+\sqrt{2}\sqrt{\pi}\mathrm{e}^{-\frac{x^2}{2}}\right)\right\}$$

3.41 ODE No. 1041

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+x\frac{\mathrm{d}}{\mathrm{d}x}y(x)+(n+1)\,y(x)=0}$$

Mathematica: cpu = 0.008501 (sec), leaf count = 55

$$\left\{\left\{y(x)\to c_1 e^{-\frac{x^2}{2}}H_n\left(\frac{x}{\sqrt{2}}\right)+c_2 e^{-\frac{x^2}{2}}\,{}_1F_1\left(-\frac{n}{2};\frac{1}{2};\frac{x^2}{2}\right)\right\}\right\}$$

Maple: cpu = 0.062 (sec), leaf count = 47

$$\left\{y(x)=\_C1\,\mathrm{e}^{-\frac{x^2}{2}}M\left(-\frac{n}{2}+\frac{1}{2},\frac{3}{2},\frac{x^2}{2}\right)x+\_C2\,\mathrm{e}^{-\frac{x^2}{2}}U\left(-\frac{n}{2}+\frac{1}{2},\frac{3}{2},\frac{x^2}{2}\right)x\right\}$$

3.42 ODE No. 1042

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+x\frac{\mathrm{d}}{\mathrm{d}x}y(x)-ny(x)=0}$$

Mathematica: cpu = 0.008001 (sec), leaf count = 61

$$\left\{\left\{y(x)\to c_1 e^{-\frac{x^2}{2}}H_{-n-1}\left(\frac{x}{\sqrt{2}}\right)+c_2 e^{-\frac{x^2}{2}}\,{}_1F_1\left(\frac{n+1}{2};\frac{1}{2};\frac{x^2}{2}\right)\right\}\right\}$$

Maple: cpu = 0.046 (sec), leaf count = 47

$$\left\{y(x)=\_C1\,\mathrm{e}^{-\frac{x^2}{2}}M\left(\frac{n}{2}+1,\frac{3}{2},\frac{x^2}{2}\right)x+\_C2\,\mathrm{e}^{-\frac{x^2}{2}}U\left(\frac{n}{2}+1,\frac{3}{2},\frac{x^2}{2}\right)x\right\}$$

3.43 ODE No. 1043

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) - x\frac{\mathrm{d}}{\mathrm{d}x}y(x) + 2\,y(x) = 0}$$

Mathematica: cpu = 0.044506 (sec), leaf count = 69

$$\left\{\left\{y(x) \to \frac{1}{4}c_2\left(\sqrt{2\pi}x^2\operatorname{erfi}\left(\frac{x}{\sqrt{2}}\right) - \sqrt{2\pi}\operatorname{erfi}\left(\frac{x}{\sqrt{2}}\right) - 2e^{\frac{x^2}{2}}x\right) + c_1\left(x^2-1\right)\right\}\right\}$$

Maple: cpu = 0.140 (sec), leaf count = 44

$$\left\{y(x) = \_C1\left(-2\,x\mathrm{e}^{1/2\,x^2} + erfi\left(\frac{x\sqrt{2}}{2}\right)\sqrt{\pi}\sqrt{2}(x-1)\,(1+x)\right) + \_C2\,\left(x^2-1\right)\right\}$$

3.44 ODE No. 1044

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) - x\frac{\mathrm{d}}{\mathrm{d}x}y(x) - ay(x) = 0}$$

Mathematica: cpu = 0.008001 (sec), leaf count = 39

$$\left\{\left\{y(x) \to c_1 H_{-a}\left(\frac{x}{\sqrt{2}}\right) + c_2\,{}_1F_1\left(\frac{a}{2};\frac{1}{2};\frac{x^2}{2}\right)\right\}\right\}$$

Maple: cpu = 0.062 (sec), leaf count = 35

$$\left\{y(x) = \_C1\,M\left(\frac{1}{2}+\frac{a}{2},\frac{3}{2},\frac{x^2}{2}\right)x + \_C2\,U\left(\frac{1}{2}+\frac{a}{2},\frac{3}{2},\frac{x^2}{2}\right)x\right\}$$

3.45 ODE No. 1045

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) - x\frac{\mathrm{d}}{\mathrm{d}x}y(x) + (x-1)\,y(x) = 0}$$

Mathematica: cpu = 0.021003 (sec), leaf count = 39

$$\left\{\left\{y(x) \to \sqrt{\frac{\pi}{2}}c_2 e^{x-2}\operatorname{erfi}\left(\frac{x-2}{\sqrt{2}}\right) + c_1 e^x\right\}\right\}$$

Maple: cpu = 0.016 (sec), leaf count = 28

$$\left\{y(x) = Erf\left(\frac{i}{2}\sqrt{2}x - i\sqrt{2}\right)\mathrm{e}^x\_C1 + \_C2\,\mathrm{e}^x\right\}$$

3.46 ODE No. 1046

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) - 2\,x\frac{\mathrm{d}}{\mathrm{d}x}y(x) + a y(x) = 0}$$

Mathematica: cpu = 0.006501 (sec), leaf count = 31

$$\left\{\left\{y(x) \to c_1 H_{\frac{a}{2}}(x) + c_2\,{}_1F_1\left(-\frac{a}{4};\frac{1}{2};x^2\right)\right\}\right\}$$

Maple: cpu = 0.063 (sec), leaf count = 31

$$\left\{y(x) = \_C1\,M\left(\frac{1}{2} - \frac{a}{4},\,\frac{3}{2},\,x^2\right)x + \_C2\,U\left(\frac{1}{2} - \frac{a}{4},\,\frac{3}{2},\,x^2\right)x\right\}$$

3.47 ODE No. 1047

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) + 4\,x\frac{\mathrm{d}}{\mathrm{d}x}y(x) + \left(4\,x^2 + 2\right)y(x) = 0}$$

Mathematica: cpu = 0.013502 (sec), leaf count = 27

$$\left\{\left\{y(x) \to c_1 e^{-x^2} + c_2 e^{-x^2} x\right\}\right\}$$

Maple: cpu = 0.031 (sec), leaf count = 22

$$\left\{y(x) = \_C1\,\mathrm{e}^{-x^2} + \_C2\,x\mathrm{e}^{-x^2}\right\}$$

3.48 ODE No. 1048

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) - 4\,x\frac{\mathrm{d}}{\mathrm{d}x}y(x) + \left(3\,x^2 + 2\,n - 1\right)y(x) = 0}$$

Mathematica: cpu = 0.010001 (sec), leaf count = 45

$$\left\{\left\{y(x) \to c_1 e^{\frac{x^2}{2}} H_n(x) + c_2 e^{\frac{x^2}{2}}\,{}_1F_1\left(-\frac{n}{2};\frac{1}{2};x^2\right)\right\}\right\}$$

Maple: cpu = 0.063 (sec), leaf count = 43

$$\left\{y(x) = \_C1\,\mathrm{e}^{\frac{x^2}{2}} M\left(-\frac{n}{2} + \frac{1}{2},\,\frac{3}{2},\,x^2\right)x + \_C2\,\mathrm{e}^{\frac{x^2}{2}} U\left(-\frac{n}{2} + \frac{1}{2},\,\frac{3}{2},\,x^2\right)x\right\}$$

3.49 ODE No. 1049

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) - 4\,x\frac{\mathrm{d}}{\mathrm{d}x}y(x) + \left(4\,x^2 - 1\right)y(x) - \mathrm{e}^{x} = 0}$$

Mathematica: cpu = 0 (sec), leaf count = 0

Hanged

Maple: cpu = 0.125 (sec), leaf count = 70

$$\left\{y(x) = \mathrm{e}^{x^2}\cos\left(x\right)\_C2 + \mathrm{e}^{x^2}\sin\left(x\right)\_C1 - \frac{\mathrm{e}^{x^2}\left(-\mathrm{e}^{\frac{i}{2}}\left(i\cos\left(x\right) + \sin\left(x\right)\right)Erf\left(x - \frac{1}{2} - \frac{i}{2}\right) + \left(i\cos\left(x\right) - s\right.\right.\right.$$

3.50 ODE No. 1050

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) - 4\,x\frac{\mathrm{d}}{\mathrm{d}x}y(x) + \left(4\,x^2 - 2\right)y(x) = 0}$$

Mathematica: cpu = 0.012002 (sec), leaf count = 23

$$\left\{\left\{y(x) \to c_1 e^{x^2} + c_2 e^{x^2} x\right\}\right\}$$

Maple: cpu = 0.016 (sec), leaf count = 18

$$\left\{y(x) = \mathrm{e}^{x^2}\_C1 + \_C2\,\mathrm{e}^{x^2}x\right\}$$

3.51 ODE No. 1051

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) - 4\,x\frac{\mathrm{d}}{\mathrm{d}x}y(x) + \left(4\,x^2 - 3\right)y(x) - \mathrm{e}^{x^2} = 0}$$

Mathematica: cpu = 0.030004 (sec), leaf count = 44

$$\left\{\left\{y(x) \to c_1 e^{(x-1)x} + \frac{1}{2}c_2 e^{(x-1)x+2x} - e^{(x-1)x+x}\right\}\right\}$$

Maple: cpu = 0.032 (sec), leaf count = 27

$$\left\{y(x) = \mathrm{e}^{x(1+x)}\_C2 + \mathrm{e}^{x(x-1)}\_C1 - \mathrm{e}^{x^2}\right\}$$

3.52 ODE No. 1052

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+ax\frac{\mathrm{d}}{\mathrm{d}x}y(x)+by(x)=0}$$

Mathematica: cpu = 0.020503 (sec), leaf count = 78

$$\left\{\left\{y(x)\to c_1e^{-\frac{ax^2}{2}}H_{\frac{b-a}{a}}\left(\frac{\sqrt{a}x}{\sqrt{2}}\right)+c_2e^{-\frac{ax^2}{2}}\,{}_1F_1\left(-\frac{b-a}{2a};\frac{1}{2};\frac{ax^2}{2}\right)\right\}\right\}$$

Maple: cpu = 0.063 (sec), leaf count = 65

$$\left\{y(x)=\_C1\,\mathrm{e}^{-\frac{ax^2}{2}}M\left(\frac{2\,a-b}{2\,a},\frac{3}{2},\frac{ax^2}{2}\right)x+\_C2\,\mathrm{e}^{-\frac{ax^2}{2}}U\left(\frac{2\,a-b}{2\,a},\frac{3}{2},\frac{ax^2}{2}\right)x\right\}$$

3.53 ODE No. 1053

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+2\,ax\frac{\mathrm{d}}{\mathrm{d}x}y(x)+a^2x^2y(x)=0}$$

Mathematica: cpu = 0.029004 (sec), leaf count = 57

$$\left\{\left\{y(x)\to c_1e^{-\frac{ax^2}{2}-\sqrt{a}x}+\frac{c_2e^{\sqrt{a}x-\frac{ax^2}{2}}}{2\sqrt{a}}\right\}\right\}$$

Maple: cpu = 0.047 (sec), leaf count = 35

$$\left\{y(x)=\_C1\,\mathrm{e}^{-\frac{x}{2}\left(ax-2\sqrt{a}\right)}+\_C2\,\mathrm{e}^{-\frac{x}{2}\left(ax+2\sqrt{a}\right)}\right\}$$

3.54 ODE No. 1054

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+\left(ax+b\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+\left(cx+d\right)y(x)=0}$$

Mathematica: cpu = 0.048006 (sec), leaf count = 172

$$\left\{\left\{y(x)\to c_1e^{\frac{cx}{a}-\frac{ax^2}{2}-bx}H_{\frac{-a^3+a^2d-abc+c^2}{a^3}}\left(\frac{ab-2c}{\sqrt{2}a^{3/2}}+\frac{\sqrt{a}x}{\sqrt{2}}\right)+c_2e^{\frac{cx}{a}-\frac{ax^2}{2}-bx}\,{}_1F_1\left(-\frac{-a^3+da^2-bca+c^2}{2a^3};\frac{1}{2}\right.\right.\right.$$

Maple: cpu = 0.047 (sec), leaf count = 105

$$\left\{y(x)=\_C1\,\mathrm{e}^{-\frac{cx}{a}}M\left(\frac{da^2-abc+c^2}{2\,a^3},\frac{1}{2},-\frac{\left(a^2x+ab-2\,c\right)^2}{2\,a^3}\right)+\_C2\,\mathrm{e}^{-\frac{cx}{a}}U\left(\frac{da^2-abc+c^2}{2\,a^3},\frac{1}{2},-\frac{(a^2\right.$$

3.55 ODE No. 1055

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+(ax+b)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+\left(a1\,x^2+b1\,x+c1\right)y(x)=0}$$

Mathematica: cpu = 0.155020 (sec), leaf count = 421

$$\left\{\left\{y(x)\to c_1\exp\left(\frac{-bx\sqrt{a^2-4\mathrm{a1}}-\frac{1}{2}ax^2\sqrt{a^2-4\mathrm{a1}}-\frac{1}{2}a^2x^2-abx+2\mathrm{a1}x^2+2\mathrm{b1}x}{2\sqrt{a^2-4\mathrm{a1}}}\right)H_{\underline{\quad -a^3-a^2\sqrt{a^2-4\mathrm{a1}}+4\mathrm{a}}}\right.\right.$$

Maple: cpu = 0.172 (sec), leaf count = 317

$$\left\{y(x)=\_C1\,{}_1\mathrm{F}_1(\frac{1}{4}\left(\left(a^2-4\,a1\right)^{\frac{3}{2}}+a^3-2\,a^2c1+\left(2\,b1\,b-4\,a1\right)a+\left(-2\,b^2+8\,c1\right)a1-2\,b1^2\right)\left(a^2-\right.\right.$$

3.56 ODE No. 1056

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)-x^2\frac{\mathrm{d}}{\mathrm{d}x}y(x)+xy(x)=0}$$

Mathematica: cpu = 0.036005 (sec), leaf count = 66

$$\left\{\left\{y(x)\to c_1x-\frac{c_2\left(3e^{\frac{x^3}{3}}\left(-x^3\right)^{2/3}+3^{2/3}x^3\Gamma\left(\frac{2}{3},-\frac{x^3}{3}\right)\right)}{3\left(-x^3\right)^{2/3}}\right\}\right\}$$

Maple: cpu = 0.078 (sec), leaf count = 48

$$\left\{y(x)=x\_C1+\frac{\_C2}{x^2}\left(\sqrt[3]{3}\mathrm{e}^{\frac{x^3}{3}}\left(-x^3\right)^{\frac{2}{3}}-x^3\left(\Gamma\left(\frac{2}{3}\right)-\Gamma\left(\frac{2}{3},-\frac{x^3}{3}\right)\right)\right)\right\}$$

3.57 ODE No. 1057

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)-x^2\frac{\mathrm{d}}{\mathrm{d}x}y(x)-(1+x)^2y(x)=0}$$

Mathematica: cpu = 0.879612 (sec), leaf count = 55

$$\left\{\left\{y(x)\to c_2e^{\frac{x^3}{3}+x}\int_1^x e^{-\frac{1}{3}K[1]^3-2K[1]}\,dK[1]+c_1e^{\frac{x^3}{3}+x}\right\}\right\}$$

Maple: cpu = 0.110 (sec), leaf count = 50

$$\left\{y(x)=\_C1\;HeunT\left(0,-3,2\sqrt[3]{3},\frac{3^{\frac{2}{3}}x}{3}\right)\mathrm{e}^{-x}+\_C2\;HeunT\left(0,3,2\sqrt[3]{3},-\frac{3^{\frac{2}{3}}x}{3}\right)\mathrm{e}^{\frac{x\left(x^2+3\right)}{3}}\right\}$$

3.58 ODE No. 1058

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) - x^2(1+x)\frac{\mathrm{d}}{\mathrm{d}x}y(x) + x\left(x^4-2\right)y(x) = 0}$$

Mathematica: cpu = 0.899614 (sec), leaf count = 55

$$\left\{\left\{y(x) \to c_2 e^{\frac{x^3}{3}} \int_1^x e^{\frac{K[1]^4}{4} - \frac{K[1]^3}{3}}\, dK[1] + c_1 e^{\frac{x^3}{3}}\right\}\right\}$$

Maple: cpu = 0.093 (sec), leaf count = 35

$$\left\{y(x) = \_C1\, \mathrm{e}^{\frac{x^3}{3}} + \_C2\, \mathrm{e}^{\frac{x^3}{3}} \int \mathrm{e}^{\frac{x^4}{4} - \frac{x^3}{3}}\, \mathrm{d}x\right\}$$

3.59 ODE No. 1059

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) + x^4\frac{\mathrm{d}}{\mathrm{d}x}y(x) - x^3 y(x) = 0}$$

Mathematica: cpu = 0.052007 (sec), leaf count = 72

$$\left\{\left\{y(x) \to c_1 x - \frac{c_2 e^{-\frac{x^5}{5}}\left(5(x^5)^{4/5} - 5^{4/5} e^{\frac{x^5}{5}} x^5 \Gamma\left(\frac{4}{5}, \frac{x^5}{5}\right)\right)}{5\,(x^5)^{4/5}}\right\}\right\}$$

Maple: cpu = 0.062 (sec), leaf count = 55

$$\left\{y(x) = x\_C1 + \frac{\_C2}{x^7}\mathrm{e}^{-\frac{x^5}{10}}\left(x^{10} M_{\frac{2}{5}, \frac{9}{10}}\left(\frac{x^5}{5}\right) + 9\, M_{7/5, \frac{9}{10}}\left(1/5\, x^5\right) x^5 + 36\, M_{7/5, \frac{9}{10}}\left(1/5\, x^5\right)\right)\right\}$$

3.60 ODE No. 1060

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) + ax^{q-1}\frac{\mathrm{d}}{\mathrm{d}x}y(x) + bx^{q-2}y(x) = 0}$$

Mathematica: cpu = 0.037005 (sec), leaf count = 83

$$\left\{\left\{y(x) \to c_2 q^{-1/q} a^{\frac{1}{q}} (x^q)^{\frac{1}{q}}\ {}_1F_1\left(\frac{b}{aq} + \frac{1}{q}; 1 + \frac{1}{q}; -\frac{ax^q}{q}\right) + c_1\, {}_1F_1\left(\frac{b}{aq}; 1 - \frac{1}{q}; -\frac{ax^q}{q}\right)\right\}\right\}$$

Maple: cpu = 0.125 (sec), leaf count = 91

$$\left\{y(x) = \_C1\, \mathrm{e}^{-\frac{ax^q}{q}} M\left(\frac{aq-b}{aq}, \frac{q+1}{q}, \frac{ax^q}{q}\right)x + \_C2\, \mathrm{e}^{-\frac{ax^q}{q}} U\left(\frac{aq-b}{aq}, \frac{q+1}{q}, \frac{ax^q}{q}\right)x\right\}$$

3.61 ODE No. 1061

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)\sqrt{x}+\left(1/4\,\frac{1}{\sqrt{x}}+x/4-9\right)y(x)-x\mathrm{e}^{-1/3\,x^{3/2}}=0}$$

Mathematica: cpu = 0.076010 (sec), leaf count = 70

$$\left\{\left\{y(x)\to c_1e^{-\frac{1}{3}(\sqrt{x}+9)x}+\frac{1}{6}c_2e^{6x-\frac{1}{3}(\sqrt{x}+9)x}-\frac{1}{9}e^{3x-\frac{1}{3}(\sqrt{x}+9)x}x\right\}\right\}$$

Maple: cpu = 0.062 (sec), leaf count = 38

$$\left\{y(x)=\mathrm{e}^{-\frac{1}{3}x^{\frac{3}{2}}}\sinh\left(3\,x\right)\_C2+\mathrm{e}^{-\frac{1}{3}x^{\frac{3}{2}}}\cosh\left(3\,x\right)\_C1-\frac{x}{9}\mathrm{e}^{-\frac{1}{3}x^{\frac{3}{2}}}\right\}$$

3.62 ODE No. 1062

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)-\frac{\frac{\mathrm{d}}{\mathrm{d}x}y(x)}{\sqrt{x}}+1/4\,\frac{\left(x+\sqrt{x}-8\right)y(x)}{x^2}=0}$$

Mathematica: cpu = 0.028004 (sec), leaf count = 35

$$\left\{\left\{y(x)\to\frac{1}{3}c_2e^{\sqrt{x}}x^2+\frac{c_1e^{\sqrt{x}}}{x}\right\}\right\}$$

Maple: cpu = 0.015 (sec), leaf count = 23

$$\left\{y(x)=\frac{\_C1}{x}\mathrm{e}^{\sqrt{x}}+\_C2\,\mathrm{e}^{\sqrt{x}}x^2\right\}$$

3.63 ODE No. 1063

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)-\left(2\,\mathrm{e}^x+1\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+\mathrm{e}^{2\,x}y(x)-\mathrm{e}^{3\,x}=0}$$

Mathematica: cpu = 0.040505 (sec), leaf count = 28

$$\left\{\left\{y(x)\to c_1e^{e^x}+c_2e^{x+e^x}+e^x+2\right\}\right\}$$

Maple: cpu = 0.125 (sec), leaf count = 66

$$\left\{y(x)=\mathrm{e}^{\mathrm{e}^x+\frac{x}{2}}\sinh\left(\frac{x}{2}\right)\_C2+\mathrm{e}^{\mathrm{e}^x+\frac{x}{2}}\cosh\left(\frac{x}{2}\right)\_C1+\mathrm{e}^{\frac{x}{2}}\left(\left(\mathrm{e}^{2\,x}+\mathrm{e}^x+1\right)\cosh\left(\frac{x}{2}\right)-3\left(\mathrm{e}^x+1/3\,\mathrm{e}^{2\,x}+\right.\right.\right.$$

3.64 ODE No. 1064

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+a\frac{\mathrm{d}}{\mathrm{d}x}y(x)+\tan\left(x\right)+by(x)=0}$$

Mathematica: cpu = 0.564072 (sec), leaf count = 1400

$$\left\{\left\{y(x)\to e^{\frac{1}{2}\left(-a-\sqrt{a^2-4b}\right)x}c_1+e^{\frac{1}{2}\left(\sqrt{a^2-4b}-a\right)x}c_2+\frac{8\left(2\,{}_2F_1\left(1,\frac{1}{4}i\left(\sqrt{a^2-4b}-a\right);\frac{1}{4}i\left(\sqrt{a^2-4b}-a\right)+1;-\right.\right.\right.$$

Maple: cpu = 0.203 (sec), leaf count = 129

$$\left\{y(x)=\mathrm{e}^{\left(-\frac{a}{2}+\frac{1}{2}\sqrt{a^2-4\,b}\right)x}\_C2+\mathrm{e}^{\left(-\frac{a}{2}-\frac{1}{2}\sqrt{a^2-4\,b}\right)x}\_C1-1\left(\int\tan\left(x\right)\mathrm{e}^{-\frac{x}{2}\left(-a+\sqrt{a^2-4\,b}\right)}\,\mathrm{d}x\mathrm{e}^{x\sqrt{a^2-4\,b}}-\int\tan\right.\right.$$

3.65 ODE No. 1065

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+2\,n\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)\cot\left(x\right)+\left(-a^2+n^2\right)y(x)=0}$$

Mathematica: cpu = 0.163021 (sec), leaf count = 114

$$\left\{\left\{y(x)\to c_1\left(\cos^2(x)-1\right)^{\frac{1}{4}(1-2n)}P^{\frac{1}{2}(2n-1)}_{\frac{1}{2}\left(2\sqrt{2n^2-a^2}-1\right)}(\cos(x))+c_2\left(\cos^2(x)-1\right)^{\frac{1}{4}(1-2n)}Q^{\frac{1}{2}(2n-1)}_{\frac{1}{2}\left(2\sqrt{2n^2-a^2}-1\right)}(\cos(x)\right.\right\}$$

Maple: cpu = 0.171 (sec), leaf count = 67

$$\left\{y(x)=\_C1\left(\sin\left(x\right)\right)^{-n+\frac{1}{2}}LegendreP\left(-\frac{1}{2}+\sqrt{-a^2+2\,n^2},n-\frac{1}{2},\cos\left(x\right)\right)+\_C2\left(\sin\left(x\right)\right)^{-n+\frac{1}{2}}Legend\right.$$

3.66 ODE No. 1066

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)\tan\left(x\right)+y(x)\left(\cos\left(x\right)\right)^2=0}$$

Mathematica: cpu = 0.035004 (sec), leaf count = 18

$$\{\{y(x)\to c_2\sin(\sin(x))+c_1\cos(\sin(x))\}\}$$

Maple: cpu = 0.063 (sec), leaf count = 15

$$\{y(x)=\_C1\,\sin\left(\sin\left(x\right)\right)+\_C2\,\cos\left(\sin\left(x\right)\right)\}$$

3.67 ODE No. 1067

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)\tan\left(x\right)-y(x)\left(\cos\left(x\right)\right)^2=0}$$

Mathematica: cpu = 0.032504 (sec), leaf count = 21

$$\{\{y(x)\to c_1\cosh(\sin(x))+ic_2\sinh(\sin(x))\}\}$$

Maple: cpu = 0.032 (sec), leaf count = 17

$$\left\{y(x)=\_C1\,\mathrm{e}^{\sin(x)}+\_C2\,\mathrm{e}^{-\sin(x)}\right\}$$

3.68 ODE No. 1068

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)\cot\left(x\right)+v(v+1)\,y(x)=0}$$

Mathematica: cpu = 0 (sec), leaf count = 0

Hanged

Maple: cpu = 0.141 (sec), leaf count = 45

$$\left\{y(x)=\_C1\,{}_2\mathrm{F}_1(-\frac{v}{2},\frac{1}{2}+\frac{v}{2};\,\frac{1}{2};\,(\cos\left(x\right))^2)+\_C2\,\cos\left(x\right){}_2\mathrm{F}_1(1+\frac{v}{2},\frac{1}{2}-\frac{v}{2};\,\frac{3}{2};\,(\cos\left(x\right))^2)\right\}$$

3.69 ODE No. 1069

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)-\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)\cot\left(x\right)+y(x)\left(\sin\left(x\right)\right)^2=0}$$

Mathematica: cpu = 0.036005 (sec), leaf count = 19

$$\{\{y(x)\to c_1\cos(\cos(x))-c_2\sin(\cos(x))\}\}$$

Maple: cpu = 0.063 (sec), leaf count = 15

$$\{y(x)=\_C1\,\sin\left(\cos\left(x\right)\right)+\_C2\,\cos\left(\cos\left(x\right)\right)\}$$

3.70 ODE No. 1070

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+a\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)\tan\left(x\right)+by(x)=0}$$

Mathematica: cpu = 0.317540 (sec), leaf count = 143

$$\left\{\left\{y(x)\to c_1\,{}_2F_1\left(-\frac{a}{4}-\frac{1}{4}\sqrt{a^2+4b},\frac{1}{4}\sqrt{a^2+4b}-\frac{a}{4};\frac{1}{2}-\frac{a}{2};\cos^2(x)\right)+i^{a+1}c_2\cos^{a+1}(x)\,{}_2F_1\left(\frac{a}{4}-\frac{1}{4}\sqrt{a^2}\right.\right.\right.$$

Maple: cpu = 0.141 (sec), leaf count = 67

$$\left\{y(x)=\_C1\left(\cos\left(x\right)\right)^{\frac{1}{2}+\frac{a}{2}}\mathit{LegendreP}\left(\frac{1}{2}\sqrt{a^2+4\,b}-\frac{1}{2},\frac{1}{2}+\frac{a}{2},\sin\left(x\right)\right)+\_C2\left(\cos\left(x\right)\right)^{\frac{1}{2}+\frac{a}{2}}\mathit{LegendreQ}\left(\right.\right.$$

3.71 ODE No. 1071

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+2\,a\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)\cot\left(ax\right)+\left(-a^2+b^2\right)y(x)=0}$$

Mathematica: cpu = 0.106514 (sec), leaf count = 59

$$\left\{\left\{y(x)\to c_1e^{-\sqrt{-b^2}x}\csc(ax)+\frac{c_2e^{\sqrt{-b^2}x}\csc(ax)}{2\sqrt{-b^2}}\right\}\right\}$$

Maple: cpu = 0.046 (sec), leaf count = 37

$$\left\{y(x)=\_C1\,\sin\left(bx\right)\frac{1}{\sqrt{\left(\cos\left(ax\right)\right)^2-1}}+\_C2\,\cos\left(bx\right)\frac{1}{\sqrt{\left(\cos\left(ax\right)\right)^2-1}}\right\}$$

3.72 ODE No. 1072

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+a\left(\frac{\mathrm{d}^2}{\mathrm{d}x^2}p(x)\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+\left(a+bp(x)-4\,na(p(x))^2\right)y(x)=0}$$

Mathematica: cpu = 0.281536 (sec), leaf count = 38

$$\text{DSolve}\left[y(x)\left(-4anp(x)^2+a+bp(x)\right)+ap''(x)y'(x)+y''(x)=0,y(x),x\right]$$

Maple: cpu = 0.250 (sec), leaf count = 45

$$\left\{y(x)=\mathit{DESol}\left(\left\{\frac{\mathrm{d}^2}{\mathrm{d}x^2}\_Y(x)+a\left(\frac{\mathrm{d}^2}{\mathrm{d}x^2}p(x)\right)\frac{\mathrm{d}}{\mathrm{d}x}\_Y(x)+\left(a+bp(x)-4\,na(p(x))^2\right)\_Y(x)\right\},\{\_Y(x)\right.\right.$$

3.73 ODE No. 1073

$$\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+\frac{\left(11\,\mathit{WeierstrassP}(x,a,b)\,\mathit{WeierstrassPPrime}(x,a,b)-6\left(\mathit{WeierstrassP}(x,a,b)\right)^2+a/2\right)\frac{\mathrm{d}}{\mathrm{d}x}y}{\mathit{WeierstrassPPrime}\left(x,a,b\right)+\left(\mathit{WeierstrassP}\left(x,a,b\right)\right)^2}$$

Mathematica: cpu = 1.365173 (sec), leaf count = 129

$$\text{DSolve}\left[\frac{y'(x)\left(-\wp(x;a,b)\wp'(x;a,b)+\wp(x;a,b)^3-6\wp(x;a,b)^2+\frac{a}{2}\right)}{\wp'(x;a,b)-\wp(x;a,b)^2}+\frac{y(x)\left(\wp(x;a,b)^2(-\wp'(x;a,b))-(6\right.}{\wp(x;a,b)}$$

Maple: cpu = 2.511 (sec), leaf count = 109

$$\left\{y(x)=\mathit{DESol}\left(\left\{\frac{\mathrm{d}^2}{\mathrm{d}x^2}\_Y(x)+\frac{\frac{\mathrm{d}}{\mathrm{d}x}\_Y(x)}{\mathit{WeierstrassPPrime}\left(x,a,b\right)+\left(\mathit{WeierstrassP}\left(x,a,b\right)\right)^2}\left(11\,\mathit{Weierstrass}\right.\right.\right.$$

3.74 ODE No. 1074

$$\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+\frac{k^2\,\mathit{JacobiSN}(x,k)\,\mathit{JacobiCN}(x,k)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)}{\mathit{JacobiDN}\left(x,k\right)}+n^2y(x)\left(\mathit{JacobiDN}(x,k)\right)^2=0$$

Mathematica: cpu = 26.455859 (sec), leaf count = 41

$$\text{DSolve}\left[\frac{k^2\text{cn}(x|k)\text{sn}(x|k)y'(x)}{\text{dn}(x|k)}+n^2y(x)\text{dn}(x|k)^2+y''(x)=0,y(x),x\right]$$

Maple: cpu = 0.016 (sec), leaf count = 21

$$\left\{y(x)=\_C1\,\sin\left(n\mathit{JacobiAM}(x,k)\right)+\_C2\,\cos\left(n\mathit{JacobiAM}(x,k)\right)\right\}$$

3.75 ODE No. 1075

$$\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+f(x)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)+g(x)\,y(x)=0$$

Mathematica: cpu = 0.178523 (sec), leaf count = 23

$$\text{DSolve}[f(x)y'(x)+g(x)y(x)+y''(x)=0,y(x),x]$$

Maple: cpu = 0.0 (sec), leaf count = 28

$$\left\{y(x)=\mathit{DESol}\left(\left\{g(x)\,\_Y(x)+f(x)\,\frac{\mathrm{d}}{\mathrm{d}x}\_Y(x)+\frac{\mathrm{d}^2}{\mathrm{d}x^2}\_Y(x)\right\},\{\_Y(x)\}\right)\right\}$$

3.76 ODE No. 1076

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+f(x)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+\left(\frac{\mathrm{d}}{\mathrm{d}x}f(x)+a\right)y(x)-g(x)=0}$$

Mathematica: cpu = 0.203026 (sec), leaf count = 31

$$\text{DSolve}[y(x)\left(a+f'(x)\right)+f(x)y'(x)-g(x)+y''(x)=0,y(x),x]$$

Maple: cpu = 0.171 (sec), leaf count = 36

$$\left\{y(x)=DESol\left(\left\{\frac{\mathrm{d}^2}{\mathrm{d}x^2}\_Y(x)+f(x)\frac{\mathrm{d}}{\mathrm{d}x}\_Y(x)+\left(\frac{\mathrm{d}}{\mathrm{d}x}f(x)+a\right)\_Y(x)-g(x)\right\},\{\_Y(x)\}\right)\right\}$$

3.77 ODE No. 1077

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+(af(x)+b)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+(cf(x)+d)y(x)=0}$$

Mathematica: cpu = 0.320041 (sec), leaf count = 31

$$\text{DSolve}[y'(x)(af(x)+b)+y(x)(cf(x)+d)+y''(x)=0,y(x),x]$$

Maple: cpu = 0.172 (sec), leaf count = 36

$$\left\{y(x)=DESol\left(\left\{\frac{\mathrm{d}^2}{\mathrm{d}x^2}\_Y(x)+(af(x)+b)\frac{\mathrm{d}}{\mathrm{d}x}\_Y(x)+(cf(x)+d)\_Y(x)\right\},\{\_Y(x)\}\right)\right\}$$

3.78 ODE No. 1078

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+f(x)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+\left(1/4\left(f(x)\right)^2+1/2\frac{\mathrm{d}}{\mathrm{d}x}f(x)+a\right)y(x)=0}$$

Mathematica: cpu = 0.073009 (sec), leaf count = 73

$$\left\{\left\{y(x)\to c_1\exp\left(-\frac{1}{2}\int_1^x f(K[1])\,dK[1]-\sqrt{-a}x\right)+\frac{c_2e^{\sqrt{-a}x-\frac{1}{2}\int_1^x f(K[1])\,dK[1]}}{2\sqrt{-a}}\right\}\right\}$$

Maple: cpu = 0.031 (sec), leaf count = 39

$$\left\{y(x)=\_C1\,\mathrm{e}^{-\frac{\int f(x)\,\mathrm{d}x}{2}}\sinh\left(\sqrt{-a}x\right)+\_C2\,\mathrm{e}^{-\frac{\int f(x)\,\mathrm{d}x}{2}}\cosh\left(\sqrt{-a}x\right)\right\}$$

3.79 ODE No. 1079

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)-\frac{a\left(\frac{\mathrm{d}}{\mathrm{d}x}f(x)\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)}{f\left(x\right)}+b(f(x))^{2\,a}\,y(x)=0}$$

Mathematica: cpu = 0.237530 (sec), leaf count = 135

$$\left\{\left\{y(x)\to\frac{1}{2}\left(e^{c_2+\int_1^x-i\sqrt{b}f(K[1])^a\,dK[1]}-2c_1\exp\left(-c_2-\int_1^x-i\sqrt{b}f(K[1])^a\,dK[1]\right)\right)\right\},\left\{y(x)\to\frac{1}{2}\left(e^{c_2+\int_1^{}}\right.\right.\right.$$

Maple: cpu = 0.016 (sec), leaf count = 37

$$\left\{y(x)=\_C1\,\mathrm{e}^{\int i(f(x))^a\sqrt{b}\,\mathrm{d}x}+\_C2\,\mathrm{e}^{-\int i(f(x))^a\sqrt{b}\,\mathrm{d}x}\right\}$$

3.80 ODE No. 1080

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)-\left(\frac{\frac{\mathrm{d}}{\mathrm{d}x}f(x)}{f\left(x\right)}+2\,a\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+\left(\frac{a\frac{\mathrm{d}}{\mathrm{d}x}f(x)}{f\left(x\right)}+a^2-b^2(f(x))^2\right)y(x)=0}$$

Mathematica: cpu = 0.303038 (sec), leaf count = 56

$$\text{DSolve}\left[y(x)\left(a^2+\frac{af'(x)}{f(x)}-b^2f(x)^2\right)-y'(x)\left(2a+\frac{f'(x)}{f(x)}\right)+y''(x)=0,y(x),x\right]$$

Maple: cpu = 0.219 (sec), leaf count = 74

$$\left\{y(x)=\mathrm{e}^{\int-1\left(\frac{f(x)\left(\mathrm{e}^{-C1\,b}\right)^2b}{\left(\mathrm{e}^{\int f(x)\,\mathrm{d}x}b\right)^2}+bf(x)-\frac{\left(\mathrm{e}^{-C1\,b}\right)^2a}{\left(\mathrm{e}^{\int f(x)\,\mathrm{d}x}b\right)^2}+a\right)\left(\frac{\left(\mathrm{e}^{-C1\,b}\right)^2}{\left(\mathrm{e}^{\int f(x)\,\mathrm{d}x}b\right)^2}-1\right)^{-1}\mathrm{d}x}\_C2\right\}$$

3.81 ODE No. 1081

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+\frac{f(x)\left(\frac{\mathrm{d}^3}{\mathrm{d}x^3}f(x)\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)}{\left(f\left(x\right)\right)^2+b^2}-\frac{a^2\left(\frac{\mathrm{d}}{\mathrm{d}x}f(x)\right)^2y(x)}{\left(f\left(x\right)\right)^2+b^2}=0}$$

Mathematica: cpu = 0.810103 (sec), leaf count = 55

$$\text{DSolve}\left[-\frac{a^2y(x)f'(x)^2}{b^2+f(x)^2}+\frac{f(x)f^3(x)y'(x)}{b^2+f(x)^2}+y''(x)=0,y(x),x\right]$$

Maple: cpu = 0.561 (sec), leaf count = 64

$$\left\{y(x)=DESol\left(\left\{\frac{\mathrm{d}^2}{\mathrm{d}x^2}\_Y(x)+\frac{f(x)\left(\frac{\mathrm{d}^3}{\mathrm{d}x^3}f(x)\right)\frac{\mathrm{d}}{\mathrm{d}x}\_Y(x)}{\left(f\left(x\right)\right)^2+b^2}-\frac{\left(\frac{\mathrm{d}}{\mathrm{d}x}f(x)\right)^2a^2\_Y(x)}{\left(f\left(x\right)\right)^2+b^2}\right\},\{\_Y(x)\}\right)\right\}$$

3.82 ODE No. 1082

$$\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)-\left(\frac{\frac{\mathrm{d}^2}{\mathrm{d}x^2}g(x)}{\frac{\mathrm{d}}{\mathrm{d}x}g\left(x\right)}+\frac{\left(2\,m-1\right)\frac{\mathrm{d}}{\mathrm{d}x}g(x)}{g\left(x\right)}\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+\left(\frac{\left(m^2-v^2\right)\left(\frac{\mathrm{d}}{\mathrm{d}x}g(x)\right)^2}{g\left(x\right)}+\left(\frac{\mathrm{d}}{\mathrm{d}x}g(x)\right)^2\right)y(x)=0$$

Mathematica: cpu = 0.548070 (sec), leaf count = 73

$$\text{DSolve}\left[y(x)\left(\frac{\left(m^2-v^2\right)g'(x)^2}{g(x)}+g'(x)^2\right)-y'(x)\left(\frac{(2m-1)g'(x)}{g(x)}+\frac{g''(x)}{g'(x)}\right)+y''(x)=0,y(x),x\right]$$

Maple: cpu = 0.094 (sec), leaf count = 85

$$\left\{y(x)=\_C1\,\mathrm{e}^{-ig(x)}M\left(\frac{i}{2}m^2-\frac{i}{2}v^2+m+\frac{1}{2},\,2\,m+1,\,2\,ig(x)\right)(g(x))^{2\,m}+\_C2\,\mathrm{e}^{-ig(x)}U\left(\frac{i}{2}m^2-\frac{i}{2}v^2+\right.\right.$$

3.83 ODE No. 1083

$$\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)-\frac{\left(\frac{\mathrm{d}}{\mathrm{d}x}f(x)\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)}{f\left(x\right)}+\left(3/4\,\frac{\left(\frac{\mathrm{d}}{\mathrm{d}x}f(x)\right)^2}{\left(f\left(x\right)\right)^2}-1/2\,\frac{\frac{\mathrm{d}^2}{\mathrm{d}x^2}f(x)}{f\left(x\right)}-3/4\,\frac{\left(\frac{\mathrm{d}^2}{\mathrm{d}x^2}g(x)\right)^2}{\left(\frac{\mathrm{d}}{\mathrm{d}x}g\left(x\right)\right)^2}+1/2\,\frac{\frac{\mathrm{d}^3}{\mathrm{d}x^3}g(x)}{\frac{\mathrm{d}}{\mathrm{d}x}g\left(x\right)}+\frac{(1/4}{}\right.$$

Mathematica: cpu = 0.823605 (sec), leaf count = 111

$$\text{DSolve}\left[-\frac{f'(x)y'(x)}{f(x)}+y(x)\left(-\frac{f''(x)}{2f(x)}+\frac{3f'(x)^2}{4f(x)^2}+\frac{\left(\frac{1}{4}-v^2\right)g'(x)^2}{g(x)^2}+g'(x)^2+\frac{g^3(x)}{2g'(x)}-\frac{3g''(x)^2}{4g'(x)^2}\right)+y''(x\right.$$

Maple: cpu = 0.078 (sec), leaf count = 43

$$\left\{y(x)=\_C1\,\sqrt{\frac{f\left(x\right)g\left(x\right)}{\frac{\mathrm{d}}{\mathrm{d}x}g\left(x\right)}}J_v(g(x))+\_C2\,\sqrt{\frac{f\left(x\right)g\left(x\right)}{\frac{\mathrm{d}}{\mathrm{d}x}g\left(x\right)}}Y_v(g(x))\right\}$$

3.84 ODE No. 1084

$$\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)-\left(2\,\frac{\frac{\mathrm{d}}{\mathrm{d}x}f(x)}{f\left(x\right)}+\frac{\frac{\mathrm{d}^2}{\mathrm{d}x^2}g(x)}{\frac{\mathrm{d}}{\mathrm{d}x}g\left(x\right)}-\frac{\frac{\mathrm{d}}{\mathrm{d}x}g(x)}{g\left(x\right)}\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+\left(\frac{\frac{\mathrm{d}}{\mathrm{d}x}f(x)}{f\left(x\right)}\left(2\,\frac{\frac{\mathrm{d}}{\mathrm{d}x}f(x)}{f\left(x\right)}+\frac{\frac{\mathrm{d}^2}{\mathrm{d}x^2}g(x)}{\frac{\mathrm{d}}{\mathrm{d}x}g\left(x\right)}-\frac{\frac{\mathrm{d}}{\mathrm{d}x}g(x)}{g\left(x\right)}\right)-\frac{\mathrm{d}}{\mathrm{d}x}\right.$$

Mathematica: cpu = 0.859609 (sec), leaf count = 125

$$\text{DSolve}\left[-y'(x)\left(\frac{2f'(x)}{f(x)}-\frac{g'(x)}{g(x)}+\frac{g''(x)}{g'(x)}\right)+y(x)\left(-\frac{f''(x)}{f(x)}+\frac{f'(x)\left(\frac{2f'(x)}{f(x)}-\frac{g'(x)}{g(x)}+\frac{g''(x)}{g'(x)}\right)}{f(x)}-\frac{v^2g'(x)^2}{g(x)^2}+\right.$$

Maple: cpu = 0.078 (sec), leaf count = 21

$$\{y(x)=\_C1\,J_v(g(x))f(x)+\_C2\,Y_v(g(x))f(x)\}$$

3.85 ODE No. 1085

$$\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)-\left(\frac{\frac{\mathrm{d}^2}{\mathrm{d}x^2}g(x)}{\frac{\mathrm{d}}{\mathrm{d}x}g\left(x\right)}+\frac{\left(2\,v-1\right)\frac{\mathrm{d}}{\mathrm{d}x}g(x)}{g\left(x\right)}+2\,\frac{\frac{\mathrm{d}}{\mathrm{d}x}h(x)}{h\left(x\right)}\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+\left(\frac{\frac{\mathrm{d}}{\mathrm{d}x}h(x)}{h\left(x\right)}\left(\frac{\frac{\mathrm{d}^2}{\mathrm{d}x^2}g(x)}{\frac{\mathrm{d}}{\mathrm{d}x}g\left(x\right)}+\frac{\left(2\,v-1\right)\frac{\mathrm{d}}{\mathrm{d}x}g(x)}{g\left(x\right)}\right.\right.$$

Mathematica: cpu = 0.922617 (sec), leaf count = 118

$$\text{DSolve}\left[-y'(x)\left(\frac{(2v-1)g'(x)}{g(x)}+\frac{g''(x)}{g'(x)}+\frac{2h'(x)}{h(x)}\right)+y(x)\left(g'(x)^2+\frac{h'(x)\left(\frac{(2v-1)g'(x)}{g(x)}+\frac{g''(x)}{g'(x)}+\frac{2h'(x)}{h(x)}\right)}{h(x)}-\right.\right.$$

Maple: cpu = 0.062 (sec), leaf count = 29

$$\{y(x)=\_C1\ J_v(g(x))h(x)\left(g(x)\right)^v+\_C2\ Y_v(g(x))h(x)\left(g(x)\right)^v\}$$

3.86 ODE No. 1086

$$4\,\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+9\,xy(x)=0$$

Mathematica: cpu = 0.004501 (sec), leaf count = 42

$$\left\{\left\{y(x)\to c_1\text{Ai}\left(\sqrt[3]{-1}\left(\frac{3}{2}\right)^{2/3}x\right)+c_2\text{Bi}\left(\sqrt[3]{-1}\left(\frac{3}{2}\right)^{2/3}x\right)\right\}\right\}$$

Maple: cpu = 0.016 (sec), leaf count = 29

$$\left\{y(x)=\_C1\ \text{Ai}\left(-\frac{3^{\frac{2}{3}}\sqrt[3]{2}x}{2}\right)+\_C2\ \text{Bi}\left(-\frac{3^{\frac{2}{3}}\sqrt[3]{2}x}{2}\right)\right\}$$

3.87 ODE No. 1087

$$4\,\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)-\left(x^2+a\right)y(x)=0$$

Mathematica: cpu = 0.008001 (sec), leaf count = 36

$$\left\{\left\{y(x)\to c_1D_{\frac{1}{4}(-a-2)}(x)+c_2D_{\frac{a-2}{4}}(ix)\right\}\right\}$$

Maple: cpu = 0.062 (sec), leaf count = 35

$$\left\{y(x)=\_C1M_{-\frac{a}{8},\frac{1}{4}}\left(\frac{x^2}{2}\right)\frac{1}{\sqrt{x}}+\_C2W_{-\frac{a}{8},\frac{1}{4}}\left(\frac{x^2}{2}\right)\frac{1}{\sqrt{x}}\right\}$$

3.88 ODE No. 1088

$$\boxed{4\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+4\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)\tan\left(x\right)-\left(5\left(\tan\left(x\right)\right)^2+2\right)y(x)=0}$$

Mathematica: cpu = 0.102513 (sec), leaf count = 180

$$\left\{\left\{y(x)\to -\frac{(-1)^{7/8}2^{5/8}c_1}{\sqrt[8]{-8\cos^2(2x)-16\cos(2x)-8}}+\frac{3(-1)^{5/8}c_2\left(4\sqrt[4]{-1}2^{3/4}\sinh^{-1}\left(\frac{1}{2}\sqrt[4]{-\frac{1}{2}}\sqrt[4]{-8\cos^2(2x)-1\right.\right.\right.\right.$$

Maple: cpu = 0.094 (sec), leaf count = 36

$$\left\{y(x)=\_C1\frac{1}{\sqrt{\cos\left(x\right)}}+\_C2\left(i\cos\left(x\right)\sin\left(x\right)-\ln\left(\sin\left(x\right)+i\cos\left(x\right)\right)\right)\frac{1}{\sqrt{\cos\left(x\right)}}\right\}$$

3.89 ODE No. 1089

$$\boxed{a\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)-\left(ab+c+x\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+\left(b(x+c)+d\right)y(x)=0}$$

Mathematica: cpu = 0.045006 (sec), leaf count = 99

$$\left\{\left\{y(x)\to c_1e^{bx}H_d\left(\frac{x}{\sqrt{2}\sqrt{a}}-\frac{ab-c}{\sqrt{2}\sqrt{a}}\right)+c_2e^{bx}\,{}_1F_1\left(-\frac{d}{2};\frac{1}{2};\left(\frac{x}{\sqrt{2}\sqrt{a}}-\frac{ab-c}{\sqrt{2}\sqrt{a}}\right)^2\right)\right\}\right\}$$

Maple: cpu = 0.047 (sec), leaf count = 61

$$\left\{y(x)=\_C1\,\mathrm{e}^{bx}M\left(-\frac{d}{2},\frac{1}{2},\frac{(ab-c-x)^2}{2\,a}\right)+\_C2\,\mathrm{e}^{bx}U\left(-\frac{d}{2},\frac{1}{2},\frac{(ab-c-x)^2}{2\,a}\right)\right\}$$

3.90 ODE No. 1090

$$\boxed{a^2\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+a\left(a^2-2\,b\mathrm{e}^{-ax}\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+b^2\mathrm{e}^{-2\,ax}y(x)=0}$$

Mathematica: cpu = 0 (sec), leaf count = 0

Hanged

Maple: cpu = 0.032 (sec), leaf count = 59

$$\left\{y(x)=\_C1\,\mathrm{e}^{-\frac{a^3x+2\,b\mathrm{e}^{-ax}}{2\,a^2}}\sinh\left(\frac{ax}{2}\right)+\_C2\,\mathrm{e}^{-\frac{a^3x+2\,b\mathrm{e}^{-ax}}{2\,a^2}}\cosh\left(\frac{ax}{2}\right)\right\}$$

3.91 ODE No. 1091

$$\boxed{x\left(\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+y(x)\right)-\cos\left(x\right)=0}$$

Mathematica: cpu = 0.022503 (sec), leaf count = 41

$$\left\{\left\{y(x)\to c_2\sin(x)+c_1\cos(x)+\frac{1}{2}(\text{Ci}(2x)\sin(x)-\text{Si}(2x)\cos(x)+\log(x)\sin(x))\right\}\right\}$$

Maple: cpu = 0.031 (sec), leaf count = 35

$$\left\{y(x)=\sin\left(x\right)\_C2+\cos\left(x\right)\_C1+\frac{\sin\left(x\right)\mathit{Ci}\left(2\,x\right)}{2}+\frac{\sin\left(x\right)\ln\left(x\right)}{2}-\frac{\mathit{Si}\left(2\,x\right)\cos\left(x\right)}{2}\right\}$$

3.92 ODE No. 1092

$$\boxed{x\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+(x+a)\,y(x)=0}$$

Mathematica: cpu = 0.096012 (sec), leaf count = 72

$$\left\{\left\{y(x)\to c_2e^{-ix}x\,{}_1F_1\left(1-\frac{1}{4}i(-2(a-2)-4);2;2ix\right)+c_1e^{-ix}xU\left(1-\frac{1}{4}i(-2(a-2)-4),2,2ix\right)\right\}\right\}$$

Maple: cpu = 0.109 (sec), leaf count = 29

$$\left\{y(x)=\_C1\,M_{-\frac{i}{2}a,\frac{1}{2}}\left(2\,ix\right)+\_C2\,W_{-\frac{i}{2}a,\frac{1}{2}}\left(2\,ix\right)\right\}$$

3.93 ODE No. 1093

$$\boxed{x\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+\frac{\mathrm{d}}{\mathrm{d}x}y(x)=0}$$

Mathematica: cpu = 0.004501 (sec), leaf count = 13

$$\{\{y(x)\to c_1\log(x)+c_2\}\}$$

Maple: cpu = 0.016 (sec), leaf count = 10

$$\{y(x)=\_C2\,\ln\left(x\right)+\_C1\}$$

3.94 ODE No. 1094

$$\boxed{x\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+\frac{\mathrm{d}}{\mathrm{d}x}y(x)+ay(x)=0}$$

Mathematica: cpu = 0.022003 (sec), leaf count = 41

$$\left\{\left\{y(x)\to c_1 J_0\left(2\sqrt{a}\sqrt{x}\right)+2c_2 Y_0\left(2\sqrt{a}\sqrt{x}\right)\right\}\right\}$$

Maple: cpu = 0.016 (sec), leaf count = 29

$$\left\{y(x)=\_C1\, J_0\left(2\sqrt{a}\sqrt{x}\right)+\_C2\, Y_0\left(2\sqrt{a}\sqrt{x}\right)\right\}$$

3.95 ODE No. 1095

$$\boxed{x\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+\frac{\mathrm{d}}{\mathrm{d}x}y(x)+lxy(x)=0}$$

Mathematica: cpu = 0.008501 (sec), leaf count = 30

$$\left\{\left\{y(x)\to c_1 J_0\left(\sqrt{l}x\right)+c_2 Y_0\left(\sqrt{l}x\right)\right\}\right\}$$

Maple: cpu = 0.031 (sec), leaf count = 23

$$\left\{y(x)=\_C1\, J_0\left(\sqrt{l}x\right)+\_C2\, Y_0\left(\sqrt{l}x\right)\right\}$$

3.96 ODE No. 1096

$$\boxed{x\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+\frac{\mathrm{d}}{\mathrm{d}x}y(x)+(x+a)\,y(x)=0}$$

Mathematica: cpu = 0.012002 (sec), leaf count = 61

$$\left\{\left\{y(x)\to c_1 e^{-ix}U\left(\frac{1}{2}i(a-i),1,2ix\right)+c_2 e^{-ix}L_{-\frac{1}{2}i(a-i)}(2ix)\right\}\right\}$$

Maple: cpu = 0.109 (sec), leaf count = 43

$$\left\{y(x)=\_C1\, \mathrm{e}^{-ix}M\left(\frac{1}{2}+\frac{i}{2}a,\,1,\,2\,ix\right)+\_C2\, \mathrm{e}^{-ix}U\left(\frac{1}{2}+\frac{i}{2}a,\,1,\,2\,ix\right)\right\}$$

3.97 ODE No. 1097

$$\boxed{x\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)-\frac{\mathrm{d}}{\mathrm{d}x}y(x)+ay(x)=0}$$

Mathematica: cpu = 0.026003 (sec), leaf count = 46

$$\left\{\left\{y(x)\to 2ac_1xJ_2\left(2\sqrt{a}\sqrt{x}\right)-2ac_2xY_2\left(2\sqrt{a}\sqrt{x}\right)\right\}\right\}$$

Maple: cpu = 0.016 (sec), leaf count = 31

$$\left\{y(x)=\_C1\ xJ_2\left(2\sqrt{a}\sqrt{x}\right)+\_C2\ xY_2\left(2\sqrt{a}\sqrt{x}\right)\right\}$$

3.98 ODE No. 1098

$$\boxed{x\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)-\frac{\mathrm{d}}{\mathrm{d}x}y(x)-y(x)\,ax^3=0}$$

Mathematica: cpu = 0.008501 (sec), leaf count = 41

$$\left\{\left\{y(x)\to c_1\cosh\left(\frac{\sqrt{a}x^2}{2}\right)+ic_2\sinh\left(\frac{\sqrt{a}x^2}{2}\right)\right\}\right\}$$

Maple: cpu = 0.0 (sec), leaf count = 27

$$\left\{y(x)=\_C1\ \sinh\left(\frac{x^2}{2}\sqrt{a}\right)+\_C2\ \cosh\left(\frac{x^2}{2}\sqrt{a}\right)\right\}$$

3.99 ODE No. 1099

$$\boxed{x\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)-\frac{\mathrm{d}}{\mathrm{d}x}y(x)+x^3\left(\mathrm{e}^{x^2}-v^2\right)y(x)=0}$$

Mathematica: cpu = 1.065635 (sec), leaf count = 36

$$\text{DSolve}\left[x^3\left(e^{x^3}-v^2\right)y(x)+xy''(x)-y'(x)=0,y(x),x\right]$$

Maple: cpu = 0.031 (sec), leaf count = 25

$$\left\{y(x)=\_C1\ J_v\left(\mathrm{e}^{\frac{x^2}{2}}\right)+\_C2\ Y_v\left(\mathrm{e}^{\frac{x^2}{2}}\right)\right\}$$

3.100 ODE No. 1100

$$\boxed{x\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+2\frac{\mathrm{d}}{\mathrm{d}x}y(x)-xy(x)-\mathrm{e}^x=0}$$

Mathematica: cpu = 0.021503 (sec), leaf count = 44

$$\left\{\left\{y(x)\to\frac{c_1e^{-x}}{x}+\frac{c_2e^x}{2x}+\frac{e^x(2x-1)}{4x}\right\}\right\}$$

Maple: cpu = 0.032 (sec), leaf count = 23

$$\left\{y(x)=\frac{\sinh\left(x\right)\_C2}{x}+\frac{\cosh\left(x\right)\_C1}{x}+\frac{\mathrm{e}^x}{2}\right\}$$

3.101 ODE No. 1101

$$\boxed{x\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+2\frac{\mathrm{d}}{\mathrm{d}x}y(x)+axy(x)=0}$$

Mathematica: cpu = 0.025503 (sec), leaf count = 51

$$\left\{\left\{y(x)\to\frac{c_1e^{-\sqrt{-a}x}}{x}+\frac{c_2e^{\sqrt{-a}x}}{2\sqrt{-a}x}\right\}\right\}$$

Maple: cpu = 0.031 (sec), leaf count = 31

$$\left\{y(x)=\frac{\_C1}{x}\sinh\left(\sqrt{-a}x\right)+\frac{\_C2}{x}\cosh\left(\sqrt{-a}x\right)\right\}$$

3.102 ODE No. 1102

$$\boxed{x\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+2\frac{\mathrm{d}}{\mathrm{d}x}y(x)+ax^2y(x)=0}$$

Mathematica: cpu = 0.006001 (sec), leaf count = 42

$$\left\{\left\{y(x)\to\frac{c_1\mathrm{Ai}\left(-\frac{ax}{(-a)^{2/3}}\right)}{x}+\frac{c_2\mathrm{Bi}\left(-\frac{ax}{(-a)^{2/3}}\right)}{x}\right\}\right\}$$

Maple: cpu = 0.031 (sec), leaf count = 35

$$\left\{y(x)=\_C1\,J_{\frac{1}{3}}\left(\frac{2}{3}\sqrt{a}x^{\frac{3}{2}}\right)\frac{1}{\sqrt{x}}+\_C2Y_{\frac{1}{3}}\left(\frac{2}{3}\sqrt{a}x^{\frac{3}{2}}\right)\frac{1}{\sqrt{x}}\right\}$$

3.103 ODE No. 1103

$$\boxed{x\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)-2\frac{\mathrm{d}}{\mathrm{d}x}y(x)+ay(x)=0}$$

Mathematica: cpu = 0.025503 (sec), leaf count = 64

$$\left\{\left\{y(x)\to 6a^{3/2}c_1x^{3/2}J_3\left(2\sqrt{a}\sqrt{x}\right)-2ia^{3/2}c_2x^{3/2}Y_3\left(2\sqrt{a}\sqrt{x}\right)\right\}\right\}$$

Maple: cpu = 0.016 (sec), leaf count = 35

$$\left\{y(x)=\_C1\,x^{\frac{3}{2}}J_3\left(2\,\sqrt{a}\sqrt{x}\right)+\_C2\,x^{\frac{3}{2}}Y_3\left(2\,\sqrt{a}\sqrt{x}\right)\right\}$$

3.104 ODE No. 1104

$$\boxed{x\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+v\frac{\mathrm{d}}{\mathrm{d}x}y(x)+ay(x)=0}$$

Mathematica: cpu = 0.035505 (sec), leaf count = 104

$$\left\{\left\{y(x)\to c_2a^{\frac{v-1}{2}-v+1}x^{\frac{v-1}{2}-v+1}\Gamma(2-v)J_{1-v}\left(2\sqrt{a}\sqrt{x}\right)+c_1a^{\frac{1-v}{2}}x^{\frac{1-v}{2}}\Gamma(v)J_{v-1}\left(2\sqrt{a}\sqrt{x}\right)\right\}\right\}$$

Maple: cpu = 0.016 (sec), leaf count = 47

$$\left\{y(x)=\_C1\,x^{\frac{1}{2}-\frac{v}{2}}J_{v-1}\left(2\,\sqrt{a}\sqrt{x}\right)+\_C2\,x^{\frac{1}{2}-\frac{v}{2}}Y_{v-1}\left(2\,\sqrt{a}\sqrt{x}\right)\right\}$$

3.105 ODE No. 1105

$$\boxed{x\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+a\frac{\mathrm{d}}{\mathrm{d}x}y(x)+bxy(x)=0}$$

Mathematica: cpu = 0.021003 (sec), leaf count = 64

$$\left\{\left\{y(x)\to c_1x^{\frac{1-a}{2}}J_{\frac{a-1}{2}}\left(\sqrt{b}x\right)+c_2x^{\frac{1-a}{2}}Y_{\frac{a-1}{2}}\left(\sqrt{b}x\right)\right\}\right\}$$

Maple: cpu = 0.031 (sec), leaf count = 45

$$\left\{y(x)=\_C1\,x^{-\frac{a}{2}+\frac{1}{2}}J_{\frac{a}{2}-\frac{1}{2}}\left(\sqrt{b}x\right)+\_C2\,x^{-\frac{a}{2}+\frac{1}{2}}Y_{\frac{a}{2}-\frac{1}{2}}\left(\sqrt{b}x\right)\right\}$$

3.106 ODE No. 1106

$$\boxed{x\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+a\frac{\mathrm{d}}{\mathrm{d}x}y(x)+bx^{a1}y(x)=0}$$

Mathematica: cpu = 0.054507 (sec), leaf count = 447

$$\left\{\left\{y(x)\to c_1\left(\frac{1}{\text{a1}}+1\right)^{\frac{a}{\left(\frac{1}{\text{a1}}+1\right)\text{a1}}-\frac{1}{\left(\frac{1}{\text{a1}}+1\right)\text{a1}}}\ \text{a1}^{\frac{a}{\left(\frac{1}{\text{a1}}+1\right)\text{a1}}-\frac{1}{\left(\frac{1}{\text{a1}}+1\right)\text{a1}}}b^{\frac{1}{2}\left(\frac{1}{\left(\frac{1}{\text{a1}}+1\right)\text{a1}}-\frac{a}{\left(\frac{1}{\text{a1}}+1\right)\text{a1}}\right)}\left(x^{\text{a1}}\right)^{\left(\frac{1}{2\text{a1}}+\frac{1}{2}\right)\left(\frac{1}{\left(\frac{1}{\text{a1}}+1\right)\text{a1}}-\frac{1}{\left(\frac{1}{\text{a}}\right.\right.}\right.\right.$$

Maple: cpu = 0.062 (sec), leaf count = 77

$$\left\{y(x)=\_C1\,x^{-\frac{a}{2}+\frac{1}{2}}J_{\frac{a-1}{a1+1}}\left(2\,\frac{\sqrt{b}x^{a1/2+1/2}}{a1+1}\right)+\_C2\,x^{-\frac{a}{2}+\frac{1}{2}}Y_{\frac{a-1}{a1+1}}\left(2\,\frac{\sqrt{b}x^{a1/2+1/2}}{a1+1}\right)\right\}$$

3.107 ODE No. 1107

$$\boxed{x\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+(x+b)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+ay(x)=0}$$

Mathematica: cpu = 0.030504 (sec), leaf count = 40

$$\left\{\left\{y(x)\to c_1e^{-x}U(b-a,b,x)+c_2e^{-x}L_{a-b}^{b-1}(x)\right\}\right\}$$

Maple: cpu = 0.062 (sec), leaf count = 33

$$\left\{y(x)=\_C1\,\mathrm{e}^{-x}M(-a+b,\,b,\,x)+\_C2\,\mathrm{e}^{-x}U(-a+b,\,b,\,x)\right\}$$

3.108 ODE No. 1108

$$\boxed{x\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+(x+a+b)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+ay(x)=0}$$

Mathematica: cpu = 0.035004 (sec), leaf count = 37

$$\left\{\left\{y(x)\to c_1e^{-x}U(b,a+b,x)+c_2e^{-x}L_{-b}^{a+b-1}(x)\right\}\right\}$$

Maple: cpu = 0.062 (sec), leaf count = 29

$$\left\{y(x)=\_C1\,\mathrm{e}^{-x}M(b,\,a+b,\,x)+\_C2\,\mathrm{e}^{-x}U(b,\,a+b,\,x)\right\}$$

3.109 ODE No. 1109

$$\boxed{x\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)-x\frac{\mathrm{d}}{\mathrm{d}x}y(x)-y(x)-x(1+x)\,\mathrm{e}^x=0}$$

Mathematica: cpu = 0.052507 (sec), leaf count = 45

$$\left\{\left\{y(x)\to c_2(-e^x x\mathrm{Ei}(-x)-1)+c_1e^x x+e^x\left(x^2+x-x\log(-x)-1\right)\right\}\right\}$$

Maple: cpu = 0.031 (sec), leaf count = 40

$$\left\{y(x)=\left(-Ei(1,x)\,x+\mathrm{e}^{-x}\right)\mathrm{e}^x\_C1+\mathrm{e}^x\_C2\,x-\left(x\ln\left(x\right)-x^2+1\right)\mathrm{e}^x\right\}$$

3.110 ODE No. 1110

$$\boxed{x\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)-x\frac{\mathrm{d}}{\mathrm{d}x}y(x)-ay(x)=0}$$

Mathematica: cpu = 0.040505 (sec), leaf count = 36

$$\left\{\left\{y(x)\to c_2G^{2,0}_{1,2}\left(-x\left|\begin{array}{c}1-a\\0,1\end{array}\right.\right)+c_1x\,{}_1F_1(a+1;2;x)\right\}\right\}$$

Maple: cpu = 0.094 (sec), leaf count = 23

$$\{y(x)=\_C1\,xM(a+1,\,2,\,x)+\_C2\,xU(a+1,\,2,\,x)\}$$

3.111 ODE No. 1111

$$\boxed{x\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)-(1+x)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)+y(x)=0}$$

Mathematica: cpu = 0.017502 (sec), leaf count = 20

$$\{\{y(x)\to c_1e^x+c_2(-x-1)\}\}$$

Maple: cpu = 0.031 (sec), leaf count = 14

$$\{y(x)=\_C1\,(1+x)+\_C2\,\mathrm{e}^x\}$$

3.112 ODE No. 1112

$$\boxed{x\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)-(1+x)\frac{\mathrm{d}}{\mathrm{d}x}y(x)-2\left(x-1\right)y(x)=0}$$

Mathematica: cpu = 0.025003 (sec), leaf count = 30

$$\left\{\left\{y(x)\to c_1e^{2x}-\frac{1}{9}c_2e^{-x}(3x+1)\right\}\right\}$$

Maple: cpu = 0.031 (sec), leaf count = 22

$$\left\{y(x) = \_C1\,\mathrm{e}^{2\,x}+\_C2\,\mathrm{e}^{-x}(3\,x+1)\right\}$$

3.113 ODE No. 1113

$$\boxed{x\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+(b-x)\frac{\mathrm{d}}{\mathrm{d}x}y(x)-ay(x)=0}$$

Mathematica: cpu = 0.021503 (sec), leaf count = 24

$$\left\{\left\{y(x)\to c_1U(a,b,x)+c_2L_{-a}^{b-1}(x)\right\}\right\}$$

Maple: cpu = 0.063 (sec), leaf count = 17

$$\left\{y(x) = \_C1\,M(a,\,b,\,x)+\_C2\,U(a,\,b,\,x)\right\}$$

3.114 ODE No. 1114

$$\boxed{x\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)-2\left(x-1\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)-y(x)=0}$$

Mathematica: cpu = 0.049506 (sec), leaf count = 39

$$\left\{\left\{y(x)\to c_2G_{1,2}^{2,0}\left(-2x\left|\begin{array}{c}\frac{1}{2}\\-1,0\end{array}\right.\right)+c_1e^x(I_0(x)-I_1(x))\right\}\right\}$$

Maple: cpu = 0.031 (sec), leaf count = 35

$$\left\{y(x) = \_C1\,\mathrm{e}^{x}(I_0(x)-I_1(x))+\_C2\,\mathrm{e}^{x}(-K_0(-x)+K_1(-x))\right\}$$

3.115 ODE No. 1115

$$\boxed{x\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)-(3\,x-2)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)-(2\,x-3)\,y(x)=0}$$

Mathematica: cpu = 0.069009 (sec), leaf count = 76

$$\left\{\left\{y(x)\to c_2e^{-\frac{1}{2}\left(\sqrt{17}-3\right)x}\,{}_1F_1\left(1-\frac{6}{\sqrt{17}};2;\sqrt{17}x\right)+c_1e^{-\frac{1}{2}\left(\sqrt{17}-3\right)x}U\left(1-\frac{6}{\sqrt{17}},2,\sqrt{17}x\right)\right\}\right\}$$

Maple: cpu = 0.140 (sec), leaf count = 55

$$\left\{y(x)=\_C1\,M\left(1-\frac{6\sqrt{17}}{17},\,2,\,\sqrt{17}x\right)\mathrm{e}^{-\frac{x\left(-3+\sqrt{17}\right)}{2}}+\_C2\,U\left(1-\frac{6\sqrt{17}}{17},\,2,\,\sqrt{17}x\right)\mathrm{e}^{-\frac{x\left(-3+\sqrt{17}\right)}{2}}\right\}$$

3.116 ODE No. 1116

$$\boxed{x\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+(ax+b+n)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)+nay(x)=0}$$

Mathematica: cpu = 0.053507 (sec), leaf count = 43

$$\left\{\left\{y(x)\to c_1e^{-ax}U(b,b+n,ax)+c_2e^{-ax}L_{-b}^{b+n-1}(ax)\right\}\right\}$$

Maple: cpu = 0.078 (sec), leaf count = 35

$$\left\{y(x)=\_C1\,\mathrm{e}^{-ax}M(b,\,b+n,\,ax)+\_C2\,\mathrm{e}^{-ax}U(b,\,b+n,\,ax)\right\}$$

3.117 ODE No. 1117

$$\boxed{x\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)-(a+b)\,(1+x)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)+abxy(x)=0}$$

Mathematica: cpu = 0.097512 (sec), leaf count = 107

$$\left\{\left\{y(x)\to c_1U\left(-\frac{-a^2-ba-a+b}{a-b},a+b+2,(a-b)x\right)e^{(a+b+1)\log(x)+bx}+c_2L_{\frac{-a^2-ab-a+b}{a-b}}^{a+b+1}(x(a-b))e^{(a+b\right.\right.$$

Maple: cpu = 0.094 (sec), leaf count = 91

$$\left\{y(x)=\_C1\,\mathrm{e}^{bx}M\left(\frac{a^2+ab+a-b}{a-b},\,a+b+2,\,x(a-b)\right)x^{a+b+1}+\_C2\,\mathrm{e}^{bx}U\left(\frac{a^2+ab+a-b}{a-b},\,a+b+\right.\right.$$

3.118 ODE No. 1118

$$\boxed{x\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+((a+b)\,x+m+n)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)+(abx+na+bm)\,y(x)=0}$$

Mathematica: cpu = 0.093012 (sec), leaf count = 51

$$\left\{\left\{y(x)\to c_1e^{-ax}U(m,m+n,(a-b)x)+c_2e^{-ax}L_{-m}^{m+n-1}(x(a-b))\right\}\right\}$$

Maple: cpu = 0.063 (sec), leaf count = 43

$$\left\{y(x) = \_C1\,\mathrm{e}^{-ax}M(m,\,m+n,\,x(a-b))+\_C2\,\mathrm{e}^{-ax}U(m,\,m+n,\,x(a-b))\right\}$$

3.119 ODE No. 1119

$$\boxed{x\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)-2\,(ax+b)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)+\left(a^2x+2\,ab\right)y(x)=0}$$

Mathematica: cpu = 0.174522 (sec), leaf count = 77

$$\left\{\left\{y(x)\to c_1e^{ax}x^{b-\frac{1}{2}\sqrt{(2b+1)^2}+\frac{1}{2}}+\frac{c_2e^{ax}x^{b+\frac{1}{2}\sqrt{(2b+1)^2}+\frac{1}{2}}}{\sqrt{(2b+1)^2}}\right\}\right\}$$

Maple: cpu = 0.047 (sec), leaf count = 24

$$\left\{y(x) = \_C1\,\mathrm{e}^{ax}+\_C2\,x^{2\,b+1}\mathrm{e}^{ax}\right\}$$

3.120 ODE No. 1120

$$\boxed{x\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+(ax+b)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)+(cx+d)\,y(x)=0}$$

Mathematica: cpu = 0.065008 (sec), leaf count = 166

$$\left\{\left\{y(x)\to c_1e^{\frac{1}{2}x\left(-\sqrt{a^2-4c}-a\right)}U\left(-\frac{-ab-\sqrt{a^2-4c}b+2d}{2\sqrt{a^2-4c}},b,\sqrt{a^2-4c}cx\right)+c_2e^{\frac{1}{2}x\left(-\sqrt{a^2-4c}-a\right)}L^{b-1}_{\frac{-b\sqrt{a^2-4c}-ab+}{2\sqrt{a^2-4c}}}\right.\right.$$

Maple: cpu = 0.140 (sec), leaf count = 123

$$\left\{y(x) = \_C1\,\mathrm{e}^{-\frac{x}{2}\left(a+\sqrt{a^2-4\,c}\right)}M\left(\frac{1}{2}\left(b\sqrt{a^2-4\,c}+ab-2\,d\right)\frac{1}{\sqrt{a^2-4\,c}},\,b,\,\sqrt{a^2-4\,c}x\right)+\_C2\,\mathrm{e}^{-\frac{x}{2}\left(a+\sqrt{a^2-\right.}\right.$$

3.121 ODE No. 1121

$$\boxed{x\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)-\left(x^2-x\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+(x-1)\,y(x)=0}$$

Mathematica: cpu = 10.521836 (sec), leaf count = 40

$$\left\{\left\{y(x)\to c_2 x\int_1^x\frac{e^{\frac{K[1]^2}{2}-K[1]}}{K[1]^2}\,dK[1]+c_1 x\right\}\right\}$$

Maple: cpu = 0.016 (sec), leaf count = 26

$$\left\{y(x)=\left(\int\frac{1}{x^2}\mathrm{e}^{\frac{x^2}{2}-x}\,\mathrm{d}x\_C1+\_C2\right)x\right\}$$

3.122 ODE No. 1122

$$\boxed{x\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)-\left(x^2-x-2\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)-x(x+3)\,y(x)=0}$$

Mathematica: cpu = 10.079280 (sec), leaf count = 56

$$\left\{\left\{y(x)\to c_2 e^{\frac{x^2}{2}}\int_1^x\frac{e^{-\frac{1}{2}K[1]^2-K[1]}}{K[1]^2}\,dK[1]+c_1 e^{\frac{x^2}{2}}\right\}\right\}$$

Maple: cpu = 0.125 (sec), leaf count = 34

$$\left\{y(x)=\_C1\,\mathrm{e}^{\frac{x^2}{2}}+\_C2\,\mathrm{e}^{\frac{x^2}{2}}\int\frac{1}{x^2}\mathrm{e}^{-\frac{x(x+2)}{2}}\,\mathrm{d}x\right\}$$

3.123 ODE No. 1123

$$\boxed{x\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)-\left(2\,ax^2+1\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+bx^3y(x)=0}$$

Mathematica: cpu = 0.012002 (sec), leaf count = 91

$$\left\{\left\{y(x)\to c_1 e^{\frac{1}{2}\sqrt{b}x^2\left(\frac{a}{\sqrt{b}}-\frac{\sqrt{a^2-b}}{\sqrt{b}}\right)}+c_2 e^{\frac{1}{2}\sqrt{b}x^2\left(\frac{\sqrt{a^2-b}}{\sqrt{b}}+\frac{a}{\sqrt{b}}\right)}\right\}\right\}$$

Maple: cpu = 0.047 (sec), leaf count = 45

$$\left\{y(x)=\_C1\,\mathrm{e}^{\frac{x^2}{2}\left(\sqrt{a^2-b}+a\right)}+\_C2\,\mathrm{e}^{-\frac{x^2}{2}\left(\sqrt{a^2-b}-a\right)}\right\}$$

3.124 ODE No. 1124

$$\boxed{x\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)-2\left(x^2-a\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+2\,nxy(x)=0}$$

Mathematica: cpu = 0.063008 (sec), leaf count = 65

$$\left\{\left\{y(x)\to c_1\,{}_1F_1\left(-\frac{n}{2};a+\frac{1}{2};x^2\right)+i^{1-2a}c_2x^{1-2a}\,{}_1F_1\left(-a-\frac{n}{2}+\frac{1}{2};\frac{3}{2}-a;x^2\right)\right\}\right\}$$

Maple: cpu = 0.062 (sec), leaf count = 29

$$\left\{y(x)=\_C1\,M\left(-\frac{n}{2},\,\frac{1}{2}+a,\,x^2\right)+\_C2\,U\left(-\frac{n}{2},\,\frac{1}{2}+a,\,x^2\right)\right\}$$

3.125 ODE No. 1125

$$\boxed{x\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+\left(4\,x^2-1\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)-4\,x^3y(x)-4\,x^5=0}$$

Mathematica: cpu = 0.129016 (sec), leaf count = 84

$$\left\{\left\{y(x)\to c_1e^{-\left(1-\sqrt{2}\right)x^2}+c_2e^{-\left(1+\sqrt{2}\right)x^2}-\frac{3\sqrt{2}x^2+4x^2+6\sqrt{2}+8}{\sqrt{2}\left(3+2\sqrt{2}\right)}\right\}\right\}$$

Maple: cpu = 0.062 (sec), leaf count = 36

$$\left\{y(x)=\mathrm{e}^{x^2\left(\sqrt{2}-1\right)}\_C2+\mathrm{e}^{-x^2\left(1+\sqrt{2}\right)}\_C1-x^2-2\right\}$$

3.126 ODE No. 1126

$$\boxed{x\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+\left(2\,ax^3-1\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+\left(a^2x^3+a\right)x^2y(x)=0}$$

Mathematica: cpu = 1.204153 (sec), leaf count = 58

$$\left\{\left\{y(x)\to \text{DifferentialRoot}\left(\{y,x\},\left\{\left(a^2x^3+a\right)y(x)+\left(2x^3a-1\right)y'(x)+xy''(x)=0,y(1)=c_1,y'(1)=\right.\right.\right.$$

Maple: cpu = 0.047 (sec), leaf count = 26

$$\left\{y(x)=\_C1\,\mathrm{e}^{-\frac{ax^3}{3}}+\_C2\,\mathrm{e}^{-\frac{ax^3}{3}}x^2\right\}$$

3.127 ODE No. 1127

$$\boxed{x\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+\left(2\,ax\ln\left(x\right)+1\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+\left(a^2x(\ln\left(x\right))^2+a\ln\left(x\right)+a\right)y(x)=0}$$

Mathematica: cpu = 0.038505 (sec), leaf count = 36

$$\left\{\left\{y(x)\to c_1e^{ax}x^{-ax}+c_2e^{ax}x^{-ax}\log(x)\right\}\right\}$$

Maple: cpu = 0.016 (sec), leaf count = 31

$$\left\{y(x)=\_C1\,x^{-ax}\mathrm{e}^{ax}+\_C2\,x^{-ax}\mathrm{e}^{ax}\ln\left(x\right)\right\}$$

3.128 ODE No. 1128

$$\boxed{x\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+\left(xf(x)+2\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+f(x)\,y(x)=0}$$

Mathematica: cpu = 0.244031 (sec), leaf count = 29

$$\text{DSolve}[(xf(x)+2)y'(x)+f(x)y(x)+xy''(x)=0,y(x),x]$$

Maple: cpu = 0.156 (sec), leaf count = 35

$$\left\{y(x)=\frac{\_C1}{x}+\frac{\_C2}{x}\int\mathrm{e}^{\int\frac{-xf(x)-2}{x}\,\mathrm{d}x}x^2\,\mathrm{d}x\right\}$$

3.129 ODE No. 1129

$$\boxed{\left(x-3\right)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)-\left(4\,x-9\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+\left(3\,x-6\right)y(x)=0}$$

Mathematica: cpu = 0.037505 (sec), leaf count = 42

$$\left\{\left\{y(x)\to\frac{1}{8}c_2e^{3x-9}\left(4x^3-42x^2+150x-183\right)+c_1e^{x-3}\right\}\right\}$$

Maple: cpu = 0.047 (sec), leaf count = 30

$$\left\{y(x)=\_C1\,\mathrm{e}^{x}+\_C2\,\mathrm{e}^{3\,x}\left(4\,x^3-42\,x^2+150\,x-183\right)\right\}$$

3.130 ODE No. 1130

$$\boxed{2\,x\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+\frac{\mathrm{d}}{\mathrm{d}x}y(x)+ay(x)=0}$$

Mathematica: cpu = 0.011501 (sec), leaf count = 46

$$\left\{\left\{y(x)\to c_2\sin\left(\sqrt{2}\sqrt{a}\sqrt{x}\right)+c_1\cos\left(\sqrt{2}\sqrt{a}\sqrt{x}\right)\right\}\right\}$$

Maple: cpu = 0.016 (sec), leaf count = 31

$$\left\{y(x)=\_C1\ \sin\left(\sqrt{x}\sqrt{2}\sqrt{a}\right)+\_C2\ \cos\left(\sqrt{x}\sqrt{2}\sqrt{a}\right)\right\}$$

3.131 ODE No. 1131

$$\boxed{2\,x\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)-(x-1)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+ay(x)=0}$$

Mathematica: cpu = 0.010001 (sec), leaf count = 58

$$\left\{\left\{y(x)\to c_1\sqrt{x}U\left(\frac{1}{2}(1-2a),\frac{3}{2},\frac{x}{2}\right)+c_2\sqrt{x}L^{\frac{1}{2}}_{\frac{1}{2}(2a-1)}\left(\frac{x}{2}\right)\right\}\right\}$$

Maple: cpu = 0.062 (sec), leaf count = 35

$$\left\{y(x)=\_C1\ \sqrt{x}M\left(-a+\frac{1}{2},\frac{3}{2},\frac{x}{2}\right)+\_C2\ \sqrt{x}U\left(-a+\frac{1}{2},\frac{3}{2},\frac{x}{2}\right)\right\}$$

3.132 ODE No. 1132

$$\boxed{2\,x\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)-(2\,x-1)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+ay(x)=0}$$

Mathematica: cpu = 0.010501 (sec), leaf count = 48

$$\left\{\left\{y(x)\to c_1\sqrt{x}U\left(\frac{1-a}{2},\frac{3}{2},x\right)+c_2\sqrt{x}L^{\frac{1}{2}}_{\frac{a-1}{2}}(x)\right\}\right\}$$

Maple: cpu = 0.063 (sec), leaf count = 31

$$\left\{y(x)=\_C1\ \sqrt{x}M\left(-\frac{a}{2}+\frac{1}{2},\frac{3}{2},x\right)+\_C2\ \sqrt{x}U\left(-\frac{a}{2}+\frac{1}{2},\frac{3}{2},x\right)\right\}$$

3.133 ODE No. 1133

$$\boxed{(2\,x-1)\,\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)-(3\,x-4)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)+(x-3)\,y(x)=0}$$

Mathematica: cpu = 0.091011 (sec), leaf count = 92

$$\left\{\left\{y(x)\to 2^{5/8}c_1e^{x-\frac{1}{2}}+\frac{c_2e^{\frac{x}{2}-\frac{1}{2}}\left(\sqrt{2}e^{x/2}\sqrt[4]{2x-1}\Gamma\left(\frac{3}{4},\frac{1}{4}(2x-1)\right)-2\sqrt[4]{e}\right)}{2^{5/8}\sqrt[4]{2x-1}}\right\}\right\}$$

Maple: cpu = 0.078 (sec), leaf count = 47

$$\left\{y(x)=\_C1\mathrm{e}^{\frac{x}{2}}M\left(1,\,\frac{3}{4},\,\frac{x}{2}-\frac{1}{4}\right)\frac{1}{\sqrt[4]{2\,x-1}}+\_C2\mathrm{e}^{\frac{x}{2}}U\left(1,\,\frac{3}{4},\,\frac{x}{2}-\frac{1}{4}\right)\frac{1}{\sqrt[4]{2\,x-1}}\right\}$$

3.134 ODE No. 1134

$$\boxed{4\,x\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)-(x+a)\,y(x)=0}$$

Mathematica: cpu = 0.094512 (sec), leaf count = 78

$$\left\{\left\{y(x)\to\frac{1}{4}c_2e^{-x/2}x\,{}_1F_1\left(\frac{1}{128}(-32(-a-4i)-128i)+1;2;x\right)+\frac{1}{4}c_1e^{-x/2}xU\left(\frac{1}{128}(-32(-a-4i)-12\right.\right.\right.$$

Maple: cpu = 0.094 (sec), leaf count = 21

$$\left\{y(x)=\_C1\,M_{-\frac{a}{4},\frac{1}{2}}(x)+\_C2\,W_{-\frac{a}{4},\frac{1}{2}}(x)\right\}$$

3.135 ODE No. 1135

$$\boxed{4\,x\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+2\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)-y(x)=0}$$

Mathematica: cpu = 0.009501 (sec), leaf count = 27

$$\left\{\left\{y(x)\to c_1\cosh\left(\sqrt{x}\right)+ic_2\sinh\left(\sqrt{x}\right)\right\}\right\}$$

Maple: cpu = 0.0 (sec), leaf count = 17

$$\left\{y(x)=\_C1\,\sinh\left(\sqrt{x}\right)+\_C2\,\cosh\left(\sqrt{x}\right)\right\}$$

3.136 ODE No. 1136

$$\boxed{4\,x\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+4\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)-(x+2)\,y(x)=0}$$

Mathematica: cpu = 0.020503 (sec), leaf count = 30

$$\left\{\left\{y(x)\to c_2e^{x/2}\mathrm{Ei}(-x)+c_1e^{x/2}\right\}\right\}$$

Maple: cpu = 0.031 (sec), leaf count = 20

$$\left\{y(x)=\_C1\,\mathrm{e}^{\frac{x}{2}}+\_C2\,\mathrm{e}^{\frac{x}{2}}Ei(1,x)\right\}$$

3.137 ODE No. 1137

$$\boxed{4\,x\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+4\,y(x)-(x+2)\,y(x)+ly(x)=0}$$

Mathematica: cpu = 0.095512 (sec), leaf count = 74

$$\left\{\left\{y(x)\to \frac{1}{4}c_2e^{-x/2}x\,{}_1F_1\left(\frac{1}{128}(-32(l+(2-4i))-128i)+1;2;x\right)+\frac{1}{4}c_1e^{-x/2}xU\left(\frac{1}{128}(-32(l+(2-4i)\right.\right.\right.$$

Maple: cpu = 0.109 (sec), leaf count = 25

$$\left\{y(x)=\_C1\,M_{\frac{l}{4}+\frac{1}{2},\frac{1}{2}}(x)+\_C2\,W_{\frac{l}{4}+\frac{1}{2},\frac{1}{2}}(x)\right\}$$

3.138 ODE No. 1138

$$\boxed{4\,x\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+4\,m\frac{\mathrm{d}}{\mathrm{d}x}y(x)-(x-2\,m-4\,n)\,y(x)=0}$$

Mathematica: cpu = 0.030504 (sec), leaf count = 38

$$\left\{\left\{y(x)\to c_1e^{-x/2}U(-n,m,x)+c_2e^{-x/2}L_n^{m-1}(x)\right\}\right\}$$

Maple: cpu = 0.062 (sec), leaf count = 29

$$\left\{y(x)=\_C1\,\mathrm{e}^{-\frac{x}{2}}M(-n,\,m,\,x)+\_C2\,\mathrm{e}^{-\frac{x}{2}}U(-n,\,m,\,x)\right\}$$

3.139 ODE No. 1139

$$\boxed{16\,x\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+8\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)-(x+a)\,y(x)=0}$$

Mathematica: cpu = 0.012502 (sec), leaf count = 74

$$\left\{\left\{y(x)\to c_1 e^{\frac{1}{4}(2\log(x)-x)}U\left(\frac{a+6}{8},\frac{3}{2},\frac{x}{2}\right)+c_2 e^{\frac{1}{4}(2\log(x)-x)}L^{\frac{1}{2}}_{\frac{1}{8}(-a-6)}\left(\frac{x}{2}\right)\right\}\right\}$$

Maple: cpu = 0.063 (sec), leaf count = 43

$$\left\{y(x)=\_C1\,\sqrt{x}\mathrm{e}^{-\frac{x}{4}}M\left(\frac{a}{8}+\frac{3}{4},\frac{3}{2},\frac{x}{2}\right)+\_C2\,\sqrt{x}\mathrm{e}^{-\frac{x}{4}}U\left(\frac{a}{8}+\frac{3}{4},\frac{3}{2},\frac{x}{2}\right)\right\}$$

3.140 ODE No. 1140

$$\boxed{ax\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+b\frac{\mathrm{d}}{\mathrm{d}x}y(x)+cy(x)=0}$$

Mathematica: cpu = 0.049006 (sec), leaf count = 190

$$\left\{\left\{y(x)\to c_1 a^{\frac{1}{2}\left(\frac{b}{a}-1\right)}c^{\frac{1}{2}\left(1-\frac{b}{a}\right)}x^{\frac{1}{2}\left(1-\frac{b}{a}\right)}\Gamma\left(\frac{b}{a}\right)J_{\frac{b}{a}-1}\left(\frac{2\sqrt{c}\sqrt{x}}{\sqrt{a}}\right)+c_2 a^{\frac{1}{2}\left(1-\frac{b}{a}\right)-\frac{a-b}{a}}c^{\frac{a-b}{a}+\frac{1}{2}\left(\frac{b}{a}-1\right)}x^{\frac{a-b}{a}+\frac{1}{2}\left(\frac{b}{a}-1\right)}\Gamma\right.$$

Maple: cpu = 0.015 (sec), leaf count = 77

$$\left\{y(x)=\_C1\,x^{\frac{a-b}{2a}}J_{\frac{-a+b}{a}}\left(2\sqrt{\frac{c}{a}}\sqrt{x}\right)+\_C2\,x^{\frac{a-b}{2a}}Y_{\frac{-a+b}{a}}\left(2\sqrt{\frac{c}{a}}\sqrt{x}\right)\right\}$$

3.141 ODE No. 1141

$$\boxed{ax\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+(bx+3\,a)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)+3\,by(x)=0}$$

Mathematica: cpu = 0.107514 (sec), leaf count = 70

$$\left\{\left\{y(x)\to\frac{c_2 e^{-\frac{bx}{a}}\left(b^2x^2\mathrm{Ei}\left(\frac{bx}{a}\right)-ae^{\frac{bx}{a}}(a+bx)\right)}{2a^2x^2}+c_1 e^{-\frac{bx}{a}}\right\}\right\}$$

Maple: cpu = 0.047 (sec), leaf count = 49

$$\left\{y(x)=\_C1\,\mathrm{e}^{-\frac{bx}{a}}+\_C2\left(\frac{a(bx+a)}{x^2}+\mathrm{e}^{-\frac{bx}{a}}Ei\left(1,-\frac{bx}{a}\right)b^2\right)\right\}$$

3.142 ODE No. 1142

$$\boxed{5\left(ax+b\right)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+8\,a\frac{\mathrm{d}}{\mathrm{d}x}y(x)+c\sqrt[5]{ax+b}y(x)=0}$$

Mathematica: cpu = 0.047006 (sec), leaf count = 108

$$\left\{\left\{y(x)\to \frac{3ac_2\sin\left(\frac{\sqrt{5}\sqrt{c}(ax+b)^{3/5}}{3a}\right)}{\sqrt{5}\sqrt{c}(ax+b)^{3/5}}+\frac{6ac_1\cos\left(\frac{\sqrt{5}\sqrt{c}(ax+b)^{3/5}}{3a}\right)}{\sqrt{5}\sqrt{c}(ax+b)^{3/5}}\right\}\right\}$$

Maple: cpu = 0.078 (sec), leaf count = 59

$$\left\{y(x)=\_C1\sinh\left(\frac{1}{3\,a}(ax+b)^{\frac{3}{5}}\sqrt{-5\,c}\right)(ax+b)^{-\frac{3}{5}}+\_C2\cosh\left(\frac{1}{3\,a}(ax+b)^{\frac{3}{5}}\sqrt{-5\,c}\right)(ax+b)^{-\frac{3}{5}}\right\}$$

3.143 ODE No. 1143

$$\boxed{2\,ax\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+(bx+a)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+cy(x)=0}$$

Mathematica: cpu = 0.045006 (sec), leaf count = 93

$$\left\{\left\{y(x)\to c_1e^{\frac{a\log(x)-bx}{2a}}U\left(-\frac{c-b}{b},\frac{3}{2},\frac{bx}{2a}\right)+c_2e^{\frac{a\log(x)-bx}{2a}}L^{\frac{1}{2}}_{\frac{c-b}{b}}\left(\frac{bx}{2a}\right)\right\}\right\}$$

Maple: cpu = 0.078 (sec), leaf count = 67

$$\left\{y(x)=\_C1\,\mathrm{e}^{-\frac{bx}{2\,a}}M\left(\frac{b-c}{b},\frac{3}{2},\frac{bx}{2\,a}\right)\sqrt{x}+\_C2\,\mathrm{e}^{-\frac{bx}{2\,a}}U\left(\frac{b-c}{b},\frac{3}{2},\frac{bx}{2\,a}\right)\sqrt{x}\right\}$$

3.144 ODE No. 1144

$$\boxed{2\,ax\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+(bx+3\,a)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+cy(x)=0}$$

Mathematica: cpu = 0.039505 (sec), leaf count = 88

$$\left\{\left\{y(x)\to c_1e^{-\frac{bx}{2a}}U\left(-\frac{2c-3b}{2b},\frac{3}{2},\frac{bx}{2a}\right)+c_2e^{-\frac{bx}{2a}}L^{\frac{1}{2}}_{\frac{2c-3b}{2b}}\left(\frac{bx}{2a}\right)\right\}\right\}$$

Maple: cpu = 0.063 (sec), leaf count = 67

$$\left\{y(x)=\_C1\,\mathrm{e}^{-\frac{bx}{2\,a}}M\left(\frac{3\,b-2\,c}{2\,b},\frac{3}{2},\frac{bx}{2\,a}\right)+\_C2\,\mathrm{e}^{-\frac{bx}{2\,a}}U\left(\frac{3\,b-2\,c}{2\,b},\frac{3}{2},\frac{bx}{2\,a}\right)\right\}$$

3.145 ODE No. 1145

$$\boxed{(a2\,x+b2)\,\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+(a1\,x+b1)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)+(a0\,x+b0)\,y(x)=0}$$

Mathematica: cpu = 0.387049 (sec), leaf count = 398

$$\left\{\left\{y(x)\to c_1 U\left(-\frac{\text{b2a1}^2-\text{a2b1a1}-\sqrt{\text{a1}^2-4\text{a0a2}}\text{b2a1}+2\text{a2}^2\text{b0}+\text{a2}\sqrt{\text{a1}^2-4\text{a0a2}}\text{b1}-2\text{a0a2b2}-2\text{a}}{2\text{a2}^2\sqrt{\text{a1}^2-4\text{a0a2}}}\right.\right.\right.$$

Maple: cpu = 0.141 (sec), leaf count = 287

$$\left\{y(x)=\_C1\,\mathrm{e}^{-\frac{x}{2\,a2}\left(\sqrt{-4\,a0\,a2+a1^2}+a1\right)}M\left(\frac{1}{2\,a2^2}\left(\left(a1\,b2+2\,a2^2-a2\,b1\right)\sqrt{-4\,a0\,a2+a1^2}-2\,a2^2b0+\right.\right.\right.$$

3.146 ODE No. 1146

$$\boxed{x^2\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)-6\,y(x)=0}$$

Mathematica: cpu = 0.022503 (sec), leaf count = 18

$$\left\{\left\{y(x)\to c_1x^3+\frac{c_2}{x^2}\right\}\right\}$$

Maple: cpu = 0.0 (sec), leaf count = 15

$$\left\{y(x)=\frac{\_C1}{x^2}+\_C2\,x^3\right\}$$

3.147 ODE No. 1147

$$\boxed{x^2\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)-12\,y(x)=0}$$

Mathematica: cpu = 0.016002 (sec), leaf count = 18

$$\left\{\left\{y(x)\to c_1x^4+\frac{c_2}{x^3}\right\}\right\}$$

Maple: cpu = 0.015 (sec), leaf count = 15

$$\left\{y(x)=\_C1\,x^4+\frac{\_C2}{x^3}\right\}$$

3.148 ODE No. 1148

$$\boxed{x^2 \frac{\mathrm{d}^2}{\mathrm{d}x^2} y(x) + a y(x) = 0}$$

Mathematica: cpu = 0.009501 (sec), leaf count = 77

$$\left\{\left\{y(x) \to c_1 x^{\frac{1}{2}\left(\frac{1}{\sqrt{a}}-\frac{\sqrt{1-4a}}{\sqrt{a}}\right)\sqrt{a}} + c_2 x^{\frac{1}{2}\left(\frac{\sqrt{1-4a}}{\sqrt{a}}+\frac{1}{\sqrt{a}}\right)\sqrt{a}}\right\}\right\}$$

Maple: cpu = 0.016 (sec), leaf count = 35

$$\left\{y(x) = \_C1\, x^{\frac{1}{2}+\frac{1}{2}\sqrt{1-4\,a}} + \_C2\, x^{\frac{1}{2}-\frac{1}{2}\sqrt{1-4\,a}}\right\}$$

3.149 ODE No. 1149

$$\boxed{x^2 \frac{\mathrm{d}^2}{\mathrm{d}x^2} y(x) + (ax + b)\, y(x) = 0}$$

Mathematica: cpu = 0.075510 (sec), leaf count = 212

$$\left\{\left\{y(x) \to c_2 a^{\frac{1}{2}(\sqrt{1-4b}+1)-\frac{1}{2}\sqrt{1-4b}} x^{\frac{1}{2}(\sqrt{1-4b}+1)-\frac{1}{2}\sqrt{1-4b}} \Gamma\left(\sqrt{1-4b}+1\right) J_{\sqrt{1-4b}}\left(2\sqrt{a}\sqrt{x}\right) + c_1 a^{\frac{1}{2}(1-\sqrt{1-4b})+\frac{1}{2}\sqrt{}\right.\right.$$

Maple: cpu = 0.015 (sec), leaf count = 47

$$\left\{y(x) = \_C1\, \sqrt{x} J_{\sqrt{1-4\,b}}\left(2\,\sqrt{a}\sqrt{x}\right) + \_C2\, \sqrt{x} Y_{\sqrt{1-4\,b}}\left(2\,\sqrt{a}\sqrt{x}\right)\right\}$$

3.150 ODE No. 1150

$$\boxed{x^2 \frac{\mathrm{d}^2}{\mathrm{d}x^2} y(x) + \left(x^2 - 2\right) y(x) = 0}$$

Mathematica: cpu = 0.009001 (sec), leaf count = 53

$$\left\{\left\{y(x) \to \sqrt{\frac{2}{\pi}} c_2 \left(-\sin(x) - \frac{\cos(x)}{x}\right) + \sqrt{\frac{2}{\pi}} c_1 \left(\frac{\sin(x)}{x} - \cos(x)\right)\right\}\right\}$$

Maple: cpu = 0.063 (sec), leaf count = 31

$$\left\{y(x) = \frac{\_C1\, (\cos(x)\, x - \sin(x))}{x} + \frac{\_C2\, (\cos(x) + x \sin(x))}{x}\right\}$$

3.151 ODE No. 1151

$$\boxed{x^2 \frac{\mathrm{d}^2}{\mathrm{d}x^2} y(x) - \left(ax^2 + 2\right) y(x) = 0}$$

Mathematica: cpu = 0.018002 (sec), leaf count = 129

$$\left\{\left\{y(x) \to \frac{\sqrt{\frac{2}{\pi}} c_2 \sqrt{x} \left(i \sinh\left(\sqrt{a} x\right) - \frac{i \cosh\left(\sqrt{a} x\right)}{\sqrt{a} x}\right)}{\sqrt{-i \sqrt{a} x}} + \frac{\sqrt{\frac{2}{\pi}} c_1 \sqrt{x} \left(\frac{\sinh\left(\sqrt{a} x\right)}{\sqrt{a} x} - \cosh\left(\sqrt{a} x\right)\right)}{\sqrt{-i \sqrt{a} x}}\right\}\right\}$$

Maple: cpu = 0.062 (sec), leaf count = 43

$$\left\{y(x) = \frac{\_C1}{x} \mathrm{e}^{\sqrt{a} x} \left(-ax + \sqrt{a}\right) + \frac{\_C2}{x} \mathrm{e}^{-\sqrt{a} x} \left(ax + \sqrt{a}\right)\right\}$$

3.152 ODE No. 1152

$$\boxed{x^2 \frac{\mathrm{d}^2}{\mathrm{d}x^2} y(x) + \left(a^2 x^2 - 6\right) y(x) = 0}$$

Mathematica: cpu = 0.018502 (sec), leaf count = 114

$$\left\{\left\{y(x) \to \frac{\sqrt{\frac{2}{\pi}} c_1 \sqrt{x} \left(\frac{3 \sin(ax)}{a^2 x^2} - \sin(ax) - \frac{3 \cos(ax)}{ax}\right)}{\sqrt{ax}} + \frac{\sqrt{\frac{2}{\pi}} c_2 \sqrt{x} \left(-\frac{3 \cos(ax)}{a^2 x^2} - \frac{3 \sin(ax)}{ax} + \cos(ax)\right)}{\sqrt{ax}}\right\}\right\}$$

Maple: cpu = 0.171 (sec), leaf count = 67

$$\left\{y(x) = \frac{\_C1 \left(\cos\left(ax\right) a^2 x^2 - 3 \sin\left(ax\right) xa - 3 \cos\left(ax\right)\right)}{x^2} + \frac{\_C2 \left(\sin\left(ax\right) a^2 x^2 + 3 \cos\left(ax\right) xa - 3 \sin\left(a\right.\right.\right.}{x^2}$$

3.153 ODE No. 1153

$$\boxed{x^2 \frac{\mathrm{d}^2}{\mathrm{d}x^2} y(x) + \left(ax^2 - v(v-1)\right) y(x) = 0}$$

Mathematica: cpu = 0.033504 (sec), leaf count = 56

$$\left\{\left\{y(x) \to c_1 \sqrt{x} J_{\frac{1}{2}(2v-1)}\left(\sqrt{a} x\right) + c_2 \sqrt{x} Y_{\frac{1}{2}(2v-1)}\left(\sqrt{a} x\right)\right\}\right\}$$

Maple: cpu = 0.031 (sec), leaf count = 33

$$\left\{y(x) = \_C1 \sqrt{x} J_{v-\frac{1}{2}}\left(\sqrt{a} x\right) + \_C2 \sqrt{x} Y_{v-\frac{1}{2}}\left(\sqrt{a} x\right)\right\}$$

3.154 ODE No. 1154

$$\boxed{x^2 \frac{\mathrm{d}^2}{\mathrm{d}x^2} y(x) + \left(ax^2 + bx + c\right) y(x) = 0}$$

Mathematica: cpu = 0.020002 (sec), leaf count = 88

$$\left\{\left\{y(x) \to c_1 M_{-\frac{ib}{2\sqrt{a}},-\frac{1}{2}i\sqrt{4c-1}}\left(2i\sqrt{a}x\right) + c_2 W_{-\frac{ib}{2\sqrt{a}},-\frac{1}{2}i\sqrt{4c-1}}\left(2i\sqrt{a}x\right)\right\}\right\}$$

Maple: cpu = 0.094 (sec), leaf count = 57

$$\left\{y(x) = \_C1\, M_{-\frac{i}{2}b\frac{1}{\sqrt{a}},\frac{1}{2}\sqrt{1-4\,c}}\left(2\,i\sqrt{a}x\right) + \_C2\, W_{-\frac{i}{2}b\frac{1}{\sqrt{a}},\frac{1}{2}\sqrt{1-4\,c}}\left(2\,i\sqrt{a}x\right)\right\}$$

3.155 ODE No. 1155

$$\boxed{x^2 \frac{\mathrm{d}^2}{\mathrm{d}x^2} y(x) + \left(ax^k - b(b-1)\right) y(x) = 0}$$

Mathematica: cpu = 0.052507 (sec), leaf count = 225

$$\left\{\left\{y(x) \to c_1 k^{-\frac{2(1-b)}{k}-\frac{2b}{k}+\frac{1}{k}} a^{\frac{1-b}{k}+\frac{1}{2}\left(\frac{2b}{k}-\frac{1}{k}\right)} \left(x^k\right)^{\frac{1-b}{k}+\frac{1}{2}\left(\frac{2b}{k}-\frac{1}{k}\right)} \Gamma\left(-\frac{2b}{k}+\frac{1}{k}+1\right) J_{\frac{1-2b}{k}}\left(\frac{2\sqrt{a}\sqrt{x^k}}{k}\right) + c_2 k^{-1/k}\right.\right.$$

Maple: cpu = 0.031 (sec), leaf count = 69

$$\left\{y(x) = \_C1\, \sqrt{x} J_{\frac{1}{k}\sqrt{(2\,b-1)^2}}\left(2\,\frac{\sqrt{a}x^{k/2}}{k}\right) + \_C2\, \sqrt{x} Y_{\frac{1}{k}\sqrt{(2\,b-1)^2}}\left(2\,\frac{\sqrt{a}x^{k/2}}{k}\right)\right\}$$

3.156 ODE No. 1156

$$\boxed{x^2 \frac{\mathrm{d}^2}{\mathrm{d}x^2} y(x) + \frac{y(x)}{\ln(x)} - x\mathrm{e}^x(2 + x\ln(x)) = 0}$$

Mathematica: cpu = 0.207026 (sec), leaf count = 34

$$\text{DSolve}\left[x^2 y''(x) + \frac{y(x)}{\log(x)} - e^x x(x\log(x)+2) = 0, y(x), x\right]$$

Maple: cpu = 0.093 (sec), leaf count = 73

$$\left\{y(x) = \ln(x)\,\_C2 + \left(-Ei(1,-\ln(x))\ln(x) - x\right)\_C1 - \left(-\int \frac{\left(Ei(1,-\ln(x))\ln(x)+x\right)\mathrm{e}^x(2+x\ln(x$$

3.157 ODE No. 1157

$$\boxed{x^2 \frac{\mathrm{d}^2}{\mathrm{d}x^2} y(x) + a \frac{\mathrm{d}}{\mathrm{d}x} y(x) - x y(x) = 0}$$

Mathematica: cpu = 0.501564 (sec), leaf count = 46

$$\left\{\left\{y(x) \to \text{DifferentialRoot}\left(\{y, x\}, \left\{y''(x) x^2 - y(x) x + a y'(x) = 0, y(1) = c_1, y'(1) = c_2\right\}\right)(x)\right\}\right\}$$

Maple: cpu = 0.140 (sec), leaf count = 32

$$\left\{y(x) = DESol\left(\left\{\frac{\mathrm{d}^2}{\mathrm{d}x^2} \_Y(x) + \frac{a \frac{\mathrm{d}}{\mathrm{d}x} \_Y(x)}{x^2} - \frac{\_Y(x)}{x}\right\}, \{\_Y(x)\}\right)\right\}$$

3.158 ODE No. 1158

$$\boxed{x^2 \frac{\mathrm{d}^2}{\mathrm{d}x^2} y(x) + a \frac{\mathrm{d}}{\mathrm{d}x} y(x) - \left(b^2 x^2 + a b\right) y(x) = 0}$$

Mathematica: cpu = 8.381064 (sec), leaf count = 42

$$\left\{\left\{y(x) \to c_2 e^{b x} \int_1^x e^{\frac{a}{K[1]} - 2 b K[1]} \, dK[1] + c_1 e^{b x}\right\}\right\}$$

Maple: cpu = 0.172 (sec), leaf count = 180

$$\left\{y(x) = \_C1 \, \mathrm{e}^{\frac{-b x^2 + a}{x}} \mathit{HeunD}\left(4 \sqrt{2} \sqrt{a b}, -1 - 4 \sqrt{2} \sqrt{a b}, 8 \sqrt{2} \sqrt{a b}, -4 \sqrt{2} \sqrt{a b} + 1, 1\left(\sqrt{2} \sqrt{a b} x - a\right)\right)\left(\sqrt{2}\right.\right.$$

3.159 ODE No. 1159

$$\boxed{x^2 \frac{\mathrm{d}^2}{\mathrm{d}x^2} y(x) + x \frac{\mathrm{d}}{\mathrm{d}x} y(x) - y(x) - a x^2 = 0}$$

Mathematica: cpu = 0.014502 (sec), leaf count = 44

$$\left\{\left\{y(x) \to \frac{a x^2}{3} + \frac{c_1 (x^2 + 1)}{2 x} + \frac{i c_2 (x^2 - 1)}{2 x}\right\}\right\}$$

Maple: cpu = 0.016 (sec), leaf count = 19

$$\left\{y(x) = x \_C2 + \frac{a x^2}{3} + \frac{\_C1}{x}\right\}$$

3.160 ODE No. 1160

$$\boxed{x^2 \frac{\mathrm{d}^2}{\mathrm{d}x^2} y(x) + x \frac{\mathrm{d}}{\mathrm{d}x} y(x) + a y(x) = 0}$$

Mathematica: cpu = 0.008501 (sec), leaf count = 30

$$\left\{\left\{y(x) \to c_2 \sin\left(\sqrt{a} \log(x)\right) + c_1 \cos\left(\sqrt{a} \log(x)\right)\right\}\right\}$$

Maple: cpu = 0.016 (sec), leaf count = 23

$$\left\{y(x) = \_C1 \ \sin\left(\sqrt{a} \ln\left(x\right)\right) + \_C2 \ \cos\left(\sqrt{a} \ln\left(x\right)\right)\right\}$$

3.161 ODE No. 1161

$$\boxed{x^2 \frac{\mathrm{d}^2}{\mathrm{d}x^2} y(x) + x \frac{\mathrm{d}}{\mathrm{d}x} y(x) - (x + a)\, y(x) = 0}$$

Mathematica: cpu = 0.047506 (sec), leaf count = 78

$$\left\{\left\{y(x) \to (-1)^{-\sqrt{a}} c_1 \Gamma\left(1 - 2\sqrt{a}\right) I_{-2\sqrt{a}}\left(2\sqrt{x}\right) + (-1)^{\sqrt{a}} c_2 \Gamma\left(2\sqrt{a} + 1\right) I_{2\sqrt{a}}\left(2\sqrt{x}\right)\right\}\right\}$$

Maple: cpu = 0.0 (sec), leaf count = 31

$$\left\{y(x) = \_C1 \ I_{2\sqrt{a}}\left(2\sqrt{x}\right) + \_C2 \ K_{2\sqrt{a}}\left(2\sqrt{x}\right)\right\}$$

3.162 ODE No. 1162

$$\boxed{x^2 \frac{\mathrm{d}^2}{\mathrm{d}x^2} y(x) + x \frac{\mathrm{d}}{\mathrm{d}x} y(x) + \left(-v^2 + x^2\right) y(x) = 0}$$

Mathematica: cpu = 0.057007 (sec), leaf count = 18

$$\{\{y(x) \to c_1 J_v(x) + c_2 Y_v(x)\}\}$$

Maple: cpu = 0.0 (sec), leaf count = 15

$$\{y(x) = \_C1 \ J_v(x) + \_C2 \ Y_v(x)\}$$

3.163 ODE No. 1163

$$\boxed{x^2 \frac{\mathrm{d}^2}{\mathrm{d}x^2} y(x) + x \frac{\mathrm{d}}{\mathrm{d}x} y(x) + \left(-v^2 + x^2\right) y(x) - f(x) = 0}$$

Mathematica: cpu = 0.353045 (sec), leaf count = 70

$$\left\{\left\{y(x) \to J_v(x) \int_1^x -\frac{\pi f(K[1]) Y_v(K[1])}{2K[1]} \, dK[1] + Y_v(x) \int_1^x \frac{\pi f(K[2]) J_v(K[2])}{2K[2]} \, dK[2] + c_1 J_v(x) + c_2 Y_v(x\right.\right.$$

Maple: cpu = 0.015 (sec), leaf count = 50

$$\left\{y(x) = J_v(x) \_C2 + Y_v(x) \_C1 - \frac{\pi}{2}\left(J_v(x) \int \frac{Y_v(x) f(x)}{x} \, \mathrm{d}x - Y_v(x) \int \frac{J_v(x) f(x)}{x} \, \mathrm{d}x\right)\right\}$$

3.164 ODE No. 1164

$$\boxed{x^2 \frac{\mathrm{d}^2}{\mathrm{d}x^2} y(x) + x \frac{\mathrm{d}}{\mathrm{d}x} y(x) + \left(l x^2 - v^2\right) y(x) = 0}$$

Mathematica: cpu = 0.028004 (sec), leaf count = 30

$$\left\{\left\{y(x) \to c_1 J_v\left(\sqrt{l} x\right) + c_2 Y_v\left(\sqrt{l} x\right)\right\}\right\}$$

Maple: cpu = 0.031 (sec), leaf count = 23

$$\left\{y(x) = \_C1 \, J_v\left(\sqrt{l} x\right) + \_C2 \, Y_v\left(\sqrt{l} x\right)\right\}$$

3.165 ODE No. 1165

$$\boxed{x^2 \frac{\mathrm{d}^2}{\mathrm{d}x^2} y(x) + (x + a) \frac{\mathrm{d}}{\mathrm{d}x} y(x) - y(x) = 0}$$

Mathematica: cpu = 0.054507 (sec), leaf count = 37

$$\left\{\left\{y(x) \to \frac{c_1 (a + x)}{a + 1} - \frac{c_2 x e^{a/x}}{a^2 (a + 1)}\right\}\right\}$$

Maple: cpu = 0.016 (sec), leaf count = 19

$$\left\{y(x) = (x + a) \_C1 + \_C2 \, x \mathrm{e}^{\frac{a}{x}}\right\}$$

3.166 ODE No. 1166

$$\boxed{x^2 \frac{\mathrm{d}^2}{\mathrm{d}x^2} y(x) - x \frac{\mathrm{d}}{\mathrm{d}x} y(x) + y(x) - 3\,x^3 = 0}$$

Mathematica: cpu = 0.012502 (sec), leaf count = 23

$$\left\{\left\{y(x) \to c_1 x + c_2 x \log(x) + \frac{3x^3}{4}\right\}\right\}$$

Maple: cpu = 0.015 (sec), leaf count = 18

$$\left\{y(x) = x\_C2 + x \ln(x) \_C1 + \frac{3\,x^3}{4}\right\}$$

3.167 ODE No. 1167

$$\boxed{x^2 \frac{\mathrm{d}^2}{\mathrm{d}x^2} y(x) - x \frac{\mathrm{d}}{\mathrm{d}x} y(x) + (a x^m + b)\, y(x) = 0}$$

Mathematica: cpu = 0.082010 (sec), leaf count = 326

$$\left\{\left\{y(x) \to c_1 m^{-\frac{2(m-i\sqrt{b-1}m)}{m^2}-\frac{2i\sqrt{b-1}}{m}} a^{\frac{m-i\sqrt{b-1}m}{m^2}+\frac{i\sqrt{b-1}}{m}} (x^m)^{\frac{m-i\sqrt{b-1}m}{m^2}+\frac{i\sqrt{b-1}}{m}} \Gamma\left(1-\frac{2i\sqrt{b-1}}{m}\right) J_{-\frac{2i\sqrt{b-1}}{m}}\left(\frac{2\sqrt{a}\sqrt{}\right.\right.\right.$$

Maple: cpu = 0.031 (sec), leaf count = 63

$$\left\{y(x) = \_C1\, x J_{2\,\frac{\sqrt{1-b}}{m}}\left(2\,\frac{\sqrt{a} x^{m/2}}{m}\right) + \_C2\, x Y_{2\,\frac{\sqrt{1-b}}{m}}\left(2\,\frac{\sqrt{a} x^{m/2}}{m}\right)\right\}$$

3.168 ODE No. 1168

$$\boxed{x^2 \frac{\mathrm{d}^2}{\mathrm{d}x^2} y(x) + 2\,x \frac{\mathrm{d}}{\mathrm{d}x} y(x) = 0}$$

Mathematica: cpu = 0.004501 (sec), leaf count = 15

$$\left\{\left\{y(x) \to c_2 - \frac{c_1}{x}\right\}\right\}$$

Maple: cpu = 0.016 (sec), leaf count = 11

$$\left\{y(x) = \_C1 + \frac{\_C2}{x}\right\}$$

3.169 ODE No. 1169

$$\boxed{x^2 \frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) + 2\,x \frac{\mathrm{d}}{\mathrm{d}x}y(x) + \left(ax - b^2\right) y(x) = 0}$$

Mathematica: cpu = 0.069509 (sec), leaf count = 236

$$\left\{\left\{y(x) \to c_1 a^{\frac{1}{2}\left(-\sqrt{4b^2+1}-1\right)+\frac{1}{2}\sqrt{4b^2+1}} x^{\frac{1}{2}\left(-\sqrt{4b^2+1}-1\right)+\frac{1}{2}\sqrt{4b^2+1}} \Gamma\left(1-\sqrt{4b^2+1}\right) J_{-\sqrt{4b^2+1}}\left(2\sqrt{a}\sqrt{x}\right) + c_2 a^{\frac{1}{2}(\sqrt{}\right.\right.$$

Maple: cpu = 0.016 (sec), leaf count = 51

$$\left\{y(x) = \_C1\, J_{\sqrt{4\,b^2+1}}\left(2\,\sqrt{a}\sqrt{x}\right)\frac{1}{\sqrt{x}} + \_C2 Y_{\sqrt{4\,b^2+1}}\left(2\,\sqrt{a}\sqrt{x}\right)\frac{1}{\sqrt{x}}\right\}$$

3.170 ODE No. 1170

$$\boxed{x^2 \frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) + 2\,x \frac{\mathrm{d}}{\mathrm{d}x}y(x) + \left(ax^2 + b\right) y(x) = 0}$$

Mathematica: cpu = 0.022503 (sec), leaf count = 58

$$\left\{\left\{y(x) \to c_1 j_{\frac{1}{2}\left(\sqrt{1-4b}-1\right)}\left(\sqrt{a}x\right) + c_2 y_{\frac{1}{2}\left(\sqrt{1-4b}-1\right)}\left(\sqrt{a}x\right)\right\}\right\}$$

Maple: cpu = 0.031 (sec), leaf count = 45

$$\left\{y(x) = \_C1\, J_{\frac{1}{2}\sqrt{1-4\,b}}\left(\sqrt{a}x\right)\frac{1}{\sqrt{x}} + \_C2 Y_{\frac{1}{2}\sqrt{1-4\,b}}\left(\sqrt{a}x\right)\frac{1}{\sqrt{x}}\right\}$$

3.171 ODE No. 1171

$$\boxed{x^2 \frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) + 2\,x \frac{\mathrm{d}}{\mathrm{d}x}y(x) + \left(lx^2 + ax - n(n+1)\right) y(x) = 0}$$

Mathematica: cpu = 0.054007 (sec), leaf count = 142

$$\left\{\left\{y(x) \to c_1 e^{n\log(x) - i\sqrt{l}x} U\left(\frac{i\left(a - 2i\sqrt{l}n - 2i\sqrt{l}\right)}{2\sqrt{l}}, 2n+2, 2i\sqrt{l}x\right) + c_2 e^{n\log(x) - i\sqrt{l}x} L^{2n+1}_{-\frac{i\left(a-2i\sqrt{l}n-2i\sqrt{l}\right)}{2\sqrt{l}}}\left(2i\sqrt{}\right.\right.$$

Maple: cpu = 0.093 (sec), leaf count = 51

$$\left\{y(x) = \frac{\_C1}{x} M_{-\frac{i}{2}a\frac{1}{\sqrt{l}}, n+\frac{1}{2}}\left(2\,i\sqrt{l}x\right) + \frac{\_C2}{x} W_{-\frac{i}{2}a\frac{1}{\sqrt{l}}, n+\frac{1}{2}}\left(2\,i\sqrt{l}x\right)\right\}$$

3.172 ODE No. 1172

$$\boxed{x^2 \frac{\mathrm{d}^2}{\mathrm{d}x^2} y(x) + 2\left(x-1\right) \frac{\mathrm{d}}{\mathrm{d}x} y(x) + a y(x) = 0}$$

Mathematica: cpu = 0.055007 (sec), leaf count = 158

$$\left\{\left\{y(x) \to 2^{\frac{1}{2}\left(1-\sqrt{1-4a}\right)} c_1 \left(\frac{1}{x}\right)^{\frac{1}{2}\left(1-\sqrt{1-4a}\right)} {}_1F_1\left(\frac{1}{2}-\frac{1}{2}\sqrt{1-4a};1-\sqrt{1-4a};-\frac{2}{x}\right) + 2^{\frac{1}{2}\left(\sqrt{1-4a}+1\right)} c_2 \left(\frac{1}{x}\right)^{\frac{1}{2}}\right.\right.$$

Maple: cpu = 0.031 (sec), leaf count = 57

$$\left\{y(x) = \_C1 \, \mathrm{e}^{-x^{-1}} \sqrt{x^{-1}} I_{\frac{1}{2}\sqrt{1-4\,a}}\left(x^{-1}\right) + \_C2 \, \mathrm{e}^{-x^{-1}} \sqrt{x^{-1}} K_{\frac{1}{2}\sqrt{1-4\,a}}\left(x^{-1}\right)\right\}$$

3.173 ODE No. 1173

$$\boxed{x^2 \frac{\mathrm{d}^2}{\mathrm{d}x^2} y(x) + 2\left(x+a\right) \frac{\mathrm{d}}{\mathrm{d}x} y(x) - b(b-1)\, y(x) = 0}$$

Mathematica: cpu = 0.060508 (sec), leaf count = 74

$$\left\{\left\{y(x) \to (-2)^{1-b} c_1 a^{1-b} \left(\frac{1}{x}\right)^{1-b} {}_1F_1\left(1-b;2-2b;\frac{2a}{x}\right) + (-2)^b c_2 a^b \left(\frac{1}{x}\right)^b {}_1F_1\left(b;2b;\frac{2a}{x}\right)\right\}\right\}$$

Maple: cpu = 0.062 (sec), leaf count = 45

$$\left\{y(x) = \_C1 \mathrm{e}^{\frac{a}{x}} I_{b-\frac{1}{2}}\left(\frac{a}{x}\right) \frac{1}{\sqrt{x}} + \_C2 \mathrm{e}^{\frac{a}{x}} K_{b-\frac{1}{2}}\left(\frac{a}{x}\right) \frac{1}{\sqrt{x}}\right\}$$

3.174 ODE No. 1174

$$\boxed{x^2 \frac{\mathrm{d}^2}{\mathrm{d}x^2} y(x) - 2\, x \frac{\mathrm{d}}{\mathrm{d}x} y(x) + 2\, y(x) - x^5 \ln\left(x\right) = 0}$$

Mathematica: cpu = 0.018002 (sec), leaf count = 33

$$\left\{\left\{y(x) \to c_2 x^2 + c_1 x + \frac{1}{144}\left(12x^5 \log(x) - 7x^5\right)\right\}\right\}$$

Maple: cpu = 0.031 (sec), leaf count = 24

$$\left\{y(x) = x \_C2 + \_C1 \, x^2 + \frac{x^5(12 \ln\left(x\right) - 7)}{144}\right\}$$

3.175 ODE No. 1175

$$\boxed{x^2 \frac{\mathrm{d}^2}{\mathrm{d}x^2} y(x) - 2\,x \frac{\mathrm{d}}{\mathrm{d}x} y(x) - 4\,y(x) - x \sin(x) - \left(a x^2 + 12\,a + 4\right) \cos(x) = 0}$$

Mathematica: cpu = 0.157020 (sec), leaf count = 38

$$\left\{\left\{y(x) \to \frac{-2a \sin(x) - ax \cos(x) - \sin(x)}{x} + c_2 x^4 + \frac{c_1}{x}\right\}\right\}$$

Maple: cpu = 0.032 (sec), leaf count = 33

$$\left\{y(x) = \frac{\_C1}{x} + x^4 \_C2 - \frac{ax \cos(x) + 2\,\sin(x)\,a + \sin(x)}{x}\right\}$$

3.176 ODE No. 1176

$$\boxed{x^2 \frac{\mathrm{d}^2}{\mathrm{d}x^2} y(x) - 2\,x \frac{\mathrm{d}}{\mathrm{d}x} y(x) + \left(x^2 + 2\right) y(x) = 0}$$

Mathematica: cpu = 0.017502 (sec), leaf count = 33

$$\left\{\left\{y(x) \to c_1 e^{-ix} x - \frac{1}{2} i c_2 e^{ix} x\right\}\right\}$$

Maple: cpu = 0.016 (sec), leaf count = 15

$$\{y(x) = \_C1\,x \sin(x) + \_C2\,\cos(x)\,x\}$$

3.177 ODE No. 1177

$$\boxed{x^2 \frac{\mathrm{d}^2}{\mathrm{d}x^2} y(x) - 2\,x \frac{\mathrm{d}}{\mathrm{d}x} y(x) + \left(x^2 + 2\right) y(x) - \frac{x^2}{\cos(x)} = 0}$$

Mathematica: cpu = 174.646177 (sec), leaf count = 136

$$\left\{\left\{y(x) \to c_2 \int_1^x e^{\frac{2}{K[1]} - K[1]} K[1]^2\,dK[1] + \int_1^x -\frac{e^{K[2] - \frac{2}{K[2]}} \sec(K[2]) \left(\int_1^{K[2]} e^{\frac{2}{K[1]} - K[1]} K[1]^2\,dK[1]\right)}{K[2]^2}\,dK[2] +\right.\right.$$

Maple: cpu = 0.062 (sec), leaf count = 39

$$\left\{y(x) = x \sin(x) \_C2 + \cos(x)\,x \_C1 + x\left(\ln(x) \sin(x) - \int \frac{\sin(x)}{\cos(x)\,x}\,\mathrm{d}x \cos(x)\right)\right\}$$

3.178 ODE No. 1178

$$\boxed{x^2 \frac{\mathrm{d}^2}{\mathrm{d}x^2} y(x) - 2\,x \frac{\mathrm{d}}{\mathrm{d}x} y(x) + \left(x^2 + 2\right) y(x) - \frac{x^3}{\cos\left(x\right)} = 0}$$

Mathematica: cpu = 0.052507 (sec), leaf count = 74

$$\left\{\left\{y(x) \to c_1 e^{-ix} x - \frac{1}{2} i c_2 e^{ix} x + \frac{1}{2} e^{-ix} x \left(e^{2ix} \log\left(1 + e^{-2ix}\right) + \log\left(1 + e^{2ix}\right)\right)\right\}\right\}$$

Maple: cpu = 0.016 (sec), leaf count = 28

$$\{y(x) = x \sin\left(x\right) \_C2 + \cos\left(x\right) x \_C1 + x(x \sin\left(x\right) + \ln\left(\cos\left(x\right)\right) \cos\left(x\right))\}$$

3.179 ODE No. 1179

$$\boxed{x^2 \frac{\mathrm{d}^2}{\mathrm{d}x^2} y(x) - 2\,x \frac{\mathrm{d}}{\mathrm{d}x} y(x) + \left(a^2 x^2 + 2\right) y(x) = 0}$$

Mathematica: cpu = 0.040005 (sec), leaf count = 53

$$\left\{\left\{y(x) \to c_1 x e^{-\sqrt{-a^2} x} + \frac{c_2 x e^{\sqrt{-a^2} x}}{2\sqrt{-a^2}}\right\}\right\}$$

Maple: cpu = 0.016 (sec), leaf count = 19

$$\{y(x) = \_C1\, x \sin\left(a x\right) + \_C2\, x \cos\left(a x\right)\}$$

3.180 ODE No. 1180

$$\boxed{x^2 \frac{\mathrm{d}^2}{\mathrm{d}x^2} y(x) + 3\,x \frac{\mathrm{d}}{\mathrm{d}x} y(x) + \left(-v^2 + x^2 + 1\right) y(x) - f(x) = 0}$$

Mathematica: cpu = 0.231029 (sec), leaf count = 73

$$\left\{\left\{y(x) \to \frac{J_v(x) \int_1^x -\frac{1}{2} \pi f(K[1]) Y_v(K[1])\, dK[1] + Y_v(x) \int_1^x \frac{1}{2} \pi f(K[2]) J_v(K[2])\, dK[2]}{x} + \frac{c_1 J_v(x)}{x} + \frac{c_2 Y_v(}{x}\right.\right.$$

Maple: cpu = 0.047 (sec), leaf count = 53

$$\left\{y(x) = \frac{J_v(x) \_C2}{x} + \frac{Y_v(x) \_C1}{x} + \frac{\pi \left(Y_v(x) \int J_v(x) f(x)\, \mathrm{d}x - J_v(x) \int Y_v(x) f(x)\, \mathrm{d}x\right)}{2\,x}\right\}$$

3.181 ODE No. 1181

$$\boxed{x^2 \frac{\mathrm{d}^2}{\mathrm{d}x^2} y(x) + (3\,x - 1) \frac{\mathrm{d}}{\mathrm{d}x} y(x) + y(x) = 0}$$

Mathematica: cpu = 0.028004 (sec), leaf count = 37

$$\left\{\left\{y(x) \to \frac{c_1 e^{-1/x}}{x} - \frac{c_2 e^{-1/x} \mathrm{Ei}\left(\frac{1}{x}\right)}{x}\right\}\right\}$$

Maple: cpu = 0.016 (sec), leaf count = 25

$$\left\{y(x) = \frac{1}{x \mathrm{e}^{x^{-1}}} \left(\_C1\ Ei\left(1, -x^{-1}\right) + \_C2\right)\right\}$$

3.182 ODE No. 1182

$$\boxed{x^2 \frac{\mathrm{d}^2}{\mathrm{d}x^2} y(x) - 3\,x \frac{\mathrm{d}}{\mathrm{d}x} y(x) + 4\,y(x) - 5\,x = 0}$$

Mathematica: cpu = 0.015502 (sec), leaf count = 24

$$\left\{\left\{y(x) \to c_1 x^2 + 2 c_2 x^2 \log(x) + 5x\right\}\right\}$$

Maple: cpu = 0.015 (sec), leaf count = 20

$$\left\{y(x) = x^2 \_C2 + x^2 \ln(x) \_C1 + 5\,x\right\}$$

3.183 ODE No. 1183

$$\boxed{x^2 \frac{\mathrm{d}^2}{\mathrm{d}x^2} y(x) - 3\,x \frac{\mathrm{d}}{\mathrm{d}x} y(x) - 5\,y(x) - x^2 \ln(x) = 0}$$

Mathematica: cpu = 0.024003 (sec), leaf count = 27

$$\left\{\left\{y(x) \to c_1 x^5 + \frac{c_2}{x} - \frac{1}{9} x^2 \log(x)\right\}\right\}$$

Maple: cpu = 0.0 (sec), leaf count = 22

$$\left\{y(x) = x^5 \_C2 - \frac{x^2 \ln(x)}{9} + \frac{\_C1}{x}\right\}$$

3.184 ODE No. 1184

$$\boxed{x^2 \frac{\mathrm{d}^2}{\mathrm{d}x^2} y(x) - 4\,x \frac{\mathrm{d}}{\mathrm{d}x} y(x) + 6\,y(x) - x^4 + x^2 = 0}$$

Mathematica: cpu = 0.018502 (sec), leaf count = 38

$$\left\{\left\{y(x) \to c_2 x^3 + c_1 x^2 + \frac{1}{2}\left(x^4 + 2x^2 + 2x^2 \log(x)\right)\right\}\right\}$$

Maple: cpu = 0.015 (sec), leaf count = 29

$$\left\{y(x) = x^2 \_C2 + \_C1\, x^3 + \frac{x^2(x^2 + 2\,\ln(x) + 2)}{2}\right\}$$

3.185 ODE No. 1185

$$\boxed{x^2 \frac{\mathrm{d}^2}{\mathrm{d}x^2} y(x) + 5\,x \frac{\mathrm{d}}{\mathrm{d}x} y(x) - \left(2\,x^3 - 4\right) y(x) = 0}$$

Mathematica: cpu = 0.036005 (sec), leaf count = 67

$$\left\{\left\{y(x) \to \frac{3\sqrt[3]{6} c_2 K_0\left(\frac{2}{3}\sqrt{2} x^{3/2}\right)}{x^2} - \frac{3\sqrt[3]{-3} c_1 I_0\left(\frac{2}{3}\sqrt{2} x^{3/2}\right)}{2^{2/3} x^2}\right\}\right\}$$

Maple: cpu = 0.016 (sec), leaf count = 35

$$\left\{y(x) = \frac{\_C1}{x^2} I_0\left(\frac{2\sqrt{2}}{3} x^{\frac{3}{2}}\right) + \frac{\_C2}{x^2} K_0\left(\frac{2\sqrt{2}}{3} x^{\frac{3}{2}}\right)\right\}$$

3.186 ODE No. 1186

$$\boxed{x^2 \frac{\mathrm{d}^2}{\mathrm{d}x^2} y(x) - 5\,x \frac{\mathrm{d}}{\mathrm{d}x} y(x) + 8\,y(x) - \sin(x)\, x^3 = 0}$$

Mathematica: cpu = 0.029504 (sec), leaf count = 42

$$\left\{\left\{y(x) \to c_2 x^4 + c_1 x^2 + \frac{1}{2}\left(x^4 \mathrm{Ci}(x) - x^3 \sin(x) + x^2 \cos(x)\right)\right\}\right\}$$

Maple: cpu = 0.015 (sec), leaf count = 34

$$\left\{y(x) = x^4 \_C2 + \_C1\, x^2 + \frac{(\cos(x) + x(x\,Ci(x) - \sin(x)))\, x^2}{2}\right\}$$

3.187 ODE No. 1187

$$\boxed{x^2 \frac{\mathrm{d}^2}{\mathrm{d}x^2} y(x) + ax \frac{\mathrm{d}}{\mathrm{d}x} y(x) + by(x) = 0}$$

Mathematica: cpu = 0.011001 (sec), leaf count = 99

$$\left\{\left\{y(x) \to c_1 x^{\frac{1}{2}\sqrt{b}\left(-\frac{\sqrt{a^2-2a-4b+1}}{\sqrt{b}}-\frac{a-1}{\sqrt{b}}\right)} + c_2 x^{\frac{1}{2}\sqrt{b}\left(\frac{\sqrt{a^2-2a-4b+1}}{\sqrt{b}}-\frac{a-1}{\sqrt{b}}\right)}\right\}\right\}$$

Maple: cpu = 0.015 (sec), leaf count = 53

$$\left\{y(x) = \_C1\, x^{-\frac{a}{2}+\frac{1}{2}+\frac{1}{2}\sqrt{a^2-2\,a-4\,b+1}} + \_C2\, x^{-\frac{a}{2}+\frac{1}{2}-\frac{1}{2}\sqrt{a^2-2\,a-4\,b+1}}\right\}$$

3.188 ODE No. 1188

$$\boxed{x^2 \frac{\mathrm{d}^2}{\mathrm{d}x^2} y(x) + (ax+b) \frac{\mathrm{d}}{\mathrm{d}x} y(x) + cy(x) = 0}$$

Mathematica: cpu = 0.082511 (sec), leaf count = 266

$$\left\{\left\{y(x) \to c_1 i^{-\sqrt{a^2-2a-4c+1}+a-1} b^{\frac{1}{2}\left(-\sqrt{a^2-2a-4c+1}+a-1\right)} \left(\frac{1}{x}\right)^{\frac{1}{2}\left(-\sqrt{a^2-2a-4c+1}+a-1\right)} {}_1F_1\left(\frac{a}{2}-\frac{1}{2}\sqrt{a^2-2a-4\right.\right.\right.$$

Maple: cpu = 0.125 (sec), leaf count = 135

$$\left\{y(x) = \_C1\, x^{-\frac{1}{2}\sqrt{a^2-2\,a-4\,c+1}-\frac{a}{2}+\frac{1}{2}} M\left(-\frac{1}{2}+\frac{1}{2}\sqrt{a^2-2\,a-4\,c+1}+\frac{a}{2},\, 1+\sqrt{a^2-2\,a-4\,c+1},\, \frac{b}{x}\right) + \right.$$

3.189 ODE No. 1189

$$\boxed{x^2 \frac{\mathrm{d}^2}{\mathrm{d}x^2} y(x) + ax \frac{\mathrm{d}}{\mathrm{d}x} y(x) + \left(bx^m + c\right) y(x) = 0}$$

Mathematica: cpu = 0.069509 (sec), leaf count = 445

$$\left\{\left\{y(x) \to c_1 m^{-\frac{-\sqrt{a^2-2a-4c+1}-a+1}{m}-\frac{\sqrt{a^2-2a-4c+1}}{m}} b^{\frac{-\sqrt{a^2-2a-4c+1}-a+1}{2m}+\frac{\sqrt{a^2-2a-4c+1}}{2m}} \left(x^m\right)^{\frac{-\sqrt{a^2-2a-4c+1}-a+1}{2m}+\frac{\sqrt{a^2-2a-4c+1}}{2m}}\right.\right.$$

Maple: cpu = 0.031 (sec), leaf count = 85

$$\left\{y(x) = \_C1\, x^{-\frac{a}{2}+\frac{1}{2}} J_{\frac{1}{m}\sqrt{a^2-2\,a-4\,c+1}}\left(2\,\frac{\sqrt{b}x^{m/2}}{m}\right) + \_C2\, x^{-\frac{a}{2}+\frac{1}{2}} Y_{\frac{1}{m}\sqrt{a^2-2\,a-4\,c+1}}\left(2\,\frac{\sqrt{b}x^{m/2}}{m}\right)\right\}$$

3.190 ODE No. 1190

$$\boxed{x^2 \frac{\mathrm{d}^2}{\mathrm{d}x^2} y(x) + x^2 \frac{\mathrm{d}}{\mathrm{d}x} y(x) + (ax + b)\, y(x) = 0}$$

Mathematica: cpu = 0.030004 (sec), leaf count = 122

$$\left\{\left\{y(x) \to c_1 e^{\frac{1}{2}\left(\left(\sqrt{1-4b}+1\right)\log(x)-2x\right)} U\left(\frac{1}{2}\left(-2a+\sqrt{1-4b}+1\right), \sqrt{1-4b}+1, x\right) + c_2 e^{\frac{1}{2}\left(\left(\sqrt{1-4b}+1\right)\log(x)-2x\right)}\right.\right.$$

Maple: cpu = 0.062 (sec), leaf count = 41

$$\left\{y(x) = \_C1\, \mathrm{e}^{-\frac{x}{2}} M_{a,\, \frac{1}{2}\sqrt{1-4\,b}}(x) + \_C2\, \mathrm{e}^{-\frac{x}{2}} W_{a,\, \frac{1}{2}\sqrt{1-4\,b}}(x)\right\}$$

3.191 ODE No. 1191

$$\boxed{x^2 \frac{\mathrm{d}^2}{\mathrm{d}x^2} y(x) + x^2 \frac{\mathrm{d}}{\mathrm{d}x} y(x) - 2\, y(x) = 0}$$

Mathematica: cpu = 0.008501 (sec), leaf count = 110

$$\left\{\left\{y(x) \to \frac{2c_2 e^{\frac{1}{2}(\log(x)-x)}\left(i \sinh\left(\frac{x}{2}\right) - \frac{2i\cosh\left(\frac{x}{2}\right)}{x}\right)}{\sqrt{\pi}\sqrt{-ix}} + \frac{2c_1 e^{\frac{1}{2}(\log(x)-x)}\left(\frac{2\sinh\left(\frac{x}{2}\right)}{x} - \cosh\left(\frac{x}{2}\right)\right)}{\sqrt{\pi}\sqrt{-ix}}\right\}\right\}$$

Maple: cpu = 0.016 (sec), leaf count = 25

$$\left\{y(x) = \frac{\_C1\,(x-2)}{x} + \frac{\_C2\, \mathrm{e}^{-x}(x+2)}{x}\right\}$$

3.192 ODE No. 1192

$$\boxed{x^2 \frac{\mathrm{d}^2}{\mathrm{d}x^2} y(x) + \left(x^2 - 1\right) \frac{\mathrm{d}}{\mathrm{d}x} y(x) - y(x) = 0}$$

Mathematica: cpu = 10.168291 (sec), leaf count = 39

$$\left\{\left\{y(x) \to c_2 e^{-x} \int_1^x e^{K[1] - \frac{1}{K[1]}}\, dK[1] + c_1 e^{-x}\right\}\right\}$$

Maple: cpu = 0.109 (sec), leaf count = 53

$$\left\{y(x) = \_C1\, \mathrm{e}^{-x} HeunD\left(4, 3, -8, 5, \frac{x-1}{1+x}\right)\sqrt{x} + \_C2\, \mathrm{e}^{-x^{-1}} HeunD\left(-4, 3, -8, 5, \frac{x-1}{1+x}\right)\sqrt{x}\right\}$$

3.193 ODE No. 1193

$$\boxed{x^2 \frac{\mathrm{d}^2}{\mathrm{d}x^2} y(x) + x(1+x) \frac{\mathrm{d}}{\mathrm{d}x} y(x) + (x-9)\, y(x) = 0}$$

Mathematica: cpu = 0.048506 (sec), leaf count = 44

$$\left\{\left\{y(x) \to \frac{c_1((x-8)x+20)}{x^3} - \frac{c_2 e^{-x}(x^3+9x^2+36x+60)}{x^3}\right\}\right\}$$

Maple: cpu = 0.032 (sec), leaf count = 40

$$\left\{y(x) = \frac{\_C1\ (x^2-8\,x+20)}{x^3} + \frac{\_C2\ \mathrm{e}^{-x}(x^3+9\,x^2+36\,x+60)}{x^3}\right\}$$

3.194 ODE No. 1194

$$\boxed{x^2 \frac{\mathrm{d}^2}{\mathrm{d}x^2} y(x) + x(1+x) \frac{\mathrm{d}}{\mathrm{d}x} y(x) + (3\,x-1)\, y(x) = 0}$$

Mathematica: cpu = 0.049506 (sec), leaf count = 65

$$\left\{\left\{y(x) \to c_1 e^{-x}(x-3)x - \frac{c_2 e^{-x}(x^3(-\mathrm{Ei}(x)) + 3x^2\mathrm{Ei}(x) + e^x x^2 - 2e^x x - e^x)}{6x}\right\}\right\}$$

Maple: cpu = 0.047 (sec), leaf count = 44

$$\left\{y(x) = \_C1\ x\mathrm{e}^{-x}(x-3) + \frac{\_C2\ (x^2\mathrm{e}^{-x}(x-3)\,Ei(1,-x) + x^2 - 2\,x - 1)}{x}\right\}$$

3.195 ODE No. 1195

$$\boxed{x^2 \frac{\mathrm{d}^2}{\mathrm{d}x^2} y(x) + (x+3)\, x \frac{\mathrm{d}}{\mathrm{d}x} y(x) - y(x) = 0}$$

Mathematica: cpu = 0.028004 (sec), leaf count = 80

$$\left\{\left\{y(x) \to c_1 U\left(2+\sqrt{2}, 1+2\sqrt{2}, x\right) e^{\left(\sqrt{2}-1\right)\log(x)-x} + c_2 L^{2\sqrt{2}}_{-2-\sqrt{2}}(x) e^{\left(\sqrt{2}-1\right)\log(x)-x}\right\}\right\}$$

Maple: cpu = 0.078 (sec), leaf count = 94

$$\left\{y(x) = \_C1\mathrm{e}^{-\frac{x}{2}}\left(\left(\sqrt{2}+x+1\right) I_{-\frac{1}{2}+\sqrt{2}}\left(\frac{x}{2}\right) + \left(-\sqrt{2}+x+1\right) I_{\frac{1}{2}+\sqrt{2}}\left(\frac{x}{2}\right)\right)\frac{1}{\sqrt{x}} + \_C2\mathrm{e}^{-\frac{x}{2}}\left(\left(\sqrt{2}+x+\right.\right.\right.$$

3.196 ODE No. 1196

$$\boxed{x^2 \frac{\mathrm{d}^2}{\mathrm{d}x^2} y(x) - x(x-1) \frac{\mathrm{d}}{\mathrm{d}x} y(x) + (x-1)\, y(x) = 0}$$

Mathematica: cpu = 0.025003 (sec), leaf count = 37

$$\left\{\left\{y(x) \to \frac{c_2(x^2 \mathrm{Ei}(x) - e^x x - e^x)}{2x} + c_1 x\right\}\right\}$$

Maple: cpu = 0.031 (sec), leaf count = 27

$$\left\{y(x) = x\_C1 + \_C2 \left(\frac{(1+x)\,\mathrm{e}^x}{x} + x Ei(1,-x)\right)\right\}$$

3.197 ODE No. 1197

$$\boxed{x^2 \frac{\mathrm{d}^2}{\mathrm{d}x^2} y(x) - \left(x^2 - 2\,x\right) \frac{\mathrm{d}}{\mathrm{d}x} y(x) - (x+a)\, y(x) = 0}$$

Mathematica: cpu = 0.018002 (sec), leaf count = 78

$$\left\{\left\{y(x) \to c_1 e^{\frac{1}{2}(x - \log(x))} J_{\frac{1}{2}\sqrt{4a+1}}\left(-\frac{ix}{2}\right) + c_2 e^{\frac{1}{2}(x-\log(x))} Y_{\frac{1}{2}\sqrt{4a+1}}\left(-\frac{ix}{2}\right)\right\}\right\}$$

Maple: cpu = 0.032 (sec), leaf count = 49

$$\left\{y(x) = \_C1 \mathrm{e}^{\frac{x}{2}} I_{\frac{1}{2}\sqrt{4\,a+1}}\left(\frac{x}{2}\right) \frac{1}{\sqrt{x}} + \_C2 \mathrm{e}^{\frac{x}{2}} K_{\frac{1}{2}\sqrt{4\,a+1}}\left(\frac{x}{2}\right) \frac{1}{\sqrt{x}}\right\}$$

3.198 ODE No. 1198

$$\boxed{x^2 \frac{\mathrm{d}^2}{\mathrm{d}x^2} y(x) - \left(x^2 - 2\,x\right) \frac{\mathrm{d}}{\mathrm{d}x} y(x) - (3\,x+2)\, y(x) = 0}$$

Mathematica: cpu = 0.029504 (sec), leaf count = 41

$$\left\{\left\{y(x) \to c_1 e^x x - \frac{c_2(e^x x^3 \mathrm{Ei}(-x) + x^2 - x + 2)}{6x^2}\right\}\right\}$$

Maple: cpu = 0.031 (sec), leaf count = 33

$$\left\{y(x) = \_C1\, x \mathrm{e}^x + \frac{\_C2\,(-x^3 \mathrm{e}^x Ei(1,x) + x^2 - x + 2)}{x^2}\right\}$$

3.199 ODE No. 1199

$$\boxed{x^2 \frac{\mathrm{d}^2}{\mathrm{d}x^2} y(x) - x(x+4) \frac{\mathrm{d}}{\mathrm{d}x} y(x) + 4\, y(x) = 0}$$

Mathematica: cpu = 0.012502 (sec), leaf count = 41

$$\left\{\left\{y(x) \to c_2 e^x x^4 - \frac{1}{6} c_1 x \left(e^x x^3 \mathrm{Ei}(-x) + x^2 - x + 2\right)\right\}\right\}$$

Maple: cpu = 0.016 (sec), leaf count = 32

$$\left\{y(x) = \_C1\, x^4 \mathrm{e}^x + \_C2\, x \left(x^3 \mathrm{e}^x Ei(1,x) - x^2 + x - 2\right)\right\}$$

3.200 ODE No. 1200

$$\boxed{x^2 \frac{\mathrm{d}^2}{\mathrm{d}x^2} y(x) + 2\, x^2 \frac{\mathrm{d}}{\mathrm{d}x} y(x) - v(v-1)\, y(x) = 0}$$

Mathematica: cpu = 0.021503 (sec), leaf count = 62

$$\left\{\left\{y(x) \to c_1 e^{-x} \sqrt{x} J_{\frac{1}{2}(2v-1)}(-ix) + c_2 e^{-x} \sqrt{x} Y_{\frac{1}{2}(2v-1)}(-ix)\right\}\right\}$$

Maple: cpu = 0.015 (sec), leaf count = 33

$$\left\{y(x) = \_C1\, \mathrm{e}^{-x} \sqrt{x} I_{v-\frac{1}{2}}(x) + \_C2\, \mathrm{e}^{-x} \sqrt{x} K_{v-\frac{1}{2}}(x)\right\}$$

3.201 ODE No. 1201

$$\boxed{x^2 \frac{\mathrm{d}^2}{\mathrm{d}x^2} y(x) + x(2\,x+1) \frac{\mathrm{d}}{\mathrm{d}x} y(x) - 4\, y(x) = 0}$$

Mathematica: cpu = 0.054007 (sec), leaf count = 44

$$\left\{\left\{y(x) \to \frac{c_1 e^{-2x}(2x+3)}{2x^2} + \frac{c_2 (2x^2 - 4x + 3)}{4x^2}\right\}\right\}$$

Maple: cpu = 0.015 (sec), leaf count = 34

$$\left\{y(x) = \frac{\_C1\, (2\,x^2 - 4\,x + 3)}{x^2} + \frac{\_C2\, \mathrm{e}^{-2\,x} (2\,x+3)}{x^2}\right\}$$

3.202 ODE No. 1202

$$\boxed{x^2 \frac{\mathrm{d}^2}{\mathrm{d}x^2} y(x) - 2\,x(1+x)\,\frac{\mathrm{d}}{\mathrm{d}x} y(x) + 2\,(1+x)\,y(x) = 0}$$

Mathematica: cpu = 0.014502 (sec), leaf count = 22

$$\left\{\left\{y(x) \to c_1 x + \frac{1}{2} c_2 e^{2x} x\right\}\right\}$$

Maple: cpu = 0.031 (sec), leaf count = 15

$$\left\{y(x) = x\_C1 + \_C2\, x \mathrm{e}^{2\,x}\right\}$$

3.203 ODE No. 1203

$$\boxed{x^2 \frac{\mathrm{d}^2}{\mathrm{d}x^2} y(x) + a x^2 \frac{\mathrm{d}}{\mathrm{d}x} y(x) - 2\,y(x) = 0}$$

Mathematica: cpu = 0.021003 (sec), leaf count = 124

$$\left\{\left\{y(x) \to \frac{2 c_2 e^{\frac{1}{2}(\log(x) - a x)} \left(i \sinh\left(\frac{a x}{2}\right) - \frac{2i \cosh\left(\frac{a x}{2}\right)}{a x}\right)}{\sqrt{\pi}\sqrt{-i a x}} + \frac{2 c_1 e^{\frac{1}{2}(\log(x) - a x)} \left(\frac{2 \sinh\left(\frac{a x}{2}\right)}{a x} - \cosh\left(\frac{a x}{2}\right)\right)}{\sqrt{\pi}\sqrt{-i a x}}\right\}\right\}$$

Maple: cpu = 0.015 (sec), leaf count = 30

$$\left\{y(x) = \frac{\_C1\,(a x - 2)}{x} + \frac{\_C2\, \mathrm{e}^{-a x} (a x + 2)}{x}\right\}$$

3.204 ODE No. 1204

$$\boxed{x^2 \frac{\mathrm{d}^2}{\mathrm{d}x^2} y(x) + (a + 2\,b)\,x^2 \frac{\mathrm{d}}{\mathrm{d}x} y(x) + \left((a+b)\,b x^2 - 2\right) y(x) = 0}$$

Mathematica: cpu = 0.019002 (sec), leaf count = 132

$$\left\{\left\{y(x) \to \frac{2 c_2 e^{\frac{1}{2}(-a x - 2 b x + \log(x))} \left(i \sinh\left(\frac{a x}{2}\right) - \frac{2i \cosh\left(\frac{a x}{2}\right)}{a x}\right)}{\sqrt{\pi}\sqrt{-i a x}} + \frac{2 c_1 e^{\frac{1}{2}(-a x - 2 b x + \log(x))} \left(\frac{2 \sinh\left(\frac{a x}{2}\right)}{a x} - \cosh\left(\frac{a x}{2}\right)\right)}{\sqrt{\pi}\sqrt{-i a x}}\right\}\right\}$$

Maple: cpu = 0.031 (sec), leaf count = 37

$$\left\{y(x) = \frac{\_C1\, \mathrm{e}^{-b x} (a x - 2)}{x} + \frac{\_C2\, \mathrm{e}^{-(a+b) x} (a x + 2)}{x}\right\}$$

3.205 ODE No. 1205

$$\boxed{x^2 \frac{\mathrm{d}^2}{\mathrm{d}x^2} y(x) + a x^2 \frac{\mathrm{d}}{\mathrm{d}x} y(x) + f(x)\, y(x) = 0}$$

Mathematica: cpu = 0.212527 (sec), leaf count = 29

$$\text{DSolve}\left[a x^2 y'(x) + f(x) y(x) + x^2 y''(x) = 0, y(x), x\right]$$

Maple: cpu = 0.0 (sec), leaf count = 30

$$\left\{y(x) = DESol\left(\left\{\frac{f(x) \_Y(x)}{x^2} + a \frac{\mathrm{d}}{\mathrm{d}x} \_Y(x) + \frac{\mathrm{d}^2}{\mathrm{d}x^2} \_Y(x)\right\}, \{\_Y(x)\}\right)\right\}$$

3.206 ODE No. 1206

$$\boxed{x^2 \frac{\mathrm{d}^2}{\mathrm{d}x^2} y(x) + (2\,ax + b)\, x \frac{\mathrm{d}}{\mathrm{d}x} y(x) + \left(abx + cx^2 + d\right) y(x) = 0}$$

Mathematica: cpu = 0.114515 (sec), leaf count = 120

$$\left\{\left\{y(x) \to c_1 e^{\frac{1}{2}(-2ax-(b-1)\log(x))} J_{\frac{1}{2}\sqrt{b^2-2b-4d+1}}\left(-i\sqrt{a^2-c}x\right) + c_2 e^{\frac{1}{2}(-2ax-(b-1)\log(x))} Y_{\frac{1}{2}\sqrt{b^2-2b-4d+1}}\left(-i\sqrt{a^2\right.\right.\right.$$

Maple: cpu = 0.062 (sec), leaf count = 87

$$\left\{y(x) = \_C1\, \mathrm{e}^{-ax} x^{\frac{1}{2}-\frac{b}{2}} J_{\frac{1}{2}\sqrt{b^2-2\,b-4\,d+1}}\left(\sqrt{-a^2+c}x\right) + \_C2\, \mathrm{e}^{-ax} x^{\frac{1}{2}-\frac{b}{2}} Y_{\frac{1}{2}\sqrt{b^2-2\,b-4\,d+1}}\left(\sqrt{-a^2+c}x\right)\right\}$$

3.207 ODE No. 1207

$$\boxed{x^2 \frac{\mathrm{d}^2}{\mathrm{d}x^2} y(x) + (ax + b)\left(\frac{\mathrm{d}}{\mathrm{d}x} y(x)\right) x + \left(a1\, x^2 + b1\, x + c1\right) y(x) = 0}$$

Mathematica: cpu = 0.123516 (sec), leaf count = 294

$$\left\{\left\{y(x) \to c_1 U\left(-\frac{-ab + 2\text{b1} - \sqrt{a^2-4\text{a1}} - \sqrt{a^2-4\text{a1}}\sqrt{b^2-2b-4\text{c1}+1}}{2\sqrt{a^2-4\text{a1}}}, \sqrt{b^2-2b-4\text{c1}+1}+1, \sqrt{a\right.\right.\right.$$

Maple: cpu = 0.156 (sec), leaf count = 119

$$\left\{y(x) = \_C1\, \mathrm{e}^{-\frac{ax}{2}} x^{-\frac{b}{2}} M_{-\frac{ab-2\,b1}{2}\frac{1}{\sqrt{a^2-4\,a1}}, \frac{1}{2}\sqrt{b^2-2\,b-4\,c1+1}}\left(\sqrt{a^2-4\,a1}x\right) + \_C2\, \mathrm{e}^{-\frac{ax}{2}} x^{-\frac{b}{2}} W_{-\frac{ab-2\,b1}{2}\frac{1}{\sqrt{a^2-4\,a1}}, \frac{1}{2}}\right.$$

3.208 ODE No. 1208

$$\boxed{x^2 \frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) + x^3 \frac{\mathrm{d}}{\mathrm{d}x}y(x) + \left(x^2 - 2\right) y(x) = 0}$$

Mathematica: cpu = 0.037005 (sec), leaf count = 59

$$\left\{\left\{y(x) \to \frac{c_2 e^{-\frac{x^2}{2}} \left(\sqrt{2\pi} e^{\frac{x^2}{2}} \operatorname{erf}\left(\frac{x}{\sqrt{2}}\right) - 2x\right)}{2x} + \frac{c_1}{x}\right\}\right\}$$

Maple: cpu = 0.047 (sec), leaf count = 40

$$\left\{y(x) = \frac{\_C1}{x} + \frac{\_C2}{x}\left(-\sqrt{\pi}\sqrt{2} Erf\left(\frac{x\sqrt{2}}{2}\right) + 2\,x \mathrm{e}^{-1/2\,x^2}\right)\right\}$$

3.209 ODE No. 1209

$$\boxed{x^2 \frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) + \left(x^2 + 2\right) x \frac{\mathrm{d}}{\mathrm{d}x}y(x) + \left(x^2 - 2\right) y(x) = 0}$$

Mathematica: cpu = 0.020002 (sec), leaf count = 67

$$\left\{\left\{y(x) \to \frac{c_1 e^{-\frac{x^2}{2}} \left(e^{\frac{x^2}{2}} x - \sqrt{\frac{\pi}{2}} \operatorname{erfi}\left(\frac{x}{\sqrt{2}}\right)\right)}{x^2} + \frac{c_2 e^{-\frac{x^2}{2}}}{x^2}\right\}\right\}$$

Maple: cpu = 0.047 (sec), leaf count = 48

$$\left\{y(x) = \frac{\_C1}{x^2} \mathrm{e}^{-\frac{x^2}{2}} + \frac{\_C2}{x^2}\left(-ix\sqrt{\pi}\sqrt{2} + \mathrm{e}^{-\frac{x^2}{2}} \pi\, Erf\left(\frac{i}{2}\sqrt{2}x\right)\right)\right\}$$

3.210 ODE No. 1210

$$\boxed{x^2 \frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) - 2\,x\left(x^2 - a\right) \frac{\mathrm{d}}{\mathrm{d}x}y(x) + \left(2\,n x^2 + \left((-1)^n - 1\right) a\right) y(x) = 0}$$

Mathematica: cpu = 0.266034 (sec), leaf count = 252

$$\left\{\left\{y(x) \to c_1 (-1)^{\frac{1}{4}\left(-\sqrt{4a^2-4a(-1)^n+1}-2a+1\right)} x^{\frac{1}{2}\left(-\sqrt{4a^2-4a(-1)^n+1}-2a+1\right)} {}_1F_1\left(-\frac{a}{2} - \frac{n}{2} - \frac{1}{4}\sqrt{4a^2 - 4(-1)^n a +\right.\right.$$

Maple: cpu = 0.421 (sec), leaf count = 93

$$\left\{y(x) = \_C1\, x^{-\frac{1}{2}-a} \mathrm{e}^{\frac{x^2}{2}} M_{\frac{n}{2}+\frac{a}{2}+\frac{1}{4}, \frac{1}{4}\sqrt{1-4\,(-1)^n a+4\,a^2}}\left(x^2\right) + \_C2\, x^{-\frac{1}{2}-a} \mathrm{e}^{\frac{x^2}{2}} W_{\frac{n}{2}+\frac{a}{2}+\frac{1}{4}, \frac{1}{4}\sqrt{1-4\,(-1)^n a+4\,a^2}}\left(x^2\right)\right\}$$

3.211 ODE No. 1211

$$\boxed{x^2 \frac{\mathrm{d}^2}{\mathrm{d}x^2} y(x) + 4\,x^3 \frac{\mathrm{d}}{\mathrm{d}x} y(x) + \left(4\,x^4 + 2\,x^2 + 1\right) y(x) = 0}$$

Mathematica: cpu = 0.055007 (sec), leaf count = 68

$$\left\{\left\{y(x) \to c_1 e^{-x^2} x^{\frac{1}{2} - \frac{i\sqrt{3}}{2}} - \frac{i c_2 e^{-x^2} x^{\frac{1}{2} + \frac{i\sqrt{3}}{2}}}{\sqrt{3}}\right\}\right\}$$

Maple: cpu = 0.046 (sec), leaf count = 41

$$\left\{y(x) = \_C1\, x^{\frac{1}{2} + \frac{i}{2}\sqrt{3}} \mathrm{e}^{-x^2} + \_C2\, x^{\frac{1}{2} - \frac{i}{2}\sqrt{3}} \mathrm{e}^{-x^2}\right\}$$

3.212 ODE No. 1212

$$\boxed{x^2 \frac{\mathrm{d}^2}{\mathrm{d}x^2} y(x) + \left(a x^2 + b\right) x \frac{\mathrm{d}}{\mathrm{d}x} y(x) + f(x)\, y(x) = 0}$$

Mathematica: cpu = 0.375548 (sec), leaf count = 33

$$\text{DSolve}\left[x\left(a x^2 + b\right) y'(x) + f(x) y(x) + x^2 y''(x) = 0, y(x), x\right]$$

Maple: cpu = 0.016 (sec), leaf count = 39

$$\left\{y(x) = DESol\left(\left\{\frac{f(x) \_Y(x)}{x^2} + \frac{\left(a x^2 + b\right) \frac{\mathrm{d}}{\mathrm{d}x} \_Y(x)}{x} + \frac{\mathrm{d}^2}{\mathrm{d}x^2} \_Y(x)\right\}, \{\_Y(x)\}\right)\right\}$$

3.213 ODE No. 1213

$$\boxed{x^2 \frac{\mathrm{d}^2}{\mathrm{d}x^2} y(x) + \left(x^3 + 1\right) x \frac{\mathrm{d}}{\mathrm{d}x} y(x) - y(x) = 0}$$

Mathematica: cpu = 0.072009 (sec), leaf count = 54

$$\left\{\left\{y(x) \to \frac{\sqrt[3]{3} c_1\, {}_1F_1\left(-\frac{1}{3}; \frac{1}{3}; -\frac{x^3}{3}\right)}{x} + \frac{c_2 x\, {}_1F_1\left(\frac{1}{3}; \frac{5}{3}; -\frac{x^3}{3}\right)}{\sqrt[3]{3}}\right\}\right\}$$

Maple: cpu = 0.047 (sec), leaf count = 59

$$\left\{y(x) = \_C1\, \mathrm{e}^{-\frac{x^3}{6}} x^{\frac{3}{2}} \left(I_{\frac{5}{6}}\left(\frac{x^3}{6}\right) + I_{-\frac{1}{6}}\left(\frac{x^3}{6}\right)\right) + \_C2\, \mathrm{e}^{-\frac{x^3}{6}} x^{\frac{3}{2}} \left(K_{\frac{1}{6}}\left(\frac{x^3}{6}\right) - K_{\frac{5}{6}}\left(\frac{x^3}{6}\right)\right)\right\}$$

3.214 ODE No. 1214

$$\boxed{x^2 \frac{\mathrm{d}^2}{\mathrm{d}x^2} y(x) + \left(-x^4 + (2\,n + 2\,a + 1)\,x^2 + (-1)^n\,a - a^2\right) y(x) = 0}$$

Mathematica: cpu = 0.289037 (sec), leaf count = 260

$$\left\{\left\{y(x) \to \frac{c_1 e^{-\frac{x^2}{2}} 2^{\frac{1}{4}\left(\sqrt{4a^2-4a(-1)^n+1}+2\right)} \left(x^2\right)^{\frac{1}{4}\left(\sqrt{4a^2-4a(-1)^n+1}+2\right)} U\left(\frac{1}{4}\left(-2a-2n+\sqrt{4a^2-4(-1)^n a+1}+\right.\right.\right.}{\sqrt{x}}$$

Maple: cpu = 0.390 (sec), leaf count = 73

$$\left\{y(x) = \_C1\, M_{\frac{n}{2}+\frac{a}{2}+\frac{1}{4},\,\frac{1}{4}\sqrt{1-4\,(-1)^n a+4\,a^2}}\left(x^2\right)\frac{1}{\sqrt{x}} + \_C2\, W_{\frac{n}{2}+\frac{a}{2}+\frac{1}{4},\,\frac{1}{4}\sqrt{1-4\,(-1)^n a+4\,a^2}}\left(x^2\right)\frac{1}{\sqrt{x}}\right\}$$

3.215 ODE No. 1215

$$\boxed{x^2 \frac{\mathrm{d}^2}{\mathrm{d}x^2} y(x) + (a x^n + b)\left(\frac{\mathrm{d}}{\mathrm{d}x} y(x)\right) x + \left(a1\, x^{2\,n} + b1\, x^n + c1\right) y(x) = 0}$$

Mathematica: cpu = 0.158020 (sec), leaf count = 664

$$\left\{\left\{y(x) \to c_1 x^{\frac{1-n}{2}} 2^{\frac{\sqrt{b^2n^2-2bn^2-4c1n^2+n^2}+n^2}{2n^2}} \left(x^n\right)^{\frac{\sqrt{b^2n^2-2bn^2-4c1n^2+n^2}+n^2}{2n^2}} \exp\left(\frac{1}{2}\left(-\frac{a x^n}{n} - b\log(x)\right) - \frac{\sqrt{a^2-4a}}{2n}\right.\right.\right.$$

Maple: cpu = 0.140 (sec), leaf count = 167

$$\left\{y(x) = \_C1\, x^{-\frac{b}{2}-\frac{n}{2}+\frac{1}{2}} \mathrm{e}^{-\frac{a x^n}{2n}} M_{-\frac{(b+n-1)a-2\,b1}{2\,n}\frac{1}{\sqrt{a^2-4\,a1}},\,\frac{1}{2\,n}\sqrt{b^2-2\,b-4\,c1+1}}\left(\frac{x^n}{n}\sqrt{a^2-4\,a1}\right) + \_C2\, x^{-\frac{b}{2}-\frac{n}{2}+\frac{1}{2}} \mathrm{e}^{-\frac{q}{2}}\right.$$

3.216 ODE No. 1216

$$\boxed{x^2 \frac{\mathrm{d}^2}{\mathrm{d}x^2} y(x) + \left(a x^{a1} + b\right) x \frac{\mathrm{d}}{\mathrm{d}x} y(x) + \left(A x^{2\,a1} + B x^{a1} + C x^{b1} + DD\right) y(x) = 0}$$

Mathematica: cpu = 1.452184 (sec), leaf count = 50

$$\text{DSolve}\left[x y'(x)\left(a x^{\text{a1}} + b\right) + y(x)\left(A x^{2\text{a1}} + B x^{\text{a1}} + C x^{\text{b1}} + \text{DD}\right) + x^2 y''(x) = 0, y(x), x\right]$$

Maple: cpu = 0.546 (sec), leaf count = 56

$$\left\{y(x) = DESol\left(\left\{\frac{\mathrm{d}^2}{\mathrm{d}x^2}\_Y(x) + \frac{(ax^{a1}+b)\frac{\mathrm{d}}{\mathrm{d}x}\_Y(x)}{x} + \frac{\left(Ax^{2\,a1}+Bx^{a1}+Cx^{b1}+DD\right)\_Y(x)}{x^2}\right\}, \{\_Y\right.$$

3.217 ODE No. 1217

$$\boxed{x^2\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) - \left(2\,x^2\tan\left(x\right) - x\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x) - \left(x\tan\left(x\right) + a\right)y(x) = 0}$$

Mathematica: cpu = 0.144018 (sec), leaf count = 30

$$\left\{\left\{y(x) \to c_1 \sec(x) J_{\sqrt{a}}(x) + c_2 \sec(x) Y_{\sqrt{a}}(x)\right\}\right\}$$

Maple: cpu = 0.031 (sec), leaf count = 27

$$\left\{y(x) = \frac{\_C1}{\cos\left(x\right)}J_{\sqrt{a}}(x) + \frac{\_C2}{\cos\left(x\right)}Y_{\sqrt{a}}(x)\right\}$$

3.218 ODE No. 1218

$$\boxed{x^2\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) + \left(2\,x^2\cot\left(x\right) + x\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x) + \left(x\cot\left(x\right) + a\right)y(x) = 0}$$

Mathematica: cpu = 0.143518 (sec), leaf count = 38

$$\left\{\left\{y(x) \to c_1 \csc(x) J_{i\sqrt{a}}(x) + c_2 \csc(x) Y_{i\sqrt{a}}(x)\right\}\right\}$$

Maple: cpu = 0.031 (sec), leaf count = 33

$$\left\{y(x) = \frac{\_C1}{\sin\left(x\right)}J_{i\sqrt{a}}(x) + \frac{\_C2}{\sin\left(x\right)}Y_{i\sqrt{a}}(x)\right\}$$

3.219 ODE No. 1219

$$\boxed{x^2\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) + 2\,xf(x)\frac{\mathrm{d}}{\mathrm{d}x}y(x) + \left(x\frac{\mathrm{d}}{\mathrm{d}x}f(x) + \left(f(x)\right)^2 - f(x) + ax^2 + bx + c\right)y(x) = 0}$$

Mathematica: cpu = 23.116936 (sec), leaf count = 216

$$\left\{\left\{y(x) \to c_1 U\left(-\frac{-ib-\sqrt{a}-\sqrt{a}\sqrt{1-4c}}{2\sqrt{a}}, \sqrt{1-4c}+1, 2i\sqrt{a}x\right)\exp\left(\int_1^x \frac{-2i\sqrt{a}K[1]-2f(K[1])+\sqrt{}\right.\right.$$

Maple: cpu = 0.062 (sec), leaf count = 79

$$\left\{y(x) = \_C1\, M_{-\frac{i}{2}b\frac{1}{\sqrt{a}},\frac{1}{2}\sqrt{1-4\,c}}\left(2\,i\sqrt{a}x\right)\mathrm{e}^{-\int\frac{f(x)}{x}\,\mathrm{d}x} + \_C2\, W_{-\frac{i}{2}b\frac{1}{\sqrt{a}},\frac{1}{2}\sqrt{1-4\,c}}\left(2\,i\sqrt{a}x\right)\mathrm{e}^{-\int\frac{f(x)}{x}\,\mathrm{d}x}\right\}$$

3.220 ODE No. 1220

$$\boxed{x^2 \frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) + 2\,x^2 f(x) \frac{\mathrm{d}}{\mathrm{d}x}y(x) + \left(x^2\left(\frac{\mathrm{d}}{\mathrm{d}x}f(x) + (f(x))^2 + a\right) - v(v-1)\right) y(x) = 0}$$

Mathematica: cpu = 11.805499 (sec), leaf count = 96

$$\left\{\left\{y(x) \to c_1 J_{\frac{1}{2}(2v-1)}\left(\sqrt{a}x\right) \exp\left(\int_1^x \frac{1 - 2K[1]f(K[1])}{2K[1]}\,dK[1]\right) + c_2 Y_{\frac{1}{2}(2v-1)}\left(\sqrt{a}x\right) \exp\left(\int_1^x \frac{1 - 2K[1]f}{2K[1]}\right.\right.\right.$$

Maple: cpu = 0.015 (sec), leaf count = 51

$$\left\{y(x) = \_C1\, \mathrm{e}^{-\frac{\int 2\,f(x)\,\mathrm{d}x}{2}} \sqrt{x} J_{v-\frac{1}{2}}\left(\sqrt{a}x\right) + \_C2\, \mathrm{e}^{-\frac{\int 2\,f(x)\,\mathrm{d}x}{2}} \sqrt{x} Y_{v-\frac{1}{2}}\left(\sqrt{a}x\right)\right\}$$

3.221 ODE No. 1221

$$\boxed{x^2 \frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) + \left(x - 2\,x^2 f(x)\right) \frac{\mathrm{d}}{\mathrm{d}x}y(x) + \left(x^2\left(1 + (f(x))^2 - \frac{\mathrm{d}}{\mathrm{d}x}f(x)\right) - x f(x) - v^2\right) y(x) = 0}$$

Mathematica: cpu = 0.061508 (sec), leaf count = 40

$$\left\{\left\{y(x) \to c_1 J_v(x) e^{\int_1^x f(K[1])\,dK[1]} + c_2 Y_v(x) e^{\int_1^x f(K[1])\,dK[1]}\right\}\right\}$$

Maple: cpu = 0.016 (sec), leaf count = 53

$$\left\{y(x) = \_C1\, \mathrm{e}^{-\frac{1}{2}\int \frac{-2\,x f(x)+1}{x}\,\mathrm{d}x} \sqrt{x} J_v(x) + \_C2\, \mathrm{e}^{-\frac{1}{2}\int \frac{-2\,x f(x)+1}{x}\,\mathrm{d}x} \sqrt{x} Y_v(x)\right\}$$

3.222 ODE No. 1222

$$\boxed{\left(x^2+1\right) \frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) + x \frac{\mathrm{d}}{\mathrm{d}x}y(x) + 2\,y(x) = 0}$$

Mathematica: cpu = 0.020003 (sec), leaf count = 30

$$\left\{\left\{y(x) \to c_2 \sin\left(\sqrt{2}\sinh^{-1}(x)\right) + c_1 \cos\left(\sqrt{2}\sinh^{-1}(x)\right)\right\}\right\}$$

Maple: cpu = 0.015 (sec), leaf count = 23

$$\left\{y(x) = \_C1\, \sin\left(\sqrt{2}Arcsinh(x)\right) + \_C2\, \cos\left(\sqrt{2}Arcsinh(x)\right)\right\}$$

3.223 ODE No. 1223

$$\boxed{\left(x^2+1\right)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+x\frac{\mathrm{d}}{\mathrm{d}x}y(x)-9\,y(x)=0}$$

Mathematica: cpu = 0.019502 (sec), leaf count = 25

$$\left\{\left\{y(x)\to c_1\cosh\left(3\sinh^{-1}(x)\right)+ic_2\sinh\left(3\sinh^{-1}(x)\right)\right\}\right\}$$

Maple: cpu = 0.016 (sec), leaf count = 39

$$\left\{y(x)=\_C1\ \sin\left(3\arctan\left(\frac{x}{\sqrt{-x^2-1}}\right)\right)+\_C2\ \cos\left(3\arctan\left(\frac{x}{\sqrt{-x^2-1}}\right)\right)\right\}$$

3.224 ODE No. 1224

$$\boxed{\left(x^2+1\right)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+x\frac{\mathrm{d}}{\mathrm{d}x}y(x)+ay(x)=0}$$

Mathematica: cpu = 0.018002 (sec), leaf count = 30

$$\left\{\left\{y(x)\to c_2\sin\left(\sqrt{a}\sinh^{-1}(x)\right)+c_1\cos\left(\sqrt{a}\sinh^{-1}(x)\right)\right\}\right\}$$

Maple: cpu = 0.016 (sec), leaf count = 23

$$\left\{y(x)=\_C1\ \sin\left(\sqrt{a}Arcsinh(x)\right)+\_C2\ \cos\left(\sqrt{a}Arcsinh(x)\right)\right\}$$

3.225 ODE No. 1225

$$\boxed{\left(x^2+1\right)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)-x\frac{\mathrm{d}}{\mathrm{d}x}y(x)+y(x)=0}$$

Mathematica: cpu = 0.032004 (sec), leaf count = 29

$$\left\{\left\{y(x)\to c_2\left(x\sinh^{-1}(x)-\sqrt{x^2+1}\right)+c_1x\right\}\right\}$$

Maple: cpu = 0.016 (sec), leaf count = 24

$$\left\{y(x)=x\_C1+\_C2\left(Arcsinh(x)\,x-\sqrt{x^2+1}\right)\right\}$$

3.226 ODE No. 1226

$$\boxed{\left(x^2+1\right)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+2\,x\frac{\mathrm{d}}{\mathrm{d}x}y(x)-v(v-1)\,y(x)=0}$$

Mathematica: cpu = 0.018502 (sec), leaf count = 30

$$\{\{y(x)\to c_1 P_{v-1}(ix)+c_2 Q_{v-1}(ix)\}\}$$

Maple: cpu = 0.031 (sec), leaf count = 25

$$\{y(x)=\_C1\ LegendreP(v-1,ix)+\_C2\ LegendreQ(v-1,ix)\}$$

3.227 ODE No. 1227

$$\boxed{\left(x^2+1\right)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)-2\,x\frac{\mathrm{d}}{\mathrm{d}x}y(x)+2\,y(x)=0}$$

Mathematica: cpu = 0.036005 (sec), leaf count = 21

$$\left\{\left\{y(x)\to c_2 x-c_1(x-i)^2\right\}\right\}$$

Maple: cpu = 0.016 (sec), leaf count = 15

$$\left\{y(x)=x\_C1+\_C2\left(x^2-1\right)\right\}$$

3.228 ODE No. 1228

$$\boxed{\left(x^2+1\right)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+3\,x\frac{\mathrm{d}}{\mathrm{d}x}y(x)+ay(x)=0}$$

Mathematica: cpu = 0.014502 (sec), leaf count = 82

$$\left\{\left\{y(x)\to \frac{c_1 P^{\frac{1}{2}}_{\frac{1}{2}\left(2\sqrt{1-a}-1\right)}(ix)}{\sqrt[4]{x^2+1}}+\frac{c_2 Q^{\frac{1}{2}}_{\frac{1}{2}\left(2\sqrt{1-a}-1\right)}(ix)}{\sqrt[4]{x^2+1}}\right\}\right\}$$

Maple: cpu = 0.047 (sec), leaf count = 59

$$\left\{y(x)=\_C1\left(x+\sqrt{x^2+1}\right)^{\sqrt{1-a}}\frac{1}{\sqrt{x^2+1}}+\_C2\left(x+\sqrt{x^2+1}\right)^{-\sqrt{1-a}}\frac{1}{\sqrt{x^2+1}}\right\}$$

3.229 ODE No. 1229

$$\boxed{\left(x^2+1\right)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+4\,x\frac{\mathrm{d}}{\mathrm{d}x}y(x)+2\,y(x)-2\,\cos\left(x\right)+2\,x=0}$$

Mathematica: cpu = 0.040505 (sec), leaf count = 48

$$\left\{\left\{y(x)\to \frac{c_1}{x^2+1}+\frac{c_2 x}{x^2+1}+\frac{-x^3-6\cos(x)}{3\left(x^2+1\right)}\right\}\right\}$$

Maple: cpu = 0.016 (sec), leaf count = 41

$$\left\{y(x)=\frac{x\_C1}{x^2+1}+\frac{\_C2}{x^2+1}-\frac{x^3+6\,\cos\left(x\right)}{3\,x^2+3}\right\}$$

3.230 ODE No. 1230

$$\boxed{\left(x^2+1\right)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+ax\frac{\mathrm{d}}{\mathrm{d}x}y(x)+(a-2)\,y(x)=0}$$

Mathematica: cpu = 0.025503 (sec), leaf count = 82

$$\left\{\left\{y(x)\to c_1\left(x^2+1\right)^{\frac{2-a}{4}}P^{\frac{a-2}{2}}_{\frac{a-4}{2}}(ix)+c_2\left(x^2+1\right)^{\frac{2-a}{4}}Q^{\frac{a-2}{2}}_{\frac{a-4}{2}}(ix)\right\}\right\}$$

Maple: cpu = 0.062 (sec), leaf count = 36

$$\left\{y(x)=\_C1\,\left(x^2+1\right)^{1-\frac{a}{2}}+\_C2\,{}_2\mathrm{F}_1(1,\frac{a}{2}-\frac{1}{2};\,\frac{3}{2};\,-x^2)x\right\}$$

3.231 ODE No. 1231

$$\boxed{\left(x^2-1\right)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)-v(v+1)\,y(x)=0}$$

Mathematica: cpu = 0.075010 (sec), leaf count = 58

$$\left\{\left\{y(x)\to c_1\,{}_2F_1\left(-\frac{v}{2}-\frac{1}{2},\frac{v}{2};\frac{1}{2};x^2\right)+ic_2x\,{}_2F_1\left(\frac{v}{2}+\frac{1}{2},-\frac{v}{2};\frac{3}{2};x^2\right)\right\}\right\}$$

Maple: cpu = 0.047 (sec), leaf count = 57

$$\left\{y(x)=\_C1\,\left(-x^2+1\right)\,{}_2\mathrm{F}_1(1+\frac{v}{2},\frac{1}{2}-\frac{v}{2};\,\frac{1}{2};\,x^2)+\_C2\,\left(-x^3+x\right)\,{}_2\mathrm{F}_1(1-\frac{v}{2},\frac{3}{2}+\frac{v}{2};\,\frac{3}{2};\,x^2)\right\}$$

3.232 ODE No. 1232

$$\boxed{\left(x^2-1\right)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)-n(n+1)\,y(x)+\frac{\partial}{\partial x}LegendreP(n,x)=0}$$

Mathematica: cpu = 0 (sec), leaf count = 0

Hanged

Maple: cpu = 0.141 (sec), leaf count = 418

$$\left\{y(x)=\left(-x^2+1\right){}_2\mathrm{F}_1(\frac{n}{2}+1,-\frac{n}{2}+\frac{1}{2};\,\frac{1}{2};\,x^2)\_C2+\left(-x^3+x\right){}_2\mathrm{F}_1(-\frac{n}{2}+1,\frac{n}{2}+\frac{3}{2};\,\frac{3}{2};\,x^2)\_C1-3\,(n\right.$$

3.233 ODE No. 1233

$$\boxed{\left(x^2-1\right)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)-n(n+1)\,y(x)+\frac{\partial}{\partial x}LegendreQ(n,x)=0}$$

Mathematica: cpu = 0 (sec), leaf count = 0

Hanged

Maple: cpu = 0.109 (sec), leaf count = 418

$$\left\{y(x)=\left(-x^2+1\right){}_2\mathrm{F}_1(\frac{n}{2}+1,-\frac{n}{2}+\frac{1}{2};\,\frac{1}{2};\,x^2)\_C2+\left(-x^3+x\right){}_2\mathrm{F}_1(-\frac{n}{2}+1,\frac{n}{2}+\frac{3}{2};\,\frac{3}{2};\,x^2)\_C1-3\,(n\right.$$

3.234 ODE No. 1234

$$\boxed{\left(x^2-1\right)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+x\frac{\mathrm{d}}{\mathrm{d}x}y(x)+2=0}$$

Mathematica: cpu = 0.028004 (sec), leaf count = 38

$$\left\{\left\{y(x)\to \log\left(\sqrt{x^2-1}+x\right)\left(c_1-\log\left(\sqrt{x^2-1}+x\right)\right)+c_2\right\}\right\}$$

Maple: cpu = 0.125 (sec), leaf count = 57

$$\left\{y(x)=\int 1\left(-2\sqrt{x^2-1}\ln\left(x+\sqrt{x^2-1}\right)\sqrt{x-1}\sqrt{1+x}+\_C1\,x^2-\_C1\right)(1+x)^{-\frac{3}{2}}(x-1)^{-\frac{3}{2}}\,\mathrm{d}x+\right.$$

3.235 ODE No. 1235

$$\boxed{\left(x^2-1\right)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+x\frac{\mathrm{d}}{\mathrm{d}x}y(x)+ay(x)=0}$$

Mathematica: cpu = 0.026503 (sec), leaf count = 50

$$\left\{\left\{y(x)\to c_2\sin\left(\sqrt{a}\log\left(\sqrt{x^2-1}+x\right)\right)+c_1\cos\left(\sqrt{a}\log\left(\sqrt{x^2-1}+x\right)\right)\right\}\right\}$$

Maple: cpu = 0.015 (sec), leaf count = 43

$$\left\{y(x)=\_C1\left(x+\sqrt{x^2-1}\right)^{i\sqrt{a}}+\_C2\left(\left(x+\sqrt{x^2-1}\right)^{i\sqrt{a}}\right)^{-1}\right\}$$

3.236 ODE No. 1236

$$\boxed{\left(x^2-1\right)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+x\frac{\mathrm{d}}{\mathrm{d}x}y(x)+f(x)\,y(x)=0}$$

Mathematica: cpu = 0.365046 (sec), leaf count = 28

$$\text{DSolve}\left[f(x)y(x)+\left(x^2-1\right)y''(x)+xy'(x)=0,y(x),x\right]$$

Maple: cpu = 0.0 (sec), leaf count = 41

$$\left\{y(x)=DESol\left(\left\{\frac{f(x)\_Y(x)}{x^2-1}+\frac{x\frac{\mathrm{d}}{\mathrm{d}x}\_Y(x)}{x^2-1}+\frac{\mathrm{d}^2}{\mathrm{d}x^2}\_Y(x)\right\},\{\_Y(x)\}\right)\right\}$$

3.237 ODE No. 1237

$$\boxed{\left(x^2-1\right)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+2\,x\frac{\mathrm{d}}{\mathrm{d}x}y(x)=0}$$

Mathematica: cpu = 0.010001 (sec), leaf count = 30

$$\left\{\left\{y(x)\to c_1\left(\frac{1}{2}\log(1-x)-\frac{1}{2}\log(x+1)\right)+c_2\right\}\right\}$$

Maple: cpu = 0.031 (sec), leaf count = 21

$$\left\{y(x)=\_C1+\left(-\frac{\ln\left(1+x\right)}{2}+\frac{\ln\left(x-1\right)}{2}\right)\_C2\right\}$$

3.238 ODE No. 1238

$$\boxed{\left(x^2-1\right)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+2\,x\frac{\mathrm{d}}{\mathrm{d}x}y(x)-a=0}$$

Mathematica: cpu = 0.017502 (sec), leaf count = 36

$$\left\{\left\{y(x)\to \frac{1}{2}(a+c_1)\log(1-x)+\frac{1}{2}(a-c_1)\log(x+1)+c_2\right\}\right\}$$

Maple: cpu = 0.015 (sec), leaf count = 34

$$\left\{y(x)=\frac{\ln\left(x-1\right)\_C1}{2}+\frac{\ln\left(x-1\right)a}{2}-\frac{\ln\left(1+x\right)\_C1}{2}+\frac{\ln\left(1+x\right)a}{2}+\_C2\right\}$$

3.239 ODE No. 1239

$$\boxed{\left(x^2-1\right)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+2\,x\frac{\mathrm{d}}{\mathrm{d}x}y(x)-ly(x)=0}$$

Mathematica: cpu = 0.014002 (sec), leaf count = 46

$$\left\{\left\{y(x)\to c_1P_{\frac{1}{2}\left(\sqrt{4l+1}-1\right)}(x)+c_2Q_{\frac{1}{2}\left(\sqrt{4l+1}-1\right)}(x)\right\}\right\}$$

Maple: cpu = 0.031 (sec), leaf count = 35

$$\left\{y(x)=\_C1\ LegendreP\left(\frac{1}{2}\sqrt{1+4\,l}-\frac{1}{2},x\right)+\_C2\ LegendreQ\left(\frac{1}{2}\sqrt{1+4\,l}-\frac{1}{2},x\right)\right\}$$

3.240 ODE No. 1240

$$\boxed{\left(x^2-1\right)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+2\,x\frac{\mathrm{d}}{\mathrm{d}x}y(x)-v(v+1)\,y(x)=0}$$

Mathematica: cpu = 0.017002 (sec), leaf count = 18

$$\{\{y(x)\to c_1P_v(x)+c_2Q_v(x)\}\}$$

Maple: cpu = 0.031 (sec), leaf count = 15

$$\{y(x)=\_C1\ LegendreP(v,x)+\_C2\ LegendreQ(v,x)\}$$

3.241 ODE No. 1241

$$\boxed{\left(x^2-1\right)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)-2\,x\frac{\mathrm{d}}{\mathrm{d}x}y(x)-\left(v+2\right)\left(v-1\right)y(x)=0}$$

Mathematica: cpu = 0.015002 (sec), leaf count = 30

$$\left\{\left\{y(x)\to c_1\left(x^2-1\right)P_v^2(x)+c_2\left(x^2-1\right)Q_v^2(x)\right\}\right\}$$

Maple: cpu = 0.031 (sec), leaf count = 29

$$\{y(x)=\_C1\,\left(x-1\right)\left(1+x\right)\mathit{LegendreP}(v,2,x)+\_C2\,\left(x-1\right)\left(1+x\right)\mathit{LegendreQ}(v,2,x)\}$$

3.242 ODE No. 1242

$$\boxed{\left(x^2-1\right)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)-\left(3\,x+1\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)-\left(x^2-x\right)y(x)=0}$$

Mathematica: cpu = 0.074509 (sec), leaf count = 68

$$\left\{\left\{y(x)\to c_1e^{-x}(x+1)^2-c_2e^{-x-2}\left(x^2(-\mathrm{Ei}(2(x+1)))-2x\mathrm{Ei}(2(x+1))-\mathrm{Ei}(2(x+1))+2e^{2x+2}\right)\right\}\right\}$$

Maple: cpu = 0.063 (sec), leaf count = 42

$$\left\{y(x)=\_C1\,\mathrm{e}^{-x}\left(1+x\right)^2+\_C2\,\left(\mathrm{e}^{-2-x}\left(1+x\right)^2\mathit{Ei}(1,-2\,x-2)+2\,\mathrm{e}^{x}\right)\right\}$$

3.243 ODE No. 1243

$$\boxed{\left(x^2-1\right)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+4\,x\frac{\mathrm{d}}{\mathrm{d}x}y(x)+\left(x^2+1\right)y(x)=0}$$

Mathematica: cpu = 0.029004 (sec), leaf count = 45

$$\left\{\left\{y(x)\to\frac{c_1e^{-ix}}{x^2-1}-\frac{ic_2e^{ix}}{2\left(x^2-1\right)}\right\}\right\}$$

Maple: cpu = 0.031 (sec), leaf count = 27

$$\left\{y(x)=\frac{\_C1\,\sin\left(x\right)}{x^2-1}+\frac{\_C2\,\cos\left(x\right)}{x^2-1}\right\}$$

3.244 ODE No. 1244

$$\boxed{\left(x^2-1\right)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+2\left(n+1\right)x\frac{\mathrm{d}}{\mathrm{d}x}y(x)-\left(v+n+1\right)\left(v-n\right)y(x)=0}$$

Mathematica: cpu = 0.026003 (sec), leaf count = 42

$$\left\{\left\{y(x)\to c_1\left(x^2-1\right)^{-n/2}P_v^n(x)+c_2\left(x^2-1\right)^{-n/2}Q_v^n(x)\right\}\right\}$$

Maple: cpu = 0.062 (sec), leaf count = 35

$$\left\{y(x)=\_C1\left(x^2-1\right)^{-\frac{n}{2}}\mathit{LegendreP}(v,n,x)+\_C2\left(x^2-1\right)^{-\frac{n}{2}}\mathit{LegendreQ}(v,n,x)\right\}$$

3.245 ODE No. 1245

$$\boxed{\left(x^2-1\right)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)-2\left(n-1\right)x\frac{\mathrm{d}}{\mathrm{d}x}y(x)-\left(v-n+1\right)\left(v+n\right)y(x)=0}$$

Mathematica: cpu = 0.021003 (sec), leaf count = 42

$$\left\{\left\{y(x)\to c_1\left(x^2-1\right)^{n/2}P_v^n(x)+c_2\left(x^2-1\right)^{n/2}Q_v^n(x)\right\}\right\}$$

Maple: cpu = 0.031 (sec), leaf count = 35

$$\left\{y(x)=\_C1\left(x^2-1\right)^{\frac{n}{2}}\mathit{LegendreP}(v,n,x)+\_C2\left(x^2-1\right)^{\frac{n}{2}}\mathit{LegendreQ}(v,n,x)\right\}$$

3.246 ODE No. 1246

$$\boxed{\left(x^2-1\right)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)-2\left(v-1\right)x\frac{\mathrm{d}}{\mathrm{d}x}y(x)-2vy(x)=0}$$

Mathematica: cpu = 0.021003 (sec), leaf count = 42

$$\left\{\left\{y(x)\to c_1\left(x^2-1\right)^{v/2}P_v^v(x)+c_2\left(x^2-1\right)^{v/2}Q_v^v(x)\right\}\right\}$$

Maple: cpu = 0.094 (sec), leaf count = 35

$$\left\{y(x)=\_C1\left(x^2-1\right)^{v}+\_C2\left(x^2-1\right)^{v}x_2\mathrm{F}_1(\frac{1}{2},v+1;\frac{3}{2};x^2)\right\}$$

3.247 ODE No. 1247

$$\boxed{\left(x^2-1\right)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+2\,ax\frac{\mathrm{d}}{\mathrm{d}x}y(x)+a(a-1)\,y(x)=0}$$

Mathematica: cpu = 0.224528 (sec), leaf count = 97

$$\left\{\left\{y(x)\to c_1\sqrt{1-x^2}\left(x^2-1\right)^{-a/2}e^{-\sqrt{(a-1)^2}\tanh^{-1}(x)}+\frac{c_2\sqrt{1-x^2}(x^2-1)^{-a/2}\,e^{\sqrt{(a-1)^2}\tanh^{-1}(x)}}{2\sqrt{(a-1)^2}}\right\}\right\}$$

Maple: cpu = 0.031 (sec), leaf count = 27

$$\left\{y(x)=\_C1\,(1+x)^{1-a}+\_C2\,(x-1)^{1-a}\right\}$$

3.248 ODE No. 1248

$$\boxed{\left(x^2-1\right)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+ax\frac{\mathrm{d}}{\mathrm{d}x}y(x)+\left(bx^2+cx+d\right)y(x)=0}$$

Mathematica: cpu = 2.122269 (sec), leaf count = 57

$$\left\{\left\{y(x)\to \text{DifferentialRoot}\left(\{y,x\},\left\{\left(bx^2+cx+d\right)y(x)+xay'(x)+\left(x^2-1\right)y''(x)=0,y(0)=c_1,y'(0)\right.\right.\right.\right.$$

Maple: cpu = 0.172 (sec), leaf count = 150

$$\left\{y(x)=\_C1\,\mathrm{e}^{\sqrt{-b}x}\left(x^2-1\right)^{-\frac{a}{4}}\left((1+x)\,(x-1)\right)^{\frac{a}{4}}HeunC\left(4\sqrt{-b},\frac{a}{2}-1,\frac{a}{2}-1,2\,c,d-c-\frac{a^2}{8}+b+\frac{1}{2},\right.\right.$$

3.249 ODE No. 1249

$$\boxed{\left(x^2-1\right)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+(ax+b)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+cy(x)=0}$$

Mathematica: cpu = 0.175022 (sec), leaf count = 193

$$\left\{\left\{y(x)\to c_2 2^{\frac{1}{2}(a+b-2)}(x-1)^{\frac{1}{2}(-a-b+2)}\,{}_2F_1\left(-\frac{b}{2}-\frac{1}{2}\sqrt{a^2-2a-4c+1}+\frac{1}{2},-\frac{b}{2}+\frac{1}{2}\sqrt{a^2-2a-4c+1}+\right.\right.\right.$$

Maple: cpu = 0.062 (sec), leaf count = 134

$$\left\{y(x)=\_C1\,{}_2\mathrm{F}_1(-\frac{1}{2}-\frac{1}{2}\sqrt{a^2-2\,a-4\,c+1}+\frac{a}{2},-\frac{1}{2}+\frac{1}{2}\sqrt{a^2-2\,a-4\,c+1}+\frac{a}{2};\frac{a}{2}-\frac{b}{2};\frac{1}{2}+\frac{x}{2})+\_\right.$$

3.250 ODE No. 1250

$$\boxed{\left(-a^2+x^2\right)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+8\,x\frac{\mathrm{d}}{\mathrm{d}x}y(x)+12\,y(x)=0}$$

Mathematica: cpu = 0.047506 (sec), leaf count = 41

$$\left\{\left\{y(x)\to \frac{c_2(a^2+3x^2)}{3(a-x)^3(a+x)^3}+\frac{c_1}{(a+x)^3}\right\}\right\}$$

Maple: cpu = 0.016 (sec), leaf count = 52

$$\left\{y(x)=\frac{\_C1\,\left(a^2+3\,x^2\right)}{\left(a-x\right)^3\left(x+a\right)^3}+\frac{\_C2\,x(3\,a^2+x^2)}{\left(a-x\right)^3\left(x+a\right)^3}\right\}$$

3.251 ODE No. 1251

$$\boxed{x(1+x)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)-(x-1)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+y(x)=0}$$

Mathematica: cpu = 0.035005 (sec), leaf count = 25

$$\{\{y(x)\to c_1(x-1)+c_2(x\log(x)-\log(x)-4)\}\}$$

Maple: cpu = 0.031 (sec), leaf count = 20

$$\{y(x)=\_C1\,\left(x-1\right)+\_C2\,\left(-4+\left(x-1\right)\ln\left(x\right)\right)\}$$

3.252 ODE No. 1252

$$\boxed{x(1+x)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+(ax+b)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+cy(x)=0}$$

Mathematica: cpu = 0.161521 (sec), leaf count = 151

$$\left\{\left\{y(x)\to c_2x^{1-b}\,{}_2F_1\left(\frac{a}{2}-b-\frac{1}{2}\sqrt{a^2-2a-4c+1}+\frac{1}{2},\frac{a}{2}-b+\frac{1}{2}\sqrt{a^2-2a-4c+1}+\frac{1}{2};2-b;-x\right)+\right.\right.$$

Maple: cpu = 0.032 (sec), leaf count = 124

$$\left\{y(x)=\_C1\,{}_2\mathrm{F}_1(-\frac{1}{2}-\frac{1}{2}\sqrt{a^2-2\,a-4\,c+1}+\frac{a}{2},-\frac{1}{2}+\frac{1}{2}\sqrt{a^2-2\,a-4\,c+1}+\frac{a}{2};\,a-b;\,1+x)+\_C\right.$$

3.253 ODE No. 1253

$$\boxed{x(1+x)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+(3\,x+2)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+y(x)=0}$$

Mathematica: cpu = 0.025003 (sec), leaf count = 34

$$\left\{\left\{y(x)\to\frac{\sqrt{2}c_1}{x}+\frac{c_2\log(2x+2)}{\sqrt{2}x}\right\}\right\}$$

Maple: cpu = 0.0 (sec), leaf count = 16

$$\left\{y(x)=\frac{\ln\left(1+x\right)\_C1+\_C2}{x}\right\}$$

3.254 ODE No. 1254

$$\boxed{\left(x^2+x-2\right)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+\left(x^2-x\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)-\left(6\,x^2+7\,x\right)y(x)=0}$$

Mathematica: cpu = 0.088511 (sec), leaf count = 69

$$\left\{\left\{y(x)\to\frac{1}{5}c_2e^{-3x-5}\left(195e^{5x}x\mathrm{Ei}(5-5x)-195e^{5x}\mathrm{Ei}(5-5x)+e^5x+44e^5\right)-c_1e^{2x}(x-1)\right\}\right\}$$

Maple: cpu = 0.062 (sec), leaf count = 44

$$\left\{y(x)=\_C1\,\mathrm{e}^{2\,x}(x-1)+\_C2\,\left(195\,\mathrm{e}^{-5+2\,x}(x-1)\,Ei(1,5\,x-5)-\mathrm{e}^{-3\,x}(x+44)\right)\right\}$$

3.255 ODE No. 1255

$$\boxed{x(x-1)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+a\frac{\mathrm{d}}{\mathrm{d}x}y(x)-2\,y(x)=0}$$

Mathematica: cpu = 0.204526 (sec), leaf count = 118

$$\left\{\left\{y(x)\to\frac{c_1(a^2+2ax-a+2x^2-2x)}{a^2+3a+4}+\frac{c_2x^{a+1}(a^2+2ax-a+2x^2-2x)\,(1-x)^{1-a}}{(a-1)a(a+1)\,(a^2+3a+4)\,(a^2+a(2x-1)+2(x-1)x)}\right\}\right.$$

Maple: cpu = 0.031 (sec), leaf count = 42

$$\left\{y(x)=\left(a^2+2\,ax+2\,x^2-a-2\,x\right)\_C1+\frac{\_C2\,x^a x(x-1)}{(x-1)^a}\right\}$$

3.256 ODE No. 1256

$$\boxed{x(x-1)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+(2x-1)\frac{\mathrm{d}}{\mathrm{d}x}y(x)-v(v+1)y(x)=0}$$

Mathematica: cpu = 0.023003 (sec), leaf count = 26

$$\{\{y(x)\to c_1P_v(2x-1)+c_2Q_v(2x-1)\}\}$$

Maple: cpu = 0.078 (sec), leaf count = 51

$$\left\{y(x)=\_C1\,{}_2\mathrm{F}_1(-v,-v;\,-2\,v;\,x^{-1})x^v+\_C2\,{}_2\mathrm{F}_1(v+1,v+1;\,2+2\,v;\,x^{-1})x^{-v-1}\right\}$$

3.257 ODE No. 1257

$$\boxed{x(x-1)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+((a+1)x+b)\frac{\mathrm{d}}{\mathrm{d}x}y(x)=0}$$

Mathematica: cpu = 0.045506 (sec), leaf count = 33

$$\left\{\left\{y(x)\to\frac{c_1x^{b+1}\,{}_2F_1(b+1,a+b+1;b+2;x)}{b+1}+c_2\right\}\right\}$$

Maple: cpu = 0.172 (sec), leaf count = 27

$$\left\{y(x)=\_C1+{}_2\mathrm{F}_1(b+1,a+b+1;\,b+2;\,x)x^{b+1}\_C2\right\}$$

3.258 ODE No. 1258

$$\boxed{x(x-1)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+(ax+b)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+cy(x)=0}$$

Mathematica: cpu = 0.162021 (sec), leaf count = 146

$$\left\{\left\{y(x)\to(-1)^{b+1}c_2x^{b+1}\,{}_2F_1\left(\frac{a}{2}+b-\frac{1}{2}\sqrt{a^2-2a-4c+1}+\frac{1}{2},\frac{a}{2}+b+\frac{1}{2}\sqrt{a^2-2a-4c+1}+\frac{1}{2};b+2\right.\right.\right.$$

Maple: cpu = 0.031 (sec), leaf count = 110

$$\left\{y(x)=\_C1\,{}_2\mathrm{F}_1(-\frac{1}{2}-\frac{1}{2}\sqrt{a^2-2\,a-4\,c+1}+\frac{a}{2},-\frac{1}{2}+\frac{1}{2}\sqrt{a^2-2\,a-4\,c+1}+\frac{a}{2};\,-b;\,x)+\_C2\,x^{b+1}{}_2\right.$$

3.259 ODE No. 1259

$$\boxed{x(x-1)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+((a+1)x+b)\frac{\mathrm{d}}{\mathrm{d}x}y(x)-ly(x)=0}$$

Mathematica: cpu = 0.142018 (sec), leaf count = 120

$$\left\{\left\{y(x)\to (-1)^{b+1}c_2x^{b+1}\,{}_2F_1\left(\frac{a}{2}+b-\frac{1}{2}\sqrt{a^2+4l}+1,\frac{a}{2}+b+\frac{1}{2}\sqrt{a^2+4l}+1;b+2;x\right)+c_1\,{}_2F_1\left(\frac{a}{2}-\frac{1}{2}\right.\right.\right.$$

Maple: cpu = 0.047 (sec), leaf count = 92

$$\left\{y(x)=\_C1\,{}_2\mathrm{F}_1(\frac{a}{2}-\frac{1}{2}\sqrt{a^2+4\,l},\frac{a}{2}+\frac{1}{2}\sqrt{a^2+4\,l};\,-b;\,x)+\_C2\,x^{b+1}{}_2\mathrm{F}_1(\frac{a}{2}-\frac{1}{2}\sqrt{a^2+4\,l}+b+1,\frac{a}{2}+\right.$$

3.260 ODE No. 1260

$$\boxed{x(x-1)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+((a1+b1+1)x-d1)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+a1\;b1\;d1=0}$$

Mathematica: cpu = 0.160020 (sec), leaf count = 65

$$\left\{\left\{y(x)\to \text{a1b1}x\Gamma(\text{d1}+1)\,{}_3\tilde{F}_2(1,\text{a1}+\text{b1}+1,1;\text{d1}+1,2;x)-\frac{c_1x^{1-\text{d1}}\,{}_2F_1(1-\text{d1},\text{a1}+\text{b1}-\text{d1}+1;2-}{\text{d1}-1}\right.\right.$$

Maple: cpu = 0.296 (sec), leaf count = 76

$$\left\{y(x)=\int\left(-(signum(x-1))^{a1+b1-d1}\,(-signum(x-1))^{-a1-b1+d1}\,{}_2\mathrm{F}_1(d1,-a1-b1+d1;\,1+d1;\,x)d\right.\right.$$

3.261 ODE No. 1261

$$\boxed{x(x+2)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+2\left(n+1+(n+1-2\,l)\,x-lx^2\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+(2\,l(p-n-1)\,x+2\,pl+m)\,y(x)=0}$$

Mathematica: cpu = 2.666839 (sec), leaf count = 82

$$\{\{y(x)\to \text{DifferentialRoot}(\{y,x\},\{(-2xl-2xnl+2xpl+2pl+m)y(x)+2(-lx^2-2lx+nx+x+n+$$

Maple: cpu = 0.171 (sec), leaf count = 124

$$\left\{y(x)=\_C1\;HeunC\left(4\,l,n,n,-4\,pl,\frac{(4\,n+4\,p+4)\,l}{2}-\frac{n^2}{2}+m-n,-\frac{x}{2}\right)(x+2)^{-\frac{n}{2}-\frac{1}{2}}\left(-\frac{x}{2}-1\right)^{\frac{n}{2}+\frac{1}{2}}-\right.$$

3.262 ODE No. 1262

$$\boxed{(1+x)^2 \frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) + \left(x^2+x-1\right) \frac{\mathrm{d}}{\mathrm{d}x}y(x) - (x+2)\, y(x) = 0}$$

Mathematica: cpu = 38.898939 (sec), leaf count = 87

$$\left\{\left\{y(x) \to c_2 e^{-x} \int_1^x (K[1]+1)^{\frac{K[1]}{K[1]+1}+\frac{1}{K[1]+1}} \exp\left(-\frac{K[1]^2}{K[1]+1} - \frac{K[1]}{K[1]+1} + 2K[1] - \frac{1}{K[1]+1}\right) dK[1] + c\right.\right.$$

Maple: cpu = 0.171 (sec), leaf count = 55

$$\left\{y(x) = \_C1\, \mathrm{e}^{-x} HeunD\left(4, 4, -8, 12, \frac{x}{x+2}\right)(1+x) + \_C2\, HeunD\left(-4, 4, -8, 12, \frac{x}{x+2}\right)(1+x)\, \mathrm{e}^{\frac{x-1}{2x+}}\right.$$

3.263 ODE No. 1263

$$\boxed{x(x+3) \frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) + (3x-1) \frac{\mathrm{d}}{\mathrm{d}x}y(x) + y(x) - (20x+30)\left(x^2+3x\right)^{7/3} = 0}$$

Mathematica: cpu = 0 (sec), leaf count = 0

Hanged

Maple: cpu = 0.047 (sec), leaf count = 52

$$\left\{y(x) = 1\left(\_C2 + \int \frac{1}{x^2+3x}\left(\_C1 + 3\left(x^2+3x\right)^{7/3} x(x+3)\right)(x+3)^{\frac{7}{3}} x^{-\frac{4}{3}}\, \mathrm{d}x\right) x^{\frac{4}{3}}(x+3)^{-\frac{7}{3}}\right\}$$

3.264 ODE No. 1264

$$\boxed{\left(x^2+3x+4\right) \frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) + \left(x^2+x+1\right) \frac{\mathrm{d}}{\mathrm{d}x}y(x) - (2x+3)\, y(x) = 0}$$

Mathematica: cpu = 0.064008 (sec), leaf count = 23

$$\left\{\left\{y(x) \to c_2\left(x^2+x+3\right) + c_1 e^{-x}\right\}\right\}$$

Maple: cpu = 0.031 (sec), leaf count = 19

$$\left\{y(x) = \_C1\, \mathrm{e}^{-x} + \_C2\left(x^2+x+3\right)\right\}$$

3.265 ODE No. 1265

$$(x-1)(x-2)\frac{d^2}{dx^2}y(x)-(2x-3)\frac{d}{dx}y(x)+y(x)=0$$

Mathematica: cpu = 0.042505 (sec), leaf count = 64

$$\left\{\left\{y(x)\to c_1\left(x^2-3x+2\right)P^2_{\frac{1}{2}\left(-1+\sqrt{5}\right)}(2x-3)+c_2\left(x^2-3x+2\right)Q^2_{\frac{1}{2}\left(-1+\sqrt{5}\right)}(2x-3)\right\}\right\}$$

Maple: cpu = 0.093 (sec), leaf count = 97

$$\left\{y(x)=\_C1\,{}_2F_1(\frac{1}{2}-\frac{\sqrt{5}}{2},\frac{5}{2}-\frac{\sqrt{5}}{2};-\sqrt{5}+1;(x-1)^{-1})(x-2)^2(x-1)^{\frac{\sqrt{5}}{2}-\frac{1}{2}}+\_C2\,{}_2F_1(\frac{1}{2}+\frac{\sqrt{5}}{2},\frac{5}{2}+\right.$$

3.266 ODE No. 1266

$$(x-2)^2\frac{d^2}{dx^2}y(x)-(x-2)\frac{d}{dx}y(x)-3y(x)=0$$

Mathematica: cpu = 0.029504 (sec), leaf count = 22

$$\left\{\left\{y(x)\to c_1(x-2)^3+\frac{c_2}{x-2}\right\}\right\}$$

Maple: cpu = 0.0 (sec), leaf count = 19

$$\left\{y(x)=\frac{\_C1}{x-2}+\_C2\,(x-2)^3\right\}$$

3.267 ODE No. 1267

$$2x^2\frac{d^2}{dx^2}y(x)-\left(2x^2+l-5x\right)\frac{d}{dx}y(x)-(4x-1)y(x)=0$$

Mathematica: cpu = 34.197343 (sec), leaf count = 205

$$\left\{\left\{y(x)\to\frac{\sqrt{\frac{\pi}{2}}c_2l\left(e^{2\sqrt{2}\sqrt{-l}}\text{erf}\left(\frac{\sqrt{-l}}{\sqrt{2}\sqrt{x}}+\sqrt{x}\right)+\text{erf}\left(\frac{\sqrt{2}\sqrt{-l}-2x}{2\sqrt{x}}\right)+\text{erf}\left(1-\frac{\sqrt{-l}}{\sqrt{2}}\right)-e^{2\sqrt{2}\sqrt{-l}}\text{erf}\left(\frac{\sqrt{-l}}{\sqrt{2}}+1\right)\right)e}{(-l)^{3/2}}\right.\right.$$

Maple: cpu = 0.046 (sec), leaf count = 41

$$\left\{y(x)=e^x\left(\_C1\int\frac{1}{2e^x}e^{\frac{l}{2x}}x^{-\frac{3}{2}}\,dx+\_C2\right)\frac{1}{\sqrt{x}}\left(e^{\frac{l}{2x}}\right)^{-1}\right\}$$

3.268 ODE No. 1268

$$\boxed{2\,x(x-1)\,\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+(2\,x-1)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)+(ax+b)\,y(x)=0}$$

Mathematica: cpu = 1.377675 (sec), leaf count = 55

$$\{\{y(x)\to \text{DifferentialRoot}(\{y,x\},\{(xa+b)y(x)+(2x-1)y'(x)+2(x-1)xy''(x)=0,y(2)=c_1,y'(2)=$$

Maple: cpu = 0.078 (sec), leaf count = 39

$$\left\{y(x)=\_C1\ MathieuC\left(-a-2\,b,\frac{a}{2},\arccos\left(\sqrt{x}\right)\right)+\_C2\ MathieuS\left(-a-2\,b,\frac{a}{2},\arccos\left(\sqrt{x}\right)\right)\right\}$$

3.269 ODE No. 1269

$$\boxed{2\,x(x-1)\,\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+((2\,v+5)\,x-2\,v-3)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)+(v+1)\,y(x)=0}$$

Mathematica: cpu = 0.084511 (sec), leaf count = 60

$$\left\{\left\{y(x)\to c_1\,{}_2F_1\left(\frac{1}{2},v+1;v+\frac{3}{2};x\right)+c_2 i^{-2v-1}x^{\frac{1}{2}(-2v-1)}\,{}_2F_1\left(\frac{1}{2},-v;\frac{1}{2}-v;x\right)\right\}\right\}$$

Maple: cpu = 0.062 (sec), leaf count = 40

$$\left\{y(x)=\_C1\ {}_2\mathrm{F}_1(\frac{1}{2},v+1;\ \frac{3}{2}+v;\ x)+\_C2\ x^{-\frac{1}{2}-v}{}_2\mathrm{F}_1(\frac{1}{2},-v;\ \frac{1}{2}-v;\ x)\right\}$$

3.270 ODE No. 1270

$$\boxed{\left(2\,x^2+6\,x+4\right)\,\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+\left(10\,x^2+21\,x+8\right)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)+\left(12\,x^2+17\,x+8\right)\,y(x)=0}$$

Mathematica: cpu = 162.565643 (sec), leaf count = 57

$$\left\{\left\{y(x)\to c_2e^{-3x}(x+2)^4\left(\int_1^x\frac{e^{K[1]}(K[1]+1)^{3/2}}{(K[1]+2)^5}\,dK[1]\right)+c_1e^{-3x}(x+2)^4\right\}\right\}$$

Maple: cpu = 0.125 (sec), leaf count = 54

$$\left\{y(x)=\_C1\,\mathrm{e}^{-2\,x}(x+2)^4\,HeunC\left(-1,-\frac{5}{2},4,-\frac{7}{4},\frac{7}{2},-1-x\right)+\_C2\,\mathrm{e}^{-2\,x}(x+2)^4\,(1+x)^{\frac{5}{2}}\,HeunC\left(-\right.\right.$$

3.271 ODE No. 1271

$$\boxed{4x^2\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+y(x)=0}$$

Mathematica: cpu = 0.010501 (sec), leaf count = 27

$$\left\{\left\{y(x)\to c_1\sqrt{x}+\frac{1}{2}c_2\sqrt{x}\log(x)\right\}\right\}$$

Maple: cpu = 0.0 (sec), leaf count = 17

$$\left\{y(x)=\_C1\,\sqrt{x}+\_C2\,\sqrt{x}\ln\left(x\right)\right\}$$

3.272 ODE No. 1272

$$\boxed{4x^2\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+\left(4a^2x^2+1\right)y(x)=0}$$

Mathematica: cpu = 0.012002 (sec), leaf count = 32

$$\left\{\left\{y(x)\to c_1\sqrt{x}J_0(ax)+c_2\sqrt{x}Y_0(ax)\right\}\right\}$$

Maple: cpu = 0.031 (sec), leaf count = 25

$$\left\{y(x)=\_C1\,\sqrt{x}J_0(ax)+\_C2\,\sqrt{x}Y_0(ax)\right\}$$

3.273 ODE No. 1273

$$\boxed{4x^2\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)-\left(-4kx+4m^2+x^2-1\right)y(x)=0}$$

Mathematica: cpu = 0.017002 (sec), leaf count = 20

$$\{\{y(x)\to c_1M_{k,m}(x)+c_2W_{k,m}(x)\}\}$$

Maple: cpu = 0.062 (sec), leaf count = 17

$$\left\{y(x)=\_C1\,M_{k,\,m}(x)+\_C2\,W_{k,\,m}(x)\right\}$$

3.274 ODE No. 1274

$$\boxed{4\,x^2\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+4\,x\frac{\mathrm{d}}{\mathrm{d}x}y(x)+\left(-v^2+x\right)y(x)=0}$$

Mathematica: cpu = 0.043506 (sec), leaf count = 38

$$\left\{\left\{y(x)\to c_1\Gamma(1-v)J_{-v}\left(\sqrt{x}\right)+c_2\Gamma(v+1)J_v\left(\sqrt{x}\right)\right\}\right\}$$

Maple: cpu = 0.0 (sec), leaf count = 19

$$\left\{y(x)=\_C1\,J_v\left(\sqrt{x}\right)+\_C2\,Y_v\left(\sqrt{x}\right)\right\}$$

3.275 ODE No. 1275

$$\boxed{4\,x^2\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+4\,x\frac{\mathrm{d}}{\mathrm{d}x}y(x)+\left(-x^2+2\left(1-m+2\,l\right)x-m^2+1\right)y(x)=0}$$

Mathematica: cpu = 0.037005 (sec), leaf count = 120

$$\left\{\left\{y(x)\to c_1e^{\frac{1}{2}\left(\sqrt{m^2-1}\log(x)-x\right)}U\left(\frac{1}{2}\left(-2l+m+\sqrt{m^2-1}\right),\sqrt{m^2-1}+1,x\right)+c_2e^{\frac{1}{2}\left(\sqrt{m^2-1}\log(x)-x\right)}L^{\sqrt{m}}_{\frac{1}{2}\left(2\right.}\right.\right.$$

Maple: cpu = 0.110 (sec), leaf count = 55

$$\left\{y(x)=\_C1\,M_{l-\frac{m}{2}+\frac{1}{2},\frac{1}{2}\sqrt{m-1}\sqrt{m+1}}(x)\frac{1}{\sqrt{x}}+\_C2W_{l-\frac{m}{2}+\frac{1}{2},\frac{1}{2}\sqrt{m-1}\sqrt{m+1}}(x)\frac{1}{\sqrt{x}}\right\}$$

3.276 ODE No. 1276

$$\boxed{4\,x^2\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+4\,x\frac{\mathrm{d}}{\mathrm{d}x}y(x)-\left(4\,x^2+1\right)y(x)-4\sqrt{x^3}\mathrm{e}^x=0}$$

Mathematica: cpu = 0.046506 (sec), leaf count = 55

$$\left\{\left\{y(x)\to\frac{c_1e^{-x}}{\sqrt{x}}+\frac{c_2e^x}{2\sqrt{x}}+\frac{e^x\sqrt{x^3}(2x-1)}{4x^2}\right\}\right\}$$

Maple: cpu = 0.063 (sec), leaf count = 31

$$\left\{y(x)=\sinh\left(x\right)\_C2\frac{1}{\sqrt{x}}+\cosh\left(x\right)\_C1\frac{1}{\sqrt{x}}+\frac{\mathrm{e}^x}{2\,x}\sqrt{x^3}\right\}$$

3.277 ODE No. 1277

$$\boxed{4\,x^2\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+4\,x\frac{\mathrm{d}}{\mathrm{d}x}y(x)-\left(ax^2+1\right)y(x)=0}$$

Mathematica: cpu = 0.028504 (sec), leaf count = 51

$$\left\{\left\{y(x)\to \frac{c_1 e^{-\frac{\sqrt{a}x}{2}}}{\sqrt{x}}+\frac{c_2 e^{\frac{\sqrt{a}x}{2}}}{\sqrt{a}\sqrt{x}}\right\}\right\}$$

Maple: cpu = 0.047 (sec), leaf count = 29

$$\left\{y(x)=\_C1\sinh\left(\frac{x}{2}\sqrt{a}\right)\frac{1}{\sqrt{x}}+\_C2\cosh\left(\frac{x}{2}\sqrt{a}\right)\frac{1}{\sqrt{x}}\right\}$$

3.278 ODE No. 1278

$$\boxed{4\,x^2\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+4\,x\frac{\mathrm{d}}{\mathrm{d}x}y(x)+f(x)\,y(x)=0}$$

Mathematica: cpu = 0.268034 (sec), leaf count = 28

$$\text{DSolve}\left[f(x)y(x)+4x^2y''(x)+4xy'(x)=0,y(x),x\right]$$

Maple: cpu = 0.0 (sec), leaf count = 33

$$\left\{y(x)=DESol\left(\left\{\frac{f(x)\_Y(x)}{4\,x^2}+\frac{\frac{\mathrm{d}}{\mathrm{d}x}\_Y(x)}{x}+\frac{\mathrm{d}^2}{\mathrm{d}x^2}\_Y(x)\right\},\{\_Y(x)\}\right)\right\}$$

3.279 ODE No. 1279

$$\boxed{4\,x^2\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+5\,x\frac{\mathrm{d}}{\mathrm{d}x}y(x)-y(x)-\ln\left(x\right)=0}$$

Mathematica: cpu = 0.163021 (sec), leaf count = 74

$$\left\{\left\{y(x)\to c_1 x^{\frac{1}{2}\left(\frac{\sqrt{17}}{4}-\frac{1}{4}\right)}+c_2 x^{\frac{1}{2}\left(-\frac{1}{4}-\frac{\sqrt{17}}{4}\right)}-\frac{256(\log(x)+1)}{\left(\sqrt{17}-1\right)^2\left(1+\sqrt{17}\right)^2}\right\}\right\}$$

Maple: cpu = 0.094 (sec), leaf count = 32

$$\left\{y(x)=x^{-\frac{1}{8}+\frac{\sqrt{17}}{8}}\_C2+x^{-\frac{1}{8}-\frac{\sqrt{17}}{8}}\_C1-\ln\left(x\right)-1\right\}$$

3.280 ODE No. 1280

$$\boxed{4\,x^2\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+8\,x\frac{\mathrm{d}}{\mathrm{d}x}y(x)-\left(4\,x^2+12\,x+3\right)y(x)=0}$$

Mathematica: cpu = 0.039005 (sec), leaf count = 52

$$\left\{\left\{y(x)\to\frac{c_2e^{-x}(4e^{2x}x^2\mathrm{Ei}(-2x)+2x-1)}{2x^{3/2}}+c_1e^x\sqrt{x}\right\}\right\}$$

Maple: cpu = 0.047 (sec), leaf count = 41

$$\left\{y(x)=\_C1\,\sqrt{x}\mathrm{e}^{x}+\_C2\,\left(4\,x^2\mathrm{e}^{x}Ei(1,2\,x)-2\,\mathrm{e}^{-x}x+\mathrm{e}^{-x}\right)x^{-\frac{3}{2}}\right\}$$

3.281 ODE No. 1281

$$\boxed{4\,x^2\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)-4\,x(2\,x-1)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)+\left(4\,x^2-4\,x-1\right)y(x)=0}$$

Mathematica: cpu = 0.020503 (sec), leaf count = 28

$$\left\{\left\{y(x)\to\frac{c_1e^x}{\sqrt{x}}+c_2e^x\sqrt{x}\right\}\right\}$$

Maple: cpu = 0.047 (sec), leaf count = 19

$$\left\{y(x)=\_C1\,\mathrm{e}^{x}\frac{1}{\sqrt{x}}+\_C2\,\sqrt{x}\mathrm{e}^{x}\right\}$$

3.282 ODE No. 1282

$$\boxed{4\,x^2\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+4\,x^3\frac{\mathrm{d}}{\mathrm{d}x}y(x)+\left(x^2+6\right)\left(x^2-4\right)y(x)=0}$$

Mathematica: cpu = 0.024003 (sec), leaf count = 39

$$\left\{\left\{y(x)\to\frac{c_1e^{-\frac{x^2}{4}}}{x^2}+\frac{1}{5}c_2e^{-\frac{x^2}{4}}x^3\right\}\right\}$$

Maple: cpu = 0.047 (sec), leaf count = 27

$$\left\{y(x)=\frac{\_C1}{x^2}\mathrm{e}^{-\frac{x^2}{4}}+\_C2\,x^3\mathrm{e}^{-\frac{x^2}{4}}\right\}$$

3.283 ODE No. 1283

$$4x^2\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+4x^2\ln(x)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+\left(x^2(\ln(x))^2+2x-8\right)y(x)-4x^2\sqrt{\frac{\mathrm{e}^x}{x^x}}=0$$

Mathematica: cpu = 0.098513 (sec), leaf count = 90

$$\left\{\left\{y(x)\to c_1e^{x/2}x^{-\frac{x}{2}-1}+\frac{1}{3}c_2e^{x/2}x^{2-\frac{x}{2}}+\frac{1}{9}\left(3x^2\sqrt{e^xx^{-x}}\log(x)-x^2\sqrt{e^xx^{-x}}\right)\right\}\right\}$$

Maple: cpu = 0.093 (sec), leaf count = 52

$$\left\{y(x)=x^{-\frac{x}{2}-1}\mathrm{e}^{\frac{x}{2}}\_C2+x^{-\frac{x}{2}+2}\mathrm{e}^{\frac{x}{2}}\_C1+\frac{x^2(3\ln(x)-1)}{9}\sqrt{x^{-x}\mathrm{e}^x}\right\}$$

3.284 ODE No. 1284

$$(2x+1)^2\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)-2(2x+1)\frac{\mathrm{d}}{\mathrm{d}x}y(x)-12y(x)-3x-1=0$$

Mathematica: cpu = 0.044506 (sec), leaf count = 47

$$\left\{\left\{y(x)\to c_1(2x+1)^3+\frac{c_2}{2x+1}+\frac{-72x^2-56x-7}{192(2x+1)}\right\}\right\}$$

Maple: cpu = 0.016 (sec), leaf count = 42

$$\left\{y(x)=\frac{\_C1}{2x+1}+(2x+1)^3\_C2-\frac{72x^2+56x+7}{384x+192}\right\}$$

3.285 ODE No. 1285

$$x(4x-1)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+((4a+2)x-a)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+a(a-1)y(x)=0$$

Mathematica: cpu = 0.335543 (sec), leaf count = 134

$$\left\{\left\{y(x)\to\frac{2c_1\sqrt[4]{4x-1}x^{\frac{1}{2}-\frac{a}{2}}e^{\sqrt{-(a-1)^2}\tan^{-1}\left(\sqrt{4x-1}\right)}}{\sqrt[4]{1-4x}}-\frac{c_2\sqrt[4]{4x-1}x^{\frac{1}{2}-\frac{a}{2}}e^{-\sqrt{-(a-1)^2}\tan^{-1}\left(\sqrt{4x-1}\right)}}{2\sqrt{-(a-1)^2}\sqrt[4]{1-4x}}\right\}\right\}$$

Maple: cpu = 0.079 (sec), leaf count = 52

$$\left\{y(x)=\_C1\,{}_2\mathrm{F}_1(\frac{a}{2},\frac{a}{2}-\frac{1}{2};\,a;\,4x)+\_C2\,x^{1-a}{}_2\mathrm{F}_1(1-\frac{a}{2},-\frac{a}{2}+\frac{1}{2};\,-a+2;\,4x)\right\}$$

3.286 ODE No. 1286

$$\boxed{(3x-1)^2\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+3(3x-1)\frac{\mathrm{d}}{\mathrm{d}x}y(x)-9y(x)-(\ln(3x-1))^2=0}$$

Mathematica: cpu = 0.103013 (sec), leaf count = 101

$$\left\{\left\{y(x)\to\frac{c_1((1-3x)^2+1)}{2(1-3x)}+\frac{ic_2((1-3x)^2-1)}{2(1-3x)}+\frac{-6x-3x\log^2(3x-1)+\log^2(3x-1)+\log(3x-1}{9(3x-1)}\right.\right.$$

Maple: cpu = 0.015 (sec), leaf count = 32

$$\left\{y(x)=\frac{\_C1}{3x-1}+(3x-1)\_C2-\frac{(\ln(3x-1))^2}{9}-\frac{2}{9}\right\}$$

3.287 ODE No. 1287

$$\boxed{9x(x-1)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+3(2x-1)\frac{\mathrm{d}}{\mathrm{d}x}y(x)-20y(x)=0}$$

Mathematica: cpu = 0.018502 (sec), leaf count = 83

$$\left\{\left\{y(x)\to c_2\sqrt[3]{1-x}\sqrt[3]{x}Q_1^{\frac{2}{3}}(2x-1)-\frac{c_1(2-2x)^{2/3}\sqrt[3]{1-x}x^{2/3}(6x-5)}{3\ 2^{2/3}(x-1)\Gamma\left(\frac{4}{3}\right)}\right\}\right\}$$

Maple: cpu = 0.016 (sec), leaf count = 27

$$\left\{y(x)=\_C1\,(6x-5)\,x^{\frac{2}{3}}+\_C2\,(6x-1)\,(x-1)^{\frac{2}{3}}\right\}$$

3.288 ODE No. 1288

$$\boxed{16x^2\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+(4x+3)y(x)=0}$$

Mathematica: cpu = 0.038505 (sec), leaf count = 47

$$\left\{\left\{y(x)\to c_1e^{i\sqrt{x}}\sqrt[4]{x}+ic_2e^{-i\sqrt{x}}\sqrt[4]{x}\right\}\right\}$$

Maple: cpu = 0.016 (sec), leaf count = 23

$$\left\{y(x)=\_C1\,\sin\left(\sqrt{x}\right)\sqrt[4]{x}+\_C2\,\sqrt[4]{x}\cos\left(\sqrt{x}\right)\right\}$$

3.289 ODE No. 1289

$$\boxed{16\,x^2\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+32\,x\frac{\mathrm{d}}{\mathrm{d}x}y(x)-(4\,x+5)\,y(x)=0}$$

Mathematica: cpu = 0.079510 (sec), leaf count = 53

$$\left\{\left\{y(x)\to\frac{c_2e^{-\sqrt{x}}\left(\sqrt{x}+1\right)}{x^{5/4}}-\frac{c_1e^{\sqrt{x}}\left(\sqrt{x}-1\right)}{x^{5/4}}\right\}\right\}$$

Maple: cpu = 0.062 (sec), leaf count = 35

$$\left\{y(x)=\_C1\mathrm{e}^{\sqrt{x}}\left(\sqrt{x}-1\right)x^{-\frac{5}{4}}+\_C2\mathrm{e}^{-\sqrt{x}}\left(\sqrt{x}+1\right)x^{-\frac{5}{4}}\right\}$$

3.290 ODE No. 1290

$$\boxed{\left(27\,x^2+4\right)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+27\,x\frac{\mathrm{d}}{\mathrm{d}x}y(x)-3\,y(x)=0}$$

Mathematica: cpu = 0.175022 (sec), leaf count = 103

$$\left\{\left\{y(x)\to c_1\cosh\left(\frac{\sqrt{-27x^2-4}\tan^{-1}\left(\frac{3x}{\sqrt{-9x^2-\frac{4}{3}}}\right)}{3\sqrt{27x^2+4}}\right)+ic_2\sinh\left(\frac{\sqrt{-27x^2-4}\tan^{-1}\left(\frac{3x}{\sqrt{-9x^2-\frac{4}{3}}}\right)}{3\sqrt{27x^2+4}}\right)\right\}\right\}$$

Maple: cpu = 0.015 (sec), leaf count = 47

$$\left\{y(x)=\_C1\,\sin\left(\frac{1}{3}\arctan\left(3\,\frac{\sqrt{3}x}{\sqrt{-27\,x^2-4}}\right)\right)+\_C2\,\cos\left(\frac{1}{3}\arctan\left(3\,\frac{\sqrt{3}x}{\sqrt{-27\,x^2-4}}\right)\right)\right\}$$

3.291 ODE No. 1291

$$\boxed{48\,x(x-1)\,\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+(152\,x-40)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)+53\,y(x)=0}$$

Mathematica: cpu = 0.078010 (sec), leaf count = 92

$$\left\{\left\{y(x)\to c_1\,{}_2F_1\left(\frac{13}{12}-\frac{\sqrt{\frac{5}{2}}}{6},\frac{13}{12}+\frac{\sqrt{\frac{5}{2}}}{6};\frac{5}{6};x\right)+\sqrt[6]{-1}c_2\sqrt[6]{x}\,{}_2F_1\left(\frac{5}{4}-\frac{\sqrt{\frac{5}{2}}}{6},\frac{5}{4}+\frac{\sqrt{\frac{5}{2}}}{6};\frac{7}{6};x\right)\right\}\right\}$$

Maple: cpu = 0.031 (sec), leaf count = 62

$$\left\{y(x)=\_C1\,{}_2\mathrm{F}_1(\frac{13}{12}-\frac{\sqrt{2}\sqrt{5}}{12},\frac{13}{12}+\frac{\sqrt{2}\sqrt{5}}{12};\frac{5}{6};x)+\_C2\,\sqrt[6]{x}{}_2\mathrm{F}_1(\frac{5}{4}-\frac{\sqrt{2}\sqrt{5}}{12},\frac{5}{4}+\frac{\sqrt{2}\sqrt{5}}{12};\frac{7}{6};x)\right\}$$

3.292 ODE No. 1292

$$\boxed{50\,x(x-1)\,\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+25\,(2\,x-1)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)-2\,y(x)=0}$$

Mathematica: cpu = 0.041505 (sec), leaf count = 53

$$\left\{\left\{y(x)\to c_1\cosh\left(\frac{2}{5}\log\left(\sqrt{x-1}+\sqrt{x}\right)\right)+ic_2\sinh\left(\frac{2}{5}\log\left(\sqrt{x-1}+\sqrt{x}\right)\right)\right\}\right\}$$

Maple: cpu = 0.047 (sec), leaf count = 31

$$\left\{y(x)=\_C1\,\left(\sqrt{x}+\sqrt{x-1}\right)^{\frac{2}{5}}+\_C2\left(\sqrt{x}+\sqrt{x-1}\right)^{-\frac{2}{5}}\right\}$$

3.293 ODE No. 1293

$$\boxed{144\,x(x-1)\,\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+(120\,x-48)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)+y(x)=0}$$

Mathematica: cpu = 0.341543 (sec), leaf count = 44

$$\left\{\left\{y(x)\to(-1)^{2/3}c_2x^{2/3}\,{}_2F_1\left(\frac{7}{12},\frac{7}{12};\frac{5}{3};x\right)+c_1\,{}_2F_1\left(-\frac{1}{12},-\frac{1}{12};\frac{1}{3};x\right)\right\}\right\}$$

Maple: cpu = 0.046 (sec), leaf count = 35

$$\left\{y(x)=\_C1\,\sqrt[3]{x}LegendreP\left(-\frac{1}{2},\frac{2}{3},\sqrt{1-x}\right)+\_C2\,\sqrt[3]{x}LegendreQ\left(-\frac{1}{2},\frac{2}{3},\sqrt{1-x}\right)\right\}$$

3.294 ODE No. 1294

$$\boxed{144\,x(x-1)\,\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+(168\,x-96)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)+y(x)=0}$$

Mathematica: cpu = 0.070009 (sec), leaf count = 44

$$\left\{\left\{y(x)\to c_1\,{}_2F_1\left(\frac{1}{12},\frac{1}{12};\frac{2}{3};x\right)+\sqrt[3]{-1}c_2\sqrt[3]{x}\,{}_2F_1\left(\frac{5}{12},\frac{5}{12};\frac{4}{3};x\right)\right\}\right\}$$

Maple: cpu = 0.047 (sec), leaf count = 35

$$\left\{y(x)=\_C1\,\sqrt[6]{x}LegendreP\left(-\frac{1}{2},\frac{1}{3},\sqrt{1-x}\right)+\_C2\,\sqrt[6]{x}LegendreQ\left(-\frac{1}{2},\frac{1}{3},\sqrt{1-x}\right)\right\}$$

3.295 ODE No. 1295

$$\boxed{ax^2\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+bx\frac{\mathrm{d}}{\mathrm{d}x}y(x)+\left(cx^2+dx+f\right)y(x)=0}$$

Mathematica: cpu = 0.287037 (sec), leaf count = 310

$$\left\{\left\{y(x)\to c_1U\left(-\frac{-\sqrt{c}a-id\sqrt{a}-\sqrt{c}\sqrt{a^2-2ba-4fa+b^2}}{2a\sqrt{c}},\frac{\sqrt{a^2-2ba-4fa+b^2}}{a}+1,\frac{2i\sqrt{c}x}{\sqrt{a}}\right)\exp\left(\right.\right.\right.$$

Maple: cpu = 0.218 (sec), leaf count = 113

$$\left\{y(x)=\_C1\,x^{-\frac{b}{2a}}M_{-\frac{i}{2}d\frac{1}{\sqrt{c}}\frac{1}{\sqrt{a}},\frac{1}{2a}\sqrt{a^2+(-2b-4f)a+b^2}}\left(2\,ix\sqrt{c}\frac{1}{\sqrt{a}}\right)+\_C2\,x^{-\frac{b}{2a}}W_{-\frac{i}{2}d\frac{1}{\sqrt{c}}\frac{1}{\sqrt{a}},\frac{1}{2a}\sqrt{a^2+(-2b-4f)a+}}\right.$$

3.296 ODE No. 1296

$$\boxed{a2\,x^2\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+\left(a1\,x^2+b1\,x\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+\left(a0\,x^2+b0\,x+c0\right)y(x)=0}$$

Mathematica: cpu = 0.571573 (sec), leaf count = 356

$$\left\{\left\{y(x)\to c_1U\left(-\frac{2\mathrm{b0a2}-\sqrt{\mathrm{a1}^2-4\mathrm{a0a2}}\mathrm{a2}-\mathrm{a1b1}-\sqrt{\mathrm{a1}^2-4\mathrm{a0a2}}\sqrt{\mathrm{a2}^2-2\mathrm{b1a2}-4\mathrm{c0a2}+\mathrm{b1}^2}}{2\mathrm{a2}\sqrt{\mathrm{a1}^2-4\mathrm{a0a2}}},\frac{\sqrt{\mathrm{a2}}}{\right.\right.\right.$$

Maple: cpu = 0.218 (sec), leaf count = 165

$$\left\{y(x)=\_C1\,x^{-\frac{b1}{2\,a2}}\mathrm{e}^{-\frac{a1\,x}{2\,a2}}M_{-\frac{a1\,b1-2\,a2\,b0}{2\,a2}\frac{1}{\sqrt{-4\,a0\,a2+a1^2}},\frac{1}{2\,a2}\sqrt{a2^2+(-2\,b1-4\,c0)a2+b1^2}}\left(\frac{x}{a2}\sqrt{-4\,a0\,a2+a1^2}\right)+\_C\right.$$

3.297 ODE No. 1297

$$\boxed{\left(ax^2+1\right)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+ax\frac{\mathrm{d}}{\mathrm{d}x}y(x)+by(x)=0}$$

Mathematica: cpu = 0.033504 (sec), leaf count = 52

$$\left\{\left\{y(x)\to c_2\sin\left(\frac{\sqrt{b}\sinh^{-1}\left(\sqrt{a}x\right)}{\sqrt{a}}\right)+c_1\cos\left(\frac{\sqrt{b}\sinh^{-1}\left(\sqrt{a}x\right)}{\sqrt{a}}\right)\right\}\right\}$$

Maple: cpu = 0.016 (sec), leaf count = 61

$$\left\{y(x)=\_C1\left(\sqrt{a}x+\sqrt{ax^2+1}\right)^{i\sqrt{b}\frac{1}{\sqrt{a}}}+\_C2\left(\left(\sqrt{a}x+\sqrt{ax^2+1}\right)^{i\sqrt{b}\frac{1}{\sqrt{a}}}\right)^{-1}\right\}$$

3.298 ODE No. 1298

$$\boxed{\left(ax^2+1\right)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+bx\frac{\mathrm{d}}{\mathrm{d}x}y(x)+cy(x)=0}$$

Mathematica: cpu = 0.079510 (sec), leaf count = 162

$$\left\{\left\{y(x)\to c_1\left(ax^2+1\right)^{\frac{2a-b}{4a}}P^{\frac{b-2a}{2a}}_{\frac{\sqrt{a^2-2ba-4ca+b^2}-a}{2a}}\left(i\sqrt{a}x\right)+c_2\left(ax^2+1\right)^{\frac{2a-b}{4a}}Q^{\frac{b-2a}{2a}}_{\frac{\sqrt{a^2-2ba-4ca+b^2}-a}{2a}}\left(i\sqrt{a}x\right)\right\}\right\}$$

Maple: cpu = 0.078 (sec), leaf count = 143

$$\left\{y(x)=\_C1\left(ax^2+1\right)^{\frac{2a-b}{4a}}\mathit{LegendreP}\left(\frac{1}{2a}\left(\sqrt{a^2+\left(-2b-4c\right)a+b^2}-a\right),\frac{2a-b}{2a},\sqrt{-a}x\right)+\_C2\left(a\right.\right.$$

3.299 ODE No. 1299

$$\boxed{\left(a^2x^2-1\right)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+2a^2x\frac{\mathrm{d}}{\mathrm{d}x}y(x)=0}$$

Mathematica: cpu = 0.014002 (sec), leaf count = 19

$$\left\{\left\{y(x)\to c_2-\frac{c_1\tanh^{-1}(ax)}{a}\right\}\right\}$$

Maple: cpu = 0.016 (sec), leaf count = 31

$$\left\{y(x)=\_C1+\left(\frac{\ln\left(ax-1\right)}{2a}-\frac{\ln\left(ax+1\right)}{2a}\right)\_C2\right\}$$

3.300 ODE No. 1300

$$\boxed{\left(a^2x^2-1\right)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+2a^2x\frac{\mathrm{d}}{\mathrm{d}x}y(x)-2a^2y(x)=0}$$

Mathematica: cpu = 0.016002 (sec), leaf count = 41

$$\left\{\left\{y(x)\to ac_1x+c_2\left(ax\left(\frac{1}{2}\log(ax+1)-\frac{1}{2}\log(1-ax)\right)-1\right)\right\}\right\}$$

Maple: cpu = 0.046 (sec), leaf count = 32

$$\left\{y(x)=x\_C1+\_C2\left(\frac{a\ln\left(ax-1\right)x}{2}-\frac{a\ln\left(ax+1\right)x}{2}+1\right)\right\}$$

3.301 ODE No. 1301

$$\boxed{\left(ax^2+bx\right)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+2\,b\frac{\mathrm{d}}{\mathrm{d}x}y(x)-2\,ay(x)=0}$$

Mathematica: cpu = 0.033004 (sec), leaf count = 31

$$\left\{\left\{y(x)\to\frac{c_2(ax+b)^3}{3ax}+\frac{c_1}{x}\right\}\right\}$$

Maple: cpu = 0.016 (sec), leaf count = 22

$$\left\{y(x)=\frac{\_C1}{x}+\frac{\_C2\,(ax+b)^3}{x}\right\}$$

3.302 ODE No. 1302

$$\boxed{A2\,(ax+b)^2\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+A1\,(ax+b)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+A0\,(ax+b)\,y(x)=0}$$

Mathematica: cpu = 0.084011 (sec), leaf count = 243

$$\left\{\left\{y(x)\to c_1\left(\frac{2b}{a}+2x\right)^{\frac{\mathrm{A1}}{2a\mathrm{A2}}}(2a\mathrm{A2}x+2\mathrm{A2}b)^{-\frac{\mathrm{A1}}{2a\mathrm{A2}}}\left(-\frac{\mathrm{A0}\left(\frac{b}{a}+x\right)}{a\mathrm{A2}}\right)^{\frac{1}{2}-\frac{\mathrm{A1}}{2a\mathrm{A2}}}I_{\frac{\mathrm{A1}}{a\mathrm{A2}}-1}\left(2\sqrt{-\frac{\mathrm{A0}\left(\frac{b}{a}+x\right)}{a\mathrm{A2}}}\right)+\right.\right.$$

Maple: cpu = 0.046 (sec), leaf count = 117

$$\left\{y(x)=\_C1\,(ax+b)^{-\frac{-aA2+A1}{2\,aA2}}J_{\frac{aA2-A1}{aA2}}\left(2\sqrt{A0}\sqrt{\frac{ax+b}{a^2A2}}\right)+\_C2\,(ax+b)^{-\frac{-aA2+A1}{2\,aA2}}Y_{\frac{aA2-A1}{aA2}}\left(2\sqrt{A0}\sqrt{\right.\right.$$

3.303 ODE No. 1303

$$\boxed{\left(ax^2+bx+c\right)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+(dx+f)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+gy(x)=0}$$

Mathematica: cpu = 14.510843 (sec), leaf count = 56

$$\{\{y(x)\to\text{DifferentialRoot}\left(\{y,x\},\{gy(x)+(xd+f)y'(x)+\left(ax^2+bx+c\right)y''(x)=0,y(0)=c_1,y'(0)=\right.\right.$$

Maple: cpu = 0.140 (sec), leaf count = 501

$$\left\{y(x)=\_C1\;{}_2\mathrm{F}_1(\frac{1}{2\,a}\left(-a+d+\sqrt{a^2+(-2\,d-4\,g)\,a+d^2}\right),-\frac{1}{2\,a}\left(a-d+\sqrt{a^2+(-2\,d-4\,g)\,a+d^2}\right)\right.$$

3.304 ODE No. 1304

$$\boxed{x^3 \frac{\mathrm{d}^2}{\mathrm{d}x^2} y(x) + x \frac{\mathrm{d}}{\mathrm{d}x} y(x) - (2\,x + 3)\, y(x) = 0}$$

Mathematica: cpu = 0.034004 (sec), leaf count = 50

$$\left\{\left\{y(x) \to \frac{c_2 \left(e^{\frac{1}{x}} \operatorname{Ei}\left(-\frac{1}{x}\right) + 2x^3 - x^2 + x\right)}{6x} + \frac{c_1 e^{\frac{1}{x}}}{x}\right\}\right\}$$

Maple: cpu = 0.016 (sec), leaf count = 41

$$\left\{y(x) = \frac{\_C1\, \mathrm{e}^{x^{-1}}}{x} + \frac{\_C2 \left(-2\,x^3 + \mathrm{e}^{x^{-1}} Ei(1, x^{-1}) + x^2 - x\right)}{x}\right\}$$

3.305 ODE No. 1305

$$\boxed{x^3 \frac{\mathrm{d}^2}{\mathrm{d}x^2} y(x) + 2\,x \frac{\mathrm{d}}{\mathrm{d}x} y(x) - y(x) = 0}$$

Mathematica: cpu = 0.071009 (sec), leaf count = 47

$$\left\{\left\{y(x) \to c_2 G^{2,0}_{1,2}\left(-\frac{2}{x} \middle| \begin{matrix} \frac{1}{2} \\ -1, 0 \end{matrix}\right) + c_1 e^{\frac{1}{x}} \left(I_0\left(\frac{1}{x}\right) - I_1\left(\frac{1}{x}\right)\right)\right\}\right\}$$

Maple: cpu = 0.046 (sec), leaf count = 47

$$\left\{y(x) = \_C1\, \mathrm{e}^{x^{-1}} \left(I_0\left(x^{-1}\right) - I_1\left(x^{-1}\right)\right) + \_C2\, \mathrm{e}^{x^{-1}} \left(K_0\left(-x^{-1}\right) - K_1\left(-x^{-1}\right)\right)\right\}$$

3.306 ODE No. 1306

$$\boxed{x^3 \frac{\mathrm{d}^2}{\mathrm{d}x^2} y(x) + x^2 \frac{\mathrm{d}}{\mathrm{d}x} y(x) + \left(a x^2 + b x + a\right) y(x) = 0}$$

Mathematica: cpu = 1.002127 (sec), leaf count = 56

$$\left\{\left\{y(x) \to \text{DifferentialRoot}\left(\{y, x\}, \left\{y''(x) x^3 + y'(x) x^2 + \left(a x^2 + b x + a\right) y(x) = 0, y(1) = c_1, y'(1) = c_2\right\}\right)\right.$$

Maple: cpu = 0.109 (sec), leaf count = 95

$$\left\{y(x) = \_C1\ HeunD\left(0, 8\,a + 4\,b, 0, 8\,a - 4\,b, \frac{1+x}{x-1}\right) + \_C2\ HeunD\left(0, 8\,a + 4\,b, 0, 8\,a - 4\,b, \frac{1+x}{x-1}\right) \int\right.$$

3.307 ODE No. 1307

$$\boxed{x^3 \frac{\mathrm{d}^2}{\mathrm{d}x^2} y(x) + x(1+x) \frac{\mathrm{d}}{\mathrm{d}x} y(x) - 2\, y(x) = 0}$$

Mathematica: cpu = 0.085011 (sec), leaf count = 54

$$\left\{\left\{y(x) \to \frac{c_1 e^{\frac{1}{x}} (x+1)}{x} - \frac{c_2 \left(e^{\frac{1}{x}} x \mathrm{Ei}\left(-\frac{1}{x}\right) + e^{\frac{1}{x}} \mathrm{Ei}\left(-\frac{1}{x}\right) + x\right)}{x}\right\}\right\}$$

Maple: cpu = 0.047 (sec), leaf count = 38

$$\left\{y(x) = \frac{\_C1\, \mathrm{e}^{x^{-1}} (1+x)}{x} + \frac{\_C2 \left(-\mathrm{e}^{x^{-1}} (1+x)\, Ei(1, x^{-1}) + x\right)}{x}\right\}$$

3.308 ODE No. 1308

$$\boxed{x^3 \frac{\mathrm{d}^2}{\mathrm{d}x^2} y(x) - x^2 \frac{\mathrm{d}}{\mathrm{d}x} y(x) + x y(x) - (\ln(x))^3 = 0}$$

Mathematica: cpu = 0.018502 (sec), leaf count = 41

$$\left\{\left\{y(x) \to c_1 x + c_2 x \log(x) + \frac{2\log^3(x) + 6\log^2(x) + 9\log(x) + 6}{8x}\right\}\right\}$$

Maple: cpu = 0.016 (sec), leaf count = 36

$$\left\{y(x) = x \_C2 + x \ln(x) \_C1 + \frac{2 (\ln(x))^3 + 6 (\ln(x))^2 + 9 \ln(x) + 6}{8\, x}\right\}$$

3.309 ODE No. 1309

$$\boxed{x^3 \frac{\mathrm{d}^2}{\mathrm{d}x^2} y(x) - \left(x^2 - 1\right) \frac{\mathrm{d}}{\mathrm{d}x} y(x) + x y(x) = 0}$$

Mathematica: cpu = 0.081010 (sec), leaf count = 84

$$\left\{\left\{y(x) \to c_2 G^{2,0}_{1,2}\left(-\frac{1}{2x^2} \middle| \begin{matrix} 1 \\ -\frac{1}{2}, -\frac{1}{2} \end{matrix}\right) + \sqrt{2} c_1 e^{\frac{1}{4x^2}} x \left(\left(1 - \frac{1}{2x^2}\right) I_0\left(\frac{1}{4x^2}\right) + \frac{I_1\left(\frac{1}{4x^2}\right)}{2x^2}\right)\right\}\right\}$$

Maple: cpu = 0.078 (sec), leaf count = 73

$$\left\{y(x) = \frac{\_C1}{x} \mathrm{e}^{\frac{1}{4x^2}} \left(\left(2x^2 - 1\right) I_0\left(\frac{1}{4x^2}\right) + I_1\left(\frac{1}{4x^2}\right)\right) + \frac{\_C2}{x} \mathrm{e}^{\frac{1}{4x^2}} \left(\left(2x^2 - 1\right) K_0\left(-\frac{1}{4x^2}\right) + K_1\left(-\frac{1}{4x^2}\right)\right)\right\}$$

3.310 ODE No. 1310

$$\boxed{x^3 \frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) + 3\,x^2 \frac{\mathrm{d}}{\mathrm{d}x}y(x) + xy(x) - 1 = 0}$$

Mathematica: cpu = 0.010001 (sec), leaf count = 31

$$\left\{\left\{y(x) \to \frac{c_1}{x} + \frac{c_2 \log(x)}{x} + \frac{\log^2(x)}{2x}\right\}\right\}$$

Maple: cpu = 0.031 (sec), leaf count = 20

$$\left\{y(x) = \frac{1}{x}\left(\frac{(\ln(x))^2}{2} + \_C1\ \ln(x) + \_C2\right)\right\}$$

3.311 ODE No. 1311

$$\boxed{x\left(x^2+1\right)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) + \left(2\,x^2+1\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x) - v(v+1)\,xy(x) = 0}$$

Mathematica: cpu = 0.134517 (sec), leaf count = 63

$$\left\{\left\{y(x) \to c_2 G^{2,0}_{2,2}\left(-x^2\middle|\begin{matrix}\frac{1-v}{2}, \frac{v+2}{2} \\ 0, 0\end{matrix}\right) + c_1\,{}_2F_1\left(\frac{v}{2}+\frac{1}{2}, -\frac{v}{2}; 1; -x^2\right)\right\}\right\}$$

Maple: cpu = 0.109 (sec), leaf count = 52

$$\left\{y(x) = \_C1\ {}_2\mathrm{F}_1(-\frac{v}{2}, \frac{1}{2}+\frac{v}{2}; \frac{1}{2}; x^2+1) + \_C2\ \sqrt{x^2+1}\,{}_2\mathrm{F}_1(1+\frac{v}{2}, \frac{1}{2}-\frac{v}{2}; \frac{3}{2}; x^2+1)\right\}$$

3.312 ODE No. 1312

$$\boxed{x\left(x^2+1\right)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) + 2\left(x^2-1\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x) - 2\,xy(x) = 0}$$

Mathematica: cpu = 0.026003 (sec), leaf count = 32

$$\left\{\left\{y(x) \to \frac{c_1}{x^2+1} + \frac{c_2 x^3}{3\left(x^2+1\right)}\right\}\right\}$$

Maple: cpu = 0.015 (sec), leaf count = 26

$$\left\{y(x) = \frac{\_C1}{x^2+1} + \frac{\_C2\ x^3}{x^2+1}\right\}$$

3.313 ODE No. 1313

$$\boxed{x\left(x^2+1\right)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+\left(2\left(n+1\right)x^2+2\,n+1\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)-\left(v-n\right)\left(v+n+1\right)xy(x)=0}$$

Mathematica: cpu = 0.211527 (sec), leaf count = 87

$$\left\{\left\{y(x)\to c_1\,{}_2F_1\left(\frac{n}{2}-\frac{v}{2},\frac{n}{2}+\frac{v}{2}+\frac{1}{2};n+1;-x^2\right)+c_2x^{-2n}\,{}_2F_1\left(-\frac{n}{2}-\frac{v}{2},-\frac{n}{2}+\frac{v}{2}+\frac{1}{2};1-n;-x^2\right)\right\}\right\}$$

Maple: cpu = 0.062 (sec), leaf count = 39

$$\left\{y(x)=\_C1\,x^{-n}LegendreP\left(v,n,\sqrt{x^2+1}\right)+\_C2\,x^{-n}LegendreQ\left(v,n,\sqrt{x^2+1}\right)\right\}$$

3.314 ODE No. 1314

$$\boxed{x\left(x^2+1\right)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)-\left(2\left(n-1\right)x^2+2\,n-1\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+\left(v+n\right)\left(-v+n-1\right)xy(x)=0}$$

Mathematica: cpu = 0.185024 (sec), leaf count = 87

$$\left\{\left\{y(x)\to c_1\,{}_2F_1\left(-\frac{n}{2}-\frac{v}{2},-\frac{n}{2}+\frac{v}{2}+\frac{1}{2};1-n;-x^2\right)+c_2x^{2n}\,{}_2F_1\left(\frac{n}{2}-\frac{v}{2},\frac{n}{2}+\frac{v}{2}+\frac{1}{2};n+1;-x^2\right)\right\}\right\}$$

Maple: cpu = 0.062 (sec), leaf count = 35

$$\left\{y(x)=\_C1\,x^{n}LegendreP\left(v,n,\sqrt{x^2+1}\right)+\_C2\,x^{n}LegendreQ\left(v,n,\sqrt{x^2+1}\right)\right\}$$

3.315 ODE No. 1315

$$\boxed{x\left(x^2-1\right)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+\frac{\mathrm{d}}{\mathrm{d}x}y(x)+y(x)\,ax^3=0}$$

Mathematica: cpu = 0.027503 (sec), leaf count = 44

$$\left\{\left\{y(x)\to c_2\sin\left(\sqrt{a}\sqrt{x^2-1}\right)+c_1\cos\left(\sqrt{a}\sqrt{x^2-1}\right)\right\}\right\}$$

Maple: cpu = 0.015 (sec), leaf count = 45

$$\left\{y(x)=\_C1\,\sin\left(\left(1+x\right)\left(x-1\right)\sqrt{a}\frac{1}{\sqrt{x^2-1}}\right)+\_C2\,\cos\left(\left(1+x\right)\left(x-1\right)\sqrt{a}\frac{1}{\sqrt{x^2-1}}\right)\right\}$$

3.316 ODE No. 1316

$$\boxed{x\left(x^2-1\right)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+\left(x^2-1\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)-xy(x)=0}$$

Mathematica: cpu = 0.091512 (sec), leaf count = 38

$$\left\{\left\{y(x)\to c_2 G^{2,0}_{2,2}\left(x^2\middle|\begin{array}{c}\frac{1}{2},\frac{3}{2}\\0,0\end{array}\right)+\frac{2c_1E(x^2)}{\pi}\right\}\right\}$$

Maple: cpu = 0.032 (sec), leaf count = 18

$$\{y(x)=\_C1\ \mathit{EllipticE}(x)+\_C2\ (\mathit{EllipticCE}(x)-\mathit{EllipticCK}(x))\}$$

3.317 ODE No. 1317

$$\boxed{x\left(x^2-1\right)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+\left(3\,x^2-1\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+xy(x)=0}$$

Mathematica: cpu = 0.115015 (sec), leaf count = 38

$$\left\{\left\{y(x)\to c_2 G^{2,0}_{2,2}\left(x^2\middle|\begin{array}{c}\frac{1}{2},\frac{1}{2}\\0,0\end{array}\right)+\frac{2c_1K(x^2)}{\pi}\right\}\right\}$$

Maple: cpu = 0.032 (sec), leaf count = 13

$$\{y(x)=\_C1\ \mathit{EllipticK}(x)+\_C2\ \mathit{EllipticCK}(x)\}$$

3.318 ODE No. 1318

$$\boxed{x\left(x^2-1\right)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+\left(ax^2+b\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+cxy(x)=0}$$

Mathematica: cpu = 0.293537 (sec), leaf count = 172

$$\left\{\left\{y(x)\to c_1\,{}_2F_1\left(\frac{a}{4}-\frac{1}{4}\sqrt{a^2-2a-4c+1}-\frac{1}{4},\frac{a}{4}+\frac{1}{4}\sqrt{a^2-2a-4c+1}-\frac{1}{4};\frac{1}{2}-\frac{b}{2};x^2\right)+i^{b+1}c_2x^{b+1}\right.\right.$$

Maple: cpu = 0.094 (sec), leaf count = 122

$$\left\{y(x)=\_C1\ {}_2\mathrm{F}_1(-\frac{1}{4}+\frac{a}{4}-\frac{1}{4}\sqrt{a^2-2\,a-4\,c+1},-\frac{1}{4}+\frac{a}{4}+\frac{1}{4}\sqrt{a^2-2\,a-4\,c+1};\ \frac{1}{2}-\frac{b}{2};\ x^2)+\_C2\right.$$

3.319 ODE No. 1319

$$\boxed{x\left(x^2+2\right)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)-\frac{\mathrm{d}}{\mathrm{d}x}y(x)-6\,xy(x)=0}$$

Mathematica: cpu = 0.099513 (sec), leaf count = 118

$$\left\{\left\{y(x)\to \frac{c_2\left(-2\sqrt[4]{2}x^2\,{}_2F_1\left(\frac{1}{4},\frac{3}{4};\frac{5}{4};-\frac{x^2}{2}\right)-\sqrt[4]{2}x^4\,{}_2F_1\left(\frac{1}{4},\frac{3}{4};\frac{5}{4};-\frac{x^2}{2}\right)-\sqrt[4]{x^2+2}x^2-\sqrt[4]{x^2+2}\right)}{3\sqrt[4]{x^2+2}}+c_1\left(x^2+\right.\right.\right.$$

Maple: cpu = 0.078 (sec), leaf count = 37

$$\left\{y(x)=\_C1\,x^{\frac{3}{2}}\left(x^2+2\right)^{\frac{3}{4}}+\_C2\,\left(x^2+2\right)^{\frac{3}{4}}\,{}_2\mathrm{F}_1(-\frac{3}{4},\frac{7}{4};\,\frac{1}{4};\,-\frac{x^2}{2})\right\}$$

3.320 ODE No. 1320

$$\boxed{x\left(x^2-2\right)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)-\left(x^3+3\,x^2-2\,x-2\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+\left(x^2+4\,x+2\right)y(x)=0}$$

Mathematica: cpu = 0.070009 (sec), leaf count = 21

$$\left\{\left\{y(x)\to c_1e^xx^2+c_2(x-1)\right\}\right\}$$

Maple: cpu = 0.031 (sec), leaf count = 17

$$\left\{y(x)=\_C1\,\left(x-1\right)+\_C2\,\mathrm{e}^x x^2\right\}$$

3.321 ODE No. 1321

$$\boxed{x^2(1+x)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)-x(2\,x+1)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+(2\,x+1)\,y(x)=0}$$

Mathematica: cpu = 0.026003 (sec), leaf count = 18

$$\{\{y(x)\to c_1x+c_2x(x+\log(x))\}\}$$

Maple: cpu = 0.015 (sec), leaf count = 15

$$\{y(x)=x\_C1+\_C2\,x(x+\ln\left(x\right))\}$$

3.322 ODE No. 1322

$$\boxed{x^2(1+x)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+2\,x(3\,x+2)\frac{\mathrm{d}}{\mathrm{d}x}y(x)=0}$$

Mathematica: cpu = 0.028504 (sec), leaf count = 44

$$\left\{\left\{y(x)\to c_1\left(-\frac{1}{3x^3}+\frac{1}{x^2}-\frac{3}{x}-\frac{1}{x+1}-4\log(x)+4\log(x+1)\right)+c_2\right\}\right\}$$

Maple: cpu = 0.015 (sec), leaf count = 44

$$\left\{y(x)=\_C1+\left(-4\,\ln(x)+4\,\ln(1+x)-\frac{12\,x^3+6\,x^2-2\,x+1}{(3+3\,x)\,x^3}\right)\_C2\right\}$$

3.323 ODE No. 1323

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)=-2\,\frac{(x-2)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)}{x\,(x-1)}+2\,\frac{(1+x)\,y(x)}{x^2\,(x-1)}=0}$$

Mathematica: cpu = 0.744094 (sec), leaf count = 54

$\{\{y(x)\to \text{DifferentialRoot}(\{y,x\},\{(-2x-2)y(x)+(2x-4)y'(x)+(x-1)xy''(x)=0,y(2)=c_1,y'(2)$

Maple: cpu = 0.016 (sec), leaf count = 20

$$\left\{y(x)=\frac{\_C1}{x^2}+\frac{\_C2\,(x-1)^3}{x^2}\right\}$$

3.324 ODE No. 1324

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)=\frac{(5\,x-4)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)}{x\,(x-1)}-\frac{(9\,x-6)\,y(x)}{x^2\,(x-1)}=0}$$

Mathematica: cpu = 0.029004 (sec), leaf count = 25

$$\{\{y(x)\to c_1x^3-c_2x^2(x\log(x)+1)\}\}$$

Maple: cpu = 0.047 (sec), leaf count = 21

$$\{y(x)=\_C1\,x^3+\_C2\,x^2(x\ln(x)+1)\}$$

3.325 ODE No. 1325

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)=-\frac{((a+b+1)\,x+\alpha+\beta-1)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)}{x\,(x-1)}-\frac{(abx-\alpha\,\beta)\,y(x)}{x^2\,(x-1)}=0}$$

Mathematica: cpu = 0.264534 (sec), leaf count = 52

$$\left\{\left\{y(x)\to (-1)^{\alpha}c_1x^{\alpha}\,{}_2F_1(a+\alpha,\alpha+b;\alpha-\beta+1;x)+(-1)^{\beta}c_2x^{\beta}\,{}_2F_1(a+\beta,b+\beta;-\alpha+\beta+1;x)\right\}\right\}$$

Maple: cpu = 0.093 (sec), leaf count = 103

$$\left\{y(x)=\_C1\,x^{\alpha}(x-1)^{1-a-\alpha-b-\beta}\,{}_2\mathrm{F}_1(1-b-\beta,1-a-\beta;\,1+\alpha-\beta;\,x)+\_C2\,x^{\beta}(x-1)^{1-a-\alpha-b-\beta}\,{}_2\mathrm{F}\right.$$

3.326 ODE No. 1326

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)=-\frac{\frac{\mathrm{d}}{\mathrm{d}x}y(x)}{1+x}-\frac{y(x)}{x\,(1+x)^2}=0}$$

Mathematica: cpu = 0.028504 (sec), leaf count = 29

$$\left\{\left\{y(x)\to \frac{c_1x}{x+1}+\frac{c_2(x\log(x)-1)}{x+1}\right\}\right\}$$

Maple: cpu = 0.031 (sec), leaf count = 26

$$\left\{y(x)=\frac{x\_C1}{1+x}+\frac{\_C2\,(x\ln(x)-1)}{1+x}\right\}$$

3.327 ODE No. 1327

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)=2\,\frac{\frac{\mathrm{d}}{\mathrm{d}x}y(x)}{x\,(x-2)}-\frac{y(x)}{x^2\,(x-2)}=0}$$

Mathematica: cpu = 0.167521 (sec), leaf count = 104

$$\left\{\left\{y(x)\to \left(-\frac{1}{2}\right)^{-\frac{1}{\sqrt{2}}}c_1x^{-\frac{1}{\sqrt{2}}}\,{}_2F_1\left(-\frac{1}{\sqrt{2}},-1-\frac{1}{\sqrt{2}};1-\sqrt{2};\frac{x}{2}\right)+\left(-\frac{1}{2}\right)^{\frac{1}{\sqrt{2}}}c_2x^{\frac{1}{\sqrt{2}}}\,{}_2F_1\left(\frac{1}{\sqrt{2}},-1+\frac{1}{\sqrt{2}};1\right.\right.\right.$$

Maple: cpu = 0.094 (sec), leaf count = 85

$$\left\{y(x)=\_C1\,{}_2\mathrm{F}_1(2-\frac{\sqrt{2}}{2},1-\frac{\sqrt{2}}{2};\,1-\sqrt{2};\,\frac{x}{2})x^{-\frac{\sqrt{2}}{2}}(x-2)^2+\_C2\,{}_2\mathrm{F}_1(2+\frac{\sqrt{2}}{2},1+\frac{\sqrt{2}}{2};\,1+\sqrt{2};\,\frac{x}{2})x\right.$$

3.328 ODE No. 1328

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) = 2\,\frac{y(x)}{x\,(x-1)^2} = 0}$$

Mathematica: cpu = 0.022003 (sec), leaf count = 36

$$\left\{\left\{y(x) \to \frac{c_2(-x^2+2x\log(x)+1)}{x-1} - \frac{c_1 x}{x-1}\right\}\right\}$$

Maple: cpu = 0.015 (sec), leaf count = 32

$$\left\{y(x) = \frac{x\_C1}{x-1} + \frac{\_C2\,(2\,x\ln(x) - x^2 + 1)}{x-1}\right\}$$

3.329 ODE No. 1329

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) = -\frac{((\alpha+\beta+1)\,x^2 - (\alpha+\beta+1+a(\gamma 1+\delta)-\delta)\,x + a\gamma 1)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)}{x\,(x-1)\,(x-a)} - \frac{(\alpha\,\beta\,x - q)\,y(x)}{x\,(x-1)\,(x-a)} = 0}$$

Mathematica: cpu = 6.409814 (sec), leaf count = 99

$$\{\{y(x) \to \text{DifferentialRoot}\big(\{y,x\},\{(x\alpha\beta - q)y(x) + \big(\alpha x^2 + \beta x^2 + x^2 - \alpha x - \beta x - a\delta x + \delta x - a\text{gamma}$$

Maple: cpu = 0.234 (sec), leaf count = 64

$$\{y(x) = \_C1\ HeunG(a,q,\alpha,\beta,\gamma 1,\delta,x) + \_C2\ x^{1-\gamma 1} HeunG(a, q-(-1+\gamma 1)\,(\delta\,(a-1)+\alpha+\beta-\gamma 1+$$

3.330 ODE No. 1330

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) = -\frac{(Ax^2+Bx+C)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)}{(x-a)\,(x-b)\,(x-c)} - \frac{(DD\,x+E)\,y(x)}{(x-a)\,(x-b)\,(x-c)} = 0}$$

Mathematica: cpu = 135.163163 (sec), leaf count = 71

$$\{\{y(x) \to \text{DifferentialRoot}\big(\{y,x\},\{(x\text{DD}+e)y(x) + \big(Ax^2+Bx+C\big)\,y'(x) - (a-x)(b-x)(c-x)y''($$

Maple: cpu = 0.780 (sec), leaf count = 1147

$$\left\{y(x) = \_C1\ HeunG\left(\frac{a-c}{a-b}, \frac{DD\,a+E}{a-b}, \frac{A}{2} - \frac{1}{2} + \frac{1}{2}\sqrt{A^2-2\,A-4\,DD+1}, 1\Big((A(b-c)\,a - Abc - Bc -\right.\right.$$

3.331 ODE No. 1331

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) = 1/2\,\frac{(x-4)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)}{x\,(x-2)} - 1/2\,\frac{(x-3)\,y(x)}{x^2\,(x-2)} = 0}$$

Mathematica: cpu = 0.043006 (sec), leaf count = 55

$$\left\{\left\{y(x) \to \frac{c_1\sqrt[4]{x-2}\sqrt{x}}{\sqrt[4]{2-x}} + \frac{2c_2(x-2)^{3/4}\sqrt{x}}{\sqrt[4]{2-x}}\right\}\right\}$$

Maple: cpu = 0.031 (sec), leaf count = 19

$$\left\{y(x) = \_C1\,\sqrt{x} + \_C2\,\sqrt{x\,(x-2)}\right\}$$

3.332 ODE No. 1332

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) = \frac{\frac{\mathrm{d}}{\mathrm{d}x}y(x)}{1+x} - 1/4\,\frac{(3\,x+1)\,y(x)}{x^2\,(1+x)} = 0}$$

Mathematica: cpu = 0.023503 (sec), leaf count = 26

$$\{\{y(x) \to c_1\sqrt{x} + c_2\sqrt{x}(x+\log(x))\}\}$$

Maple: cpu = 0.015 (sec), leaf count = 19

$$\{y(x) = \_C1\,\sqrt{x} + \_C2\,\sqrt{x}(x+\ln(x))\}$$

3.333 ODE No. 1333

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) = -1/2\,\frac{(3\,x-1)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)}{x\,(x-1)} + 1/4\,\frac{v(v+1)\,y(x)}{x^2} = 0}$$

Mathematica: cpu = 0.109014 (sec), leaf count = 70

$$\left\{\left\{y(x) \to c_1 i^{-v} x^{-v/2}\,{}_2F_1\left(\frac{1}{2},-v;\frac{1}{2}-v;x\right) + c_2 i^{v+1} x^{\frac{v+1}{2}}\,{}_2F_1\left(\frac{1}{2},v+1;v+\frac{3}{2};x\right)\right\}\right\}$$

Maple: cpu = 0.047 (sec), leaf count = 45

$$\left\{y(x) = \_C1\,x^{-\frac{v}{2}}{}_2\mathrm{F}_1(\frac{1}{2},-v;\,\frac{1}{2}-v;\,x) + \_C2\,x^{\frac{1}{2}+\frac{v}{2}}{}_2\mathrm{F}_1(\frac{1}{2},v+1;\,\frac{3}{2}+v;\,x)\right\}$$

3.334 ODE No. 1334

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) = -\frac{((a+1)\,x-1)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)}{x\,(x-1)} - 1/4\,\frac{((a^2-b^2)\,x+c^2)\,y(x)}{x^2\,(x-1)} = 0}$$

Mathematica: cpu = 0.198525 (sec), leaf count = 114

$$\left\{\left\{y(x) \to i^{-c}c_1 x^{-c/2}\,{}_2F_1\left(\frac{a}{2}-\frac{b}{2}-\frac{c}{2},\frac{a}{2}+\frac{b}{2}-\frac{c}{2};1-c;x\right) + i^c c_2 x^{c/2}\,{}_2F_1\left(\frac{a}{2}-\frac{b}{2}+\frac{c}{2},\frac{a}{2}+\frac{b}{2}+\frac{c}{2};c+1\right.\right.$$

Maple: cpu = 0.062 (sec), leaf count = 97

$$\left\{y(x) = \_C1\,(x-1)^{1-a}\,x^{\frac{c}{2}}{}_2\mathrm{F}_1(-\frac{a}{2}-\frac{b}{2}+\frac{c}{2}+1,-\frac{a}{2}+\frac{b}{2}+\frac{c}{2}+1;\,c+1;\,x) + \_C2\,(x-1)^{1-a}\,x^{-\frac{c}{2}}{}_2\mathrm{F}_1(-\right.$$

3.335 ODE No. 1335

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) = -1/2\,\frac{(3\,x-1)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)}{x\,(x-1)} - 1/4\,\frac{(ax+b)\,y(x)}{x\,(x-1)^2} = 0}$$

Mathematica: cpu = 0.305039 (sec), leaf count = 893

$$\left\{\left\{y(x) \to e^{\frac{1}{4}(-2\log(1-x)-\log(x))}\sqrt[4]{x}c_1\,{}_2F_1\left(\frac{1}{4}\left(\sqrt{-8a-4b-4\sqrt{4a^2+4ba-a-b}+1}+1\right),\frac{(-8a-4b-\right.\right.\right.$$

Maple: cpu = 0.031 (sec), leaf count = 57

$$\left\{y(x) = \_C1\,\mathit{LegendreP}\left(\frac{1}{2}\sqrt{1-4\,a}-\frac{1}{2},\sqrt{-a-b},\sqrt{x}\right) + \_C2\,\mathit{LegendreQ}\left(\frac{1}{2}\sqrt{1-4\,a}-\frac{1}{2},\sqrt{-a-b},\right.\right.$$

3.336 ODE No. 1336

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) = -\frac{(-3\,x+1)\,y(x)}{(x-1)\,(2\,x-1)^2} = 0}$$

Mathematica: cpu = 0.051007 (sec), leaf count = 70

$$\{\{y(x) \to c_2\sqrt{1-2x}(2x\log(2(x-1)+1) - 2\log(2(x-1)+1) - 2x\log(x-1) + 2\log(x-1) - 1) - c_1$$

Maple: cpu = 0.031 (sec), leaf count = 50

$$\left\{y(x) = \_C1\,\sqrt{2\,x-1}(x-1) + \_C2\,((2\,x-2)\ln(2\,x-1) - 1 + (-2\,x+2)\ln(x-1))\,\sqrt{2\,x-1}\right\}$$

3.337 ODE No. 1337

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) = -1/2\,\frac{(3\,x+a+2\,b)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)}{(x+a)\,(x+b)} - 1/4\,\frac{(a-b)\,y(x)}{(x+a)^2\,(x+b)} = 0}$$

Mathematica: cpu = 0.081010 (sec), leaf count = 62

$$\left\{\left\{y(x) \to \frac{c_1}{\sqrt{\frac{b+x}{a-b}+1}} + \frac{c_2\sqrt{b+x}}{\sqrt{a-b}\sqrt{\frac{b+x}{a-b}+1}}\right\}\right\}$$

Maple: cpu = 0.015 (sec), leaf count = 44

$$\left\{y(x) = \_C1\sqrt{x+b}\frac{1}{\sqrt{1+\frac{x+b}{a-b}}} + \_C2\frac{1}{\sqrt{1+\frac{x+b}{a-b}}}\right\}$$

3.338 ODE No. 1338

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) = 1/3\,\frac{(6\,x-1)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)}{x\,(x-2)} + 1/3\,\frac{y(x)}{x^2\,(x-2)} = 0}$$

Mathematica: cpu = 0.067008 (sec), leaf count = 40

$$\left\{\left\{y(x) \to \frac{3}{935}c_2x\left(18x^2-102x+187\right) + c_1\sqrt[6]{x}(2-x)^{17/6}\right\}\right\}$$

Maple: cpu = 0.016 (sec), leaf count = 31

$$\left\{y(x) = \_C1\,\left(18\,x^3-102\,x^2+187\,x\right) + \_C2\,\sqrt[6]{x}(x-2)^{\frac{17}{6}}\right\}$$

3.339 ODE No. 1339

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) = -\frac{(a(b+2)\,x^2+(c-d+1)\,x)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)}{(ax+1)\,x^2} - \frac{(abx-cd)\,y(x)}{(ax+1)\,x^2} = 0}$$

Mathematica: cpu = 0.263533 (sec), leaf count = 66

$$\left\{\left\{y(x) \to c_1a^{-c}x^{-c}\,{}_2F_1(1-c,b-c;-c-d+1;-ax) + c_2a^dx^d\,{}_2F_1(d+1,b+d;c+d+1;-ax)\right\}\right\}$$

Maple: cpu = 0.094 (sec), leaf count = 89

$$\left\{y(x) = \_C1\,x^d(ax+1)^{-b+c-d}\,{}_2\mathrm{F}_1(c,1-b+c;\,1+d+c;\,-ax) + \_C2\,x^{-c}(ax+1)^{-b+c-d}\,{}_2\mathrm{F}_1(-d,1-b\right.$$

3.340 ODE No. 1340

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) = 2\,\frac{(ax+2\,b)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)}{x\,(ax+b)} - \frac{(2\,ax+6\,b)\,y(x)}{(ax+b)\,x^2} = 0}$$

Mathematica: cpu = 0.035005 (sec), leaf count = 32

$$\left\{\left\{y(x) \to \frac{c_2 x^3}{ax+b} + \frac{c_1 x^2}{ax+b}\right\}\right\}$$

Maple: cpu = 0.015 (sec), leaf count = 29

$$\left\{y(x) = \frac{\_C1\,x^2}{ax+b} + \frac{\_C2\,x^3}{ax+b}\right\}$$

3.341 ODE No. 1341

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) = -\frac{(2\,ax+b)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)}{x\,(ax+b)} - \frac{(avx-b)\,y(x)}{(ax+b)\,x^2} + Ax = 0}$$

Mathematica: cpu = 0 (sec), leaf count = 0

Hanged

Maple: cpu = 0.125 (sec), leaf count = 195

$$\left\{y(x) = {}_2\mathrm{F}_1(\frac{3}{2} - \frac{1}{2}\sqrt{1-4\,v}, -\frac{1}{2} - \frac{1}{2}\sqrt{1-4\,v};\, 1-\sqrt{1-4\,v};\, -\frac{b}{ax})x^{-\frac{1}{2}+\frac{1}{2}\sqrt{1-4\,v}}\_C2 + {}_2\mathrm{F}_1(\frac{3}{2} + \frac{1}{2}\sqrt{1-\right.$$

3.342 ODE No. 1342

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) = -\frac{a y(x)}{x^4} = 0}$$

Mathematica: cpu = 0.041505 (sec), leaf count = 51

$$\left\{\left\{y(x) \to c_1 x e^{\frac{\sqrt{-a}}{x}} + \frac{c_2 x e^{-\frac{\sqrt{-a}}{x}}}{2\sqrt{-a}}\right\}\right\}$$

Maple: cpu = 0.031 (sec), leaf count = 31

$$\left\{y(x) = \_C1\,x\sinh\left(\frac{1}{x}\sqrt{-a}\right) + \_C2\,x\cosh\left(\frac{1}{x}\sqrt{-a}\right)\right\}$$

3.343 ODE No. 1343

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) = -\frac{\left(x^2 a(1-a) - b(x+b)\right) y(x)}{x^4} = 0}$$

Mathematica: cpu = 0.665585 (sec), leaf count = 61

$$\left\{\left\{y(x) \to \text{DifferentialRoot}\left(\{y, x\}, \left\{y''(x)x^4 + \left(-a^2x^2 + ax^2 - bx - b^2\right) y(x) = 0, y(1) = c_1, y'(1) = c_2\right\}\right)\right.$$

Maple: cpu = 0.094 (sec), leaf count = 62

$$\left\{y(x) = \_C1 \left(\left(2\,ax + b\right) I_a\left(\frac{b}{x}\right) + I_{a+1}\left(\frac{b}{x}\right) b\right) + \_C2 \left(\left(2\,ax + b\right) K_a\left(\frac{b}{x}\right) - K_{a+1}\left(\frac{b}{x}\right) b\right)\right\}$$

3.344 ODE No. 1344

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) = -\frac{y(x)}{x^4}\left(\mathrm{e}^{2\,x^{-1}} - v^2\right) = 0}$$

Mathematica: cpu = 0.559571 (sec), leaf count = 173

$$\left\{\left\{y(x) \to \frac{c_1 2^{v+\frac{v+1}{2}} \left(e^{2/x}\right)^{\frac{v+1}{2}-\frac{1}{2}} \left(-e^{2/x}\right)^{\frac{1}{2}(-v-1)+\frac{1}{2}} I_v\left(\sqrt{-e^{2/x}}\right)}{\log\left(e^{2/x}\right)} + \frac{c_2(-1)^{-v} 2^{v+\frac{v+1}{2}} \left(e^{2/x}\right)^{\frac{v+1}{2}-\frac{1}{2}} \left(-e^{2/x}\right)^{\frac{1}{2}(-}}{\log\left(e^{2/x}\right)}\right.\right.$$

Maple: cpu = 0.031 (sec), leaf count = 23

$$\left\{y(x) = \_C1\, xJ_v\left(\mathrm{e}^{x^{-1}}\right) + \_C2\, xY_v\left(\mathrm{e}^{x^{-1}}\right)\right\}$$

3.345 ODE No. 1345

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) = -\frac{\frac{\mathrm{d}}{\mathrm{d}x}y(x)}{x^3} + 2\,\frac{y(x)}{x^4} = 0}$$

Mathematica: cpu = 0.028504 (sec), leaf count = 52

$$\left\{\left\{y(x) \to c_1 e^{\frac{1}{2x^2}} x - \sqrt{\frac{\pi}{2}} c_2 e^{\frac{1}{2x^2}} x \text{erf}\left(\frac{1}{\sqrt{2}x}\right)\right\}\right\}$$

Maple: cpu = 0.047 (sec), leaf count = 32

$$\left\{y(x) = \_C1\, x\mathrm{e}^{\frac{1}{2\,x^2}} + \_C2\, x\mathrm{e}^{\frac{1}{2\,x^2}}\, Erf\left(\frac{\sqrt{2}}{2\,x}\right)\right\}$$

3.346 ODE No. 1346

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)=\frac{(a+b)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)}{x^2}-\frac{((a+b)\,x+ab)\,y(x)}{x^4}=0}$$

Mathematica: cpu = 0.326541 (sec), leaf count = 87

$$\left\{\left\{y(x)\to c_1 x e^{-\frac{-\sqrt{(a-b)^2}+a+b}{2x}}+\frac{c_2 x e^{-\frac{\sqrt{(a-b)^2}}{2x}-\frac{a}{2x}-\frac{b}{2x}}}{\sqrt{(a-b)^2}}\right\}\right\}$$

Maple: cpu = 0.047 (sec), leaf count = 25

$$\left\{y(x)=\_C1\,x\mathrm{e}^{-\frac{a}{x}}+\_C2\,x\mathrm{e}^{-\frac{b}{x}}\right\}$$

3.347 ODE No. 1347

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)=-\frac{\frac{\mathrm{d}}{\mathrm{d}x}y(x)}{x}-\frac{y(x)}{x^4}=0}$$

Mathematica: cpu = 0.076510 (sec), leaf count = 31

$$\left\{\left\{y(x)\to c_2 J_0\left(\frac{1}{x}\right)+\frac{c_1 K_0\left(\frac{i}{x}\right)}{\sqrt{\pi}}\right\}\right\}$$

Maple: cpu = 0.031 (sec), leaf count = 19

$$\left\{y(x)=\_C1\,J_0\left(x^{-1}\right)+\_C2\,Y_0\left(x^{-1}\right)\right\}$$

3.348 ODE No. 1348

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)=-\frac{\frac{\mathrm{d}}{\mathrm{d}x}y(x)}{x}-\frac{(bx^2+a(x^4+1))\,y(x)}{x^4}=0}$$

Mathematica: cpu = 1.313167 (sec), leaf count = 58

$$\left\{\left\{y(x)\to \text{DifferentialRoot}\left(\{y,x\},\left\{y''(x)x^4+y'(x)x^3+\left(ax^4+bx^2+a\right)y(x)=0,y(1)=c_1,y'(1)=c_2\right\}\right.\right.$$

Maple: cpu = 0.156 (sec), leaf count = 101

$$\left\{y(x)=\_C1\,HeunD\left(0,2\,a+b,0,2\,a-b,\frac{x^2+1}{x^2-1}\right)+\_C2\,HeunD\left(0,2\,a+b,0,2\,a-b,\frac{x^2+1}{x^2-1}\right)\int\frac{1}{x}\left(\right.\right.$$

3.349 ODE No. 1349

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) = -\frac{(x^2+1)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)}{x^3} - \frac{y(x)}{x^4} = 0}$$

Mathematica: cpu = 0.087011 (sec), leaf count = 76

$$\left\{\left\{y(x) \to c_2 G^{2,0}_{1,2}\left(-\frac{1}{2x^2}\middle|\begin{matrix}\frac{3}{2}\\ 0,0\end{matrix}\right) + c_1 e^{\frac{1}{4x^2}}\left(\left(1-\frac{1}{2x^2}\right)I_0\left(\frac{1}{4x^2}\right) + \frac{I_1\left(\frac{1}{4x^2}\right)}{2x^2}\right)\right\}\right\}$$

Maple: cpu = 0.063 (sec), leaf count = 73

$$\left\{y(x) = \frac{\_C1}{x^2}\mathrm{e}^{\frac{1}{4\,x^2}}\left(\left(2\,x^2-1\right)I_0\left(\frac{1}{4\,x^2}\right) + I_1\left(\frac{1}{4\,x^2}\right)\right) + \frac{\_C2}{x^2}\mathrm{e}^{\frac{1}{4\,x^2}}\left(\left(2\,x^2-1\right)K_0\left(-\frac{1}{4\,x^2}\right) + K_1\left(-\frac{1}{4\,x}\right.\right.\right.$$

3.350 ODE No. 1350

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) = -2\,\frac{\frac{\mathrm{d}}{\mathrm{d}x}y(x)}{x} - \frac{a^2 y(x)}{x^4} = 0}$$

Mathematica: cpu = 0.009501 (sec), leaf count = 25

$$\left\{\left\{y(x) \to c_1 \cos\left(\frac{a}{x}\right) - c_2 \sin\left(\frac{a}{x}\right)\right\}\right\}$$

Maple: cpu = 0.0 (sec), leaf count = 21

$$\left\{y(x) = \_C1\ \sin\left(\frac{a}{x}\right) + \_C2\ \cos\left(\frac{a}{x}\right)\right\}$$

3.351 ODE No. 1351

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) = -\frac{(2\,x^2+1)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)}{x^3} + \frac{y(x)}{x^4} = 0}$$

Mathematica: cpu = 0.024003 (sec), leaf count = 50

$$\left\{\left\{y(x) \to c_1 e^{\frac{1}{2x^2}} - \sqrt{\frac{\pi}{2}}c_2 e^{\frac{1}{2x^2}}\operatorname{erf}\left(\frac{1}{\sqrt{2}x}\right)\right\}\right\}$$

Maple: cpu = 0.031 (sec), leaf count = 30

$$\left\{y(x) = \_C1\ \mathrm{e}^{\frac{1}{2\,x^2}} + \_C2\ \mathrm{e}^{\frac{1}{2\,x^2}}\,Erf\left(\frac{\sqrt{2}}{2\,x}\right)\right\}$$

3.352 ODE No. 1352

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) = -2\,\frac{(x+a)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)}{x^2} - \frac{b y(x)}{x^4} = 0}$$

Mathematica: cpu = 0.013002 (sec), leaf count = 89

$$\left\{\left\{y(x) \to c_1 e^{-\frac{\sqrt{b}\left(-\frac{\sqrt{a^2-b}}{\sqrt{b}}-\frac{a}{\sqrt{b}}\right)}{x}} + c_2 e^{-\frac{\sqrt{b}\left(\frac{\sqrt{a^2-b}}{\sqrt{b}}-\frac{a}{\sqrt{b}}\right)}{x}}\right\}\right\}$$

Maple: cpu = 0.047 (sec), leaf count = 43

$$\left\{y(x) = \_C1\,\mathrm{e}^{\frac{1}{x}\left(a-\sqrt{a^2-b}\right)} + \_C2\,\mathrm{e}^{\frac{1}{x}\left(\sqrt{a^2-b}+a\right)}\right\}$$

3.353 ODE No. 1353

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) = \frac{(2\,x^2-1)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)}{x^3} - \frac{y(x)}{x^4} = 0}$$

Mathematica: cpu = 0.107514 (sec), leaf count = 119

$$\left\{\left\{y(x) \to c_1\left(x^3+2x-\frac{1}{x}\right) - \frac{c_2\left(\sqrt{2\pi}x^4\mathrm{erfi}\left(\frac{1}{\sqrt{2}x}\right) + 2\sqrt{2\pi}x^2\mathrm{erfi}\left(\frac{1}{\sqrt{2}x}\right) - \sqrt{2\pi}\mathrm{erfi}\left(\frac{1}{\sqrt{2}x}\right) + 2e^{\frac{1}{2x^2}}x - 2\right.}{16x}\right\}\right\}$$

Maple: cpu = 0.141 (sec), leaf count = 68

$$\left\{y(x) = \frac{\_C1}{x}\left(\sqrt{2}\sqrt{\pi}\left(x^4+2\,x^2-1\right)\,erfi\left(\frac{\sqrt{2}}{2\,x}\right) + \left(-2\,x^3+2\,x\right)\mathrm{e}^{\frac{1}{2\,x^2}}\right) + \frac{\_C2\,\left(x^4+2\,x^2-1\right)}{x}\right\}$$

3.354 ODE No. 1354

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) = \frac{(2\,x^2-1)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)}{x^3} - 2\,\frac{y(x)}{x^4} = 0}$$

Mathematica: cpu = 0.071009 (sec), leaf count = 108

$$\left\{\left\{y(x) \to \frac{c_2\left(-5\sqrt{2\pi}x^2\mathrm{erfi}\left(\frac{1}{\sqrt{2}x}\right) + \sqrt{2\pi}\mathrm{erfi}\left(\frac{1}{\sqrt{2}x}\right) - 2e^{\frac{1}{2x^2}}x + 4e^{\frac{1}{2x^2}}x^5 + 8e^{\frac{1}{2x^2}}x^3\right)}{12x^2} + c_1\left(1-\frac{1}{5x^2}\right)\right\}\right\}$$

Maple: cpu = 0.156 (sec), leaf count = 32

$$\left\{y(x) = \frac{\_C1\,\left(5\,x^2-1\right)}{x^2} + \_C2\,{}_1\mathrm{F}_1(-\frac{5}{2};\,-\frac{1}{2};\,\frac{1}{2\,x^2})x^3\right\}$$

3.355 ODE No. 1355

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)=-\frac{(x^3-1)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)}{(x^3+1)\,x}+\frac{xy(x)}{x^3+1}=0}$$

Mathematica: cpu = 0.131517 (sec), leaf count = 59

$$\left\{\left\{y(x)\to \frac{1}{2}c_2\left(2x^2-x^2\sqrt[3]{x^3+1}\,{}_2F_1\left(\frac{1}{3},\frac{2}{3};\frac{5}{3};-x^3\right)\right)+c_1\sqrt[3]{x^3+1}\right\}\right\}$$

Maple: cpu = 0.110 (sec), leaf count = 37

$$\left\{y(x)=\_C1\,x^2\sqrt[3]{x^3+1}{}_2\mathrm{F}_1(\frac{2}{3},\frac{4}{3};\,\frac{5}{3};\,-x^3)+\_C2\,\sqrt[3]{x^3+1}\right\}$$

3.356 ODE No. 1356

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)=-\frac{(2\,x^2+1)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)}{x\,(x^2+1)}-\frac{(-v(v+1)\,x^2-n^2)\,y(x)}{x^2\,(x^2+1)}=0}$$

Mathematica: cpu = 0.287536 (sec), leaf count = 90

$$\left\{\left\{y(x)\to c_1x^{-n}\,{}_2F_1\left(-\frac{n}{2}-\frac{v}{2},-\frac{n}{2}+\frac{v}{2}+\frac{1}{2};1-n;-x^2\right)+c_2x^n\,{}_2F_1\left(\frac{n}{2}-\frac{v}{2},\frac{n}{2}+\frac{v}{2}+\frac{1}{2};n+1;-x^2\right)\right\}\right.$$

Maple: cpu = 0.063 (sec), leaf count = 29

$$\left\{y(x)=\_C1\,\mathit{LegendreP}\left(v,n,\sqrt{x^2+1}\right)+\_C2\,\mathit{LegendreQ}\left(v,n,\sqrt{x^2+1}\right)\right\}$$

3.357 ODE No. 1357

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)=-\frac{(ax^2+a-1)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)}{x\,(x^2+1)}-\frac{(bx^2+c)\,y(x)}{x^2\,(x^2+1)}=0}$$

Mathematica: cpu = 0.665585 (sec), leaf count = 288

$$\left\{\left\{y(x)\to c_1x^{\frac{1}{2}\left(-\sqrt{a^2-4a-4c+4}-a+2\right)}\,{}_2F_1\left(-\frac{1}{4}\sqrt{a^2-2a-4b+1}-\frac{1}{4}\sqrt{a^2-4a-4c+4}+\frac{1}{4},\frac{1}{4}\sqrt{a^2-2a-\right.\right.$$

Maple: cpu = 0.094 (sec), leaf count = 103

$$\left\{y(x)=\_C1\,x^{1-\frac{a}{2}}\,\mathit{LegendreP}\left(-\frac{1}{2}+\frac{1}{2}\sqrt{a^2-2\,a-4\,b+1},\frac{1}{2}\sqrt{a^2-4\,a-4\,c+4},\sqrt{x^2+1}\right)+\_C2\,x^{1-\frac{a}{2}}\right.$$

3.358 ODE No. 1358

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) = \frac{(x^2-2)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)}{x\,(x^2-1)} - \frac{(x^2-2)\,y(x)}{x^2\,(x^2-1)} = 0}$$

Mathematica: cpu = 0.065008 (sec), leaf count = 66

$$\left\{\left\{y(x) \to \frac{c_1 x \sqrt[4]{x^2-1}}{\sqrt[4]{1-x^2}} + \frac{c_2 x \sqrt[4]{x^2-1}\log\left(\sqrt{x^2-1}+x\right)}{\sqrt[4]{1-x^2}}\right\}\right\}$$

Maple: cpu = 0.031 (sec), leaf count = 21

$$\left\{y(x) = x\_C1 + \_C2\, x \ln\left(x + \sqrt{x^2-1}\right)\right\}$$

3.359 ODE No. 1359

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) = -2\,\frac{x\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)}{x^2-1} - \frac{v(v+1)\,y(x)}{x^2\,(x^2-1)} = 0}$$

Mathematica: cpu = 0.101513 (sec), leaf count = 86

$$\left\{\left\{y(x) \to c_1 i^{-v} x^{-v}\,{}_2F_1\left(\frac{1}{2}-\frac{v}{2},-\frac{v}{2};\frac{1}{2}-v;x^2\right) + c_2 i^{v+1} x^{v+1}\,{}_2F_1\left(\frac{v}{2}+\frac{1}{2},\frac{v}{2}+1;v+\frac{3}{2};x^2\right)\right\}\right\}$$

Maple: cpu = 0.063 (sec), leaf count = 57

$$\left\{y(x) = \_C1\,{}_2\mathrm{F}_1(-\frac{v}{2},\frac{1}{2}-\frac{v}{2};\,\frac{1}{2}-v;\,x^2)x^{-v} + \_C2\,{}_2\mathrm{F}_1(1+\frac{v}{2},\frac{1}{2}+\frac{v}{2};\,\frac{3}{2}+v;\,x^2)x^{v+1}\right\}$$

3.360 ODE No. 1360

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) = -2\,\frac{x\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)}{x^2-1} + \frac{v(v+1)\,y(x)}{x^2} = 0}$$

Mathematica: cpu = 0.091512 (sec), leaf count = 68

$$\left\{\left\{y(x) \to c_1 i^{-v} x^{-v}\,{}_2F_1\left(\frac{1}{2},-v;\frac{1}{2}-v;x^2\right) + c_2 i^{v+1} x^{v+1}\,{}_2F_1\left(\frac{1}{2},v+1;v+\frac{3}{2};x^2\right)\right\}\right\}$$

Maple: cpu = 0.046 (sec), leaf count = 47

$$\left\{y(x) = \_C1\,{}_2\mathrm{F}_1(\frac{1}{2},-v;\,\frac{1}{2}-v;\,x^2)x^{-v} + \_C2\,{}_2\mathrm{F}_1(\frac{1}{2},v+1;\,\frac{3}{2}+v;\,x^2)x^{v+1}\right\}$$

3.361 ODE No. 1361

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) = 2\,\frac{x\frac{\mathrm{d}}{\mathrm{d}x}y(x)}{x^2-1} - \frac{\left(a(a+1) - ax^2(a+3)\right)y(x)}{x^2\left(x^2-1\right)} = 0}$$

Mathematica: cpu = 0.471560 (sec), leaf count = 38

$$\left\{\left\{y(x) \to c_1 x^{-a} + c_2\left(-2ax^2 + 2a - x^2 + 3\right)x^{a+1}\right\}\right\}$$

Maple: cpu = 0.015 (sec), leaf count = 33

$$\left\{y(x) = \_C1\, x^{-a} + \_C2\, x^{a+1}\left(2\,ax^2 + x^2 - 2\,a - 3\right)\right\}$$

3.362 ODE No. 1362

$$\boxed{x^2\left(x^2-1\right)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) - 2\,x^3\frac{\mathrm{d}}{\mathrm{d}x}y(x) - \left((a-n)\,(a+n+1)\,x^2\left(x^2-1\right) + 2\,ax^2 + n(n+1)\left(x^2-1\right)\right)y(x) =$$

Mathematica: cpu = 14.232807 (sec), leaf count = 115

$$\left\{\left\{y(x) \to \text{DifferentialRoot}\left(\{y,x\},\left\{-2y'(x)x^3 + \left(a^2x^4 - n^2x^4 + ax^4 - nx^4 - a^2x^2 + 2n^2x^2 + ax^2 + 2nx\right.\right.\right.\right.$$

Maple: cpu = 0.172 (sec), leaf count = 109

$$\left\{y(x) = \_C1\, HeunC\left(0, -n - \frac{1}{2}, -2, -\frac{a^2}{4} + \frac{n^2}{4} - \frac{a}{4} + \frac{n}{4}, -\frac{n^2}{4} - \frac{n}{4} + \frac{3}{4} + \frac{a^2}{4} - \frac{a}{4}, x^2\right)x^{-n} + \_C2\, Heu\right.$$

3.363 ODE No. 1363

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) = -\frac{\left(ax^2 + a - 2\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)}{x\left(x^2-1\right)} - \frac{by(x)}{x^2} = 0}$$

Mathematica: cpu = 0.803102 (sec), leaf count = 236

$$\left\{\left\{y(x) \to c_1(-1)^{\frac{1}{4}\left(-\sqrt{a^2-2a-4b+1}+a-1\right)}x^{\frac{1}{2}\left(-\sqrt{a^2-2a-4b+1}+a-1\right)}\,{}_2F_1\left(\frac{a}{2} - \frac{1}{2}, \frac{a}{2} - \frac{1}{2}\sqrt{a^2-2a-4b+1} - \frac{1}{2}; 1\right.\right.\right.$$

Maple: cpu = 0.109 (sec), leaf count = 171

$$\left\{y(x) = \_C1\, x^{\frac{a}{2}-\frac{1}{2}+\frac{1}{2}\sqrt{a^2-2\,a-4\,b+1}}\left(x^2-1\right)^{-a+2}\,{}_2\mathrm{F}_1\left(-\frac{a}{2} + \frac{3}{2}, -\frac{a}{2} + \frac{3}{2} + \frac{1}{2}\sqrt{a^2-2\,a-4\,b+1};\, 1 + \frac{1}{2}\sqrt{a^2}\right.\right.$$

3.364 ODE No. 1364

$$\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) = \frac{(2\,bcx^c(x^2-1)+2\,(a-1)\,x^2-2\,a)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)}{x\,(x^2-1)} - \frac{(b^2c^2x^{2\,c}(x^2-1)+bcx^{c+2}(2\,a-c-1)-bcx^c($$

Mathematica: cpu = 0.171522 (sec), leaf count = 42

$$\left\{\left\{y(x)\to c_1 P_v(x)e^{a\log(x)+bx^c}+c_2 Q_v(x)e^{a\log(x)+bx^c}\right\}\right\}$$

Maple: cpu = 0.078 (sec), leaf count = 33

$$\left\{y(x) = \_C1\,x^a\mathrm{e}^{bx^c}\,LegendreP(v,x)+\_C2\,x^a\mathrm{e}^{bx^c}\,LegendreQ(v,x)\right\}$$

3.365 ODE No. 1365

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) = -\frac{ay(x)}{\left(x^2+1\right)^2} = 0}$$

Mathematica: cpu = 0.093512 (sec), leaf count = 72

$$\left\{\left\{y(x)\to c_1\sqrt{x^2+1}e^{i\sqrt{a+1}\tan^{-1}(x)}+\frac{ic_2\sqrt{x^2+1}e^{-i\sqrt{a+1}\tan^{-1}(x)}}{2\sqrt{a+1}}\right\}\right\}$$

Maple: cpu = 0.031 (sec), leaf count = 65

$$\left\{y(x) = \_C1\,\sqrt{x^2+1}\left(\frac{x+i}{-x+i}\right)^{\frac{1}{2}\sqrt{a+1}}+\_C2\,\sqrt{x^2+1}\left(\frac{x+i}{-x+i}\right)^{-\frac{1}{2}\sqrt{a+1}}\right\}$$

3.366 ODE No. 1366

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) = -2\,\frac{x\frac{\mathrm{d}}{\mathrm{d}x}y(x)}{x^2+1}-\frac{y(x)}{\left(x^2+1\right)^2} = 0}$$

Mathematica: cpu = 0.022503 (sec), leaf count = 31

$$\left\{\left\{y(x)\to\frac{c_1}{\sqrt{x^2+1}}+\frac{c_2x}{\sqrt{x^2+1}}\right\}\right\}$$

Maple: cpu = 0.016 (sec), leaf count = 24

$$\left\{y(x) = x\_C1\,\frac{1}{\sqrt{x^2+1}}+\_C2\,\frac{1}{\sqrt{x^2+1}}\right\}$$

3.367 ODE No. 1367

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) = -2\,\frac{x\frac{\mathrm{d}}{\mathrm{d}x}y(x)}{x^2+1} - \frac{\left(a^2(x^2+1)^2 - n(n+1)\left(x^2+1\right) + m^2\right)y(x)}{\left(x^2+1\right)^2} = 0}$$

Mathematica: cpu = 2.299792 (sec), leaf count = 98

$$\left\{\left\{y(x) \to \text{DifferentialRoot}\left(\{y,x\},\left\{y''(x)\left(x^2+1\right)^2 + 2xy'(x)\left(x^2+1\right) + \left(a^2x^4 + 2a^2x^2 - n^2x^2 - nx^2 +\right.\right.\right.\right.$$

Maple: cpu = 0.187 (sec), leaf count = 96

$$\left\{y(x) = \_C1\left(x^2+1\right)^{\frac{m}{2}}\,HeunC\left(0,-\frac{1}{2},m,-\frac{a^2}{4},\frac{1}{4}+\frac{a^2}{4}+\frac{m^2}{4}-\frac{n^2}{4}-\frac{n}{4},-x^2\right) + \_C2\left(x^2+1\right)^{\frac{m}{2}}\,xHeu\right.$$

3.368 ODE No. 1368

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) = -\frac{ax\frac{\mathrm{d}}{\mathrm{d}x}y(x)}{x^2+1} - \frac{by(x)}{\left(x^2+1\right)^2} = 0}$$

Mathematica: cpu = 0.026503 (sec), leaf count = 106

$$\left\{\left\{y(x) \to c_1\left(x^2+1\right)^{\frac{2-a}{4}}\,P^{\frac{1}{2}\sqrt{a^2-4a+4b+4}}_{\frac{a-2}{2}}(ix) + c_2\left(x^2+1\right)^{\frac{2-a}{4}}\,Q^{\frac{1}{2}\sqrt{a^2-4a+4b+4}}_{\frac{a-2}{2}}(ix)\right\}\right\}$$

Maple: cpu = 0.062 (sec), leaf count = 81

$$\left\{y(x) = \_C1\left(x^2+1\right)^{\frac{1}{2}-\frac{a}{4}}\,LegendreP\left(\frac{a}{2}-1,\frac{1}{2}\sqrt{a^2-4\,a+4\,b+4},ix\right) + \_C2\left(x^2+1\right)^{\frac{1}{2}-\frac{a}{4}}\,LegendreQ\right.$$

3.369 ODE No. 1369

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) = -\frac{ay(x)}{\left(x^2-1\right)^2} = 0}$$

Mathematica: cpu = 0.102513 (sec), leaf count = 75

$$\left\{\left\{y(x) \to c_1\sqrt{1-x^2}e^{-\sqrt{1-a}\tanh^{-1}(x)} + \frac{c_2\sqrt{1-x^2}e^{\sqrt{1-a}\tanh^{-1}(x)}}{2\sqrt{1-a}}\right\}\right\}$$

Maple: cpu = 0.031 (sec), leaf count = 61

$$\left\{y(x) = \_C1\sqrt{x^2-1}\left(\frac{x-1}{1+x}\right)^{\frac{1}{2}\sqrt{1-a}} + \_C2\sqrt{x^2-1}\left(\frac{x-1}{1+x}\right)^{-\frac{1}{2}\sqrt{1-a}}\right\}$$

3.370 ODE No. 1370

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) = -2\,\frac{x\frac{\mathrm{d}}{\mathrm{d}x}y(x)}{x^2-1} + \frac{a^2 y(x)}{\left(x^2-1\right)^2} = 0}$$

Mathematica: cpu = 0.028504 (sec), leaf count = 53

$$\left\{\left\{y(x) \to c_1 \cosh\left(\frac{1}{2}a(\log(1-x)-\log(x+1))\right) + ic_2 \sinh\left(\frac{1}{2}a(\log(1-x)-\log(x+1))\right)\right\}\right\}$$

Maple: cpu = 0.016 (sec), leaf count = 19

$$\{y(x) = \_C1\ \sinh\left(a Artanh(x)\right) + \_C2\ \cosh\left(a Artanh(x)\right)\}$$

3.371 ODE No. 1371

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) = -2\,\frac{x\frac{\mathrm{d}}{\mathrm{d}x}y(x)}{x^2-1} - \frac{\left(-a^2-\lambda\left(x^2-1\right)\right)y(x)}{\left(x^2-1\right)^2} = 0}$$

Mathematica: cpu = 0.021503 (sec), leaf count = 48

$$\left\{\left\{y(x) \to c_1 P^a_{\frac{1}{2}\left(\sqrt{4\lambda+1}-1\right)}(x) + c_2 Q^a_{\frac{1}{2}\left(\sqrt{4\lambda+1}-1\right)}(x)\right\}\right\}$$

Maple: cpu = 0.047 (sec), leaf count = 37

$$\left\{y(x) = \_C1\ LegendreP\left(\frac{1}{2}\sqrt{1+4\,\lambda}-\frac{1}{2},a,x\right) + \_C2\ LegendreQ\left(\frac{1}{2}\sqrt{1+4\,\lambda}-\frac{1}{2},a,x\right)\right\}$$

3.372 ODE No. 1372

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) = -2\,\frac{x\frac{\mathrm{d}}{\mathrm{d}x}y(x)}{x^2-1} - \frac{\left(\left(x^2-1\right)\left(ax^2+bx+c\right)-k^2\right)y(x)}{\left(x^2-1\right)^2} = 0}$$

Mathematica: cpu = 4.812611 (sec), leaf count = 93

$$\{\{y(x) \to \text{DifferentialRoot}\left(\{y,x\},\left\{\left(ax^4+bx^3-ax^2+cx^2-bx-k^2-c\right)y(x)+\left(2x^3-2x\right)y'(x)+\left(x\right.\right.\right.$$

Maple: cpu = 0.187 (sec), leaf count = 120

$$\left\{y(x) = \_C1\,\mathrm{e}^{\sqrt{-a}x}\,HeunC\left(4\sqrt{-a},k,k,2\,b,\frac{k^2}{2}+a-b+c,\frac{1}{2}+\frac{x}{2}\right)\left(x^2-1\right)^{\frac{k}{2}} + \_C2\mathrm{e}^{\sqrt{-a}x}\,HeunC\left(4\sqrt{\right.}\right.$$

3.373 ODE No. 1373

$$\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) = -2\,\frac{x\frac{\mathrm{d}}{\mathrm{d}x}y(x)}{x^2-1} - \frac{\left(-a^2(x^2-1)^2 - n(n+1)\,(x^2-1) - m^2\right)y(x)}{(x^2-1)^2} = 0$$

Mathematica: cpu = 2.321295 (sec), leaf count = 104

$$\left\{\left\{y(x) \to \text{DifferentialRoot}\left(\{y,x\},\left\{\left(-a^2x^4+2a^2x^2-n^2x^2-nx^2-a^2-m^2+n^2+n\right)y(x)+\left(2x^3-2\right.\right.\right.\right.$$

Maple: cpu = 0.156 (sec), leaf count = 92

$$\left\{y(x) = \_C1\,\left(x^2-1\right)^{\frac{m}{2}}\,HeunC\left(0,-\frac{1}{2},m,-\frac{a^2}{4},\frac{1}{4}+\frac{a^2}{4}+\frac{m^2}{4}-\frac{n^2}{4}-\frac{n}{4},x^2\right)+\_C2\,\left(x^2-1\right)^{\frac{m}{2}}\,xHeun\right.$$

3.374 ODE No. 1374

$$\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) = 2\,\frac{x(2\,a-1)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)}{x^2-1} - \frac{\left(x^2(2\,a(2\,a-1)-v(v+1))+2\,a+v(v+1)\right)y(x)}{(x^2-1)^2} = 0$$

Mathematica: cpu = 0.036005 (sec), leaf count = 32

$$\left\{\left\{y(x) \to c_1\left(x^2-1\right)^a P_v(x) + c_2\left(x^2-1\right)^a Q_v(x)\right\}\right\}$$

Maple: cpu = 0.032 (sec), leaf count = 29

$$\left\{y(x) = \_C1\,\left(x^2-1\right)^a\,LegendreP(v,x) + \_C2\,\left(x^2-1\right)^a\,LegendreQ(v,x)\right\}$$

3.375 ODE No. 1375

$$\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) = -2\,\frac{x(n+1-2\,a)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)}{x^2-1} - \frac{\left(4\,ax^2(a-n)-(x^2-1)\,(2\,a+(v-n)\,(v+n+1))\right)y(x)}{(x^2-1)^2} = 0$$

Mathematica: cpu = 0.051506 (sec), leaf count = 54

$$\left\{\left\{y(x) \to c_1\left(x^2-1\right)^{\frac{1}{2}(2a-n)} P_v^n(x) + c_2\left(x^2-1\right)^{\frac{1}{2}(2a-n)} Q_v^n(x)\right\}\right\}$$

Maple: cpu = 0.047 (sec), leaf count = 39

$$\left\{y(x) = \_C1\,\left(x^2-1\right)^{a-\frac{n}{2}}\,LegendreP(v,n,x) + \_C2\,\left(x^2-1\right)^{a-\frac{n}{2}}\,LegendreQ(v,n,x)\right\}$$

3.376 ODE No. 1376

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) = -\frac{(2\,x^2+a)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)}{x\,(x^2+a)} - \frac{by(x)}{x^2\,(x^2+a)} = 0}$$

Mathematica: cpu = 0.096512 (sec), leaf count = 82

$$\left\{\left\{y(x) \to c_2 \sin\left(\frac{\sqrt{b}\left(\log(x) - \log\left(\sqrt{a}\sqrt{a+x^2}+a\right)\right)}{\sqrt{a}}\right) + c_1 \cos\left(\frac{\sqrt{b}\left(\log(x) - \log\left(\sqrt{a}\sqrt{a+x^2}+a\right)\right)}{\sqrt{a}}\right)\right\}\right\}$$

Maple: cpu = 0.016 (sec), leaf count = 71

$$\left\{y(x) = \_C1\left(\left(\frac{1}{x}\left(2\,a+2\,\sqrt{a}\sqrt{x^2+a}\right)\right)^{i\sqrt{b}\frac{1}{\sqrt{a}}}\right)^{-1} + \_C2\left(\frac{1}{x}\left(2\,a+2\,\sqrt{a}\sqrt{x^2+a}\right)\right)^{i\sqrt{b}\frac{1}{\sqrt{a}}}\right\}$$

3.377 ODE No. 1377

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) = -\frac{b^2y(x)}{\left(a^2+x^2\right)^2} = 0}$$

Mathematica: cpu = 0.236030 (sec), leaf count = 109

$$\left\{\left\{y(x) \to c_1\sqrt{a^2+x^2}e^{i\sqrt{\frac{b^2}{a^2}+1}\tan^{-1}\left(\frac{x}{a}\right)} + \frac{ic_2\sqrt{a^2+x^2}e^{-i\sqrt{\frac{a^2+b^2}{a^2}}\tan^{-1}\left(\frac{x}{a}\right)}}{2a\sqrt{\frac{a^2+b^2}{a^2}}}\right\}\right\}$$

Maple: cpu = 0.078 (sec), leaf count = 91

$$\left\{y(x) = \_C1\,\sqrt{a^2+x^2}\left(\frac{ix-a}{ix+a}\right)^{\frac{1}{2\,a}\sqrt{a^2+b^2}} + \_C2\,\sqrt{a^2+x^2}\left(\frac{ix-a}{ix+a}\right)^{-\frac{1}{2\,a}\sqrt{a^2+b^2}}\right\}$$

3.378 ODE No. 1378

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) = -2\,\frac{(x^2-1)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)}{x\,(x-1)^2} - \frac{(-2\,x^2+2\,x+2)\,y(x)}{x^2\,(x-1)^2} = 0}$$

Mathematica: cpu = 0.049506 (sec), leaf count = 65

$$\left\{\left\{y(x) \to \frac{c_1x^2}{1-x} + \frac{c_2x(2x^2\log(1-x) - 2x^2\log(x) + 2x - 2x\log(1-x) + 2x\log(x) - 1)}{(x-1)^2}\right\}\right\}$$

Maple: cpu = 0.031 (sec), leaf count = 50

$$\left\{y(x) = \frac{\_C1\,x^2}{x-1} + \frac{\_C2\,x}{(x-1)^2}\left(\left(-x^2+x\right)\ln\left(x-1\right) + \left(x^2-x\right)\ln\left(x\right) - x + \frac{1}{2}\right)\right\}$$

3.379 ODE No. 1379

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) = 12\,\frac{y(x)}{(1+x)^2\,(x^2+2\,x+3)} = 0}$$

Mathematica: cpu = 0.077510 (sec), leaf count = 99

$$\left\{\left\{y(x) \to \frac{c_2\left(2x^3+4x^2-3\sqrt{2}x^2\tan^{-1}\left(\frac{x+1}{\sqrt{2}}\right)+8x-6\sqrt{2}x\tan^{-1}\left(\frac{x+1}{\sqrt{2}}\right)-9\sqrt{2}\tan^{-1}\left(\frac{x+1}{\sqrt{2}}\right)+2\right)}{2(x+1)^2}+c_{}\right.\right.$$

Maple: cpu = 0.047 (sec), leaf count = 66

$$\left\{y(x) = \frac{\_C1\,(x^2+2\,x+3)}{(1+x)^2} + \frac{\_C2}{(1+x)^2}\left(\left(3\,x^2+6\,x+9\right)\arctan\left(\frac{(1+x)\,\sqrt{2}}{2}\right) - \sqrt{2}\left(x^3+2\,x^2+4\,x+\right.\right.\right.$$

3.380 ODE No. 1380

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) = -\frac{by(x)}{x^2\,(x-a)^2} = 0}$$

Mathematica: cpu = 0.297038 (sec), leaf count = 132

$$\left\{\left\{y(x) \to \frac{c_2(x-a)^{\frac{1}{2}\sqrt{\frac{a^2-4b}{a^2}}+\frac{1}{2}}x^{\frac{1}{2}-\frac{1}{2}\sqrt{\frac{a^2-4b}{a^2}}}}{a\sqrt{\frac{a^2-4b}{a^2}}} + c_1(x-a)^{\frac{1}{2}-\frac{1}{2}\sqrt{1-\frac{4b}{a^2}}}x^{\frac{1}{2}\sqrt{1-\frac{4b}{a^2}}+\frac{1}{2}}\right\}\right\}$$

Maple: cpu = 0.047 (sec), leaf count = 75

$$\left\{y(x) = \_C1\,\sqrt{x\,(a-x)}\left(\frac{a-x}{x}\right)^{\frac{1}{2\,a}\sqrt{a^2-4\,b}} + \_C2\,\sqrt{x\,(a-x)}\left(\frac{x}{a-x}\right)^{\frac{1}{2\,a}\sqrt{a^2-4\,b}}\right\}$$

3.381 ODE No. 1381

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) = -\frac{by(x)}{x^2\,(x-a)^2} + c = 0}$$

Mathematica: cpu = 0.626080 (sec), leaf count = 589

$$\left\{\left\{y(x) \to -\frac{2cx^2(a-x)\left(1-\frac{x}{a}\right)^{-\frac{1}{2}\sqrt{\frac{a^2-4b}{a^2}}}\left(\sqrt{\frac{a^2-4b}{a^2}}\left(1-\frac{x}{a}\right)^{\sqrt{\frac{a^2-4b}{a^2}}}\,{}_2F_1\left(\frac{1}{2}\sqrt{1-\frac{4b}{a^2}}-\frac{1}{2},\frac{1}{2}\sqrt{1-\frac{4b}{a^2}}+\frac{3}{2};\frac{1}{2}\right.\right.\right.\right.$$

Maple: cpu = 0.109 (sec), leaf count = 219

$$\left\{y(x) = \sqrt{x\,(a-x)}\left(\frac{a-x}{x}\right)^{\frac{1}{2\,a}\sqrt{a^2-4\,b}}\_C2 + \sqrt{x\,(a-x)}\left(\frac{x}{a-x}\right)^{\frac{1}{2\,a}\sqrt{a^2-4\,b}}\_C1 + c\sqrt{x\,(a-x)}\left(\left(\frac{x}{a-\right.\right.\right.$$

3.382 ODE No. 1382

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) = \frac{c y(x)}{(x-a)^2\,(x-b)^2} = 0}$$

Mathematica: cpu = 0.699089 (sec), leaf count = 154

$$\left\{\left\{y(x) \to c_1 (x-a)^{\frac{1}{2}\left(\sqrt{\frac{4c}{(a-b)^2}+1}+1\right)}(x-b)^{\frac{1}{2}\left(1-\sqrt{\frac{4c}{(a-b)^2}+1}\right)} - \frac{c_2 (x-a)^{\frac{1}{2}-\frac{1}{2}\sqrt{\frac{4c}{(a-b)^2}+1}}(x-b)^{\frac{1}{2}\sqrt{\frac{4c}{(a-b)^2}+1}+\frac{1}{2}}}{(a-b)\sqrt{\frac{4c}{(a-b)^2}+1}}\right\}\right.$$

Maple: cpu = 0.078 (sec), leaf count = 116

$$\left\{y(x) = \_C1\,\sqrt{(a-x)\,(b-x)}\left(\frac{a-x}{b-x}\right)^{\frac{1}{2\,a-2\,b}\sqrt{a^2-2\,ab+b^2+4\,c}} + \_C2\,\sqrt{(a-x)\,(b-x)}\left(\frac{a-x}{b-x}\right)^{-\frac{1}{2\,a-2\,b}\sqrt{a^2-}}\right.$$

3.383 ODE No. 1383

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) = -\frac{\left((\alpha+\beta+1)\,(x-a)^2\,(x-b) + (1-\alpha-\beta)\,(x-b)^2\,(x-a)\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)}{(x-a)^2\,(x-b)^2} - \frac{\alpha\,\beta\,(a-b)^2\,y(x)}{(x-a)^2\,(x-b)^2} =}$$

Mathematica: cpu = 0.138018 (sec), leaf count = 50

$$\left\{\left\{y(x) \to c_1 e^{\alpha(\log(x-a)-\log(x-b))} + c_2 e^{\beta(\log(x-a)-\log(x-b))}\right\}\right\}$$

Maple: cpu = 0.047 (sec), leaf count = 39

$$\left\{y(x) = \_C1\left(\frac{a-x}{b-x}\right)^{\beta} + \_C2\left(\frac{a-x}{b-x}\right)^{\alpha}\right\}$$

3.384 ODE No. 1384

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) = -1/4\,\frac{(-x^2(a^2-1)+2\,(a+3)\,bx-b^2)\,y(x)}{x^2} = 0}$$

Mathematica: cpu = 0.033504 (sec), leaf count = 110

$$\left\{\left\{y(x)\to c_1 M_{\frac{(a+3)b}{2\sqrt{a^2-1}},\frac{\sqrt{b\left(b^2+1\right)}}{2\sqrt{b}}}\left(\sqrt{a^2-1}x\right)+c_2 W_{\frac{(a+3)b}{2\sqrt{a^2-1}},\frac{\sqrt{b\left(b^2+1\right)}}{2\sqrt{b}}}\left(\sqrt{a^2-1}x\right)\right\}\right\}$$

Maple: cpu = 0.187 (sec), leaf count = 73

$$\left\{y(x) = \_C1\, M_{\frac{(a+3)b}{2}\,\frac{1}{\sqrt{a^2-1}},\frac{1}{2}\sqrt{b^2+1}}\left(\sqrt{a^2-1}x\right)+\_C2\, W_{\frac{(a+3)b}{2}\,\frac{1}{\sqrt{a^2-1}},\frac{1}{2}\sqrt{b^2+1}}\left(\sqrt{a^2-1}x\right)\right\}$$

3.385 ODE No. 1385

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) = -1/4\,\frac{(ax^2+a-3)\,y(x)}{\left(x^2+1\right)^2} = 0}$$

Mathematica: cpu = 0.019002 (sec), leaf count = 78

$$\left\{\left\{y(x)\to c_1\sqrt{x^2+1}P^{\frac{1}{2}}_{\frac{1}{2}\left(\sqrt{1-a}-1\right)}(ix)+c_2\sqrt{x^2+1}Q^{\frac{1}{2}}_{\frac{1}{2}\left(\sqrt{1-a}-1\right)}(ix)\right\}\right\}$$

Maple: cpu = 0.047 (sec), leaf count = 61

$$\left\{y(x) = \_C1\,\sqrt[4]{x^2+1}\left(x+\sqrt{x^2+1}\right)^{\frac{1}{2}\sqrt{1-a}}+\_C2\,\sqrt[4]{x^2+1}\left(x+\sqrt{x^2+1}\right)^{-\frac{1}{2}\sqrt{1-a}}\right\}$$

3.386 ODE No. 1386

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) = 18\,\frac{y(x)}{\left(2\,x+1\right)^2\left(x^2+x+1\right)} = 0}$$

Mathematica: cpu = 0.089011 (sec), leaf count = 108

$$\left\{\left\{y(x)\to \frac{c_1(x^2+x+1)}{(2x+1)^2}+\frac{c_2\left(16x^3+24x^2-12\sqrt{3}x^2\tan^{-1}\left(\frac{2x+1}{\sqrt{3}}\right)+30x-12\sqrt{3}x\tan^{-1}\left(\frac{2x+1}{\sqrt{3}}\right)-12\right.}{(2x+1)^2}\right\}\right\}$$

Maple: cpu = 0.046 (sec), leaf count = 68

$$\left\{y(x) = \frac{\_C1\,\left(x^2+x+1\right)}{\left(2\,x+1\right)^2}+\frac{\_C2}{\left(2\,x+1\right)^2}\left(\left(36\,x^2+36\,x+36\right)\arctan\left(\frac{\left(2\,x+1\right)\sqrt{3}}{3}\right)-16\,\sqrt{3}\left(x^3+x^2+\right.\right.\right.$$

3.387 ODE No. 1387

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) = 3/4\,\frac{y(x)}{\left(x^2+x+1\right)^2} = 0}$$

Mathematica: cpu = 0.038505 (sec), leaf count = 50

$$\left\{\left\{y(x) \to c_1\sqrt{x^2+x+1} + \frac{2c_2\sqrt{x^2+x+1}\tan^{-1}\left(\frac{2x+1}{\sqrt{3}}\right)}{\sqrt{3}}\right\}\right\}$$

Maple: cpu = 0.015 (sec), leaf count = 36

$$\left\{y(x) = \_C1\,\sqrt{x^2+x+1} + \_C2\,\arctan\left(\frac{(2\,x+1)\,\sqrt{3}}{3}\right)\sqrt{x^2+x+1}\right\}$$

3.388 ODE No. 1388

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) = -1/2\,\frac{(3\,x-1)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)}{x\,(x-1)} - 1/4\,\frac{(v(v+1)\,(x-1) - a^2x)\,y(x)}{x^2\,(x-1)^2} = 0}$$

Mathematica: cpu = 0.291037 (sec), leaf count = 235

$$\left\{\left\{y(x) \to c_2(-1)^{\frac{1}{2}(-2v-3)+1}x^{\frac{1}{4}(-2v-3)+1}e^{\frac{1}{4}(-2\log(1-x)-\log(x))}(x-1)^{\frac{1}{2}\left(\frac{1}{2}(a+v+1)+\frac{1}{2}(a+v+2)+\frac{1}{2}(-2v-3)+1\right)}\,{}_2F_1\left(\frac{1}{2}(-\right.\right.$$

Maple: cpu = 0.047 (sec), leaf count = 82

$$\left\{y(x) = \_C1\,x^{-\frac{v}{2}}(x-1)^{-\frac{a}{2}}\,{}_2\mathrm{F}_1(-\frac{v}{2}-\frac{a}{2},\frac{1}{2}-\frac{v}{2}-\frac{a}{2};\,\frac{1}{2}-v;\,x) + \_C2\,x^{\frac{1}{2}+\frac{v}{2}}(x-1)^{-\frac{a}{2}}\,{}_2\mathrm{F}_1(1+\frac{v}{2}-\frac{a}{2},\frac{1}{2}\right.$$

3.389 ODE No. 1389

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) = -1/2\,\frac{(3\,x-1)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)}{x\,(x-1)} - 1/4\,\frac{\left(-v(v+1)\,(x-1)^2 - 4\,n^2x\right)\,y(x)}{x^2\,(x-1)^2} = 0}$$

Mathematica: cpu = 0.378548 (sec), leaf count = 217

$$\left\{\left\{y(x) \to c_2(-1)^{\frac{1}{2}(-2v-3)+1}x^{\frac{1}{4}(-2v-3)+1}e^{\frac{1}{4}(-2\log(1-x)-\log(x))}(x-1)^{\frac{1}{2}\left(n+\frac{1}{2}(2n+1)+\frac{1}{2}(-2v-3)+v+2\right)}\,{}_2F_1\left(\frac{1}{2}(2n+1\right.\right.$$

Maple: cpu = 0.047 (sec), leaf count = 74

$$\left\{y(x) = \_C1\,x^{-\frac{v}{2}}(x-1)^{-n}\,{}_2\mathrm{F}_1(-v-n,-n+\frac{1}{2};\,\frac{1}{2}-v;\,x) + \_C2\,x^{\frac{1}{2}+\frac{v}{2}}(x-1)^{-n}\,{}_2\mathrm{F}_1(v-n+1,-n+\right.$$

3.390 ODE No. 1390

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) = -3/16\,\frac{y(x)}{x^2\left(x-1\right)^2} = 0}$$

Mathematica: cpu = 0.041005 (sec), leaf count = 51

$$\left\{\left\{y(x) \to \frac{2c_2(1-x)^{3/4}x^{5/4}}{\sqrt{-(x-1)x}} + c_1(1-x)^{3/4}\sqrt[4]{x}\right\}\right\}$$

Maple: cpu = 0.032 (sec), leaf count = 25

$$\left\{y(x) = \_C1\,x^{\frac{3}{4}}\sqrt[4]{x-1} + \_C2\,\sqrt[4]{x}(x-1)^{\frac{3}{4}}\right\}$$

3.391 ODE No. 1391

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) = \frac{\left(7\,ax^2+5\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)}{x\left(ax^2+1\right)} - \frac{\left(15\,ax^2+5\right)y(x)}{x^2\left(ax^2+1\right)} = 0}$$

Mathematica: cpu = 0.057507 (sec), leaf count = 27

$$\left\{\left\{y(x) \to c_1x^5 - \frac{1}{4}c_2x\left(2ax^2+1\right)\right\}\right\}$$

Maple: cpu = 0.032 (sec), leaf count = 20

$$\left\{y(x) = \_C1\,x^5 + \_C2\,\left(2\,ax^3+x\right)\right\}$$

3.392 ODE No. 1392

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) = -\frac{bx\frac{\mathrm{d}}{\mathrm{d}x}y(x)}{\left(x^2-1\right)a} - \frac{\left(cx^2+dx+e\right)y(x)}{a\left(x^2-1\right)^2} = 0}$$

Mathematica: cpu = 83.233069 (sec), leaf count = 1763961

Result too large for latex to process

Maple: cpu = 0.157 (sec), leaf count = 613

$$\left\{y(x) = \_C1\left(-\frac{1}{2}+\frac{x}{2}\right)^{\frac{1}{4\,a}\left(2\,a+\sqrt{4\,a^2+(-4\,b-4\,c-4\,d-4\,e)a+b^2}\right)}\left(x^2-1\right)^{-\frac{b}{4\,a}}\,{}_2\mathrm{F}_1\left(\frac{1}{4\,a}\left(\sqrt{4\,a^2+(-4\,b-4\,c-4\,d-4\,e)a+b^2}\right.\right.\right.$$

3.393 ODE No. 1393

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) = -\frac{\left(bx^2+cx+d\right)y(x)}{ax^2\left(x-1\right)^2} = 0}$$

Mathematica: cpu = 17.230188 (sec), leaf count = 413606

Result too large for latex to process

Maple: cpu = 0.110 (sec), leaf count = 299

$$\left\{y(x) = \_C1\,(x-1)^{-\frac{1}{2}\left(\sqrt{a-4\,b-4\,c-4\,d}-\sqrt{a}\right)\frac{1}{\sqrt{a}}}\,x^{\frac{1}{2}\left(\sqrt{a}+\sqrt{a-4\,d}\right)\frac{1}{\sqrt{a}}}\,{}_2\mathrm{F}_1(-\frac{1}{2}\left(\sqrt{a-4\,b-4\,c-4\,d}-\sqrt{a}-\sqrt{a-\right.\right.$$

3.394 ODE No. 1394

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) = -2\,\frac{\frac{\mathrm{d}}{\mathrm{d}x}y(x)}{x} - \frac{cy(x)}{x^2\left(ax+b\right)^2} = 0}$$

Mathematica: cpu = 0.050506 (sec), leaf count = 115

$$\left\{\left\{y(x) \to c_1 \exp\left(\frac{\sqrt{c}\left(-\frac{\sqrt{b^2-4c}}{\sqrt{c}}-\frac{b}{\sqrt{c}}\right)\left(\log(x)-\log(ax+b)\right)}{2b}\right) + c_2 \exp\left(\frac{\sqrt{c}\left(\frac{\sqrt{b^2-4c}}{\sqrt{c}}-\frac{b}{\sqrt{c}}\right)\left(\log(x)-\right.\right.\right.\right.$$

Maple: cpu = 0.078 (sec), leaf count = 89

$$\left\{y(x) = \_C1\,\sqrt{\frac{ax+b}{x}}\left(\frac{x}{ax+b}\right)^{\frac{a}{2\,b}\sqrt{\frac{b^2-4\,c}{a^2}}} + \_C2\,\sqrt{\frac{ax+b}{x}}\left(\frac{x}{ax+b}\right)^{-\frac{a}{2\,b}\sqrt{\frac{b^2-4\,c}{a^2}}}\right\}$$

3.395 ODE No. 1395

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) = -\frac{y(x)}{\left(ax+b\right)^4} = 0}$$

Mathematica: cpu = 0.160520 (sec), leaf count = 78

$$\left\{\left\{y(x) \to c_1 e^{\frac{\sqrt{-\frac{1}{a^4}}\,a}{ax+b}}(ax+b) + \frac{c_2 e^{-\frac{\sqrt{-\frac{1}{a^4}}\,a}{ax+b}}(ax+b)}{2\sqrt{-\frac{1}{a^4}}a^2}\right\}\right\}$$

Maple: cpu = 0.063 (sec), leaf count = 43

$$\left\{y(x) = \_C1\,(ax+b)\sin\left(\frac{1}{a\,(ax+b)}\right) + \_C2\,(ax+b)\cos\left(\frac{1}{a\,(ax+b)}\right)\right\}$$

3.396 ODE No. 1396

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) = -\frac{Ay(x)}{(ax^2+bx+c)^2} = 0}$$

Mathematica: cpu = 1.410179 (sec), leaf count = 211

$$\left\{\left\{y(x) \to \frac{c_2\sqrt{ax^2+bx+c}\exp\left(-\frac{\sqrt{4ac-b^2}\sqrt{1-\frac{4A}{b^2-4ac}}\tan^{-1}\left(\frac{2ax+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{b^2-4ac}}\right)}{\sqrt{b^2-4ac}\sqrt{1-\frac{4A}{b^2-4ac}}} + c_1\sqrt{x(ax+b)+c}\exp\left(\frac{\sqrt{4ac-\right.\right.\right.$$

Maple: cpu = 0.109 (sec), leaf count = 189

$$\left\{y(x) = \_C1\sqrt{ax^2+bx+c}\left(1\left(i\sqrt{4\,ac-b^2}-2\,ax-b\right)\left(2\,ax+b+i\sqrt{4\,ac-b^2}\right)^{-1}\right)^{\frac{a}{2}\sqrt{\frac{-4\,ac+b^2-4\,A}{a^2}}\frac{1}{\sqrt{-4\,a}}}\right.$$

3.397 ODE No. 1397

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) = -\frac{\frac{\mathrm{d}}{\mathrm{d}x}y(x)}{x^4} + \frac{y(x)}{x^5} = 0}$$

Mathematica: cpu = 0.027003 (sec), leaf count = 38

$$\left\{\left\{y(x) \to \frac{c_2\Gamma\left(\frac{1}{3},-\frac{1}{3x^3}\right)}{3^{2/3}\sqrt[3]{-\frac{1}{x^3}}} + c_1x\right\}\right\}$$

Maple: cpu = 0.063 (sec), leaf count = 28

$$\left\{y(x) = x\_C1 + \_C2\left(\pi\sqrt{3} - \frac{3\,\Gamma(2/3)}{2}\Gamma\left(\frac{1}{3},-\frac{1}{3\,x^3}\right)\right)x\right\}$$

3.398 ODE No. 1398

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)=-\frac{(3\,x^2-1)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)}{x\,(x^2-1)}-\frac{\left(x^2-1-(2\,v+1)^2\right)y(x)}{(x^2-1)^2}=0}$$

Mathematica: cpu = 1.452684 (sec), leaf count = 88

$$\{\{y(x)\to \text{DifferentialRoot}\big(\{y,x\},\{x\big(x^2-4v^2-4v-2\big)\,y(x)+\big(3x^4-4x^2+1\big)\,y'(x)+\big(x^5-2x^3+x\big)$$

Maple: cpu = 0.124 (sec), leaf count = 69

$$\left\{y(x)=\_C1\,\left(x^2-1\right)^{-\frac{1}{2}-v}\,{}_2\mathrm{F}_1(-v,-v;\,-2\,v;\,-x^2+1)+\_C2\,\left(x^2-1\right)^{v+\frac{1}{2}}\,{}_2\mathrm{F}_1(v+1,v+1;\,2+2\,v;\,-x\right.$$

3.399 ODE No. 1399

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)=\frac{(3\,x+1)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)}{(1+x)\,(x-1)}-36\,\frac{(1+x)^2\,y(x)}{(x-1)^2\,(3\,x+5)^2}=0}$$

Mathematica: cpu = 0.053507 (sec), leaf count = 72

$$\left\{\left\{y(x)\to c_1e^{\frac{1}{2}(3\log(1-x)+\log(3x+5))}+\frac{1}{2}c_2e^{\frac{1}{2}(3\log(1-x)+\log(3x+5))}(3\log(1-x)+\log(3x+5))\right\}\right\}$$

Maple: cpu = 0.062 (sec), leaf count = 46

$$\left\{y(x)=\_C1\,\sqrt{3\,x+5}(x-1)^{\frac{3}{2}}+\_C2\,\sqrt{3\,x+5}(x-1)^{\frac{3}{2}}\,\left(\ln\left(3\,x+5\right)+3\,\ln\left(x-1\right)\right)\right\}$$

3.400 ODE No. 1400

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)=\frac{\frac{\mathrm{d}}{\mathrm{d}x}y(x)}{x}-\frac{a\,y(x)}{x^6}=0}$$

Mathematica: cpu = 0.050506 (sec), leaf count = 60

$$\left\{\left\{y(x)\to c_1x^2e^{\frac{\sqrt{-a}}{2x^2}}+\frac{c_2x^2e^{-\frac{\sqrt{-a}}{2x^2}}}{2\sqrt{-a}}\right\}\right\}$$

Maple: cpu = 0.047 (sec), leaf count = 37

$$\left\{y(x)=\_C1\,x^2\sinh\left(\frac{1}{2\,x^2}\sqrt{-a}\right)+\_C2\,x^2\cosh\left(\frac{1}{2\,x^2}\sqrt{-a}\right)\right\}$$

3.401 ODE No. 1401

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) = -\frac{(3\,x^2+a)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)}{x^3} - \frac{by(x)}{x^6} = 0}$$

Mathematica: cpu = 0.013002 (sec), leaf count = 93

$$\left\{\left\{y(x) \to c_1 e^{-\frac{\sqrt{b}\left(-\frac{\sqrt{a^2-4b}}{\sqrt{b}}-\frac{a}{\sqrt{b}}\right)}{4x^2}} + c_2 e^{-\frac{\sqrt{b}\left(\frac{\sqrt{a^2-4b}}{\sqrt{b}}-\frac{a}{\sqrt{b}}\right)}{4x^2}}\right\}\right\}$$

Maple: cpu = 0.047 (sec), leaf count = 45

$$\left\{y(x) = \_C1\,\mathrm{e}^{-\frac{1}{4x^2}\left(-a+\sqrt{a^2-4\,b}\right)} + \_C2\,\mathrm{e}^{\frac{1}{4x^2}\left(a+\sqrt{a^2-4\,b}\right)}\right\}$$

3.402 ODE No. 1402

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) = -\frac{((1-4\,a)\,x^2-1)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)}{x\,(x^2-1)} - \frac{\left(\left(-v^2+x^2\right)\left(x^2-1\right)^2 + 4\,a(a+1)\,x^4 - 2\,ax^2(x^2-1)\right)y(x)}{x^2\left(x^2-1\right)^2} =}$$

Mathematica: cpu = 4.464067 (sec), leaf count = 127

$$\left\{\left\{y(x) \to \text{DifferentialRoot}\left(\{y,x\},\left\{\left(x^6+4a^2x^4-v^2x^4+2ax^4-2x^4+2v^2x^2+2ax^2+x^2-v^2\right)y(x)+\right.\right.\right.$$

Maple: cpu = 0.218 (sec), leaf count = 69

$$\left\{y(x) = \_C1\,x^v\left(x^2-1\right)^a\left(x^2-1\right)\mathit{HeunC}\left(0,v,1,\frac{1}{4},\frac{a}{2}+\frac{1}{4},x^2\right) + \_C2\,x^{-v}\left(x^2-1\right)^a\left(x^2-1\right)\mathit{HeunC}\left(\right.\right.$$

3.403 ODE No. 1403

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) = -\left(\frac{1-a1-b1}{x-c1}+\frac{1-a2-b2}{x-c2}+\frac{1-a3-b3}{x-c3}\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x) - \frac{y(x)}{(x-c1)\,(x-c2)\,(x-c3)}\left(a1\right.}$$

Mathematica: cpu = 97.102330 (sec), leaf count = 611

$$\left\{\left\{y(x) \to \text{DifferentialRoot}\left(\{y,x\},\left\{(\text{c1}-x)^2(\text{c2}-x)^2y''(x)(\text{c3}-x)^2+(\text{c1}-x)(\text{c2}-x)\left(\text{a1}x^2+\text{a2}x^2+\right.\right.\right.\right.$$

Maple: cpu = 0.639 (sec), leaf count = 311

$$\left\{y(x) = \_C1\,\mathit{HeunG}\left(\frac{c1-c3}{c1-c2},\frac{((-a3-2\,b1-b2+2)\,c1+(a3+b1-1)\,c2+c3\,(b1+b2-1))\,a1}{\right.\right.\right.$$

3.404 ODE No. 1404

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) = -\frac{(2\,x^2+1)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)}{x^3} - 1/4\,\frac{(-2\,x^2+1)\,y(x)}{x^6} = 0}$$

Mathematica: cpu = 0.023003 (sec), leaf count = 33

$$\left\{\left\{y(x) \to \frac{c_1 e^{\frac{1}{4x^2}}}{x} + c_2 e^{\frac{1}{4x^2}}\right\}\right\}$$

Maple: cpu = 0.031 (sec), leaf count = 24

$$\left\{y(x) = \_C1\,\mathrm{e}^{\frac{1}{4\,x^2}} + \frac{\_C2}{x}\mathrm{e}^{\frac{1}{4\,x^2}}\right\}$$

3.405 ODE No. 1405

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) = \frac{(2\,x^2+1)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)}{x^3} - 1/4\,\frac{(ax^4+10\,x^2+1)\,y(x)}{x^6} = 0}$$

Mathematica: cpu = 0.075510 (sec), leaf count = 77

$$\left\{\left\{y(x) \to c_1 e^{-\frac{1}{4x^2}} x^{\frac{3}{2}-\frac{\sqrt{9-a}}{2}} + \frac{c_2 e^{-\frac{1}{4x^2}} x^{\frac{\sqrt{9-a}}{2}+\frac{3}{2}}}{\sqrt{9-a}}\right\}\right\}$$

Maple: cpu = 0.062 (sec), leaf count = 47

$$\left\{y(x) = \_C1\,x^{\frac{3}{2}+\frac{1}{2}\sqrt{-a+9}}\mathrm{e}^{-\frac{1}{4\,x^2}} + \_C2\,x^{\frac{3}{2}-\frac{1}{2}\sqrt{-a+9}}\mathrm{e}^{-\frac{1}{4\,x^2}}\right\}$$

3.406 ODE No. 1406

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) = -\frac{27\,xy(x)}{16\,\left(x^3-1\right)^2} = 0}$$

Mathematica: cpu = 276.981672 (sec), leaf count = 257

$$\left\{\left\{y(x) \to \frac{\sqrt{2}c_2(1-x)^{3/4}\sqrt[4]{x^2+x+1}\int_1^x \frac{\sqrt{\sqrt{3}K[1]+\sqrt{2K[1]-i\sqrt{3}+1}\sqrt{2K[1]+i\sqrt{3}+1}+\sqrt{3}}}{2(1-K[1])^{3/2}\sqrt{K[1]^2+K[1]+1}}\,dK[1]}{\sqrt[4]{\sqrt{3}x+\sqrt{2x-i\sqrt{3}+1}\sqrt{2x+i\sqrt{3}+1}+\sqrt{3}}} + \frac{\sqrt{2}c_1}{\sqrt[4]{\sqrt{3}x+\sqrt{2x}}}\right.\right.$$

Maple: cpu = 0.109 (sec), leaf count = 53

$$\left\{y(x) = \_C1\,\sqrt{x}\sqrt[4]{x^3-1}\mathit{LegendreP}\left(-\frac{1}{6},\frac{1}{3},\sqrt{-x^3+1}\right) + \_C2\,\sqrt{x}\sqrt[4]{x^3-1}\mathit{LegendreQ}\left(-\frac{1}{6},\frac{1}{3},\sqrt{-x^3-\right.\right.$$

3.407 ODE No. 1407

$$\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) = -\left(\frac{(1-al1-bl1)\,b1}{b1\,x-a1}+\frac{(1-al2-bl2)\,b2}{b2\,x-a2}+\frac{(1-al3-bl3)\,b3}{b3\,x-a3}\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)-\frac{}{(b1\,x-a1)\,(}$$

Mathematica: cpu = 491.008850 (sec), leaf count = 842

$$\left\{\left\{y(x)\to \text{DifferentialRoot}\left(\{y,x\},\left\{(\text{a1}-x\text{b1})^2(\text{a2}-x\text{b2})^2y''(x)(\text{a3}-x\text{b3})^2+(\text{a1}-x\text{b1})(\text{a2}-x\text{b2})\,(\text{a}\right.\right.\right.$$

Maple: cpu = 2.074 (sec), leaf count = 2907

$$\left\{y(x)=\_C1\;HeunG\left(\frac{b2\,(a1\,b3-a3\,b1)}{b3\,\left(a1\,b2-b1\,a2\right)},-\frac{1}{4\,b3\,\left(a1\,b2-b1\,a2\right)}\left(\left(\left(2\,b2\,(a1\,b3-a3\,b1)\,\sqrt{al2^2+6}\right.\right.\right.\right.$$

3.408 ODE No. 1408

$$\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) = -\frac{(x^2((x^2-a1)\,(x^2-a2)+(x^2-a2)\,(x^2-a3)+(x^2-a3)\,(x^2-a1))-(x^2-a1)\,(x^2-}{x\,(x^2-a1)\,(x^2-a2)\,(x^2-a3)}$$

Mathematica: cpu = 59.615570 (sec), leaf count = 98

$$\left\{\left\{y(x)\to \text{DifferentialRoot}\left(\{y,x\},\left\{\left(Ax^2+B\right)y(x)+\left(2x^6-\text{a1}x^4-\text{a2}x^4-\text{a3}x^4+\text{a1a2a3}\right)y'(x)-x\left(\text{a}\right.\right.\right.\right.$$

Maple: cpu = 7.301 (sec), leaf count = 165

$$\left\{y(x)=DESol\left(\left\{\frac{\mathrm{d}^2}{\mathrm{d}x^2}\_Y(x)+\frac{(x^2((x^2-a1)\,(x^2-a2)+(x^2-a2)\,(x^2-a3)+(x^2-a3)\,(x^2-a1))}{(x^2-a1)\,(x^2-a2)\,x\,(x^2-a}\right.\right.\right.$$

3.409 ODE No. 1409

$$\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) = -\frac{ax^{2\,a-1}\frac{\mathrm{d}}{\mathrm{d}x}y(x)}{x^{2\,a}}-\frac{b^2y(x)}{x^{2\,a}}=0$$

Mathematica: cpu = 0.023003 (sec), leaf count = 43

$$\left\{\left\{y(x)\to c_1\cos\left(\frac{bx^{1-a}}{a-1}\right)-c_2\sin\left(\frac{bx^{1-a}}{a-1}\right)\right\}\right\}$$

Maple: cpu = 0.016 (sec), leaf count = 39

$$\left\{y(x)=\_C1\;\sin\left(\frac{x^{1-a}b}{a-1}\right)+\_C2\;\cos\left(\frac{x^{1-a}b}{a-1}\right)\right\}$$

3.410 ODE No. 1410

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)=-\frac{\left(apx^b+q\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)}{x\left(ax^b-1\right)}-\frac{\left(arx^b+s\right)y(x)}{x^2\left(ax^b-1\right)}=0}$$

Mathematica: cpu = 0.132017 (sec), leaf count = 481

$$\left\{\left\{y(x)\to c_1 i^{\frac{-\sqrt{q^2+2q+4s+1}+q+1}{b}}a^{\frac{-\sqrt{q^2+2q+4s+1}+q+1}{2b}}\left(x^b\right)^{\frac{-\sqrt{q^2+2q+4s+1}+q+1}{2b}}\ {}_2F_1\left(\frac{p}{2b}+\frac{q}{2b}-\frac{\sqrt{p^2-2p-4r+1}}{2b}-\right.\right.$$

Maple: cpu = 0.187 (sec), leaf count = 253

$$\left\{y(x)=\_C1\ {}_2\mathrm{F}_1(\frac{1}{2\,b}\left(p+q+\sqrt{q^2+2\,q+4\,s+1}+\sqrt{p^2-2\,p-4\,r+1}\right),\frac{1}{2\,b}\left(p+q+\sqrt{q^2+2\,q+4\,s}\right.\right.$$

3.411 ODE No. 1411

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)=\frac{y(x)}{\mathrm{e}^x+1}=0}$$

Mathematica: cpu = 0.333542 (sec), leaf count = 42

$$\left\{\left\{y(x)\to c_1\left(e^{-x}+1\right)+c_2e^{-x}(e^x\log\left(e^x+1\right)+\log\left(e^x+1\right)+1)\right\}\right\}$$

Maple: cpu = 0.016 (sec), leaf count = 27

$$\left\{y(x)=\left(\left(\left(\mathrm{e}^x+1\right)^{-1}+\ln\left(\mathrm{e}^x+1\right)\right)\_C1+\_C2\right)\left(1+\left(\mathrm{e}^x\right)^{-1}\right)\right\}$$

3.412 ODE No. 1412

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)=\frac{\frac{\mathrm{d}}{\mathrm{d}x}y(x)}{x\ln\left(x\right)}+\left(\ln\left(x\right)\right)^2y(x)=0}$$

Mathematica: cpu = 0.015502 (sec), leaf count = 29

$$\{\{y(x)\to c_1\cosh(x(\log(x)-1))+ic_2\sinh(x(\log(x)-1))\}\}$$

Maple: cpu = 0.0 (sec), leaf count = 27

$$\left\{y(x)=\_C1\ \sinh\left(x\ln\left(x\right)-x\right)+\_C2\ \cosh\left(x\ln\left(x\right)-x\right)\right\}$$

3.413 ODE No. 1413

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) = \frac{\frac{\mathrm{d}}{\mathrm{d}x}y(x)}{x\left(\ln\left(x\right)-1\right)} - \frac{y(x)}{x^2\left(\ln\left(x\right)-1\right)} = 0}$$

Mathematica: cpu = 0.346544 (sec), leaf count = 37

$$\text{DSolve}\left[y''(x) = \frac{y'(x)}{x(\log(x)-1)} - \frac{y(x)}{x^2(\log(x)-1)}, y(x), x\right]$$

Maple: cpu = 0.047 (sec), leaf count = 12

$$\{y(x) = x\_C1 + \_C2\ \ln\left(x\right)\}$$

3.414 ODE No. 1414

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) = -\frac{\left(-a^2(\sinh\left(x\right))^2 - n(n-1)\right)y(x)}{\left(\sinh\left(x\right)\right)^2} = 0}$$

Mathematica: cpu = 1.132144 (sec), leaf count = 231

$$\left\{\left\{y(x) \to \frac{c_2(-1)^{\frac{1}{2}(-2n-1)+1}\tanh^2(x)^{\frac{1}{4}(-2n-1)+1}\left(\tanh^2(x)-1\right)^{\frac{1}{2}\left(\frac{a+n}{2}+\frac{1}{2}(a+n+1)+\frac{1}{2}(-2n-1)+1\right)-\frac{1}{2}}\ {}_2F_1\left(\frac{1}{2}(-2n\right.}{\sqrt{\tanh(x)}}\right.\right\}$$

Maple: cpu = 0.187 (sec), leaf count = 97

$$\left\{y(x) = \_C1\left(\sinh\left(x\right)\right)^n\ {}_2\mathrm{F}_1(-\frac{a}{2}+\frac{n}{2},\frac{a}{2}+\frac{n}{2};\ \frac{1}{2};\ \frac{\cosh\left(2\,x\right)}{2}+\frac{1}{2}) + \_C2\left(\sinh\left(x\right)\right)^n\left(2\,\cosh\left(2\,x\right)+2\right)^{\frac{3}{4}}\ {}_2\right.$$

3.415 ODE No. 1415

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) = -2\,\frac{n\cosh\left(x\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)}{\sinh\left(x\right)} - \left(-a^2+n^2\right)y(x) = 0}$$

Mathematica: cpu = 0.841107 (sec), leaf count = 273

$$\left\{\left\{y(x) \to \frac{c_2(-1)^{\frac{1}{2}(-2n-1)+1}\tanh^2(x)^{\frac{1}{4}(-2n-1)+1}\left(\tanh^2(x)-1\right)^{\frac{1}{2}\left(\frac{a+n}{2}+\frac{1}{2}(a+n+1)+\frac{1}{2}(-2n-1)+1\right)}\ {}_2F_1\left(\frac{1}{2}(-2n-\right.\right.\right\}$$

Maple: cpu = 0.109 (sec), leaf count = 43

$$\left\{y(x) = \_C1\left(\sinh\left(x\right)\right)^{-n+\frac{1}{2}}\ \mathit{LegendreP}\left(a-\frac{1}{2},n-\frac{1}{2},\cosh\left(x\right)\right) + \_C2\left(\sinh\left(x\right)\right)^{-n+\frac{1}{2}}\ \mathit{LegendreQ}\left(a-\right.\right.$$

3.416 ODE No. 1416

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)=-\frac{(2\,n+1)\cos\left(x\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)}{\sin\left(x\right)}-(v+n+1)\,(v-n)\,y(x)=0}$$

Mathematica: cpu = 0.215027 (sec), leaf count = 46

$$\left\{\left\{y(x)\to c_1\left(\cos^2(x)-1\right)^{-n/2}P_v^n(\cos(x))+c_2\left(\cos^2(x)-1\right)^{-n/2}Q_v^n(\cos(x))\right\}\right\}$$

Maple: cpu = 0.141 (sec), leaf count = 31

$$\left\{y(x)=\_C1\left(\sin\left(x\right)\right)^{-n}\mathit{LegendreP}(v,n,\cos\left(x\right))+\_C2\left(\sin\left(x\right)\right)^{-n}\mathit{LegendreQ}(v,n,\cos\left(x\right))\right\}$$

3.417 ODE No. 1417

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)=-\frac{\left(\left(\sin\left(x\right)\right)^2-\cos\left(x\right)\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)}{\sin\left(x\right)}-y(x)\left(\sin\left(x\right)\right)^2=0}$$

Mathematica: cpu = 0.141518 (sec), leaf count = 52

$$\left\{\left\{y(x)\to c_1e^{\frac{\cos(x)}{2}}\cos\left(\frac{1}{2}\sqrt{3}\cos(x)\right)+c_2e^{\frac{\cos(x)}{2}}\sin\left(\frac{1}{2}\sqrt{3}\cos(x)\right)\right\}\right\}$$

Maple: cpu = 0.094 (sec), leaf count = 35

$$\left\{y(x)=\_C1\,\mathrm{e}^{\frac{\cos\left(x\right)}{2}}\sin\left(\frac{\sqrt{3}\cos\left(x\right)}{2}\right)+\_C2\,\mathrm{e}^{\frac{\cos\left(x\right)}{2}}\cos\left(\frac{\sqrt{3}\cos\left(x\right)}{2}\right)\right\}$$

3.418 ODE No. 1418

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)=-\frac{x\sin\left(x\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)}{\cos\left(x\right)x-\sin\left(x\right)}+\frac{y(x)\sin\left(x\right)}{\cos\left(x\right)x-\sin\left(x\right)}=0}$$

Mathematica: cpu = 1.249159 (sec), leaf count = 46

$$\text{DSolve}\left[y''(x)=\frac{y(x)\sin(x)}{x\cos(x)-\sin(x)}-\frac{x\sin(x)y'(x)}{x\cos(x)-\sin(x)},y(x),x\right]$$

Maple: cpu = 13.588 (sec), leaf count = 60

$$\left\{y(x)=\_C1\,\sin\left(x\right)+\_C2\,\sin\left(x\right)\int\mathrm{e}^{\int\frac{-2\left(\cos\left(x\right)\right)^3x+3\,\sin\left(x\right)\left(\cos\left(x\right)\right)^2-\sin\left(x\right)}{\left(\sin\left(x\right)\cos\left(x\right)x+\left(\cos\left(x\right)\right)^2-1\right)\cos\left(x\right)}\mathrm{d}x}\cos\left(x\right)\,\mathrm{d}x\right\}$$

3.419 ODE No. 1419

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) = -\frac{\left(x^2 \sin\left(x\right) - 2\,\cos\left(x\right) x\right) \frac{\mathrm{d}}{\mathrm{d}x}y(x)}{x^2 \cos\left(x\right)} - \frac{\left(2\,\cos\left(x\right) - x \sin\left(x\right)\right) y(x)}{x^2 \cos\left(x\right)} = 0}$$

Mathematica: cpu = 1.177650 (sec), leaf count = 53

$$\text{DSolve}\left[y''(x) = -\frac{\sec(x) y'(x) \left(x^2 \sin(x) - 2x \cos(x)\right)}{x^2} - \frac{y(x) \sec(x) (2x \cos(x) - x \sin(x))}{x^2}, y(x), x\right]$$

Maple: cpu = 0.219 (sec), leaf count = 13

$$\{y(x) = x\_C1 + \_C2\, x \sin\left(x\right)\}$$

3.420 ODE No. 1420

$$\boxed{\left(\cos\left(x\right)\right)^2 \frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) - \left(a \left(\cos\left(x\right)\right)^2 + n(n-1)\right) y(x) = 0}$$

Mathematica: cpu = 0.435055 (sec), leaf count = 134

$$\left\{\left\{y(x) \to c_1 i^{1-n} \cos^{1-n}(x)\, {}_2F_1\left(-\frac{n}{2} - \frac{i\sqrt{a}}{2} + \frac{1}{2}, -\frac{n}{2} + \frac{i\sqrt{a}}{2} + \frac{1}{2}; \frac{3}{2} - n; \cos^2(x)\right) + c_2 i^n \cos^n(x)\, {}_2F_1\left(\frac{n}{2}\right.\right.\right.$$

Maple: cpu = 0.218 (sec), leaf count = 123

$$\left\{y(x) = \_C1\ \sin\left(2\,x\right) \left(\cos\left(x\right)\right)^{-n}\, {}_2\mathrm{F}_1(1 + \frac{i}{2}\sqrt{a} - \frac{n}{2}, 1 - \frac{i}{2}\sqrt{a} - \frac{n}{2};\ \frac{3}{2} - n;\ \frac{\cos\left(2\,x\right)}{2} + \frac{1}{2}) + \_C2\ (\cos\left(x\right.\right.$$

3.421 ODE No. 1421

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) = -\frac{a(n-1) \sin\left(2\,ax\right) \frac{\mathrm{d}}{\mathrm{d}x}y(x)}{\left(\cos\left(ax\right)\right)^2} - \frac{na^2 \left((n-1) \left(\sin\left(ax\right)\right)^2 + \left(\cos\left(ax\right)\right)^2\right) y(x)}{\left(\cos\left(ax\right)\right)^2} = 0}$$

Mathematica: cpu = 0.248031 (sec), leaf count = 67

$$\left\{\left\{y(x) \to c_1 e^{-\sqrt{-a^2}x} \cos^{n-1}(ax) + \frac{c_2 e^{\sqrt{-a^2}x} \cos^{n-1}(ax)}{2\sqrt{-a^2}}\right\}\right\}$$

Maple: cpu = 0.063 (sec), leaf count = 27

$$\left\{y(x) = \_C1\ \left(\cos\left(ax\right)\right)^n + \_C2\ \left(\cos\left(ax\right)\right)^{n-1} \sin\left(ax\right)\right\}$$

3.422 ODE No. 1422

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) = 2\,\frac{y(x)}{\left(\sin\left(x\right)\right)^2} = 0}$$

Mathematica: cpu = 0.086011 (sec), leaf count = 64

$$\left\{\left\{y(x) \to \frac{c_1\cos(x)}{\sqrt{\cos^2(x)-1}} + \frac{c_2\left(\cos(x)\log\left(\sqrt{\cos^2(x)-1}+\cos(x)\right) - \sqrt{\cos^2(x)-1}\right)}{\sqrt{\cos^2(x)-1}}\right\}\right\}$$

Maple: cpu = 0.156 (sec), leaf count = 57

$$\left\{y(x) = \frac{\_C1\ \sin\left(2\,x\right)}{\cos\left(2\,x\right)-1} + \frac{\_C2\ \left(-i\ln\left(\cos\left(2\,x\right)+i\sin\left(2\,x\right)\right)\sin\left(2\,x\right)+2\ \cos\left(2\,x\right)-2\right)}{\cos\left(2\,x\right)-1}\right\}$$

3.423 ODE No. 1423

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) = -\frac{a y(x)}{\left(\sin\left(x\right)\right)^2} = 0}$$

Mathematica: cpu = 0.072009 (sec), leaf count = 70

$$\left\{\left\{y(x) \to c_1\sqrt[4]{\cos^2(x)-1}P^{\frac{1}{2}\sqrt{1-4a}}_{-\frac{1}{2}}(\cos(x)) + c_2\sqrt[4]{\cos^2(x)-1}Q^{\frac{1}{2}\sqrt{1-4a}}_{-\frac{1}{2}}(\cos(x))\right\}\right\}$$

Maple: cpu = 0.203 (sec), leaf count = 165

$$\left\{y(x) = \_C1\sqrt[4]{2\ \cos\left(2\,x\right)+2}\,{}_2\mathrm{F}_1(\frac{1}{4}\sqrt{1-4\,a}+\frac{1}{4},\frac{1}{4}\sqrt{1-4\,a}+\frac{1}{4};\ \frac{1}{2};\ \frac{\cos\left(2\,x\right)}{2}+\frac{1}{2})\sqrt{-2\ \cos\left(2\,x\right)+2}\left(\right.\right.$$

3.424 ODE No. 1424

$$\boxed{\left(\sin\left(x\right)\right)^2\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) - \left(a\left(\sin\left(x\right)\right)^2 + n(n-1)\right)y(x) = 0}$$

Mathematica: cpu = 0.171022 (sec), leaf count = 90

$$\left\{\left\{y(x) \to c_1\sqrt[4]{\cos^2(x)-1}P^{\frac{1}{2}(2n-1)}_{\frac{1}{2}i(2\sqrt{a}+i)}(\cos(x)) + c_2\sqrt[4]{\cos^2(x)-1}Q^{\frac{1}{2}(2n-1)}_{\frac{1}{2}i(2\sqrt{a}+i)}(\cos(x))\right\}\right\}$$

Maple: cpu = 0.203 (sec), leaf count = 125

$$\left\{y(x) = \_C1\left(\frac{\cos\left(2\,x\right)}{2}-\frac{1}{2}\right)^{\frac{n}{2}}\,{}_2\mathrm{F}_1(\frac{n}{2}+\frac{i}{2}\sqrt{a},\frac{n}{2}-\frac{i}{2}\sqrt{a};\ \frac{1}{2};\ \frac{\cos\left(2\,x\right)}{2}+\frac{1}{2}) + \_C2(2\ \cos\left(2\,x\right)+2)^{\frac{3}{4}}\,{}_2\mathrm{F}\right.$$

3.425 ODE No. 1425

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) = -\frac{\left(-a^2(\cos(x))^2 - (3-2\,a)\cos(x) - 3 + 3\,a\right)y(x)}{(\sin(x))^2} = 0}$$

Mathematica: cpu = 0.726092 (sec), leaf count = 232

$$\left\{\left\{y(x) \to \frac{c_2(1-\cos(x))^{\frac{1}{2}-a}\left(-\frac{(2a-1)(\cos(x)+1)}{-2a\cos(x)+\cos(x)+2}\right)^{a+\frac{1}{2}}(-2a\cos(x)+\cos(x)+2)\left(\frac{(2a-1)(\cos(x)-1)}{(2a-1)\cos(x)-2}\right)^{a-\frac{1}{2}}(\mathrm{co}\right.\right.$$

Maple: cpu = 0.312 (sec), leaf count = 99

$$\left\{y(x) = \_C1\,(-2+(2\,a-1)\cos(x))\sqrt[4]{2\,\cos(x)+2}(\sin(x))^{a-\frac{1}{2}}(-2\,\cos(x)+2)^{-\frac{3}{4}} + \_C2\,{}_2\mathrm{F}_1(a-\frac{1}{2},-\right.$$

3.426 ODE No. 1426

$$\boxed{(\sin(x))^2\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) - \left(a^2(\cos(x))^2 + b\cos(x) + \frac{b^2}{(2\,a-3)^2} + 3\,a + 2\right)y(x) = 0}$$

Mathematica: cpu = 6.105275 (sec), leaf count = 4128

$$\left\{\left\{y(x) \to c_1(\cos(x)+1)^{\frac{1}{2}}\left(-\frac{8a^2}{-16a^2+48a-36}+\frac{24a}{-16a^2+48a-36}+a-\frac{-32a^2+96a+\sqrt{\left(32a^2-96a+72\right)^2-4\left(-16a^2+48a-36\right)\left(16a^4+16ba^2-88a^2\right.}}{2\left(-16a^2+48a-36\right)}\right.\right.$$

Maple: cpu = 0.390 (sec), leaf count = 599

$$\left\{y(x) = \_C1\left(\frac{\cos(x)}{2}-\frac{1}{2}\right)^{\frac{1}{8\,a-12}\left(4\,a-6+\sqrt{4\,b^2+16\,(a-3/2)^2b+16\,a^4-72\,a^2+81}\right)}\,{}_2\mathrm{F}_1\left(\frac{1}{8\,a-12}\left(8\,a^2-\sqrt{4\,b^2-16\right.\right.\right.\right.$$

3.427 ODE No. 1427

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) = -\frac{\left(-\left(a^2b^2-(a+1)^2\right)(\sin(x))^2 - a(a+1)\,b\sin(2\,x) - a(a-1)\right)y(x)}{(\sin(x))^2} = 0}$$

Mathematica: cpu = 200.592472 (sec), leaf count = 57

$$\text{DSolve}\left[y''(x) = y(x)\left(-\csc^2(x)\right)\left(-\left(a^2b^2-(a+1)^2\right)\sin^2(x) - a(a+1)b\sin(2x) + (1-a)a\right), y(x), x\right]$$

Maple: cpu = 1.107 (sec), leaf count = 262

$$\left\{y(x) = \_C1\,\mathrm{e}^{\int \frac{1}{\sin(2\,x)(\sin(2\,x)b+\cos(2\,x)+1)}\left(2\,b((a+1)\cos(2\,x)+a+1/2)\sin(2\,x)-(\cos(2\,x)+1)\left((ab^2-a-2)\cos(2\,x)-ab^2-a+1\right)\right)\mathrm{d}x}\frac{\quad}{\sqrt{\sin}}\right.$$

3.428 ODE No. 1428

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) = -\frac{\left(a(\cos(x))^2 + b(\sin(x))^2 + c\right)y(x)}{(\sin(x))^2} = 0}$$

Mathematica: cpu = 0.392050 (sec), leaf count = 104

$$\left\{\left\{y(x) \to c_1\sqrt[4]{\cos^2(x)-1}P^{\frac{1}{2}\sqrt{-4a-4c+1}}_{\frac{1}{2}\left(2\sqrt{b-a}-1\right)}(\cos(x)) + c_2\sqrt[4]{\cos^2(x)-1}Q^{\frac{1}{2}\sqrt{-4a-4c+1}}_{\frac{1}{2}\left(2\sqrt{b-a}-1\right)}(\cos(x))\right\}\right\}$$

Maple: cpu = 0.218 (sec), leaf count = 219

$$\left\{y(x) = \_C1\sqrt[4]{2\cos(2\,x)+2}\,{}_2\mathrm{F}_1\left(\frac{1}{4}\sqrt{-4\,a+1-4\,c}+\frac{1}{2}\sqrt{-a+b}+\frac{1}{4},\frac{1}{4}\sqrt{-4\,a+1-4\,c}-\frac{1}{2}\sqrt{-a+b}-\right.\right.$$

3.429 ODE No. 1429

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) = -\frac{\cos(x)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)}{\sin(x)} + \frac{y(x)}{(\sin(x))^2} = 0}$$

Mathematica: cpu = 0.056507 (sec), leaf count = 51

$$\left\{\left\{y(x) \to c_1\cosh\left(\log\left(\cos\left(\frac{x}{2}\right)\right) - \log\left(\sin\left(\frac{x}{2}\right)\right)\right) - ic_2\sinh\left(\log\left(\cos\left(\frac{x}{2}\right)\right) - \log\left(\sin\left(\frac{x}{2}\right)\right)\right)\right\}\right\}$$

Maple: cpu = 0.031 (sec), leaf count = 25

$$\left\{y(x) = \frac{\sin(x)\,\_C1}{-1+\cos(x)} + \frac{(-1+\cos(x))\,\_C2}{\sin(x)}\right\}$$

3.430 ODE No. 1430

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)=-\frac{\cos\left(x\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)}{\sin\left(x\right)}-\frac{\left(v(v+1)\left(\sin\left(x\right)\right)^2-n^2\right)y(x)}{\left(\sin\left(x\right)\right)^2}=0}$$

Mathematica: cpu = 0.452557 (sec), leaf count = 22

$$\{\{y(x)\to c_1P_v^n(\cos(x))+c_2Q_v^n(\cos(x))\}\}$$

Maple: cpu = 0.250 (sec), leaf count = 122

$$\left\{y(x)=\_C1\ \sin\left(2\,x\right)\left(\frac{\cos\left(2\,x\right)}{2}-\frac{1}{2}\right)^{\frac{n}{2}}{}_2\mathrm{F}_1(1+\frac{v}{2}+\frac{n}{2},\frac{1}{2}-\frac{v}{2}+\frac{n}{2};\ \frac{3}{2};\ \frac{\cos\left(2\,x\right)}{2}+\frac{1}{2})\frac{1}{\sqrt{1-\cos\left(2\,x\right)}}+\right.$$

3.431 ODE No. 1431

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)=\frac{\cos\left(2\,x\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)}{\sin\left(2\,x\right)}-2\,y(x)=0}$$

Mathematica: cpu = 0.202526 (sec), leaf count = 80

$$\left\{\left\{y(x)\to c_1\left(\cos^2(x)-\frac{1}{2}\right)-\frac{2}{3}c_2\cos^{\frac{3}{2}}(x)\left(2\cos^2(x)\,{}_2F_1\left(\frac{1}{4},\frac{3}{4};\frac{7}{4};\cos^2(x)\right)-\,{}_2F_1\left(\frac{1}{4},\frac{3}{4};\frac{7}{4};\cos^2(x)\right)+\right.\right.$$

Maple: cpu = 0.156 (sec), leaf count = 35

$$\left\{y(x)=\_C1\left(\sin\left(2\,x\right)\right)^{\frac{3}{4}}\mathit{LegendreP}\left(\frac{1}{4},\frac{3}{4},\cos\left(2\,x\right)\right)+\_C2\left(\sin\left(2\,x\right)\right)^{\frac{3}{4}}\mathit{LegendreQ}\left(\frac{1}{4},\frac{3}{4},\cos\left(2\,x\right)\right)\right\}$$

3.432 ODE No. 1432

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)=-\frac{\cos\left(x\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)}{\sin\left(x\right)}-1/4\,\frac{\left(-17\left(\sin\left(x\right)\right)^2-1\right)y(x)}{\left(\sin\left(x\right)\right)^2}=0}$$

Mathematica: cpu = 0.090511 (sec), leaf count = 37

$$\left\{\left\{y(x)\to\frac{c_1e^{-2x}}{\sqrt{\sin(x)}}+\frac{c_2e^{2x}}{4\sqrt{\sin(x)}}\right\}\right\}$$

Maple: cpu = 0.046 (sec), leaf count = 25

$$\left\{y(x)=\_C1\ \sinh\left(2\,x\right)\frac{1}{\sqrt{\sin\left(x\right)}}+\_C2\ \cosh\left(2\,x\right)\frac{1}{\sqrt{\sin\left(x\right)}}\right\}$$

3.433 ODE No. 1433

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) = -\frac{\sin(x)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)}{\cos(x)} - 1/4\,\frac{\left(2\,x^2 + x^2(\sin(x))^2 - 24\,(\cos(x))^2\right)y(x)}{x^2\,(\cos(x))^2} + \sqrt{\cos(x)} = 0}$$

Mathematica: cpu = 0.200525 (sec), leaf count = 46

$$\left\{\left\{y(x) \to \frac{1}{5}c_2 x^3\sqrt{\cos(x)} + \frac{c_1\sqrt{\cos(x)}}{x^2} - \frac{1}{4}x^2\sqrt{\cos(x)}\right\}\right\}$$

Maple: cpu = 0.078 (sec), leaf count = 32

$$\left\{y(x) = \frac{\_C2}{x^2}\sqrt{\cos(x)} + \sqrt{\cos(x)}x^3\_C1 - \frac{x^2}{4}\sqrt{\cos(x)}\right\}$$

3.434 ODE No. 1434

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) = -\frac{b\cos(x)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)}{\sin(x)\,a} - \frac{\left(c(\cos(x))^2 + d\cos(x) + e\right)y(x)}{a\,(\sin(x))^2} = 0}$$

Mathematica: cpu = 99.286108 (sec), leaf count = 1596424

Result too large for latex to process

Maple: cpu = 0.936 (sec), leaf count = 559

$$\left\{y(x) = \_C1\,(\sin(x))^{-\frac{a+b}{2a}}\,(\cos(x)+1)^{\frac{1}{4a}\left(2a+\sqrt{a^2+(-2b-4c-4d-4e)a+b^2}\right)}\,(-1+\cos(x))^{-\frac{1}{4a}\left(-2a+\sqrt{a^2+(-2b-4}\right.\right.$$

3.435 ODE No. 1435

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) = -4\,\frac{\sin(3\,x)\,y(x)}{(\sin(x))^3} = 0}$$

Mathematica: cpu = 0.137517 (sec), leaf count = 70

$$\left\{\left\{y(x) \to c_1\sqrt[4]{\cos^2(x)-1}P^{\frac{i\sqrt{47}}{2}}_{-\frac{1}{2}+4i}(\cos(x)) + c_2\sqrt[4]{\cos^2(x)-1}Q^{\frac{i\sqrt{47}}{2}}_{-\frac{1}{2}+4i}(\cos(x))\right\}\right\}$$

Maple: cpu = 0.109 (sec), leaf count = 41

$$\left\{y(x) = \_C1\,\sqrt{\sin(x)}\mathit{LegendreP}\left(-\frac{1}{2}+4\,i, \frac{i}{2}\sqrt{47}, \cos(x)\right) + \_C2\,\sqrt{\sin(x)}\mathit{LegendreQ}\left(-\frac{1}{2}+4\,i, \frac{i}{2}\sqrt{4}\right.\right.$$

3.436 ODE No. 1436

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) = -1/4\,\frac{\left(4\,v(v+1)\left(\sin\left(x\right)\right)^2 - \left(\cos\left(x\right)\right)^2 + 2 - 4\,n^2\right)y(x)}{\left(\sin\left(x\right)\right)^2} = 0}$$

Mathematica: cpu = 0.540069 (sec), leaf count = 42

$$\left\{\left\{y(x) \to c_1\sqrt[4]{\cos^2(x)-1}P_v^n(\cos(x)) + c_2\sqrt[4]{\cos^2(x)-1}Q_v^n(\cos(x))\right\}\right\}$$

Maple: cpu = 0.203 (sec), leaf count = 140

$$\left\{y(x) = \_C1\sqrt[4]{2\,\cos\left(2\,x\right)+2}\,{}_2\mathrm{F}_1(-\frac{v}{2}+\frac{n}{2},\frac{1}{2}+\frac{v}{2}+\frac{n}{2};\,\frac{1}{2};\,\frac{\cos\left(2\,x\right)}{2}+\frac{1}{2})\left(\frac{\cos\left(2\,x\right)}{2}-\frac{1}{2}\right)^{\frac{n}{2}}\sqrt{-2\,\cos\left(2\right.}\right.$$

3.437 ODE No. 1437

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) = \frac{\left(3\left(\sin\left(x\right)\right)^2+1\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)}{\cos\left(x\right)\sin\left(x\right)} + \frac{y(x)\left(\sin\left(x\right)\right)^2}{\left(\cos\left(x\right)\right)^2} = 0}$$

Mathematica: cpu = 0.240531 (sec), leaf count = 44

$$\left\{\left\{y(x) \to c_1\cos^{\frac{\sqrt{13}}{2}-\frac{3}{2}}(x) + c_2\cos^{-\frac{3}{2}-\frac{\sqrt{13}}{2}}(x)\right\}\right\}$$

Maple: cpu = 0.125 (sec), leaf count = 29

$$\left\{y(x) = \_C1\left(\cos\left(x\right)\right)^{-\frac{3}{2}+\frac{\sqrt{13}}{2}} + \_C2\left(\cos\left(x\right)\right)^{-\frac{3}{2}-\frac{\sqrt{13}}{2}}\right\}$$

3.438 ODE No. 1438

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) = -\frac{\left(-a(\cos\left(x\right))^2\left(\sin\left(x\right)\right)^2 - m(m-1)\left(\sin\left(x\right)\right)^2 - n(n-1)\left(\cos\left(x\right)\right)^2\right)y(x)}{\left(\cos\left(x\right)\right)^2\left(\sin\left(x\right)\right)^2} = 0}$$

Mathematica: cpu = 0.940119 (sec), leaf count = 615

$$\left\{\left\{y(x) \to \frac{c_2(-1)^{\frac{1}{2}(-2m-1)+1}\cos^2(x)^{\frac{1}{4}(-2m-1)+1}\left(\cos^2(x)-1\right)^{\frac{1}{2}\left(\frac{4am+4\sqrt{-a}n^2+4an-4\sqrt{-a}n+4(-a)^{3/2}+8\sqrt{-a}a+\sqrt{-a}+4mn}{8a+8n^2-8n+2}\right.}\right.\right.$$

Maple: cpu = 0.141 (sec), leaf count = 105

$$\left\{y(x) = \_C1\left(\cos\left(x\right)\right)^m\left(\sin\left(x\right)\right)^n\,{}_2\mathrm{F}_1(\frac{n}{2}+\frac{m}{2}+\frac{i}{2}\sqrt{a},\frac{n}{2}+\frac{m}{2}-\frac{i}{2}\sqrt{a};\,\frac{1}{2}+m;\,\left(\cos\left(x\right)\right)^2) + \_C2\left(\cos\left(x\right.\right.\right.$$

3.439 ODE No. 1439

$$\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)=\frac{\left(\frac{\mathrm{d}}{\mathrm{d}x}\phi(x)\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)}{\phi\left(x\right)-\phi\left(a\right)}-\frac{\left(-n(n+1)\left(\phi(x)-\phi(a)\right)^2+\left(D^{(2)}\right)\left(\phi\right)\left(a\right)\right)y(x)}{\phi\left(x\right)-\phi\left(a\right)}=0$$

Mathematica: cpu = 0.765097 (sec), leaf count = 61

$$\text{DSolve}\left[y''(x)=\frac{\phi'(x)y'(x)}{\phi(x)-\phi(a)}-\frac{y(x)\left(\phi''(a)-n(n+1)(\phi(x)-\phi(a))^2\right)}{\phi(x)-\phi(a)},y(x),x\right]$$

Maple: cpu = 0.671 (sec), leaf count = 69

$$\left\{y(x)=DESol\left(\left\{\frac{\mathrm{d}^2}{\mathrm{d}x^2}\_Y(x)-\frac{\left(\frac{\mathrm{d}}{\mathrm{d}x}\phi(x)\right)\frac{\mathrm{d}}{\mathrm{d}x}\_Y(x)}{\phi\left(x\right)-\phi\left(a\right)}+\frac{\left(-n(n+1)\left(\phi(x)-\phi(a)\right)^2+\frac{\mathrm{d}^2}{\mathrm{d}a^2}\phi(a)\right)\_Y(x)}{\phi\left(x\right)-\phi\left(a\right)}\right\}\right.$$

3.440 ODE No. 1440

$$\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)=-\frac{\left(\phi(x^3)-\phi(x)\frac{\mathrm{d}}{\mathrm{d}x}\phi(x)-\frac{\mathrm{d}^2}{\mathrm{d}x^2}\phi(x)\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)}{\frac{\mathrm{d}}{\mathrm{d}x}\phi\left(x\right)+\left(\phi\left(x\right)\right)^2}-\frac{\left(\left(\frac{\mathrm{d}}{\mathrm{d}x}\phi(x)\right)^2-\left(\phi(x)\right)^2\frac{\mathrm{d}}{\mathrm{d}x}\phi(x)-\phi(x)\frac{\mathrm{d}^2}{\mathrm{d}x^2}\phi(x)\right)}{\frac{\mathrm{d}}{\mathrm{d}x}\phi\left(x\right)+\left(\phi\left(x\right)\right)^2}$$

Mathematica: cpu = 0.890613 (sec), leaf count = 86

$$\text{DSolve}\left[y''(x)=-\frac{y'(x)\left(-\phi''(x)-\phi(x)\phi'(x)+\phi(x^3)\right)}{\phi'(x)+\phi(x)^2}-\frac{y(x)\left(-\phi(x)\phi''(x)+\phi(x)^2\left(-\phi'(x)\right)+\phi'(x)^2\right)}{\phi'(x)+\phi(x)^2},y\right.$$

Maple: cpu = 0.0 (sec), leaf count = 94

$$\left\{y(x)=DESol\left(\left\{\frac{\left(\left(\frac{\mathrm{d}}{\mathrm{d}x}\phi(x)\right)^2-\left(\phi(x)\right)^2\frac{\mathrm{d}}{\mathrm{d}x}\phi(x)-\phi(x)\frac{\mathrm{d}^2}{\mathrm{d}x^2}\phi(x)\right)\_Y(x)}{\frac{\mathrm{d}}{\mathrm{d}x}\phi\left(x\right)+\left(\phi\left(x\right)\right)^2}+\frac{\left(\phi(x^3)-\phi(x)\frac{\mathrm{d}}{\mathrm{d}x}\phi(x)-\frac{\mathrm{d}^2}{\mathrm{d}x^2}\right.\right.\right.$$

3.441 ODE No. 1441

$$\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)=\frac{2\,JacobiSN(x,k)\,JacobiCN(x,k)\,JacobiDN(x,k)\frac{\mathrm{d}}{\mathrm{d}x}y(x)-2\left(1-2\left(k^2+1\right)\left(JacobiSN(a,k)\right.\right.}{\left(JacobiSN\left(x,k\right)\right)^2-JacobiSN\left(a,k\right)}$$

Mathematica: cpu = 1.467186 (sec), leaf count = 105

$$\text{DSolve}\left[y''(x)=-\frac{y'(x)(-\text{cn}(x|k)\text{dn}(x|k)-2\text{sn}(x|k))}{\text{sn}(x|k)^2-\text{sn}(a|k)^2}-\frac{y(x)\left(6k^2\text{sn}(a|k)^4-4(k^2+1)\,\text{sn}(a|k)^2+2\right)}{\text{sn}(x|k)^2-\text{sn}(a|k)^2}-\frac{}{\text{s}}\right.$$

Maple: cpu = 340.784 (sec), leaf count = 85

$$\left\{y(x)=DESol\left(\left\{\frac{\mathrm{d}^2}{\mathrm{d}x^2}\_Y(x)-2\,\frac{JacobiSN(x,k)\,JacobiCN(x,k)\,JacobiDN(x,k)\frac{\mathrm{d}}{\mathrm{d}x}\_Y(x)}{\left(JacobiSN\left(x,k\right)\right)^2-JacobiSN\left(a,k\right)}-\frac{\left(-2+4\right.}{}\right.\right.\right.$$

3.442 ODE No. 1442

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) = -\frac{x\frac{\mathrm{d}}{\mathrm{d}x}y(x)}{f\left(x\right)} + \frac{y(x)}{f\left(x\right)} = 0}$$

Mathematica: cpu = 0.213027 (sec), leaf count = 28

$$\text{DSolve}\left[y''(x) = \frac{y(x)}{f(x)} - \frac{xy'(x)}{f(x)}, y(x), x\right]$$

Maple: cpu = 0.063 (sec), leaf count = 31

$$\left\{y(x) = \_C1 \int \mathrm{e}^{\int \frac{1}{x}\left(-2-\frac{x^2}{f(x)}\right)\mathrm{d}x}\,\mathrm{d}x x + \_C2\, x\right\}$$

3.443 ODE No. 1443

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) = -1/2\,\frac{\left(\frac{\mathrm{d}}{\mathrm{d}x}f(x)\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)}{f\left(x\right)} - \frac{g(x)\,y(x)}{f\left(x\right)} = 0}$$

Mathematica: cpu = 0.266534 (sec), leaf count = 36

$$\text{DSolve}\left[y''(x) = -\frac{f'(x)y'(x)}{2f(x)} - \frac{g(x)y(x)}{f(x)}, y(x), x\right]$$

Maple: cpu = 0.016 (sec), leaf count = 39

$$\left\{y(x) = DESol\left(\left\{\frac{g(x)\_Y(x)}{f\left(x\right)} + \frac{\left(\frac{\mathrm{d}}{\mathrm{d}x}f(x)\right)\frac{\mathrm{d}}{\mathrm{d}x}\_Y(x)}{2\,f\left(x\right)} + \frac{\mathrm{d}^2}{\mathrm{d}x^2}\_Y(x)\right\}, \{\_Y(x)\}\right)\right\}$$

3.444 ODE No. 1444

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) = \frac{a\left(\frac{\mathrm{d}}{\mathrm{d}x}f(x)\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)}{f\left(x\right)} - \frac{b(f(x))^{2\,a+1}y(x)}{f\left(x\right)} = 0}$$

Mathematica: cpu = 1.510692 (sec), leaf count = 36

$$\text{DSolve}\left[y''(x) = -by(x)f(x)^{2a} - \frac{af'(x)y'(x)}{f(x)}, y(x), x\right]$$

Maple: cpu = 0.016 (sec), leaf count = 37

$$\left\{y(x) = \_C1\,\mathrm{e}^{\int i(f(x))^a\sqrt{b}\,\mathrm{d}x} + \_C2\,\mathrm{e}^{-\int i(f(x))^a\sqrt{b}\,\mathrm{d}x}\right\}$$

3.445 ODE No. 1445

$$\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) = -\frac{\left(2\,f(x)\left(\frac{\mathrm{d}}{\mathrm{d}x}g(x)\right)^2 g(x) - \left((g(x))^2-1\right)\left(f(x)\,\frac{\mathrm{d}^2}{\mathrm{d}x^2}g(x) + 2\left(\frac{\mathrm{d}}{\mathrm{d}x}f(x)\right)\frac{\mathrm{d}}{\mathrm{d}x}g(x)\right)\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)}{f(x)\left(\frac{\mathrm{d}}{\mathrm{d}x}g(x)\right)\left((g(x))^2-1\right)} - \frac{\left(($$

Mathematica: cpu = 1.326669 (sec), leaf count = 169

$$\text{DSolve}\left[y''(x) = -\frac{y'(x)\left(2f(x)g(x)g'(x)^2 - \left(g(x)^2-1\right)\left(2f'(x)g'(x) + f(x)g''(x)\right)\right)}{f(x)\left(g(x)^2-1\right)g'(x)} - \frac{y(x)\left(\left(g(x)^2-1\right)(f\right.\right.$$

Maple: cpu = 0.203 (sec), leaf count = 21

$$\{y(x) = \_C1\ LegendreP(v, g(x))\,f(x) + \_C2\ LegendreQ(v, g(x))\,f(x)\}$$

3.446 ODE No. 1446

$$\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) = -\frac{\frac{\mathrm{d}}{\mathrm{d}x}y(x)}{x} - \frac{(x-1)\,y(x)}{x^4} = 0$$

Mathematica: cpu = 0.022003 (sec), leaf count = 33

$$\left\{\left\{y(x) \to c_1 e^{-1/x} - c_2 e^{-1/x}\text{Ei}\left(\frac{2}{x}\right)\right\}\right\}$$

Maple: cpu = 0.047 (sec), leaf count = 28

$$\left\{y(x) = \_C1\ \mathrm{e}^{-x^{-1}} + \_C2\ \mathrm{e}^{-x^{-1}}\,Ei\left(1, -2\,x^{-1}\right)\right\}$$

3.447 ODE No. 1447

$$\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) = -\frac{\frac{\mathrm{d}}{\mathrm{d}x}y(x)}{x} - \frac{(-1-x)\,y(x)}{x^4} = 0$$

Mathematica: cpu = 0.020002 (sec), leaf count = 29

$$\left\{\left\{y(x) \to c_1 e^{\frac{1}{x}} - c_2 e^{\frac{1}{x}}\text{Ei}\left(-\frac{2}{x}\right)\right\}\right\}$$

Maple: cpu = 0.047 (sec), leaf count = 24

$$\left\{y(x) = \_C1\ \mathrm{e}^{x^{-1}} + \_C2\ \mathrm{e}^{x^{-1}}\,Ei\left(1, 2\,x^{-1}\right)\right\}$$

3.448 ODE No. 1448

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) = -\frac{b^2 y(x)}{\left(-a^2+x^2\right)^2} = 0}$$

Mathematica: cpu = 0.323041 (sec), leaf count = 149

$$\left\{\left\{y(x) \to c_1 (x-a)^{\frac{1}{2}\sqrt{1-\frac{b^2}{a^2}}+\frac{1}{2}} (a+x)^{\frac{1}{2}-\frac{1}{2}\sqrt{1-\frac{b^2}{a^2}}} - \frac{c_2 (x-a)^{\frac{1}{2}-\frac{1}{2}\sqrt{\frac{a^2-b^2}{a^2}}} (a+x)^{\frac{1}{2}\sqrt{\frac{a^2-b^2}{a^2}}+\frac{1}{2}}}{2a\sqrt{\frac{a^2-b^2}{a^2}}}\right\}\right\}$$

Maple: cpu = 0.063 (sec), leaf count = 87

$$\left\{y(x) = \_C1\ \sqrt{(a-x)(x+a)}\left(\frac{a-x}{x+a}\right)^{\frac{1}{2a}\sqrt{a^2-b^2}} + \_C2\ \sqrt{(a-x)(x+a)}\left(\frac{a-x}{x+a}\right)^{-\frac{1}{2a}\sqrt{a^2-b^2}}\right\}$$

4 Kamke chapter 3. Linear third order

4.1 ODE No. 1449

$$\boxed{\frac{\mathrm{d}^3}{\mathrm{d}x^3}y(x) - \lambda\, y(x) = 0}$$

Mathematica: cpu = 0.017002 (sec), leaf count = 53

$$\left\{\left\{y(x) \to c_1 e^{(-1)^{2/3}\sqrt[3]{\lambda}x} + c_2 e^{-\sqrt[3]{-1}\sqrt[3]{\lambda}x} + c_3 e^{\sqrt[3]{\lambda}x}\right\}\right\}$$

Maple: cpu = 0.015 (sec), leaf count = 53

$$\left\{y(x) = \_C1\, \mathrm{e}^{\left(-\frac{1}{2}\sqrt[3]{\lambda} - \frac{i}{2}\sqrt{3}\sqrt[3]{\lambda}\right)x} + \_C2\, \mathrm{e}^{\left(-\frac{1}{2}\sqrt[3]{\lambda} + \frac{i}{2}\sqrt{3}\sqrt[3]{\lambda}\right)x} + \_C3\, \mathrm{e}^{\sqrt[3]{\lambda}x}\right\}$$

4.2 ODE No. 1450

$$\boxed{\frac{\mathrm{d}^3}{\mathrm{d}x^3}y(x) + y(x)\, ax^3 - bx = 0}$$

Mathematica: cpu = 0 (sec), leaf count = 0

Hanged

Maple: cpu = 0.171 (sec), leaf count = 2294

$$\left\{y(x) = \int 1401400\, bx^3 \left(8\, x^6 {}_0\mathrm{F}_2(\ ;\ \frac{11}{6}, \frac{13}{6};\ -\frac{x^6 a}{216}) a {}_0\mathrm{F}_2(\ ;\ 7/6, 4/3;\ -\frac{x^6 a}{216}) - 5\, {}_0\mathrm{F}_2(\ ;\ 5/6, 7/6;\ -\frac{x^6 a}{216}) x^6 {}_0\right.$$

4.3 ODE No. 1451

$$\boxed{\frac{\mathrm{d}^3}{\mathrm{d}x^3}y(x) - ax^b y(x) = 0}$$

Mathematica: cpu = 0.019502 (sec), leaf count = 168

$$\left\{\left\{y(x) \to (-1)^{\frac{1}{b+3}}(b+3)^{-\frac{3}{b+3}} c_2 x a^{\frac{1}{b+3}}\, {}_0F_2\left(;1-\frac{1}{b+3}, 1+\frac{1}{b+3};\ \frac{a x^{b+3}}{(b+3)^3}\right) + (-1)^{\frac{2}{b+3}}(b+3)^{-\frac{6}{b+3}} c_3 x^2 a^{\frac{}{b}}\right.$$

Maple: cpu = 0.093 (sec), leaf count = 114

$$\left\{y(x) = \_C1\, {}_0\mathrm{F}_2(\ ;\ \frac{b+2}{b+3}, \frac{b+1}{b+3};\ \frac{x^{b+3}a}{(b+3)^3}) + \_C2\, x {}_0\mathrm{F}_2(\ ;\ \frac{b+4}{b+3}, \frac{b+2}{b+3};\ \frac{x^{b+3}a}{(b+3)^3}) + \_C3\, x^2 {}_0\mathrm{F}_2(\ ;\ \frac{b+5}{b+3}\right.$$

4.4 ODE No. 1452

$$\boxed{\frac{\mathrm{d}^3}{\mathrm{d}x^3}y(x)+3\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)-4\,y(x)=0}$$

Mathematica: cpu = 0.006001 (sec), leaf count = 54

$$\left\{\left\{y(x)\to c_3e^x+c_1e^{-x/2}\sin\left(\frac{\sqrt{15}x}{2}\right)+c_2e^{-x/2}\cos\left(\frac{\sqrt{15}x}{2}\right)\right\}\right\}$$

Maple: cpu = 0.016 (sec), leaf count = 35

$$\left\{y(x)=\_C1\,\mathrm{e}^{x}+\_C2\,\mathrm{e}^{-\frac{x}{2}}\sin\left(\frac{\sqrt{15}x}{2}\right)+\_C3\,\mathrm{e}^{-\frac{x}{2}}\cos\left(\frac{\sqrt{15}x}{2}\right)\right\}$$

4.5 ODE No. 1453

$$\boxed{\frac{\mathrm{d}^3}{\mathrm{d}x^3}y(x)-a^2\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)-\mathrm{e}^{2\,ax}(\sin(x))^2=0}$$

Mathematica: cpu = 0.593075 (sec), leaf count = 128

$$\left\{\left\{y(x)\to\frac{e^{-ax}(-9(a^2-4)\,a^4e^{3ax}\cos(2x)-3(11a^2-4)\,a^3e^{3ax}\sin(2x)+(9a^6+49a^4+56a^2+16)\,(12a^2}{12a^3\,(9a^6+49a^4+56a^2+16)}\right.\right.$$

Maple: cpu = 0.094 (sec), leaf count = 230

$$\left\{y(x)=\frac{108\,\mathrm{e}^{ax}\_C2\,a^8-108\,\mathrm{e}^{-ax}\_C1\,a^8+108\,\_C3\,a^9-9\,a^6\mathrm{e}^{2\,ax}\cos(2\,x)+588\,\mathrm{e}^{ax}\_C2\,a^6-588\,\mathrm{e}^{-ax}\_\right.$$

4.6 ODE No. 1454

$$\boxed{\frac{\mathrm{d}^3}{\mathrm{d}x^3}y(x)+2\,ax\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)+ay(x)=0}$$

Mathematica: cpu = 0.009001 (sec), leaf count = 79

$$\left\{\left\{y(x)\to c_1\mathrm{Ai}\left(\sqrt[3]{-\frac{1}{2}}\sqrt[3]{a}x\right)^2+c_3\mathrm{Bi}\left(\sqrt[3]{-\frac{1}{2}}\sqrt[3]{a}x\right)^2+c_2\mathrm{Ai}\left(\sqrt[3]{-\frac{1}{2}}\sqrt[3]{a}x\right)\mathrm{Bi}\left(\sqrt[3]{-\frac{1}{2}}\sqrt[3]{a}x\right)\right\}\right\}$$

Maple: cpu = 0.047 (sec), leaf count = 55

$$\left\{y(x)=\_C1\left(\mathrm{Ai}\left(-\frac{2^{\frac{2}{3}}x}{2}\sqrt[3]{a}\right)\right)^2+\_C2\left(\mathrm{Bi}\left(-\frac{2^{\frac{2}{3}}x}{2}\sqrt[3]{a}\right)\right)^2+\_C3\,\mathrm{Ai}\left(-\frac{2^{\frac{2}{3}}x}{2}\sqrt[3]{a}\right)\mathrm{Bi}\left(-\frac{2^{\frac{2}{3}}x}{2}\sqrt[3]{a}\right)\right\}$$

4.7 ODE No. 1455

$$\boxed{\frac{\mathrm{d}^3}{\mathrm{d}x^3}y(x)-x^2\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+(a+b-1)\,x\frac{\mathrm{d}}{\mathrm{d}x}y(x)-by(x)\,a=0}$$

Mathematica: cpu = 0.028004 (sec), leaf count = 127

$$\left\{\left\{y(x)\to \sqrt[3]{-\frac{1}{3}}c_2x\,{}_2F_2\left(\frac{1}{3}-\frac{a}{3},\frac{1}{3}-\frac{b}{3};\frac{2}{3},\frac{4}{3};\frac{x^3}{3}\right)+c_1\,{}_2F_2\left(-\frac{a}{3},-\frac{b}{3};\frac{1}{3},\frac{2}{3};\frac{x^3}{3}\right)+\left(-\frac{1}{3}\right)^{2/3}c_3x^2\,{}_2F_2\left(\frac{2}{3}\right.\right.\right.$$

Maple: cpu = 0.110 (sec), leaf count = 71

$$\left\{y(x)=\_C1\,{}_2\mathrm{F}_2(-\frac{a}{3},-\frac{b}{3};\,\frac{1}{3},\frac{2}{3};\,\frac{x^3}{3})+\_C2\,x\,{}_2\mathrm{F}_2(\frac{1}{3}-\frac{a}{3},\frac{1}{3}-\frac{b}{3};\,\frac{2}{3},\frac{4}{3};\,\frac{x^3}{3})+\_C3\,x^2\,{}_2\mathrm{F}_2(-\frac{a}{3}+\frac{2}{3},-\frac{b}{3}+\right.$$

4.8 ODE No. 1456

$$\boxed{\frac{\mathrm{d}^3}{\mathrm{d}x^3}y(x)+x^{2c-2}\frac{\mathrm{d}}{\mathrm{d}x}y(x)+(c-1)\,x^{2c-3}y(x)=0}$$

Mathematica: cpu = 0.034004 (sec), leaf count = 183

$$\left\{\left\{y(x)\to c_1\,{}_1F_2\left(\frac{1}{2}-\frac{1}{2c};1-\frac{1}{c},1-\frac{1}{2c};-\frac{x^{2c}}{4c^2}\right)+4^{-1/c}c_3c^{-2/c}\left(x^{2c}\right)^{\frac{1}{c}}\,{}_1F_2\left(\frac{1}{2}+\frac{1}{2c};1+\frac{1}{2c},1+\frac{1}{c};-\frac{x^{2c}}{4c^2}\right.\right.\right.$$

Maple: cpu = 0.047 (sec), leaf count = 74

$$\left\{y(x)=\_C1\,x\left(J_{\frac{1}{2c}}\left(\frac{x^c}{2\,c}\right)\right)^2+\_C2\,x\left(Y_{\frac{1}{2c}}\left(\frac{x^c}{2\,c}\right)\right)^2+\_C3\,xJ_{\frac{1}{2c}}\left(\frac{x^c}{2\,c}\right)Y_{\frac{1}{2c}}\left(\frac{x^c}{2\,c}\right)\right\}$$

4.9 ODE No. 1457

$$\boxed{\frac{\mathrm{d}^3}{\mathrm{d}x^3}y(x)-3\,(2\,\mathit{WeierstrassP}(x,g2,g3)+a)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)+by(x)=0}$$

Mathematica: cpu = 0.020003 (sec), leaf count = 30

$$\text{DSolve}\left[-3y'(x)(a+2\wp(x;\text{g2},\text{g3}))+by(x)+y^{(3)}(x)=0,y(x),x\right]$$

Maple: cpu = 0.203 (sec), leaf count = 37

$$\left\{y(x)=\mathit{DESol}\left(\left\{\frac{\mathrm{d}^3}{\mathrm{d}x^3}\_Y(x)+(-6\,\mathit{WeierstrassP}(x,g2,g3)-3\,a)\,\frac{\mathrm{d}}{\mathrm{d}x}\_Y(x)+b\_Y(x)\right\},\{\_Y(x)\}\right)\right\}$$

4.10 ODE No. 1458

$$\frac{\mathrm{d}^3}{\mathrm{d}x^3}y(x)+\left(-n^2+1\right)\mathit{WeierstrassP}(x,g2,g3)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+1/2\left(\left(-n^2+1\right)\mathit{WeierstrassPPrime}(x,g2,g3)+\right.$$

Mathematica: cpu = 0.018502 (sec), leaf count = 51

$$\text{DSolve}\left[\frac{1}{2}y(x)\left(\left(1-n^2\right)\wp'(x;\text{g2},\text{g3})-a\right)+\left(1-n^2\right)y'(x)\wp(x;\text{g2},\text{g3})+y^{(3)}(x)=0,y(x),x\right]$$

Maple: cpu = 0.218 (sec), leaf count = 59

$$\left\{y(x)=\mathit{DESol}\left(\left\{\frac{\mathrm{d}^3}{\mathrm{d}x^3}\_Y(x)+\left(-n^2\,\mathit{WeierstrassP}(x,g2,g3)+\mathit{WeierstrassP}(x,g2,g3)\right)\frac{\mathrm{d}}{\mathrm{d}x}\_Y(x)+\right.\right.\right.$$

4.11 ODE No. 1459

$$\frac{\mathrm{d}^3}{\mathrm{d}x^3}y(x)-\left(4\,n(n+1)\,\mathit{WeierstrassP}(x,g2,g3)+a\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)-2\,n(n+1)\,\mathit{WeierstrassPPrime}(x,g2,g3)$$

Mathematica: cpu = 0.018002 (sec), leaf count = 43

$$\text{DSolve}\left[-y'(x)(a+4n(n+1)\wp(x;\text{g2},\text{g3}))-2n(n+1)y(x)\wp'(x;\text{g2},\text{g3})+y^{(3)}(x)=0,y(x),x\right]$$

Maple: cpu = 0.297 (sec), leaf count = 41

$$\left\{y(x)=\left(\mathit{DESol}\left(\left\{\frac{\mathrm{d}^2}{\mathrm{d}x^2}\_Y(x)+\left(-n^2\,\mathit{WeierstrassP}(x,g2,g3)-n\,\mathit{WeierstrassP}(x,g2,g3)-\frac{a}{4}\right)\_Y(x\right.\right.\right.\right.$$

4.12 ODE No. 1460

$$\frac{\mathrm{d}^3}{\mathrm{d}x^3}y(x)+\left(A\,\mathit{WeierstrassP}(x,g2,g3)+a\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+B\,\mathit{WeierstrassPPrime}(x,g2,g3)\,y(x)=0$$

Mathematica: cpu = 0.012502 (sec), leaf count = 34

$$\text{DSolve}\left[y'(x)(a+A\wp(x;\text{g2},\text{g3}))+By(x)\wp'(x;\text{g2},\text{g3})+y^{(3)}(x)=0,y(x),x\right]$$

Maple: cpu = 0.219 (sec), leaf count = 39

$$\left\{y(x)=\mathit{DESol}\left(\left\{\frac{\mathrm{d}^3}{\mathrm{d}x^3}\_Y(x)+\left(A\,\mathit{WeierstrassP}(x,g2,g3)+a\right)\frac{\mathrm{d}}{\mathrm{d}x}\_Y(x)+B\,\mathit{WeierstrassPPrime}(x,g2\right.\right.\right.$$

4.13 ODE No. 1461

$$\frac{\mathrm{d}^3}{\mathrm{d}x^3}y(x)-\left(3\,k^2(JacobiSN(z,x))^2+a\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+\left(b+c(JacobiSN(z,x))^2-3\,k^2\,JacobiSN(z,x)\,JacobiC\right.$$

Mathematica: cpu = 0.029504 (sec), leaf count = 55

$$\text{DSolve}\left[-y'(x)\left(a+3k^2\text{sn}(z|x)^2\right)+y(x)\left(b+c\text{sn}(z|x)^2-3k^2\text{cn}(z|x)\text{dn}(z|x)\text{sn}(z|x)\right)+y^{(3)}(x)=0,y(x),\right.$$

Maple: cpu = 1.154 (sec), leaf count = 63

$$\left\{y(x)=DESol\left(\left\{\frac{\mathrm{d}^3}{\mathrm{d}x^3}\_Y(x)+\left(-3\,k^2(JacobiSN(z,x))^2-a\right)\frac{\mathrm{d}}{\mathrm{d}x}\_Y(x)+\left(b+c(JacobiSN(z,x))^2-3\right.\right.\right.$$

4.14 ODE No. 1462

$$\frac{\mathrm{d}^3}{\mathrm{d}x^3}y(x)-\left(6\,k^2(\sin(x))^2+a\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+by(x)=0$$

Mathematica: cpu = 0.022003 (sec), leaf count = 32

$$\text{DSolve}\left[-y'(x)\left(a+6k^2\sin^2(x)\right)+by(x)+y^{(3)}(x)=0,y(x),x\right]$$

Maple: cpu = 1.264 (sec), leaf count = 40

$$\left\{y(x)=DESol\left(\left\{\frac{\mathrm{d}^3}{\mathrm{d}x^3}\_Y(x)+\left(-6\,k^2(\sin(x))^2-a\right)\frac{\mathrm{d}}{\mathrm{d}x}\_Y(x)+b\_Y(x)\right\},\{\_Y(x)\}\right)\right\}$$

4.15 ODE No. 1463

$$\frac{\mathrm{d}^3}{\mathrm{d}x^3}y(x)+2\,f(x)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+\left(\frac{\mathrm{d}}{\mathrm{d}x}f(x)\right)y(x)=0$$

Mathematica: cpu = 0.072509 (sec), leaf count = 26

$$\text{DSolve}\left[y(x)f'(x)+2f(x)y'(x)+y^{(3)}(x)=0,y(x),x\right]$$

Maple: cpu = 0.063 (sec), leaf count = 24

$$\left\{y(x)=\left(DESol\left(\left\{\frac{\mathrm{d}^2}{\mathrm{d}x^2}\_Y(x)+\frac{f(x)\_Y(x)}{2}\right\},\{\_Y(x)\}\right)\right)^2\right\}$$

4.16 ODE No. 1464

$$\boxed{\frac{\mathrm{d}^3}{\mathrm{d}x^3}y(x) - 2\,\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) - 3\,\frac{\mathrm{d}}{\mathrm{d}x}y(x) + 10\,y(x) = 0}$$

Mathematica: cpu = 0.005501 (sec), leaf count = 34

$$\left\{\left\{y(x) \to c_3 e^{-2x} + c_1 e^{2x}\sin(x) + c_2 e^{2x}\cos(x)\right\}\right\}$$

Maple: cpu = 0.0 (sec), leaf count = 27

$$\left\{y(x) = \_C1\,\mathrm{e}^{-2\,x} + \_C2\,\mathrm{e}^{2\,x}\sin\left(x\right) + \_C3\,\mathrm{e}^{2\,x}\cos\left(x\right)\right\}$$

4.17 ODE No. 1465

$$\boxed{\frac{\mathrm{d}^3}{\mathrm{d}x^3}y(x) - 2\,\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) - a^2\frac{\mathrm{d}}{\mathrm{d}x}y(x) + 2\,a^2 y(x) - \sinh\left(x\right) = 0}$$

Mathematica: cpu = 0.081010 (sec), leaf count = 95

$$\left\{\left\{y(x) \to \frac{e^{-x}(3a^2e^{2x} - a^2 - 3e^{2x} - 12e^x\sinh(x) - 6e^x\cosh(x) + 1)}{6(a-2)(a+2)\left(a^2-1\right)} + c_1 e^{-ax} + c_3 e^{ax} + c_2 e^{2x}\right\}\right\}$$

Maple: cpu = 0.031 (sec), leaf count = 467

$$\left\{y(x) = -\frac{6\,\cosh\left(\left(a-1\right)x\right)\mathrm{e}^{ax} - 6\,\cosh\left(\left(a-1\right)x\right)\mathrm{e}^{-ax} - 6\,\sinh\left(\left(a+1\right)x\right)\mathrm{e}^{ax} - 6\,\sinh\left(\left(a+1\right)x\right)\mathrm{e}^{-a}\right.$$

4.18 ODE No. 1466

$$\boxed{\frac{\mathrm{d}^3}{\mathrm{d}x^3}y(x) - 3\,a\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) + 3\,a^2\frac{\mathrm{d}}{\mathrm{d}x}y(x) - a^3 y(x) - \mathrm{e}^{ax} = 0}$$

Mathematica: cpu = 0.018002 (sec), leaf count = 46

$$\left\{\left\{y(x) \to c_3 x^2 e^{ax} + c_2 x e^{ax} + c_1 e^{ax} + \frac{1}{6}x^3 e^{ax}\right\}\right\}$$

Maple: cpu = 0.031 (sec), leaf count = 36

$$\left\{y(x) = \frac{x^3\mathrm{e}^{ax}}{6} + \_C1\,\mathrm{e}^{ax} + \_C2\,\mathrm{e}^{ax}x + \_C3\,\mathrm{e}^{ax}x^2\right\}$$

4.19 ODE No. 1467

$$\boxed{\frac{\mathrm{d}^3}{\mathrm{d}x^3}y(x)+a2\,\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+a1\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)+a0\,y(x)=0}$$

Mathematica: cpu = 0.005001 (sec), leaf count = 84

$$\left\{\left\{y(x)\to c_1e^{x\text{Root}[\#1^3+\#1^2\text{a2}+\#1\text{a1}+\text{a0}\&,1]}+c_2e^{x\text{Root}[\#1^3+\#1^2\text{a2}+\#1\text{a1}+\text{a0}\&,2]}+c_3e^{x\text{Root}[\#1^3+\#1^2\text{a2}+\#1\text{a1}+\text{a0}\&,3]}\right.\right.$$

Maple: cpu = 0.015 (sec), leaf count = 644

$$\left\{y(x)=\_C1\,\mathrm{e}^{-\frac{x}{12}\left(i\left(36\,a1\,a2-108\,a0-8\,a2^3+12\sqrt{12\,a0\,a2^3-3\,a1^2a2^2-54\,a1\,a2\,a0+12\,a1^3+81\,a0^2}\right)^{\frac{2}{3}}\sqrt{3}-4\,i\sqrt{3}a2^2+12\,i\sqrt{3}a1+\left(3\right.\right.}\right.$$

4.20 ODE No. 1468

$$\boxed{\frac{\mathrm{d}^3}{\mathrm{d}x^3}y(x)-6\,x\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+2\left(4\,x^2+2\,a-1\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)-8\,axy(x)=0}$$

Mathematica: cpu = 0.087011 (sec), leaf count = 57

$$\left\{\left\{y(x)\to c_2H_{\frac{a}{2}}(x)\,{}_1F_1\left(-\frac{a}{4};\frac{1}{2};x^2\right)+c_1H_{\frac{a}{2}}(x)^2+c_3\,{}_1F_1\left(-\frac{a}{4};\frac{1}{2};x^2\right)^2\right\}\right\}$$

Maple: cpu = 0.062 (sec), leaf count = 64

$$\left\{y(x)=\_C1\left(M\left(\frac{1}{2}-\frac{a}{4},\frac{3}{2},x^2\right)\right)^2x^2+\_C2\left(U\left(\frac{1}{2}-\frac{a}{4},\frac{3}{2},x^2\right)\right)^2x^2+\_C3\,M\left(\frac{1}{2}-\frac{a}{4},\frac{3}{2},x^2\right)x^2U\right.$$

4.21 ODE No. 1469

$$\boxed{\frac{\mathrm{d}^3}{\mathrm{d}x^3}y(x)+3\,ax\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+3\,a^2x^2\frac{\mathrm{d}}{\mathrm{d}x}y(x)+a^3x^3y(x)=0}$$

Mathematica: cpu = 0.027003 (sec), leaf count = 72

$$\left\{\left\{y(x)\to c_1e^{-\frac{ax^2}{2}}+c_2e^{-\frac{ax^2}{2}-\sqrt{3}\sqrt{a}x}+c_3e^{\sqrt{3}\sqrt{a}x-\frac{ax^2}{2}}\right\}\right\}$$

Maple: cpu = 0.031 (sec), leaf count = 37

$$\left\{y(x)=\mathrm{e}^{-\frac{ax^2}{2}}\left(\_C1+\_C2\,\mathrm{e}^{\sqrt{3}\sqrt{a}x}+\_C3\,\mathrm{e}^{-\sqrt{3}\sqrt{a}x}\right)\right\}$$

4.22 ODE No. 1470

$$\boxed{\frac{\mathrm{d}^3}{\mathrm{d}x^3}y(x)-\left(\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)\right)\sin\left(x\right)-2\,\cos\left(x\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+y(x)\sin\left(x\right)-\ln\left(x\right)=0}$$

Mathematica: cpu = 75.667609 (sec), leaf count = 63

$$\left\{\left\{y(x)\to e^{-\cos(x)}\int_1^x\frac{1}{4}e^{\cos(K[1])}\left(4c_1K[1]-3K[1]^2+2K[1]^2\log(K[1])+4c_2\right)\,dK[1]+c_3e^{-\cos(x)}\right\}\right\}$$

Maple: cpu = 0.062 (sec), leaf count = 36

$$\left\{y(x)=\left(\_C3+\int\left(2\,x\_C1+\_C2+\frac{x^2\ln\left(x\right)}{2}-\frac{3\,x^2}{4}\right)\mathrm{e}^{\cos(x)}\,\mathrm{d}x\right)\mathrm{e}^{-\cos(x)}\right\}$$

4.23 ODE No. 1471

$$\boxed{\frac{\mathrm{d}^3}{\mathrm{d}x^3}y(x)+f(x)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+\frac{\mathrm{d}}{\mathrm{d}x}y(x)+f(x)\,y(x)=0}$$

Mathematica: cpu = 0.080010 (sec), leaf count = 27

$$\text{DSolve}\left[f(x)y''(x)+f(x)y(x)+y^{(3)}(x)+y'(x)=0,y(x),x\right]$$

Maple: cpu = 0.156 (sec), leaf count = 36

$$\left\{y(x)=\mathrm{e}^{ix}\left(\int\mathrm{e}^{-2\,ix}\left(\int\_C3\,\mathrm{e}^{\int-f(x)+i\,\mathrm{d}x}\,\mathrm{d}x+\_C2\right)\,\mathrm{d}x+\_C1\right)\right\}$$

4.24 ODE No. 1472

$$\boxed{\frac{\mathrm{d}^3}{\mathrm{d}x^3}y(x)+f(x)\left(x^2\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)-2\,x\frac{\mathrm{d}}{\mathrm{d}x}y(x)+2\,y(x)\right)=0}$$

Mathematica: cpu = 0.081010 (sec), leaf count = 34

$$\text{DSolve}\left[f(x)\left(x^2y''(x)-2xy'(x)+2y(x)\right)+y^{(3)}(x)=0,y(x),x\right]$$

Maple: cpu = 0.141 (sec), leaf count = 33

$$\left\{y(x)=\left(\int\_C1+\_C2\int\mathrm{e}^{-\int x^2f(x)+3\,x^{-1}\,\mathrm{d}x}\,\mathrm{d}x\,\mathrm{d}x+\_C3\right)x\right\}$$

4.25 ODE No. 1473

$$\frac{\mathrm{d}^3}{\mathrm{d}x^3}y(x)+f(x)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+g(x)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+\left(f(x)\,g(x)+\frac{\mathrm{d}}{\mathrm{d}x}g(x)\right)y(x)=0$$

Mathematica: cpu = 0.012002 (sec), leaf count = 38

$$\text{DSolve}\left[y(x)\left(f(x)g(x)+g'(x)\right)+f(x)y''(x)+g(x)y'(x)+y^{(3)}(x)=0,y(x),x\right]$$

Maple: cpu = 0.046 (sec), leaf count = 47

$$\left\{y(x)=DESol\left(\left\{\frac{\mathrm{d}^3}{\mathrm{d}x^3}\_Y(x)+f(x)\frac{\mathrm{d}^2}{\mathrm{d}x^2}\_Y(x)+g(x)\frac{\mathrm{d}}{\mathrm{d}x}\_Y(x)+\left(f(x)\,g(x)+\frac{\mathrm{d}}{\mathrm{d}x}g(x)\right)\_Y(x)\right\},\{\right.$$

4.26 ODE No. 1474

$$\frac{\mathrm{d}^3}{\mathrm{d}x^3}y(x)+3\,f(x)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+\left(\frac{\mathrm{d}}{\mathrm{d}x}f(x)+2\left(f(x)\right)^2+4\,g(x)\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+\left(4\,f(x)\,g(x)+2\frac{\mathrm{d}}{\mathrm{d}x}g(x)\right)y(x)=$$

Mathematica: cpu = 0.015002 (sec), leaf count = 55

$$\text{DSolve}\left[y'(x)\left(f'(x)+2f(x)^2+4g(x)\right)+y(x)\left(4f(x)g(x)+2g'(x)\right)+3f(x)y''(x)+y^{(3)}(x)=0,y(x),x\right]$$

Maple: cpu = 0.110 (sec), leaf count = 30

$$\left\{y(x)=\left(DESol\left(\left\{\frac{\mathrm{d}^2}{\mathrm{d}x^2}\_Y(x)+f(x)\frac{\mathrm{d}}{\mathrm{d}x}\_Y(x)+g(x)\_Y(x)\right\},\{\_Y(x)\}\right)\right)^2\right\}$$

4.27 ODE No. 1475

$$4\frac{\mathrm{d}^3}{\mathrm{d}x^3}y(x)-8\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)-11\frac{\mathrm{d}}{\mathrm{d}x}y(x)-3\,y(x)+18\,\mathrm{e}^x=0$$

Mathematica: cpu = 0.021503 (sec), leaf count = 38

$$\left\{\left\{y(x)\to c_1e^{-x/2}+c_2e^{-x/2}x+c_3e^{3x}+e^x\right\}\right\}$$

Maple: cpu = 0.015 (sec), leaf count = 26

$$\left\{y(x)=\mathrm{e}^x+\_C1\,\mathrm{e}^{3\,x}+\_C2\,\mathrm{e}^{-\frac{x}{2}}+\_C3\,\mathrm{e}^{-\frac{x}{2}}x\right\}$$

4.28 ODE No. 1476

$$27 \frac{\mathrm{d}^3}{\mathrm{d}x^3}y(x) - 36\,n^2\,\mathit{WeierstrassP}(x, g2, g3) \frac{\mathrm{d}}{\mathrm{d}x}y(x) - 2\,n(n+3)\,(4\,n-3)\,\mathit{WeierstrassPPrime}(x, g2, g3)$$

Mathematica: cpu = 0.128516 (sec), leaf count = 44

$$\text{DSolve}\left[-36n^2y'(x)\wp(x;\text{g2},\text{g3}) - 2(n+3)(4n-3)ny(x)\phi'(x) + 27y^{(3)}(x) = 0, y(x), x\right]$$

Maple: cpu = 0.234 (sec), leaf count = 62

$$\left\{y(x) = \mathit{DESol}\left(\left\{27 \frac{\mathrm{d}^3}{\mathrm{d}x^3}\_Y(x) - 36\,n^2\,\mathit{WeierstrassP}(x, g2, g3) \frac{\mathrm{d}}{\mathrm{d}x}\_Y(x) + \left(-8\ \mathit{WeierstrassPPrime}(x\right.\right.\right.$$

4.29 ODE No. 1477

$$x \frac{\mathrm{d}^3}{\mathrm{d}x^3}y(x) + 3 \frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) + xy(x) = 0$$

Mathematica: cpu = 0.170522 (sec), leaf count = 48

$$\left\{\left\{y(x) \to \frac{c_1 e^{-x}}{x} + \frac{c_2 e^{\sqrt[3]{-1}x}}{x} + \frac{c_3 e^{-(-1)^{2/3}x}}{x}\right\}\right\}$$

Maple: cpu = 0.031 (sec), leaf count = 41

$$\left\{y(x) = \frac{1}{x}\left(\_C1\ \mathrm{e}^{-x} + \_C2\ \mathrm{e}^{\frac{x}{2}} \sin\left(\frac{\sqrt{3}x}{2}\right) + \_C3\ \mathrm{e}^{\frac{x}{2}} \cos\left(\frac{\sqrt{3}x}{2}\right)\right)\right\}$$

4.30 ODE No. 1478

$$x \frac{\mathrm{d}^3}{\mathrm{d}x^3}y(x) + 3 \frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) - ax^2y(x) = 0$$

Mathematica: cpu = 0.032004 (sec), leaf count = 104

$$\left\{\left\{y(x) \to -\frac{2(-1)^{3/4}\sqrt{2}c_1\,{}_0F_2\left(;\frac{1}{2},\frac{3}{4};\frac{ax^4}{64}\right)}{\sqrt[4]{a}x} + c_2\,{}_0F_2\left(;\frac{3}{4},\frac{5}{4};\frac{ax^4}{64}\right) + \frac{\sqrt[4]{-1}\sqrt[4]{a}c_3x\,{}_0F_2\left(;\frac{5}{4},\frac{3}{2};\frac{ax^4}{64}\right)}{2\sqrt{2}}\right\}\right\}$$

Maple: cpu = 0.094 (sec), leaf count = 48

$$\left\{y(x) = \_C1\ {}_0\mathrm{F}_2(\ ;\frac{3}{4},\frac{5}{4};\frac{ax^4}{64}) + \frac{\_C2}{x}{}_0\mathrm{F}_2(\ ;\frac{1}{2},\frac{3}{4};\frac{ax^4}{64}) + \_C3\ x{}_0\mathrm{F}_2(\ ;\frac{5}{4},\frac{3}{2};\frac{ax^4}{64})\right\}$$

4.31 ODE No. 1479

$$\boxed{x\frac{\mathrm{d}^3}{\mathrm{d}x^3}y(x)+(a+b)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)-x\frac{\mathrm{d}}{\mathrm{d}x}y(x)-ay(x)=0}$$

Mathematica: cpu = 0.142518 (sec), leaf count = 153

$$\left\{\left\{y(x)\to \frac{1}{2}ic_2x\,{}_1F_2\left(\frac{a}{2}+\frac{1}{2};\frac{3}{2},\frac{a}{2}+\frac{b}{2}+\frac{1}{2};\frac{x^2}{4}\right)+c_1\,{}_1F_2\left(\frac{a}{2};\frac{1}{2},\frac{a}{2}+\frac{b}{2};\frac{x^2}{4}\right)+c_3\left(\frac{i}{2}\right)^{-a-b+2}x^{-a-b+2}\,{}_1F_2\right.\right.$$

Maple: cpu = 0.187 (sec), leaf count = 92

$$\left\{y(x)=\_C1\,{}_1\mathrm{F}_2(\frac{a}{2};\frac{1}{2},\frac{a}{2}+\frac{b}{2};\frac{x^2}{4})+\_C2\,x{}_1\mathrm{F}_2(\frac{1}{2}+\frac{a}{2};\frac{3}{2},\frac{a}{2}+\frac{b}{2}+\frac{1}{2};\frac{x^2}{4})+\_C3\,x^{-a-b+2}{}_1\mathrm{F}_2(1-\frac{b}{2};2\right.$$

4.32 ODE No. 1480

$$\boxed{x\frac{\mathrm{d}^3}{\mathrm{d}x^3}y(x)-(x+2\,v)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)-(x-2\,v-1)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+(x-1)\,y(x)=0}$$

Mathematica: cpu = 0.210027 (sec), leaf count = 93

$$\left\{\left\{y(x)\to \frac{c_3e^xx^{2v+2}\Gamma\left(v+\frac{3}{2}\right)\,{}_1\tilde{F}_1\left(v+\frac{3}{2};2v+3;-2x\right)}{\Gamma\left(\frac{1}{2}-v\right)}+c_2{2}^{-2v-2}e^xG^{2,1}_{2,3}\left(2x\middle|\begin{array}{c}1,v+\frac{3}{2}\\1,2(v+1),0\end{array}\right)+c_1e^x\right\}\right\}$$

Maple: cpu = 0.219 (sec), leaf count = 35

$$\left\{y(x)=\_C1\,\mathrm{e}^x+\_C2\,x^{v+1}I_{-v-1}(x)+\_C3\,x^{v+1}K_{v+1}(x)\right\}$$

4.33 ODE No. 1481

$$\boxed{x\frac{\mathrm{d}^3}{\mathrm{d}x^3}y(x)+\left(x^2-3\right)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+4\,x\frac{\mathrm{d}}{\mathrm{d}x}y(x)+2\,y(x)-f(x)=0}$$

Mathematica: cpu = 0.985125 (sec), leaf count = 431

$$\left\{\left\{y(x)\to -\frac{1}{240}e^{-\frac{x^2}{2}}\left(-240x^5\left(\int_1^x\left(\frac{1}{15}\sqrt{\frac{\pi}{2}}K[1]\mathrm{erfi}\left(\frac{K[1]}{\sqrt{2}}\right)f(K[1])-\frac{1}{240}\left(15\mathrm{Ei}\left(\frac{K[1]^2}{2}\right)+16e^{\frac{K[1]^2}{2}}\right.\right.\right.\right.\right.\right.$$

Maple: cpu = 0.031 (sec), leaf count = 44

$$\left\{y(x)=\left(\_C3+\int\frac{2\,x\_C1+\_C2-\iint-f(x)\,\mathrm{d}x\,\mathrm{d}x}{x^6}\mathrm{e}^{\frac{x^2}{2}}\,\mathrm{d}x\right)\mathrm{e}^{-\frac{x^2}{2}}x^5\right\}$$

4.34 ODE No. 1482

$$\boxed{2\,x\frac{\mathrm{d}^3}{\mathrm{d}x^3}y(x)+3\,\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+axy(x)-b=0}$$

Mathematica: cpu = 0 (sec), leaf count = 0

Hanged

Maple: cpu = 0.219 (sec), leaf count = 2292

$$\left\{y(x)=\int 350350\,bx\left(8\,x^3{}_0\mathrm{F}_2(\ ;7/6,4/3;\ -\frac{ax^3}{54})_0\mathrm{F}_2(\ ;\frac{11}{6},\frac{13}{6};\ -\frac{ax^3}{54})a-5\,x^3{}_0\mathrm{F}_2(\ ;5/6,7/6;\ -\frac{ax^3}{54})_0\mathrm{F}_2\right.\right.$$

4.35 ODE No. 1483

$$\boxed{2\,x\frac{\mathrm{d}^3}{\mathrm{d}x^3}y(x)-4\,(x+\nu-1)\,\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+(2\,x+6\,\nu-5)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)+(1-2\,\nu)\,y(x)=0}$$

Mathematica: cpu = 0.148519 (sec), leaf count = 112

$$\left\{\left\{y(x)\to \frac{c_3e^x x\Gamma\left(\frac{5}{2}-3\nu\right)\left(\frac{2\,{}_1\tilde{F}_1\left(\frac{3}{2}-3\nu;1-2\nu;-x\right)}{3(2\nu-1)x}+\frac{2}{3x\Gamma(2-2\nu)}\right)}{\Gamma\left(\frac{3}{2}-\nu\right)}+c_2e^xG^{2,1}_{2,3}\left(x\left|\begin{array}{c}1,3\nu-\frac{1}{2}\\1,2\nu,0\end{array}\right.\right)+c_1e^x\right\}\right\}$$

Maple: cpu = 0.218 (sec), leaf count = 37

$$\left\{y(x)=\_C1\,\mathrm{e}^x+\_C2\,\mathrm{e}^{\frac{x}{2}}x^\nu I_\nu\left(\frac{x}{2}\right)+\_C3\,\mathrm{e}^{\frac{x}{2}}x^\nu K_\nu\left(\frac{x}{2}\right)\right\}$$

4.36 ODE No. 1484

$$\boxed{2\,x\frac{\mathrm{d}^3}{\mathrm{d}x^3}y(x)+3\,(2\,ax+k)\,\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+6\,(ak+bx)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)+(3\,bk+2\,cx)\,y(x)=0}$$

Mathematica: cpu = 63.307539 (sec), leaf count = 80

$$\{\{y(x)\to \text{DifferentialRoot}(\{y,x\},\{(2xc+3bk)y(x)+(6xb+6ak)y'(x)+(6xa+3k)y''(x)+2xy^{(3)}(x)=$$

Maple: cpu = 0.296 (sec), leaf count = 62

$$\left\{y(x)=DESol\left(\left\{(3\,bk+2\,cx)\_Y(x)+(6\,ak+6\,bx)\,\frac{\mathrm{d}}{\mathrm{d}x}\_Y(x)+(6\,ax+3\,k)\,\frac{\mathrm{d}^2}{\mathrm{d}x^2}\_Y(x)+2\,x\frac{\mathrm{d}^3}{\mathrm{d}x^3}\_Y\right.\right.$$

4.37 ODE No. 1485

$$\boxed{(x-2)\,x\frac{\mathrm{d}^3}{\mathrm{d}x^3}y(x)-(x-2)\,x\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)-2\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)+2\,y(x)=0}$$

Mathematica: cpu = 0.119015 (sec), leaf count = 66

$$\left\{\left\{y(x)\to -\frac{c_3(4e^x\mathrm{Ei}(2-x)-e^2(x^2\log(2-x)-x^2\log(x)+2x+2))}{4e^2}+c_1x^2+c_2e^x\right\}\right\}$$

Maple: cpu = 0.297 (sec), leaf count = 47

$$\left\{y(x)=\_C1\,x^2+\_C2\,\mathrm{e}^x+\_C3\left(-\frac{x^2\ln(x)}{4}+\frac{x^2\ln(x-2)}{4}+Ei(1,x-2)\,\mathrm{e}^{x-2}+\frac{x}{2}+\frac{1}{2}\right)\right\}$$

4.38 ODE No. 1486

$$\boxed{(2\,x-1)\,\frac{\mathrm{d}^3}{\mathrm{d}x^3}y(x)-8\,x\frac{\mathrm{d}}{\mathrm{d}x}y(x)+8\,y(x)=0}$$

Mathematica: cpu = 0.168021 (sec), leaf count = 65

$$\left\{\left\{y(x)\to \frac{1}{4}c_3x\left(\frac{e^{2x-2}\mathrm{Ei}(2-4x)}{x}-\frac{2\mathrm{Ei}(1-2x)}{e}-\frac{e^{-2x}}{x}\right)+c_1x-c_2e^{2x}\right\}\right\}$$

Maple: cpu = 0.187 (sec), leaf count = 50

$$\left\{y(x)=x\_C1+\_C2\,\mathrm{e}^{2\,x}+\_C3\left(-\frac{x\mathrm{e}^{-1}Ei(1,2\,x-1)}{2}+\frac{Ei(1,-2+4\,x)\,\mathrm{e}^{2\,x-2}}{4}+\frac{\mathrm{e}^{-2\,x}}{4}\right)\right\}$$

4.39 ODE No. 1487

$$\boxed{(2\,x-1)\,\frac{\mathrm{d}^3}{\mathrm{d}x^3}y(x)+(x+4)\,\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+2\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)=0}$$

Mathematica: cpu = 114.051983 (sec), leaf count = 86

$$\left\{\left\{y(x)\to \int_1^x\left(c_2e^{-\frac{K[1]}{2}}L_{-\frac{1}{4}}^{\frac{5}{4}}\left(\frac{K[1]}{2}-\frac{1}{4}\right)+\frac{c_1e^{-\frac{K[1]}{2}}\left(\frac{1}{4\left(\frac{K[1]}{2}-\frac{1}{4}\right)}+1\right)}{\sqrt[4]{\frac{K[1]}{2}-\frac{1}{4}}}\right)dK[1]+c_3\right\}\right\}$$

Maple: cpu = 0.078 (sec), leaf count = 38

$$\left\{y(x)=1\left(\_C3+\int(2\,x\_C1+\_C2)\mathrm{e}^{\frac{x}{2}}(2\,x-1)^{-\frac{3}{4}}\,\mathrm{d}x\right)\mathrm{e}^{-\frac{x}{2}}\frac{1}{\sqrt[4]{2\,x-1}}\right\}$$

4.40 ODE No. 1488

$$\boxed{x^2 \frac{\mathrm{d}^3}{\mathrm{d}x^3} y(x) - 6 \frac{\mathrm{d}}{\mathrm{d}x} y(x) + a x^2 y(x) = 0}$$

Mathematica: cpu = 0.546069 (sec), leaf count = 102

$$\left\{\left\{y(x) \to \frac{c_1 e^{-\sqrt[3]{a} x} \left(\sqrt[3]{a} x + 2\right)}{x} + \frac{c_2 e^{\sqrt[3]{-1} \sqrt[3]{a} x} \left(\sqrt[3]{a} x + 2 (-1)^{2/3}\right)}{x} + \frac{c_3 e^{-(-1)^{2/3} \sqrt[3]{a} x} \left(\sqrt[3]{a} x - 2 \sqrt[3]{-1}\right)}{x}\right\}\right\}$$

Maple: cpu = 0.390 (sec), leaf count = 151

$$\left\{y(x) = \frac{\_C1}{x}\left(a^3 x + 2\left(-a^4\right)^{2/3}\right) \mathrm{e}^{\frac{x}{a} \sqrt[3]{-a^4}} + \frac{\_C2}{x}\left(\left(-a^4\right)^{\frac{2}{3}} \sqrt{3} - i a^3 x + i\left(-a^4\right)^{\frac{2}{3}}\right) \mathrm{e}^{\frac{\frac{i}{2}\left(-\sqrt{3}+i\right) x}{a} \sqrt[3]{-a^4}} + \frac{\_C3}{x}\right.$$

4.41 ODE No. 1489

$$\boxed{x^2 \frac{\mathrm{d}^3}{\mathrm{d}x^3} y(x) + (1 + x) \frac{\mathrm{d}^2}{\mathrm{d}x^2} y(x) - y(x) = 0}$$

Mathematica: cpu = 0.799102 (sec), leaf count = 54

$$\{\{y(x) \to \text{DifferentialRoot}\{\{y, x\}, \{y^{(3)}(x) x^2 - y(x) + (x+1) y''(x) = 0, y(1) = c_1, y'(1) = c_2, y''(1) = c_3\}\}\}$$

Maple: cpu = 0.218 (sec), leaf count = 36

$$\left\{y(x) = DESol\left(\left\{-\_Y(x) + (1+x) \frac{\mathrm{d}^2}{\mathrm{d}x^2} \_Y(x) + x^2 \frac{\mathrm{d}^3}{\mathrm{d}x^3} \_Y(x)\right\}, \{\_Y(x)\}\right)\right\}$$

4.42 ODE No. 1490

$$\boxed{x^2 \frac{\mathrm{d}^3}{\mathrm{d}x^3} y(x) - x \frac{\mathrm{d}^2}{\mathrm{d}x^2} y(x) + \left(x^2 + 1\right) \frac{\mathrm{d}}{\mathrm{d}x} y(x) = 0}$$

Mathematica: cpu = 0.018502 (sec), leaf count = 33

$$\left\{\left\{y(x) \to \frac{1}{2} c_1 x^2 \, {}_0\tilde{F}_1\left(;2;-\frac{x^2}{4}\right) + c_2 x Y_1(x) + c_3\right\}\right\}$$

Maple: cpu = 0.063 (sec), leaf count = 18

$$\{y(x) = \_C1 + \_C2 \, x J_1(x) + \_C3 \, x Y_1(x)\}$$

4.43 ODE No. 1491

$$x^2 \frac{\mathrm{d}^3}{\mathrm{d}x^3}y(x) + 3\,x \frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) + \left(4\,a^2 x^{2\,a} + 1 - 4\,\nu^2 a^2\right) \frac{\mathrm{d}}{\mathrm{d}x}y(x) = 4\,a^3 x^{2\,a-1} y(x) = 0$$

Mathematica: cpu = 0.046006 (sec), leaf count = 102

$$\left\{\left\{y(x) \to c_2 \left(x^{2a}\right)^{-\nu}\, {}_1F_2\left(-\nu - \frac{1}{2}; 1-2\nu, 1-\nu; -x^{2a}\right) + c_3 \left(x^{2a}\right)^{\nu}\, {}_1F_2\left(\nu - \frac{1}{2}; \nu+1, 2\nu+1; -x^{2a}\right) + c\right.\right.$$

Maple: cpu = 0.063 (sec), leaf count = 88

$$\left\{y(x) = \_C1\ {}_1\mathrm{F}_2(-\frac{1}{2};\ \nu+1, -\nu+1;\ -x^{2\,a}) + \_C2\ x^{-2\,a\nu}\, {}_1\mathrm{F}_2(-\frac{1}{2} - \nu;\ 1-2\,\nu, -\nu+1;\ -x^{2\,a}) + \_C3\ x\right.$$

4.44 ODE No. 1492

$$x^2 \frac{\mathrm{d}^3}{\mathrm{d}x^3}y(x) - 3\,(x-m)\,x \frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) + \left(2\,x^2 + 4\,(n-m)\,x + m(2\,m-1)\right) \frac{\mathrm{d}}{\mathrm{d}x}y(x) - 2\,n(2\,x - 2\,m + 1)\,y(x$$

Mathematica: cpu = 0.403551 (sec), leaf count = 43

$$\left\{\left\{y(x) \to c_2 U(-n, m, x) L_n^{m-1}(x) + c_1 U(-n, m, x)^2 + c_3 L_n^{m-1}(x)^2\right\}\right\}$$

Maple: cpu = 0.094 (sec), leaf count = 39

$$\left\{y(x) = \_C1\ \left(M(-n,\ m,\ x)\right)^2 + \_C2\ \left(U(-n,\ m,\ x)\right)^2 + \_C3\ M(-n,\ m,\ x) U(-n,\ m,\ x)\right\}$$

4.45 ODE No. 1493

$$x^2 \frac{\mathrm{d}^3}{\mathrm{d}x^3}y(x) + 4\,x \frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) + \left(x^2 + 2\right) \frac{\mathrm{d}}{\mathrm{d}x}y(x) + 3\,x y(x) - f(x) = 0$$

Mathematica: cpu = 7.185412 (sec), leaf count = 2582

$$\left\{\left\{y(x) \to J_0(x) c_1 + 2 Y_0(x) c_2 + \frac{2 c_3\, {}_1F_2\left(1; \frac{1}{2}, \frac{1}{2}; -\frac{x^2}{4}\right)}{x} + \frac{x J_0(x) \int_1^x \left(\frac{-16 J_1(K[1]) Y_0(K[1])^2 f(K[1])\, {}_1F_2\left(3; \frac{5}{2}, \frac{5}{2}; -\frac{1}{4}K\right.\right.\right.$$

Maple: cpu = 0.265 (sec), leaf count = 1849

$$\left\{y(x) = \frac{1}{x}\left(\int 9 \frac{}{-4\ {}_1\mathrm{F}_2(3;\ 5/2, 5/2;\ -1/4\,x^2) J_1\left(x\right) G_{1,3}^{3,1}\left(1/4\,x^2 \middle| \begin{matrix} -1/2 \\ 0, 0, -1/2 \end{matrix}\right) x^5 - 9\ {}_1\mathrm{F}_2(2;\ 3/2, 3/2;\ -1/4\,x^{2}\right.\right.\right.$$

4.46 ODE No. 1494

$$\boxed{x^2 \frac{\mathrm{d}^3}{\mathrm{d}x^3} y(x) + 5\, x \frac{\mathrm{d}^2}{\mathrm{d}x^2} y(x) + 4 \frac{\mathrm{d}}{\mathrm{d}x} y(x) - \ln(x) = 0}$$

Mathematica: cpu = 0.027003 (sec), leaf count = 43

$$\left\{\left\{y(x) \to -\frac{c_1}{x} - \frac{2c_2}{x} - \frac{2c_2 \log(x)}{x} + c_3 - \frac{x}{2} + \frac{1}{4} x \log(x)\right\}\right\}$$

Maple: cpu = 0.016 (sec), leaf count = 25

$$\left\{y(x) = \_C1 + \frac{\_C2 \ln(x)}{x} + \frac{\_C3}{x} + \frac{x(\ln(x) - 2)}{4}\right\}$$

4.47 ODE No. 1495

$$\boxed{x^2 \frac{\mathrm{d}^3}{\mathrm{d}x^3} y(x) + 6\, x \frac{\mathrm{d}^2}{\mathrm{d}x^2} y(x) + 6 \frac{\mathrm{d}}{\mathrm{d}x} y(x) = 0}$$

Mathematica: cpu = 0.018002 (sec), leaf count = 24

$$\left\{\left\{y(x) \to -\frac{c_2}{2x^2} - \frac{c_1}{x} + c_3\right\}\right\}$$

Maple: cpu = 0.015 (sec), leaf count = 16

$$\left\{y(x) = \_C1 + \frac{\_C2}{x^2} + \frac{\_C3}{x}\right\}$$

4.48 ODE No. 1496

$$\boxed{x^2 \frac{\mathrm{d}^3}{\mathrm{d}x^3} y(x) + 6\, x \frac{\mathrm{d}^2}{\mathrm{d}x^2} y(x) + 6 \frac{\mathrm{d}}{\mathrm{d}x} y(x) + a x^2 y(x) = 0}$$

Mathematica: cpu = 0.273535 (sec), leaf count = 63

$$\left\{\left\{y(x) \to \frac{c_1 e^{-\sqrt[3]{a} x}}{x^2} + \frac{c_2 e^{\sqrt[3]{-1} \sqrt[3]{a} x}}{x^2} + \frac{c_3 e^{-(-1)^{2/3} \sqrt[3]{a} x}}{x^2}\right\}\right\}$$

Maple: cpu = 0.031 (sec), leaf count = 67

$$\left\{y(x) = \frac{1}{x^2}\left(\_C1\, \mathrm{e}^{\left(-\frac{1}{2}\sqrt[3]{-a} + \frac{i}{2}\sqrt{3}\sqrt[3]{-a}\right)x} + \_C2\, \mathrm{e}^{\left(-\frac{1}{2}\sqrt[3]{-a} - \frac{i}{2}\sqrt{3}\sqrt[3]{-a}\right)x} + \_C3\, \mathrm{e}^{\sqrt[3]{-a}x}\right)\right\}$$

4.49 ODE No. 1497

$$\boxed{x^2 \frac{\mathrm{d}^3}{\mathrm{d}x^3} y(x) - 3\,(p+q)\,x \frac{\mathrm{d}^2}{\mathrm{d}x^2} y(x) + 3\,p(3\,q+1)\,\frac{\mathrm{d}}{\mathrm{d}x} y(x) - x^2 y(x) = 0}$$

Mathematica: cpu = 0.499063 (sec), leaf count = 135

$$\left\{\left\{y(x) \to c_1\, {}_0F_2\left(;\frac{2}{3}-p,\frac{1}{3}-q;\frac{x^3}{27}\right) + c_2(-1)^{\frac{1}{3}(3p+1)} 3^{-3p-1} x^{3p+1}\, {}_0F_2\left(;p+\frac{4}{3},p-q+\frac{2}{3};\frac{x^3}{27}\right) + c_3(-1)^{\frac{1}{3}}\right.\right.$$

Maple: cpu = 0.203 (sec), leaf count = 77

$$\left\{y(x) = \_C1\ {}_0\mathrm{F}_2(\ ;-q+\frac{1}{3},-p+\frac{2}{3};\frac{x^3}{27}) + \_C2\ x^{1+3p}\, {}_0\mathrm{F}_2(\ ;p+\frac{4}{3},-q+\frac{2}{3}+p;\frac{x^3}{27}) + \_C3\ x^{3q+2}\, {}_0\mathrm{F}_2(\right.$$

4.50 ODE No. 1498

$$\boxed{x^2 \frac{\mathrm{d}^3}{\mathrm{d}x^3} y(x) - 2\,(n+1)\,x \frac{\mathrm{d}^2}{\mathrm{d}x^2} y(x) + \left(a x^2 + 6\,n\right) \frac{\mathrm{d}}{\mathrm{d}x} y(x) - 2\,a x y(x) = 0}$$

Mathematica: cpu = 8.482077 (sec), leaf count = 584

$$\left\{\left\{y(x) \to -\frac{\pi c_3 2^{-n-\frac{3}{2}} x \left(\sqrt{a}x\right)^{-n-\frac{1}{2}} \left(-a^{3/2} 2^{2n} x^3 \sec(\pi n) \Gamma\left(\frac{3}{2}-n\right) \Gamma\left(n+\frac{3}{2}\right) J_{\frac{1}{2}(2n+1)}\left(\sqrt{a}x\right)\ {}_1\tilde{F}_2\left(\frac{3}{2}-n;\frac{1}{2}\right.\right.\right.\right.$$

Maple: cpu = 0.234 (sec), leaf count = 53

$$\left\{y(x) = \_C1\ x^{n+\frac{1}{2}} J_{-n-\frac{1}{2}}\left(\sqrt{a}x\right) + \_C2\ x^{n+\frac{1}{2}} Y_{-n-\frac{1}{2}}\left(\sqrt{a}x\right) + \_C3\ \left(a x^2 + 4\,n - 2\right)\right\}$$

4.51 ODE No. 1499

$$\boxed{x^2 \frac{\mathrm{d}^3}{\mathrm{d}x^3} y(x) - \left(x^2 - 2\,x\right) \frac{\mathrm{d}^2}{\mathrm{d}x^2} y(x) - \left(x^2 + \nu^2 - 1/4\right) \frac{\mathrm{d}}{\mathrm{d}x} y(x) + \left(x^2 - 2\,x + \nu^2 - 1/4\right) y(x) = 0}$$

Mathematica: cpu = 0.232530 (sec), leaf count = 97

$$\left\{\left\{y(x) \to \frac{c_3 e^x x^{\nu+\frac{1}{2}} \Gamma\left(\nu+\frac{1}{2}\right)\ {}_1\tilde{F}_1\left(\nu+\frac{1}{2};2\nu+1;-2x\right)}{\Gamma\left(\frac{3}{2}-\nu\right)} + c_2 2^{-\nu-\frac{1}{2}} e^x G^{2,1}_{2,3}\left(2x \middle| \begin{array}{c} 1,0 \\ \frac{1}{2}-\nu,\nu+\frac{1}{2},0 \end{array}\right) + c_1 e^x\right\}\right.$$

Maple: cpu = 0.218 (sec), leaf count = 25

$$\left\{y(x) = \_C1\ \mathrm{e}^x + \_C2\ \sqrt{x} I_\nu(x) + \_C3\ \sqrt{x} K_\nu(x)\right\}$$

4.52 ODE No. 1500

$$x^2 \frac{\mathrm{d}^3}{\mathrm{d}x^3}y(x) - (x+\nu)\, x \frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) + \nu\,(2\,x+1)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x) - \nu\,(1+x)\,y(x) = 0$$

Mathematica: cpu = 47.362014 (sec), leaf count = 71

$$\left\{\left\{y(x) \to \text{DifferentialRoot}\left(\{y,x\}, \left\{y^{(3)}(x)x^2 - (x+v)y''(x)x - (x+1)\nu y(x) + (2x\nu+\nu)y'(x) = 0, y(1)\right.\right.\right.$$

Maple: cpu = 0.172 (sec), leaf count = 55

$$\left\{y(x) = \_C1\, \mathrm{e}^{x} + \_C2\, x^{\frac{\nu}{2}+\frac{1}{2}} J_{-\nu-1}\left(2\sqrt{\nu}\sqrt{x}\right) + \_C3\, x^{\frac{\nu}{2}+\frac{1}{2}} Y_{-\nu-1}\left(2\sqrt{\nu}\sqrt{x}\right)\right\}$$

4.53 ODE No. 1501

$$x^2 \frac{\mathrm{d}^3}{\mathrm{d}x^3}y(x) - 2\left(x^2-x\right)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) + \left(x^2-2\,x+1/4-\nu^2\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x) + \left(\nu^2-1/4\right)y(x) = 0$$

Mathematica: cpu = 0.187024 (sec), leaf count = 86

$$\left\{\left\{y(x) \to \frac{c_3 e^x x^{\nu+\frac{1}{2}}\Gamma\left(\nu+\frac{1}{2}\right)\,{}_1\tilde{F}_1\left(\nu+\frac{1}{2};2\nu+1;-x\right)}{\Gamma\left(\frac{3}{2}-\nu\right)} + c_2 e^x G^{2,1}_{2,3}\left(x\,\middle|\,\begin{matrix}1,0\\ \frac{1}{2}-\nu,\nu+\frac{1}{2},0\end{matrix}\right) + c_1 e^x\right\}\right\}$$

Maple: cpu = 0.203 (sec), leaf count = 37

$$\left\{y(x) = \_C1\, \mathrm{e}^{x} + \_C2\, \mathrm{e}^{\frac{x}{2}}\sqrt{x} I_{\nu}\left(\frac{x}{2}\right) + \_C3\, \mathrm{e}^{\frac{x}{2}}\sqrt{x} K_{\nu}\left(\frac{x}{2}\right)\right\}$$

4.54 ODE No. 1502

$$x^2 \frac{\mathrm{d}^3}{\mathrm{d}x^3}y(x) - \left(x^4-6\,x\right)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) - \left(2\,x^3-6\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x) + 2\,x^2 y(x) = 0$$

Mathematica: cpu = 0.055007 (sec), leaf count = 98

$$\left\{\left\{y(x) \to \frac{c_2\Gamma\left(\frac{1}{3}\right)\,{}_2F_2\left(-\frac{2}{3},\frac{1}{3};\frac{2}{3},\frac{4}{3};\frac{x^3}{3}\right)}{3x\Gamma\left(\frac{4}{3}\right)} + \frac{\sqrt[3]{-\frac{1}{3}}c_3\Gamma\left(\frac{2}{3}\right)\,{}_2F_2\left(-\frac{1}{3},\frac{2}{3};\frac{4}{3},\frac{5}{3};\frac{x^3}{3}\right)}{3\Gamma\left(\frac{5}{3}\right)} + \frac{c_1}{x^2}\right\}\right\}$$

Maple: cpu = 0.328 (sec), leaf count = 109

$$\left\{y(x) = \frac{\_C1}{x^2} + \frac{\_C2}{x^2}\int \mathrm{e}^{\frac{x^3}{6}}\sqrt{x}\left(I_{\frac{1}{6}}\left(-\frac{x^3}{6}\right)x^3 + I_{-\frac{5}{6}}\left(-\frac{x^3}{6}\right)x^3 - 2\,I_{1/6}\left(-1/6\,x^3\right)\right)\,\mathrm{d}x + \frac{\_C3}{x^2}\int \mathrm{e}^{\frac{x^3}{6}}\sqrt{x}\right.$$

4.55 ODE No. 1503

$$\boxed{\left(x^2+1\right)\frac{\mathrm{d}^3}{\mathrm{d}x^3}y(x)+8\,x\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+10\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)-3+x^{-2}-2\,\ln\left(x\right)=0}$$

Mathematica: cpu = 0.106013 (sec), leaf count = 62

$$\left\{\left\{y(x)\to c_3-\frac{100(3c_2-1)\,x^3+900c_2x+225c_1+36x^5-60(3x^4+10x^2+15)\,x\log(x)}{900\left(x^2+1\right)^2}\right\}\right\}$$

Maple: cpu = 0.031 (sec), leaf count = 86

$$\left\{y(x)=\frac{x^2(x^2+2)\_C1}{\left(x^2+1\right)^2}+\frac{x(x^2+3)\_C2}{\left(x^2+1\right)^2}+\frac{\_C3}{\left(x^2+1\right)^2}+\frac{x(45\,x^4\ln\left(x\right)-9\,x^4+150\,x^2\ln\left(x\right)-50\,x^2+\right.$$

4.56 ODE No. 1504

$$\boxed{\left(x^2+2\right)\frac{\mathrm{d}^3}{\mathrm{d}x^3}y(x)-2\,x\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+\left(x^2+2\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)-2\,xy(x)=0}$$

Mathematica: cpu = 0.108014 (sec), leaf count = 43

$$\left\{\left\{y(x)\to\frac{c_1x^2}{2}+\frac{1}{2}ic_2e^{-ix}-\frac{1}{4}c_3e^{ix}\right\}\right\}$$

Maple: cpu = 0.171 (sec), leaf count = 18

$$\left\{y(x)=\_C1\,x^2+\_C2\,\cos\left(x\right)+\_C3\,\sin\left(x\right)\right\}$$

4.57 ODE No. 1505

$$\boxed{2\,x(x-1)\frac{\mathrm{d}^3}{\mathrm{d}x^3}y(x)+3\left(2\,x-1\right)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+\left(2\,ax+b\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+ay(x)=0}$$

Mathematica: cpu = 62.084884 (sec), leaf count = 69

$$\left\{\left\{y(x)\to\text{DifferentialRoot}\left(\{y,x\},\left\{ay(x)+(2xa+b)y'(x)+(6x-3)y''(x)+2(x-1)xy^{(3)}(x)=0,y(2)\right.\right.\right.$$

Maple: cpu = 0.125 (sec), leaf count = 79

$$\left\{y(x)=\_C1\left(MathieuC\left(-\frac{a}{2}-\frac{b}{2}+1,\frac{a}{4},\arccos\left(\sqrt{x}\right)\right)\right)^2+\_C2\left(MathieuS\left(-\frac{a}{2}-\frac{b}{2}+1,\frac{a}{4},\arccos\right.\right.\right.$$

4.58 ODE No. 1506

$$\boxed{4\,x^2\frac{\mathrm{d}^3}{\mathrm{d}x^3}y(x)+\left(x^2+14\,x-1\right)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+4\,(1+x)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+2\,y(x)=0}$$

Mathematica: cpu = 30.884422 (sec), leaf count = 208

$$\left\{\left\{y(x)\to c_2\left(-\sqrt{e\pi}\operatorname{erfi}\left(\frac{x-1}{2\sqrt{x}}\right)+3\sqrt{\frac{\pi}{e}}\operatorname{erfi}\left(\frac{x+1}{2\sqrt{x}}\right)-3\sqrt{\frac{\pi}{e}}\operatorname{erfi}(1)-\frac{4e^{\frac{x^2+1}{4x}}}{\sqrt{x}}+4\sqrt{e}\right)e^{\frac{1}{4}\left(-x-\frac{1}{x}+2\log(x)\right)}\right.\right.$$

Maple: cpu = 0.031 (sec), leaf count = 43

$$\left\{y(x)=\left(\_C3+\int\frac{2\,x\_C1+\_C2}{4}\mathrm{e}^{\frac{x}{4}}\mathrm{e}^{\frac{1}{4\,x}}x^{-\frac{5}{2}}\,\mathrm{d}x\right)\mathrm{e}^{-\frac{x}{4}}\sqrt{x}\mathrm{e}^{-\frac{1}{4\,x}}\right\}$$

4.59 ODE No. 1507

$$\boxed{(ax+b)\,x\frac{\mathrm{d}^3}{\mathrm{d}x^3}y(x)+(\alpha\,x+\beta)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+x\frac{\mathrm{d}}{\mathrm{d}x}y(x)+y(x)-f(x)=0}$$

Mathematica: cpu = 2.446811 (sec), leaf count = 40

$$\text{DSolve}\left[xy^{(3)}(x)(ax+b)+(\alpha x+\beta)y''(x)-f(x)+xy'(x)+y(x)=0,y(x),x\right]$$

Maple: cpu = 0.468 (sec), leaf count = 1421

$$\left\{y(x)=HeunC\left(0,\frac{-2\,b+\beta}{b},\frac{(2\,b+\beta)\,a-\alpha\,b}{ab},-\frac{b}{a^2},\frac{(4\,a-\alpha)\,b^2-\alpha\,\beta\,b+a\beta^2}{2\,ab^2},-\frac{ax}{b}\right)(ax+b)^{\frac{(2\,b+\beta)a-\alpha}{ab}}\right.$$

4.60 ODE No. 1508

$$\boxed{x^3\frac{\mathrm{d}^3}{\mathrm{d}x^3}y(x)+\left(-\nu^2+1\right)x\frac{\mathrm{d}}{\mathrm{d}x}y(x)+\left(ax^3+\nu^2-1\right)y(x)=0}$$

Mathematica: cpu = 0.777099 (sec), leaf count = 143

$$\left\{\left\{y(x)\to c_2 3^{\nu-1}a^{\frac{1-\nu}{3}}x^{1-\nu}\,{}_0F_2\left(;1-\frac{2\nu}{3},1-\frac{\nu}{3};-\frac{ax^3}{27}\right)+c_3 3^{-\nu-1}a^{\frac{\nu+1}{3}}x^{\nu+1}\,{}_0F_2\left(;\frac{\nu}{3}+1,\frac{2\nu}{3}+1;-\frac{ax^3}{27}\right)\right.\right.$$

Maple: cpu = 0.125 (sec), leaf count = 81

$$\left\{y(x)=\_C1\,x\,{}_0\mathrm{F}_2(\ ;\ \frac{\nu}{3}+1,-\frac{\nu}{3}+1;\ -\frac{ax^3}{27})+\_C2\,x^{-\nu+1}\,{}_0\mathrm{F}_2(\ ;\ 1-\frac{2\,\nu}{3},-\frac{\nu}{3}+1;\ -\frac{ax^3}{27})+\_C3\,x^{\nu+1}\,{}_0\mathrm{F}\right.$$

4.61 ODE No. 1509

$$\boxed{x^3 \frac{\mathrm{d}^3}{\mathrm{d}x^3}y(x) + \left(4\,x^3 + \left(-4\,\nu^2 + 1\right)x\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x) + \left(4\,\nu^2 - 1\right)y(x) = 0}$$

Mathematica: cpu = 0.010501 (sec), leaf count = 34

$$\left\{\left\{y(x) \to c_1 x J_\nu(x)^2 + c_3 x Y_\nu(x)^2 + c_2 x J_\nu(x) Y_\nu(x)\right\}\right\}$$

Maple: cpu = 0.047 (sec), leaf count = 30

$$\left\{y(x) = \_C1\, x \left(J_\nu(x)\right)^2 + \_C2\, x \left(Y_\nu(x)\right)^2 + \_C3\, x J_\nu(x) Y_\nu(x)\right\}$$

4.62 ODE No. 1510

$$\boxed{x^3 \frac{\mathrm{d}^3}{\mathrm{d}x^3}y(x) + \left(a x^{2\,\nu} + 1 - \nu^2\right) x \frac{\mathrm{d}}{\mathrm{d}x}y(x) + \left(b x^{3\,\nu} + a(\nu - 1)\, x^{2\,\nu} + \nu^2 - 1\right) y(x) = 0}$$

Mathematica: cpu = 0.052007 (sec), leaf count = 60

$$\text{DSolve}\left[y(x)\left(a(\nu-1)x^{2\nu} + b x^{3\nu} + \nu^2 - 1\right) + x\left(a x^{2\nu} - \nu^2 + 1\right) y'(x) + x^3 y^{(3)}(x) = 0, y(x), x\right]$$

Maple: cpu = 0.078 (sec), leaf count = 74

$$\left\{y(x) = DESol\left(\left\{x^3 \frac{\mathrm{d}^3}{\mathrm{d}x^3}\_Y(x) + \left(x^{2\,\nu} a x - \nu^2 x + x\right)\frac{\mathrm{d}}{\mathrm{d}x}\_Y(x) + \left(x^{2\,\nu} a \nu - a x^{2\,\nu} + b x^{3\,\nu} + \nu^2 - 1\right)\_Y\right.\right.$$

4.63 ODE No. 1511

$$\boxed{x^3 \frac{\mathrm{d}^3}{\mathrm{d}x^3}y(x) + 3\,x^2 \frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) - 2\,x \frac{\mathrm{d}}{\mathrm{d}x}y(x) + 2\,y(x) - 6\,x^3(x-1)\ln(x) + x^3(x+8) = 0}$$

Mathematica: cpu = 0.035505 (sec), leaf count = 51

$$\left\{\left\{y(x) \to \frac{c_1}{x^2} + c_2 x + c_3 x \log(x) + \frac{1}{450}\left(-50x^4 + 50x^4 \log(x) - 18x^3 - 135x^3 \log(x)\right)\right\}\right\}$$

Maple: cpu = 0.031 (sec), leaf count = 37

$$\left\{y(x) = \frac{x^3(50\,x\ln(x) - 135\,\ln(x) - 50\,x - 18)}{450} + x\_C1 + \frac{\_C2}{x^2} + \_C3\, x \ln(x)\right\}$$

4.64 ODE No. 1512

$$\boxed{x^3 \frac{\mathrm{d}^3}{\mathrm{d}x^3}y(x) + 3\,x^2 \frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) + \left(-a^2+1\right) x \frac{\mathrm{d}}{\mathrm{d}x}y(x) = 0}$$

Mathematica: cpu = 0.038005 (sec), leaf count = 29

$$\left\{\left\{y(x) \to -\frac{c_1 x^{-a}}{a} + \frac{c_2 x^a}{a} + c_3\right\}\right\}$$

Maple: cpu = 0.016 (sec), leaf count = 18

$$\left\{y(x) = \_C1 + \_C2\, x^{-a} + \_C3\, x^a\right\}$$

4.65 ODE No. 1513

$$\boxed{x^3 \frac{\mathrm{d}^3}{\mathrm{d}x^3}y(x) - 4\,x^2 \frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) + \left(x^2+8\right) x \frac{\mathrm{d}}{\mathrm{d}x}y(x) - 2\left(x^2+4\right) y(x) = 0}$$

Mathematica: cpu = 0.074509 (sec), leaf count = 25

$$\left\{\left\{y(x) \to c_1 x^2 - c_2 x \sin(x) + c_3 x \cos(x)\right\}\right\}$$

Maple: cpu = 0.171 (sec), leaf count = 20

$$\left\{y(x) = \_C1\, x^2 + \_C2\, x \sin\left(x\right) + \_C3\, \cos\left(x\right) x\right\}$$

4.66 ODE No. 1514

$$\boxed{x^3 \frac{\mathrm{d}^3}{\mathrm{d}x^3}y(x) + 6\,x^2 \frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) + \left(a x^3 - 12\right) y(x) = 0}$$

Mathematica: cpu = 0.717091 (sec), leaf count = 102

$$\left\{\left\{y(x) \to \frac{c_1 e^{-\sqrt[3]{a}x}\left(\sqrt[3]{a}x+2\right)}{x^3} + \frac{c_2 e^{\sqrt[3]{-1}\sqrt[3]{a}x}\left(\sqrt[3]{a}x+2(-1)^{2/3}\right)}{x^3} + \frac{c_3 e^{-(-1)^{2/3}\sqrt[3]{a}x}\left(\sqrt[3]{a}x-2\sqrt[3]{-1}\right)}{x^3}\right\}\right\}$$

Maple: cpu = 0.390 (sec), leaf count = 151

$$\left\{y(x) = \frac{\_C1}{x^3}\left(a^3 x + 2\left(-a^4\right)^{2/3}\right) \mathrm{e}^{\frac{x}{a}\sqrt[3]{-a^4}} + \frac{\_C2}{x^3}\left(\left(-a^4\right)^{\frac{2}{3}}\sqrt{3} - i a^3 x + i\left(-a^4\right)^{\frac{2}{3}}\right) \mathrm{e}^{\frac{\frac{i}{2}\left(-\sqrt{3}+i\right)x}{a}\sqrt[3]{-a^4}} + \frac{\_C3}{x^3}\right.$$

4.67 ODE No. 1515

$$x^3 \frac{\mathrm{d}^3}{\mathrm{d}x^3}y(x) + 3\,(1-a)\,x^2 \frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) + \left(4\,b^2c^2x^{2\,c+1} + 1 - 4\,\nu^2c^2 + 3\,a(a-1)\,x\right) \frac{\mathrm{d}}{\mathrm{d}x}y(x) + \left(4\,b^2c^2(c-a)\,x^2\right.$$

Mathematica: cpu = 0.121015 (sec), leaf count = 104

$$\text{DSolve}\left[y(x)\left(a\left(4c^2\nu^2-a^2\right)+4b^2c^2(c-a)x^{2c}\right)+y'(x)\left(3(a-1)ax+4b^2c^2x^{2c+1}-4c^2\nu^2+1\right)+3(1-a)x\right.$$

Maple: cpu = 0 (sec), leaf count = 0

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4.68 ODE No. 1516

$$x^3 \frac{\mathrm{d}^3}{\mathrm{d}x^3}y(x) + (x+3)\,x^2 \frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) + 5\,(x-6)\,x \frac{\mathrm{d}}{\mathrm{d}x}y(x) + (4\,x+30)\,y(x) = 0$$

Mathematica: cpu = 434.677197 (sec), leaf count = 71

$$\left\{\left\{y(x) \to \text{DifferentialRoot}\left(\{y,x\},\left\{y^{(3)}(x)x^3+(x+3)y''(x)x^2+5(x-6)y'(x)x+(4x+30)y(x)=0,y(\right.\right.\right.\right.$$

Maple: cpu = 0.359 (sec), leaf count = 263

$$\left\{y(x) = \frac{\_C1\,\left(x^4-84\,x^3+2016\,x^2-20160\,x+75600\right)}{x^6} + \frac{\_C2\,\mathrm{e}^{-x}(x^8+28\,x^7+450\,x^6+5100\,x^5+429}{}\right.$$

4.69 ODE No. 1517

$$x^3 \frac{\mathrm{d}^3}{\mathrm{d}x^3}y(x) + x^2 \frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) + \ln(x) + 2\,x \frac{\mathrm{d}}{\mathrm{d}x}y(x) - y(x) - 2\,x^3 = 0$$

Mathematica: cpu = 0.409052 (sec), leaf count = 30686

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Maple: cpu = 0.327 (sec), leaf count = 1770

$$\left\{y(x) = -\int -\frac{5\left(x^{1/12}\,\sqrt[3]{44+12\sqrt{69}}+2/3+\frac{11\left(44+12\sqrt{69}\right)^{2/3}}{1200}-\frac{\sqrt{69}\left(44+12\sqrt{69}\right)^{2/3}}{400}\right)^2\sqrt[3]{44+12\sqrt{69}}(\ln(x)-2\,x^3)}{2\,x^3\left(3\sqrt{23}\sqrt{3}+11\right)\left(11\sqrt{23}\sqrt{3}-207\right)}\left(3\right.\right.$$

4.70 ODE No. 1518

$$\boxed{\left(x^2+1\right) x \frac{\mathrm{d}^3}{\mathrm{d}x^3}y(x)+3\left(2\,x^2+1\right)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)-12\,y(x)=0}$$

Mathematica: cpu = 0.241531 (sec), leaf count = 106

$$\left\{\left\{y(x)\to \frac{1}{3}c_1\left(2x^2+1\right)+\frac{1}{3}c_2 x\sqrt{x^2+1}+\frac{c_3(2x^2+1)\left(3x^2+3\sqrt{x^2+1}x^2\log(x)-3\sqrt{x^2+1}x^2\log\left(\sqrt{x^2}\right.\right.\right.}{6\left(2x^3+x\right)}$$

Maple: cpu = 0.374 (sec), leaf count = 56

$$\left\{y(x)=\_C1\,x\sqrt{x^2+1}+\frac{\_C2}{x}\left(3\,x^2\sqrt{x^2+1}\mathit{Artanh}\left(\frac{1}{\sqrt{x^2+1}}\right)-3\,x^2-1\right)+\_C3\left(2\,x^2+1\right)\right\}$$

4.71 ODE No. 1519

$$\boxed{(x+3)\,x^2\frac{\mathrm{d}^3}{\mathrm{d}x^3}y(x)-3\,x(x+2)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+6\,(1+x)\frac{\mathrm{d}}{\mathrm{d}x}y(x)-6\,y(x)=0}$$

Mathematica: cpu = 0.030004 (sec), leaf count = 65

$$\left\{\left\{y(x)\to \frac{1}{4}c_1\left(x^3-3x^2+3x+3\right)+\frac{1}{2}c_2\left(-x^3+3x^2-x-1\right)+\frac{1}{8}c_3\left(3x^3-5x^2+x+1\right)\right\}\right\}$$

Maple: cpu = 0.124 (sec), leaf count = 20

$$\left\{y(x)=\_C1\,x^2+x^3\_C2+\_C3\,(1+x)\right\}$$

4.72 ODE No. 1520

$$\boxed{2\,(x-a1)\,(x-a2)\,(x-a3)\frac{\mathrm{d}^3}{\mathrm{d}x^3}y(x)+\left(9\,x^2-6\,(a1+a2+a3)\,x+3\,a1\,a2+3\,a1\,a3+3\,a2\,a3\right)\frac{\mathrm{d}^2}{\mathrm{d}x^2}}$$

Mathematica: cpu = 72.774241 (sec), leaf count = 167

$$\left\{\left\{y(x)\to \text{DifferentialRoot}\left(\{y,x\},\left\{-n(n+1)y(x)-2\left(xn^2+xn-3x+b\right)y'(x)+3\left(3x^2-2\text{a1}x-2\text{a2}\right.\right.\right.\right.$$

Maple: cpu = 0.374 (sec), leaf count = 279

$$\left\{y(x)=\_C1\left(\mathit{HeunG}\left(\frac{-a3+a1}{-a2+a1},-\frac{a1\,n^2+a1\,n-a1-a2-a3+b}{-4\,a2+4\,a1},-\frac{n}{2},\frac{n}{2}+\frac{1}{2},\frac{1}{2},\frac{1}{2},\frac{-x+a1}{-a2+a1}\right)\right.\right.$$

4.73 ODE No. 1521

$$\boxed{(1+x)\,x^3\frac{\mathrm{d}^3}{\mathrm{d}x^3}y(x)-(4\,x+2)\,x^2\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+(10\,x+4)\,x\frac{\mathrm{d}}{\mathrm{d}x}y(x)-4\,(3\,x+1)\,y(x)=0}$$

Mathematica: cpu = 0.065008 (sec), leaf count = 35

$$\left\{\left\{y(x)\to c_1x^2+c_3x^2\left(x+\frac{1}{x}+\log^2(x)\right)+c_2x^2\log(x)\right\}\right\}$$

Maple: cpu = 0.358 (sec), leaf count = 31

$$\left\{y(x)=\_C1\,x^2+\_C2\,x^2\ln(x)+\_C3\,\left(x(\ln(x))^2+x^2+1\right)x\right\}$$

4.74 ODE No. 1522

$$\boxed{4\,x^4\frac{\mathrm{d}^3}{\mathrm{d}x^3}y(x)-4\,x^3\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+4\,x^2\frac{\mathrm{d}}{\mathrm{d}x}y(x)-1=0}$$

Mathematica: cpu = 0.019502 (sec), leaf count = 44

$$\left\{\left\{y(x)\to\frac{c_1x^2}{2}-\frac{c_2x^2}{4}+\frac{1}{2}c_2x^2\log(x)+c_3-\frac{1}{36x}\right\}\right\}$$

Maple: cpu = 0.032 (sec), leaf count = 31

$$\left\{y(x)=\frac{x^2\_C1\,\ln(x)}{2}-\frac{\_C1\,x^2}{4}+\frac{x^2\_C2}{2}-\frac{1}{36\,x}+\_C3\right\}$$

4.75 ODE No. 1523

$$\boxed{\left(x^2+1\right)x^3\frac{\mathrm{d}^3}{\mathrm{d}x^3}y(x)-\left(4\,x^2+2\right)x^2\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+\left(10\,x^2+4\right)x\frac{\mathrm{d}}{\mathrm{d}x}y(x)-4\left(3\,x^2+1\right)y(x)=0}$$

Mathematica: cpu = 0.118515 (sec), leaf count = 74

$$\left\{\left\{y(x)\to c_1\left(-x^3+3x^2-x\right)+\frac{1}{2}c_2\left(x^3-2x^2+x\right)-\frac{c_3x\left(-x^3+3x^2-x\right)(\log(x)+1)}{2\left(x^2-3x+1\right)}\right\}\right\}$$

Maple: cpu = 0.359 (sec), leaf count = 26

$$\left\{y(x)=\_C1\,x^2+\_C2\,x^2(\ln(x)+1)+\_C3\,\left(x^3+x\right)\right\}$$

4.76 ODE No. 1524

$$\boxed{x^6 \frac{\mathrm{d}^3}{\mathrm{d}x^3} y(x) + x^2 \frac{\mathrm{d}^2}{\mathrm{d}x^2} y(x) - 2\, y(x) = 0}$$

Mathematica: cpu = 0.143518 (sec), leaf count = 96

$$\left\{\left\{y(x) \to -\frac{\left(-\frac{1}{3}\right)^{2/3} c_2 x \Gamma\left(\frac{1}{3}\right)\ {}_2F_2\left(-\frac{2}{3}, \frac{1}{3}; \frac{2}{3}, \frac{4}{3}; \frac{1}{3x^3}\right)}{3\Gamma\left(\frac{4}{3}\right)} + \frac{c_3 \Gamma\left(\frac{2}{3}\right)\ {}_2F_2\left(-\frac{1}{3}, \frac{2}{3}; \frac{4}{3}, \frac{5}{3}; \frac{1}{3x^3}\right)}{9\Gamma\left(\frac{5}{3}\right)} + c_1 x^2\right\}\right\}$$

Maple: cpu = 0.390 (sec), leaf count = 104

$$\left\{y(x) = \_C1\, x^2 + \_C2 \int 1 \mathrm{e}^{\frac{1}{6x^3}} \left(2\, x^3 I_{1/6}\left(-1/6\, x^{-3}\right) - I_{\frac{1}{6}}\left(-\frac{1}{6\, x^3}\right) - I_{-\frac{5}{6}}\left(-\frac{1}{6\, x^3}\right)\right) x^{-\frac{11}{2}}\, \mathrm{d}x x^2 + \_C3\right.$$

4.77 ODE No. 1525

$$\boxed{x^6 \frac{\mathrm{d}^3}{\mathrm{d}x^3} y(x) + 6\, x^5 \frac{\mathrm{d}^2}{\mathrm{d}x^2} y(x) + a y(x) = 0}$$

Mathematica: cpu = 0.439556 (sec), leaf count = 102

$$\left\{\left\{y(x) \to c_1 e^{\frac{\sqrt[3]{a}}{x}} \left(2x - \sqrt[3]{a}\right) + c_2 e^{\frac{(-1)^{2/3}\sqrt[3]{a}}{x}} \left(x - \frac{1}{2}(-1)^{2/3}\sqrt[3]{a}\right) + c_3 e^{-\frac{\sqrt[3]{-1}\sqrt[3]{a}}{x}} \left(\frac{1}{2}\sqrt[3]{-1}\sqrt[3]{a} + x\right)\right\}\right\}$$

Maple: cpu = 0.437 (sec), leaf count = 291

$$\left\{y(x) = \_C1\, \left(-8\, x^3 + a\right)^4 \mathrm{e}^{-\frac{1}{ax}\sqrt[3]{-a^4}} \left(2\, ax + \sqrt[3]{-a^4}\right)^{-3} \left(4\, a^2 x^2 - 2\, x \sqrt[3]{-a^4} a + \left(-a^4\right)^{\frac{2}{3}}\right)^{-4} + \_C2\, \left(-8\, x^3\right.\right.$$

4.78 ODE No. 1526

$$\boxed{x^2\left(x^4 + 2\, x^2 + 2\, x + 1\right) \frac{\mathrm{d}^3}{\mathrm{d}x^3} y(x) - \left(2\, x^6 + 3\, x^4 - 6\, x^2 - 6\, x - 1\right) \frac{\mathrm{d}^2}{\mathrm{d}x^2} y(x) + \left(x^6 - 6\, x^3 - 15\, x^2 - 12\, x -\right.}$$

Mathematica: cpu = 0 (sec), leaf count = 0

Hanged

Maple: cpu = 0.203 (sec), leaf count = 20

$$\left\{y(x) = \_C1\, \mathrm{e}^{x} + \_C2\, \mathrm{e}^{x^{-1}} + \_C3\, x \mathrm{e}^{x}\right\}$$

4.79 ODE No. 1527

$$\boxed{(x-a)^3 (x-b)^3 \frac{\mathrm{d}^3}{\mathrm{d}x^3}y(x) - cy(x) = 0}$$

Mathematica: cpu = 135.354688 (sec), leaf count = 58

$$\{\{y(x) \to \text{DifferentialRoot}(\{y,x\}, \{(a-x)^3(b-x)^3 y^{(3)}(x) - cy(x) = 0, y(0) = c_1, y'(0) = c_2, y''(0) = c_3$$

Maple: cpu = 0.421 (sec), leaf count = 500

$$\left\{y(x) = \_C1\,(x-a)^{-2\,\frac{b}{a-b}}\,(x-b)^{2\,\frac{a}{a-b}}\,(b-x)^{-\frac{RootOf\left(\_Z^3+(-3\,a-3\,b)\_Z^2+\left(2\,a^2+8\,ab+2\,b^2\right)\_Z-4\,ba^2-4\,ab^2-c,index=1\right)}{a-b}}\,(a-\right.$$

4.80 ODE No. 1528

$$\boxed{\left(\frac{\mathrm{d}^3}{\mathrm{d}x^3}y(x)\right)\sin(x) + (2\cos(x)+1)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) - \sin(x)\frac{\mathrm{d}}{\mathrm{d}x}y(x) - \cos(x) = 0}$$

Mathematica: cpu = 0.494563 (sec), leaf count = 72

$$\left\{\left\{y(x) \to \frac{\sin\left(\frac{x}{2}\right)\left(\sqrt{2}\left(c_2 x \sin\left(\frac{x}{2}\right) + \cos\left(\frac{x}{2}\right)\left(c_2 \log(2(\cos(x)+1)) + 2c_1\right)\right) - 2\cos\left(\frac{x}{2}\right)\sin^{-1}(\cos(x))\right)}{\cos(x)-1} + c\right.\right.$$

Maple: cpu = 0.078 (sec), leaf count = 68

$$\left\{y(x) = \frac{\_C1}{-1+\cos(x)}\left(\ln(\sin(x))\sin(x) - \ln\left(-\frac{-1+\cos(x)}{\sin(x)}\right)\sin(x) - \cos(x)\,x + x\right) + \_C2 + \frac{\sin(}{-1+}\right.$$

4.81 ODE No. 1529

$$\boxed{(\sin(x)+x)\frac{\mathrm{d}^3}{\mathrm{d}x^3}y(x) + 3(\cos(x)+1)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) - 3\sin(x)\frac{\mathrm{d}}{\mathrm{d}x}y(x) - y(x)\cos(x) + \sin(x) = 0}$$

Mathematica: cpu = 0.077010 (sec), leaf count = 42

$$\text{DSolve}\left[y^{(3)}(x)(x+\sin(x)) + 3(\cos(x)+1)y''(x) - 3\sin(x)y'(x) - y(x)\cos(x) + \sin(x) = 0, y(x), x\right]$$

Maple: cpu = 0.047 (sec), leaf count = 43

$$\left\{y(x) = \frac{\_C1\,x^2}{\sin(x)+x} + \frac{\_C2\,x}{\sin(x)+x} - \frac{\cos(x)}{\sin(x)+x} + \frac{\_C3}{\sin(x)+x}\right\}$$

4.82 ODE No. 1530

$$\left(\frac{\mathrm{d}^3}{\mathrm{d}x^3}y(x)\right)(\sin(x))^2+3\left(\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)\right)\sin(x)\cos(x)+\left(\cos(2x)+4\nu(\nu+1)(\sin(x))^2\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+2\nu(\nu$$

Mathematica: cpu = 0.112514 (sec), leaf count = 58

$$\text{DSolve}\left[y'(x)\left(4\nu(\nu+1)\sin^2(x)+\cos(2x)\right)+2\nu(\nu+1)y(x)\sin(2x)+y^{(3)}(x)\sin^2(x)+3\sin(x)\cos(x)y''(x)\right.$$

Maple: cpu = 0.187 (sec), leaf count = 113

$$\left\{y(x)=\_C1\left({}_2\mathrm{F}_1(-\frac{\nu}{2},\frac{\nu}{2}+\frac{1}{2};\frac{1}{2};\frac{\cos(2x)}{2}+\frac{1}{2})\right)^2+\_C2\left(\cos(2x)+1\right)\left({}_2\mathrm{F}_1(1+\frac{\nu}{2},\frac{1}{2}-\frac{\nu}{2};\frac{3}{2};\frac{\cos(2x)}{2}\right.\right.$$

4.83 ODE No. 1531

$$\left(\frac{\mathrm{d}}{\mathrm{d}x}f(x)\right)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+f(x)\frac{\mathrm{d}^3}{\mathrm{d}x^3}y(x)+\left(\frac{\mathrm{d}}{\mathrm{d}x}g(x)\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+g(x)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+\left(\frac{\mathrm{d}}{\mathrm{d}x}h(x)\right)y(x)+h(x)\frac{\mathrm{d}}{\mathrm{d}x}$$

Mathematica: cpu = 0.034004 (sec), leaf count = 76

$$\text{DSolve}\left[A(x)\left(f(x)y''(x)+g(x)y'(x)+h(x)y(x)\right)+f'(x)y''(x)+f(x)y^{(3)}(x)+g'(x)y'(x)+g(x)y''(x)+$$

Maple: cpu = 0.125 (sec), leaf count = 70

$$\left\{y(x)=DESol\left(\left\{f(x)\frac{\mathrm{d}^3}{\mathrm{d}x^3}\_Y(x)+\left(\frac{\mathrm{d}}{\mathrm{d}x}f(x)+g(x)+A(x)f(x)\right)\frac{\mathrm{d}^2}{\mathrm{d}x^2}\_Y(x)+\left(\frac{\mathrm{d}}{\mathrm{d}x}g(x)+h(x)+A\right.\right.\right.$$

4.84 ODE No. 1532

$$\frac{\mathrm{d}^3}{\mathrm{d}x^3}y(x)+x\frac{\mathrm{d}}{\mathrm{d}x}y(x)+ny(x)=0$$

Mathematica: cpu = 0.018502 (sec), leaf count = 103

$$\left\{\left\{y(x)\to\frac{c_2x\,{}_1F_2\left(\frac{n}{3}+\frac{1}{3};\frac{2}{3},\frac{4}{3};-\frac{x^3}{9}\right)}{3^{2/3}}+c_1\,{}_1F_2\left(\frac{n}{3};\frac{1}{3},\frac{2}{3};-\frac{x^3}{9}\right)+\frac{c_3x^2\,{}_1F_2\left(\frac{n}{3}+\frac{2}{3};\frac{4}{3},\frac{5}{3};-\frac{x^3}{9}\right)}{3\sqrt[3]{3}}\right\}\right\}$$

Maple: cpu = 0.078 (sec), leaf count = 58

$$\left\{y(x)=\_C1\,{}_1\mathrm{F}_2(\frac{n}{3};\frac{1}{3},\frac{2}{3};-\frac{x^3}{9})+\_C2\,x\,{}_1\mathrm{F}_2(\frac{1}{3}+\frac{n}{3};\frac{2}{3},\frac{4}{3};-\frac{x^3}{9})+\_C3\,x^2\,{}_1\mathrm{F}_2(\frac{2}{3}+\frac{n}{3};\frac{4}{3},\frac{5}{3};-\frac{x^3}{9})\right\}$$

4.85 ODE No. 1533

$$\boxed{\frac{\mathrm{d}^3}{\mathrm{d}x^3}y(x)-x\frac{\mathrm{d}}{\mathrm{d}x}y(x)-ny(x)=0}$$

Mathematica: cpu = 0.017002 (sec), leaf count = 113

$$\left\{\left\{y(x)\to \frac{\sqrt[3]{-1}c_2x\,{}_1F_2\left(\frac{n}{3}+\frac{1}{3};\frac{2}{3},\frac{4}{3};\frac{x^3}{9}\right)}{3^{2/3}}+c_1\,{}_1F_2\left(\frac{n}{3};\frac{1}{3},\frac{2}{3};\frac{x^3}{9}\right)+\frac{(-1)^{2/3}c_3x^2\,{}_1F_2\left(\frac{n}{3}+\frac{2}{3};\frac{4}{3},\frac{5}{3};\frac{x^3}{9}\right)}{3\sqrt[3]{3}}\right\}\right\}$$

Maple: cpu = 0.078 (sec), leaf count = 58

$$\left\{y(x)=\_C1\,{}_1\mathrm{F}_2(\frac{n}{3};\,\frac{1}{3},\frac{2}{3};\,\frac{x^3}{9})+\_C2\,x\,{}_1\mathrm{F}_2(\frac{1}{3}+\frac{n}{3};\,\frac{2}{3},\frac{4}{3};\,\frac{x^3}{9})+\_C3\,x^2\,{}_1\mathrm{F}_2(\frac{2}{3}+\frac{n}{3};\,\frac{4}{3},\frac{5}{3};\,\frac{x^3}{9})\right\}$$

5 Kamke chapter 4. Linear fourth order

5.1 ODE No. 1534

$$\boxed{d4y(x) = 0}$$

Mathematica: cpu = 0.003000 (sec), leaf count = 24

$$\{\{y(x) \to c_4 x^3 + c_3 x^2 + c_2 x + c_1\}\}$$

Maple: cpu = 0.141 (sec), leaf count = 21

$$\left\{y(x) = \frac{\_C1\, x^3}{6} + \frac{\_C2\, x^2}{2} + \_C3\, x + \_C4\right\}$$

5.2 ODE No. 1535

$$\boxed{d4y(x) + 4\, y(x) - f = 0}$$

Mathematica: cpu = 1.373674 (sec), leaf count = 265

$$\left\{\left\{y(x) \to e^{-x}\left(\cos(x) \int_1^x \frac{1}{8} e^{K[1]} f(K[1]) \left(-\sin^3(K[1]) + \cos^3(K[1]) - \sin(K[1]) \cos^2(K[1]) + \sin^2(K[1])\right.\right.\right.$$

Maple: cpu = 0.156 (sec), leaf count = 36

$$\left\{y(x) = \frac{f}{4} + \_C1\, \mathrm{e}^{x} \cos(x) + \_C2\, \mathrm{e}^{x} \sin(x) + \_C3\, \mathrm{e}^{-x} \cos(x) + \_C4\, \mathrm{e}^{-x} \sin(x)\right\}$$

5.3 ODE No. 1536

$$\boxed{d4y(x) + \lambda\, y(x) = 0}$$

Mathematica: cpu = 0.004000 (sec), leaf count = 76

$$\left\{\left\{y(x) \to c_1 e^{(-1)^{3/4} \sqrt[4]{\lambda} x} + c_2 e^{-\sqrt[4]{-1} \sqrt[4]{\lambda} x} + c_3 e^{-(-1)^{3/4} \sqrt[4]{\lambda} x} + c_4 e^{\sqrt[4]{-1} \sqrt[4]{\lambda} x}\right\}\right\}$$

Maple: cpu = 0.109 (sec), leaf count = 50

$$\left\{y(x) = \_C1\, \mathrm{e}^{-i \sqrt[4]{-\lambda} x} + \_C2\, \mathrm{e}^{-\sqrt[4]{-\lambda} x} + \_C3\, \mathrm{e}^{i \sqrt[4]{-\lambda} x} + \_C4\, \mathrm{e}^{\sqrt[4]{-\lambda} x}\right\}$$

5.4 ODE No. 1537

$$\boxed{d4y(x) - 12\,\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) + 12\,y(x) - 16\,x^4\mathrm{e}^{x^2} = 0}$$

Mathematica: cpu = 0.828605 (sec), leaf count = 1722

$$\left\{\left\{y(x) \to \frac{1}{12}e^{-\left(\sqrt{2\left(3-\sqrt{6}\right)}-x\right)x-\sqrt{2\left(3+\sqrt{6}\right)}x-\sqrt{2\left(3-\sqrt{6}\right)}x}\left(-2\sqrt{3+\sqrt{6}}e^{\sqrt{2\left(3+\sqrt{6}\right)}x+2\sqrt{2\left(3-\sqrt{6}\right)}x}x^3+2\sqrt{3+\right.\right.\right.$$

Maple: cpu = 0.141 (sec), leaf count = 67

$$\left\{y(x) = \mathrm{e}^{x^2} + \_C1\,\mathrm{e}^{\sqrt{6-2\sqrt{6}}x} + \_C2\,\mathrm{e}^{\sqrt{6+2\sqrt{6}}x} + \_C3\,\mathrm{e}^{-\sqrt{6-2\sqrt{6}}x} + \_C4\,\mathrm{e}^{-\sqrt{6+2\sqrt{6}}x}\right\}$$

5.5 ODE No. 1538

$$\boxed{d4y(x) + 2\,a^2\,\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) + a^4y(x) - \cosh\left(ax\right) = 0}$$

Mathematica: cpu = 0.247531 (sec), leaf count = 66

$$\left\{\left\{y(x) \to \frac{\cos^2(ax)\cosh(ax) + \sin^2(ax)\cosh(ax)}{4a^4} + c_3\sin(ax) + c_4x\sin(ax) + c_1\cos(ax) + c_2x\cos(ax)\right\}\right\}$$

Maple: cpu = 0.250 (sec), leaf count = 46

$$\left\{y(x) = \frac{\mathrm{e}^{ax} + \mathrm{e}^{-ax}}{8\,a^4} + \_C1\,\cos\left(ax\right) + \_C2\,\sin\left(ax\right) + \_C3\,\cos\left(ax\right)x + \_C4\,\sin\left(ax\right)x\right\}$$

5.6 ODE No. 1539

$$\boxed{d4y(x) + (\lambda+1)\,a^2\,\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) + \lambda\,a^4y(x) = 0}$$

Mathematica: cpu = 0.007001 (sec), leaf count = 44

$$\left\{\left\{y(x) \to c_2\sin\left(a\sqrt{\lambda}x\right) + c_1\cos\left(a\sqrt{\lambda}x\right) + c_4\sin(ax) + c_3\cos(ax)\right\}\right\}$$

Maple: cpu = 0.015 (sec), leaf count = 35

$$\left\{y(x) = \_C1\,\sin\left(ax\right) + \_C2\,\cos\left(ax\right) + \_C3\,\sin\left(a\sqrt{\lambda}x\right) + \_C4\,\cos\left(a\sqrt{\lambda}x\right)\right\}$$

5.7 ODE No. 1540

$$\boxed{d4y(x) + a(bx-1)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) + ab\frac{\mathrm{d}}{\mathrm{d}x}y(x) + \lambda\, y(x) = 0}$$

Mathematica: cpu = 0.429555 (sec), leaf count = 67

$$\left\{\left\{y(x) \to \text{DifferentialRoot}\left(\{y,x\}, \left\{\lambda y(x) + aby'(x) + a(xb-1)y''(x) + y^{(4)}(x) = 0, y(0) = c_1, y'(0) = c_2\right.\right.\right.$$

Maple: cpu = 0.094 (sec), leaf count = 44

$$\left\{y(x) = DESol\left(\left\{\lambda\_Y(x) + ab\frac{\mathrm{d}}{\mathrm{d}x}\_Y(x) + a(bx-1)\frac{\mathrm{d}^2}{\mathrm{d}x^2}\_Y(x) + \frac{\mathrm{d}^4}{\mathrm{d}x^4}\_Y(x)\right\}, \{\_Y(x)\}\right)\right\}$$

5.8 ODE No. 1541

$$\boxed{d4y(x) + \left(ax^2 + b\lambda + c\right)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) + \left(ax^2 + \beta\,\lambda + \gamma\right)y(x) = 0}$$

Mathematica: cpu = 80.218186 (sec), leaf count = 73

$$\left\{\left\{y(x) \to \text{DifferentialRoot}\left(\{y,x\}, \left\{\left(ax^2 + \beta\lambda + \gamma\right)y(x) + \left(ax^2 + c + b\lambda\right)y''(x) + y^{(4)}(x) = 0, y(0) = c_1\right.\right.\right.$$

Maple: cpu = 0.062 (sec), leaf count = 50

$$\left\{y(x) = DESol\left(\left\{\left(ax^2 + \beta\,\lambda + \gamma\right)\_Y(x) + \left(ax^2 + b\lambda + c\right)\frac{\mathrm{d}^2}{\mathrm{d}x^2}\_Y(x) + \frac{\mathrm{d}^4}{\mathrm{d}x^4}\_Y(x)\right\}, \{\_Y(x)\}\right)\right\}$$

5.9 ODE No. 1542

$$\boxed{d4y(x) + a\,WeierstrassP(x, g2, g3)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) + b\,WeierstrassPPrime(x, g2, g3)\frac{\mathrm{d}}{\mathrm{d}x}y(x) + \left(c\left(6\left(Weierstra\right.\right.\right.\right.$$

Mathematica: cpu = 0.029004 (sec), leaf count = 55

$$\text{DSolve}\left[ay''(x)\wp(x;\text{g2},\text{g3}) + by'(x)\wp'(x;\text{g2},\text{g3}) + y(x)\left(c\left(6\wp(x;\text{g2},\text{g3})^2 - \frac{\text{g2}}{2}\right) + d\right) + y^{(4)}(x) = 0, y(x)\right.$$

Maple: cpu = 0.561 (sec), leaf count = 60

$$\left\{y(x) = DESol\left(\left\{\frac{\mathrm{d}^4}{\mathrm{d}x^4}\_Y(x) + a\,WeierstrassP(x, g2, g3)\frac{\mathrm{d}^2}{\mathrm{d}x^2}\_Y(x) + b\,WeierstrassPPrime(x, g2, g3)\right.\right.$$

5.10 ODE No. 1543

$$\boxed{d4y(x) - \left(12\,k^2(JacobiSN(z,x))^2 + a\right)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) + b\frac{\mathrm{d}}{\mathrm{d}x}y(x) + \left(\alpha\,(JacobiSN(z,x))^2 + \beta\right)y(x) = 0}$$

Mathematica: cpu = 0.100013 (sec), leaf count = 47

$$\text{DSolve}\left[-y''(x)\left(a + 12k^2\text{sn}(z|x)^2\right) + y(x)\left(\alpha\text{sn}(z|x)^2 + \beta\right) + by'(x) + y^{(4)}(x) = 0, y(x), x\right]$$

Maple: cpu = 5.319 (sec), leaf count = 59

$$\left\{y(x) = DESol\left(\left\{\frac{\mathrm{d}^4}{\mathrm{d}x^4}\_Y(x) + \left(-12\,k^2(JacobiSN(z,x))^2 - a\right)\frac{\mathrm{d}^2}{\mathrm{d}x^2}\_Y(x) + b\frac{\mathrm{d}}{\mathrm{d}x}\_Y(x) + \left(\alpha\,(JacobiSI\right.\right.\right.$$

5.11 ODE No. 1544

$$\boxed{d4y(x) + 10\,f\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) + 10\,df\,\frac{\mathrm{d}}{\mathrm{d}x}y(x) + \left(3\,f^2 + 3\,ddf\right)y(x) = 0}$$

Mathematica: cpu = 0.014502 (sec), leaf count = 45

$$\text{DSolve}\left[y(x)\left(3f''(x) + 3f(x)^2\right) + 10f'(x)y'(x) + 10f(x)y''(x) + y^{(4)}(x) = 0, y(x), x\right]$$

Maple: cpu = 0.0 (sec), leaf count = 41

$$\left\{y(x) = \sum_{\_a=1}^{4} \mathrm{e}^{RootOf\left(\_Z^4 + 10\,f\_Z^2 + 10\,df\,\_Z + 3\,f^2 + 3\,ddf, index=\_a\right)x}\,\_C_{\_a}\right\}$$

5.12 ODE No. 1545

$$\boxed{d4y(x) + 2\,\frac{\mathrm{d}^3}{\mathrm{d}x^3}y(x) - 3\,\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) - 4\,\frac{\mathrm{d}}{\mathrm{d}x}y(x) + 4\,y(x) - 32\,\sin\left(2\,x\right) + 24\,\cos\left(2\,x\right) = 0}$$

Mathematica: cpu = 0.164521 (sec), leaf count = 40

$$\left\{\left\{y(x) \to c_1e^{-2x} + c_2e^{-2x}x + c_3e^x + c_4e^xx + \sin(2x)\right\}\right\}$$

Maple: cpu = 0.046 (sec), leaf count = 31

$$\left\{y(x) = \sin\left(2\,x\right) + \_C1\,\mathrm{e}^{x} + \_C2\,\mathrm{e}^{-2\,x} + \_C3\,x\mathrm{e}^{x} + \_C4\,\mathrm{e}^{-2\,x}x\right\}$$

5.13 ODE No. 1546

$$d4y(x)+4\,ax\frac{\mathrm{d}^3}{\mathrm{d}x^3}y(x)+6\,a^2x^2\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+4\,a^3x^3\frac{\mathrm{d}}{\mathrm{d}x}y(x)+a^4x^4y(x)=0$$

Mathematica: cpu = 0.649083 (sec), leaf count = 301

$$\left\{\left\{y(x)\to \frac{2\left(\sqrt{6}-3\right)\sqrt{-\left(\sqrt{6}-3\right)a}c_3\exp\left(-\frac{ax^2}{2}-\sqrt{-\left(\sqrt{6}-3\right)a}x-\frac{\left(-3+\sqrt{3}+\sqrt{6}\right)ax}{\sqrt{-\left(\sqrt{6}-3\right)a}}\right)}{\left(-3-\sqrt{3}+\sqrt{6}\right)\left(-3+\sqrt{3}+\sqrt{6}\right)a}+\frac{2\left(\sqrt{6}-3\right)}{}\right.\right.$$

Maple: cpu = 0.047 (sec), leaf count = 81

$$\left\{y(x)=\mathrm{e}^{-\frac{ax^2}{2}}\left(\_C1\,\mathrm{e}^{-\sqrt{-a\sqrt{6}+3\,a}x}+\_C2\,\mathrm{e}^{\sqrt{-a\sqrt{6}+3\,a}x}+\_C3\,\mathrm{e}^{-\sqrt{a\sqrt{6}+3\,a}x}+\_C4\,\mathrm{e}^{\sqrt{a\sqrt{6}+3\,a}x}\right)\right\}$$

5.14 ODE No. 1547

$$d4y(x)+6\,f\frac{\mathrm{d}^3}{\mathrm{d}x^3}y(x)+\left(11\,f^2+4\,df+10\,g\right)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+\left(6\,f^3+7\,df\,f+30\,fg+ddf+10\,dg\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+$$

Mathematica: cpu = 0.034504 (sec), leaf count = 116

$$\text{DSolve}\left[3y(x)\left(2g(x)f'(x)+5f(x)g'(x)+6f(x)^2g(x)+g''(x)+3g(x)^2\right)+y''(x)\left(4f'(x)+11f(x)^2+10g\right.\right.$$

Maple: cpu = 0.015 (sec), leaf count = 87

$$\left\{y(x)=\sum_{\_a=1}^{4}\mathrm{e}^{RootOf\left(\_Z^4+6\,f\_Z^3+\left(11\,f^2+4\,df+10\,g\right)\_Z^2+\left(6\,f^3+7\,df\,f+30\,fg+ddf+10\,dg\right)\_Z+18\,f^2g+6\,df\,g+15\,dg\,f+9\,g^2+3\,ddg,\right.}\right.$$

5.15 ODE No. 1548

$$4\,d4y(x)-12\,\frac{\mathrm{d}^3}{\mathrm{d}x^3}y(x)+11\,\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)-3\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)-4\,\cos\left(x\right)=0$$

Mathematica: cpu = 0.098513 (sec), leaf count = 50

$$\left\{\left\{y(x)\to 2c_1e^{x/2}+\frac{2}{3}c_2e^{3x/2}+c_3e^x+c_4+\frac{18\sin(x)}{65}-\frac{14\cos(x)}{65}\right\}\right\}$$

Maple: cpu = 0.047 (sec), leaf count = 32

$$\left\{y(x)=-\frac{14\,\cos\left(x\right)}{65}+\frac{18\,\sin\left(x\right)}{65}+\_C1\,\mathrm{e}^{x}+2\,\_C2\,\mathrm{e}^{x/2}+\frac{2\,\_C3}{3}\mathrm{e}^{\frac{3\,x}{2}}+\_C4\right\}$$

5.16 ODE No. 1549

$$\boxed{x d4y(x) + 5 \frac{\mathrm{d}^3}{\mathrm{d}x^3} y(x) - 24 = 0}$$

Mathematica: cpu = 0.012002 (sec), leaf count = 34

$$\left\{\left\{y(x) \to c_4 x^2 - \frac{c_1}{24x^2} + c_3 x + c_2 + \frac{4x^3}{5}\right\}\right\}$$

Maple: cpu = 0.047 (sec), leaf count = 26

$$\left\{y(x) = -\frac{\_C1}{24\,x^2} + \frac{4\,x^3}{5} + \frac{\_C2\,x^2}{2} + \_C3\,x + \_C4\right\}$$

5.17 ODE No. 1550

$$\boxed{x d4y(x) - \left(6\,x^2 + 1\right) \frac{\mathrm{d}^3}{\mathrm{d}x^3} y(x) + 12\,x^3 \frac{\mathrm{d}^2}{\mathrm{d}x^2} y(x) - \left(9\,x^2 - 7\right) x^2 \frac{\mathrm{d}}{\mathrm{d}x} y(x) + 2\left(x^2 - 3\right) x^3 y(x) = 0}$$

Mathematica: cpu = 7.686976 (sec), leaf count = 262

$$\left\{\left\{y(x) \to c_3 e^{\frac{x^2}{2}} \int_1^x \frac{e^{\frac{K[1]^2}{2}} K[1] \left(\int \frac{U\left(\frac{1}{20}\left(-5-9\sqrt{5}\right),-\frac{1}{2},\frac{1}{2}\sqrt{5}K[1]^2\right) \exp\left(\frac{1}{2}\left(-\frac{1}{2}K[1]^2 - 2\log(K[1])\right) - \frac{1}{4}\sqrt{5}K[1]^2\right)}{\sqrt{K[1]}\sqrt[4]{K[1]^2}}\, dK[1]\right)}{\sqrt[4]{2}} dK\right.\right.$$

Maple: cpu = 0.390 (sec), leaf count = 159

$$\left\{y(x) = \_C1\,\mathrm{e}^{x^2} + \_C2\,\mathrm{e}^{\frac{x^2}{2}} + \_C3\left(-\mathrm{e}^{x^2}\int 1M_{\frac{9\sqrt{5}}{20},\frac{3}{4}}\left(\frac{\sqrt{5}x^2}{2}\right)\mathrm{e}^{-\frac{x^2}{4}} x^{-\frac{3}{2}}\,\mathrm{d}x + \int 1M_{\frac{9\sqrt{5}}{20},\frac{3}{4}}\left(\frac{\sqrt{5}x^2}{2}\right)\mathrm{e}^{\frac{x^2}{4}} x\right.\right.$$

5.18 ODE No. 1551

$$\boxed{x^2 d4y(x) - 2\left(\nu^2 x^2 + 6\right) \frac{\mathrm{d}^2}{\mathrm{d}x^2} y(x) + \nu^2\left(\nu^2 x^2 + 4\right) y(x) = 0}$$

Mathematica: cpu = 0.443556 (sec), leaf count = 110

$$\left\{\left\{y(x) \to \frac{c_3(1-x)e^{-\nu x}(\nu^2x^2 + \nu^2 x + \nu^2 + 6\nu x + 6\nu + 15)}{x} + \frac{c_4(1-x)e^{\nu x}(\nu^2x^2 + \nu^2 x + \nu^2 - 6\nu x - 6\nu}{x}\right.\right.$$

Maple: cpu = 0.110 (sec), leaf count = 63

$$\left\{y(x) = \frac{\_C1\,\mathrm{e}^{\nu\,x}}{x} + \frac{\_C2\,\mathrm{e}^{-\nu\,x}}{x} + \_C3\,\mathrm{e}^{\nu\,x}\left(\nu^2x^2 - 6\,\nu\,x + 15\right) + \_C4\,\mathrm{e}^{-\nu\,x}\left(\nu^2x^2 + 6\,\nu\,x + 15\right)\right\}$$

5.19 ODE No. 1552

$$\boxed{x^2 d4y(x) + 2\,x\frac{\mathrm{d}^3}{\mathrm{d}x^3}y(x) + ay(x) - bx^2 = 0}$$

Mathematica: cpu = 0 (sec), leaf count = 0

Hanged

Maple: cpu = 0.047 (sec), leaf count = 89

$$\left\{y(x) = \frac{bx^2}{a} + \_C1\ \sqrt{x}J_1\left(2\sqrt[4]{-a}\sqrt{x}\right) + \_C2\ \sqrt{x}Y_1\left(2\sqrt[4]{-a}\sqrt{x}\right) + \_C3\ \sqrt{x}J_1\left(2\sqrt{-\sqrt{-a}}\sqrt{x}\right) + \_C4\right.$$

5.20 ODE No. 1553

$$\boxed{x^2 d4y(x) + 4\,x\frac{\mathrm{d}^3}{\mathrm{d}x^3}y(x) + 2\,\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) = 0}$$

Mathematica: cpu = 0.021503 (sec), leaf count = 29

$$\{\{y(x) \to c_1(-x) + c_4 x + c_1 x\log(x) - c_2\log(x) + c_3\}\}$$

Maple: cpu = 0.031 (sec), leaf count = 18

$$\{y(x) = \_C1\ x + \_C2\ x\ln(x) + \_C3 + \_C4\ \ln(x)\}$$

5.21 ODE No. 1554

$$\boxed{x^2 d4y(x) + 6\,x\frac{\mathrm{d}^3}{\mathrm{d}x^3}y(x) + 6\,\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) = 0}$$

Mathematica: cpu = 0.021503 (sec), leaf count = 29

$$\left\{\left\{y(x) \to c_4 x + \frac{1}{2}\left(\frac{c_2}{x} - 2c_1\log(x)\right) + c_3\right\}\right\}$$

Maple: cpu = 0.0 (sec), leaf count = 18

$$\left\{y(x) = \_C1 + \_C2\ \ln(x) + \frac{\_C3}{x} + \_C4\ x\right\}$$

5.22 ODE No. 1555

$$\boxed{x^2 d4y(x) + 6\,x\frac{\mathrm{d}^3}{\mathrm{d}x^3}y(x) + 6\,\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) - \lambda^2 y(x) = 0}$$

Mathematica: cpu = 0.060008 (sec), leaf count = 156

$$\left\{\left\{y(x) \to c_4 G^{2,0}_{0,4}\left(\frac{\lambda^2 x^2}{16}\middle|\ -\tfrac{1}{2},\tfrac{1}{2},0,0\ \right) + c_2 G^{2,0}_{0,4}\left(\frac{\lambda^2 x^2}{16}\middle|\ 0,0,-\tfrac{1}{2},\tfrac{1}{2}\ \right) + \frac{c_1\left(J_1\left(2\sqrt{\lambda}\sqrt{x}\right) + I_1\left(2\sqrt{\lambda}\sqrt{x}\right)\right.}{2\sqrt{\lambda}\sqrt{x}}\right.\right.$$

Maple: cpu = 0.062 (sec), leaf count = 69

$$\left\{y(x) = \_C1\,J_1\left(2\sqrt{\lambda}\sqrt{x}\right)\frac{1}{\sqrt{x}} + \_C2 Y_1\left(2\sqrt{\lambda}\sqrt{x}\right)\frac{1}{\sqrt{x}} + \_C3\,J_1\left(2\sqrt{-\lambda}\sqrt{x}\right)\frac{1}{\sqrt{x}} + \_C4 Y_1\left(2\sqrt{-\lambda}\sqrt{x}\right.\right.$$

5.23 ODE No. 1556

$$\boxed{x^2 d4y(x) + 8\,x\frac{\mathrm{d}^3}{\mathrm{d}x^3}y(x) + 12\,\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) = 0}$$

Mathematica: cpu = 0.020002 (sec), leaf count = 30

$$\left\{\left\{y(x) \to \frac{1}{6}\left(\frac{c_1}{x^2} + \frac{3c_2}{x}\right) + c_4 x + c_3\right\}\right\}$$

Maple: cpu = 0.015 (sec), leaf count = 19

$$\left\{y(x) = \_C1 + \frac{\_C2}{x} + \frac{\_C3}{x^2} + \_C4\,x\right\}$$

5.24 ODE No. 1557

$$\boxed{x^2 d4y(x) + 8\,x\frac{\mathrm{d}^3}{\mathrm{d}x^3}y(x) + 12\,\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) - \lambda^2 y(x) = 0}$$

Mathematica: cpu = 0.063008 (sec), leaf count = 146

$$\left\{\left\{y(x) \to c_4 G^{2,0}_{0,4}\left(\frac{\lambda^2 x^2}{16}\middle|\ -1,0,-\tfrac{1}{2},\tfrac{1}{2}\ \right) + c_2 G^{2,0}_{0,4}\left(\frac{\lambda^2 x^2}{16}\middle|\ -\tfrac{1}{2},\tfrac{1}{2},-1,0\ \right) - \frac{3ic_1\left(I_2\left(2\sqrt{\lambda}\sqrt{x}\right) - J_2\left(2\sqrt{\right.\right.\right.}\right.\right.$$

Maple: cpu = 0.047 (sec), leaf count = 69

$$\left\{y(x) = \frac{\_C1}{x}J_2\left(2\sqrt{\lambda}\sqrt{x}\right) + \frac{\_C2}{x}Y_2\left(2\sqrt{\lambda}\sqrt{x}\right) + \frac{\_C3}{x}J_2\left(2\sqrt{-\lambda}\sqrt{x}\right) + \frac{\_C4}{x}Y_2\left(2\sqrt{-\lambda}\sqrt{x}\right)\right\}$$

5.25 ODE No. 1558

$$x^2 d4y(x) + (2n - 2\nu + 4) x \frac{\mathrm{d}^3}{\mathrm{d}x^3} y(x) + (n - \nu + 1)(n - \nu + 2) \frac{\mathrm{d}^2}{\mathrm{d}x^2} y(x) - 1/16\, b^4 y(x) = 0$$

Mathematica: cpu = 0.160520 (sec), leaf count = 319

$$\left\{\left\{y(x) \to c_4 i^{-n+\nu+1} 2^{3n-3\nu-3} b^{2(-n+\nu+1)+n-\nu-2} x^{\frac{1}{2}(n-\nu-2)-n+\nu+1} \Gamma(-n+\nu+2) \left(I_{\nu-n}\left(b\sqrt{x}\right) - J_{\nu-n}\left(b\sqrt{x}\right)\right)\right.\right.$$

Maple: cpu = 0.062 (sec), leaf count = 93

$$\{y(x) = \_C1\, x^{-\frac{n}{2}+\frac{\nu}{2}} I_{n-\nu}\left(b\sqrt{x}\right) + \_C2\, x^{-\frac{n}{2}+\frac{\nu}{2}} J_{n-\nu}\left(b\sqrt{x}\right) + \_C3\, x^{-\frac{n}{2}+\frac{\nu}{2}} K_{n-\nu}\left(b\sqrt{x}\right) + \_C4\, x^{-\frac{n}{2}+\frac{\nu}{2}} Y_{n-\nu}$$

5.26 ODE No. 1559

$$x^3 d4y(x) + 2x^2 \frac{\mathrm{d}^3}{\mathrm{d}x^3} y(x) - x \frac{\mathrm{d}^2}{\mathrm{d}x^2} y(x) + \frac{\mathrm{d}}{\mathrm{d}x} y(x) - a^4 x^3 y(x) = 0$$

Mathematica: cpu = 0.264534 (sec), leaf count = 100

$$\left\{\left\{y(x) \to c_4 G^{2,0}_{0,4}\left(\frac{a^4x^4}{256}\middle|\ 0, 0, \tfrac{1}{2}, \tfrac{1}{2}\ \right) + c_2 G^{2,0}_{0,4}\left(\frac{a^4x^4}{256}\middle|\ \tfrac{1}{2}, \tfrac{1}{2}, 0, 0\ \right) + \frac{1}{8} i c_1 (I_0(ax) - J_0(ax)) + \frac{1}{2} c_3 (J_0(ax) +\right.\right.$$

Maple: cpu = 0.078 (sec), leaf count = 33

$$\{y(x) = \_C1\, I_0(ax) + \_C2\, J_0(ax) + \_C3\, K_0(ax) + \_C4\, Y_0(ax)\}$$

5.27 ODE No. 1560

$$x^3 d4y(x) + 6x^2 \frac{\mathrm{d}^3}{\mathrm{d}x^3} y(x) + 6x \frac{\mathrm{d}^2}{\mathrm{d}x^2} y(x) = 0$$

Mathematica: cpu = 0.020003 (sec), leaf count = 29

$$\left\{\left\{y(x) \to c_4 x + \frac{1}{2}\left(\frac{c_2}{x} - 2c_1 \log(x)\right) + c_3\right\}\right\}$$

Maple: cpu = 0.016 (sec), leaf count = 18

$$\left\{y(x) = \_C1 + \_C2\, \ln(x) + \frac{\_C3}{x} + \_C4\, x\right\}$$

5.28 ODE No. 1561

$$x^4 d4y(x) - 2\,n(n+1)\,x^2 \frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) + 4\,n(n+1)\,x \frac{\mathrm{d}}{\mathrm{d}x}y(x) + \left(ax^4 + n(n+1)\,(n+3)\,(n-2)\right) y(x) = 0$$

Mathematica: cpu = 3.736975 (sec), leaf count = 400

$$\left\{\left\{y(x) \to c_1\left(-2^{n-\frac{5}{2}}\right)\sqrt{x}a^{\frac{2-n}{4}+\frac{1}{4}(n-\frac{3}{2})}\Gamma\left(\frac{3}{2}-n\right)\left(\cos\left(\frac{3}{4}\pi\left(\frac{3}{2}-n\right)\right)\mathrm{ber}_{-n-\frac{1}{2}}\left(\sqrt[4]{a}x\right)+\sin\left(\frac{3}{4}\pi\left(\frac{3}{2}-n\right.\right.\right.\right.\right.$$

Maple: cpu = 0.140 (sec), leaf count = 77

$$\left\{y(x) = \_C1\,\sqrt{x}J_{n+\frac{1}{2}}\left(\sqrt[4]{-a}x\right) + \_C2\,\sqrt{x}Y_{n+\frac{1}{2}}\left(\sqrt[4]{-a}x\right) + \_C3\,\sqrt{x}J_{n+\frac{1}{2}}\left(\sqrt{-\sqrt{-a}}x\right) + \_C4\,\sqrt{x}Y_{n+\frac{1}{2}}\right.$$

5.29 ODE No. 1562

$$x^4 d4y(x) + 4\,x^3 \frac{\mathrm{d}^3}{\mathrm{d}x^3}y(x) - \left(4\,n^2-1\right)x^2 \frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) + \left(4\,n^2-1\right)x \frac{\mathrm{d}}{\mathrm{d}x}y(x) - 4\,y(x)\,x^4 = 0$$

Mathematica: cpu = 1.107641 (sec), leaf count = 140

$$\left\{\left\{y(x) \to c_1\,{}_0F_3\left(;\frac{1}{2},1-\frac{n}{2},\frac{n}{2}+1;\frac{x^4}{64}\right)+\frac{1}{8}ic_2x^2\,{}_0F_3\left(;\frac{3}{2},\frac{3}{2}-\frac{n}{2},\frac{n}{2}+\frac{3}{2};\frac{x^4}{64}\right)+c_3\left(\frac{i}{2}\right)^{-n}\Gamma(1-n)^2\,(\mathrm{b}\right.\right.$$

Maple: cpu = 0.187 (sec), leaf count = 93

$$\left\{y(x) = \_C1\,J_n\left(\left(\frac{1}{2}-\frac{i}{2}\right)\sqrt{2}x\right)J_n\left(\left(\frac{1}{2}+\frac{i}{2}\right)\sqrt{2}x\right)+\_C2\,J_n\left(\left(\frac{1}{2}-\frac{i}{2}\right)\sqrt{2}x\right)Y_n\left(\left(\frac{1}{2}+\frac{i}{2}\right)\sqrt{2}x\right)\right.$$

5.30 ODE No. 1563

$$x^4 d4y(x) + 4\,x^3 \frac{\mathrm{d}^3}{\mathrm{d}x^3}y(x) - \left(4\,n^2-1\right)x^2 \frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) - \left(4\,n^2-1\right)x \frac{\mathrm{d}}{\mathrm{d}x}y(x) + \left(-4\,x^4+4\,n^2-1\right)y(x) = 0$$

Mathematica: cpu = 1.852235 (sec), leaf count = 232

$$\left\{\left\{y(x) \to \frac{\sqrt[4]{-1}c_2x\,{}_0F_3\left(;\frac{3}{2},1-\frac{n}{2},\frac{n}{2}+1;\frac{x^4}{64}\right)}{2\sqrt{2}}-\frac{2(-1)^{3/4}\sqrt{2}c_1\,{}_0F_3\left(;\frac{1}{2},\frac{1}{2}-\frac{n}{2},\frac{n}{2}+\frac{1}{2};\frac{x^4}{64}\right)}{x}+c_3(-1)^{\frac{1}{4}(1-2n}\right.\right.$$

Maple: cpu = 0.110 (sec), leaf count = 83

$$\left\{y(x) = \_C1\,x\left(\left(\mathrm{ber}_n(x)\right)^2+\left(\mathrm{bei}_n(x)\right)^2\right)+\_C2\,x\left(\left(\mathrm{ber}_{-n}(x)\right)^2+\left(\mathrm{bei}_{-n}(x)\right)^2\right)+\_C3\,x_0\mathrm{F}_3(\ ;\frac{3}{2},1-\frac{n}{2},\right.$$

5.31 ODE No. 1564

$$x^4 d4y(x) + 4\,x^3 \frac{\mathrm{d}^3}{\mathrm{d}x^3} y(x) - \left(4\,n^2 + 3\right) x^2 \frac{\mathrm{d}^2}{\mathrm{d}x^2} y(x) + \left(12\,n^2 - 3\right) x \frac{\mathrm{d}}{\mathrm{d}x} y(x) - \left(4\,x^4 + 12\,n^2 - 3\right) y(x) = 0$$

Mathematica: cpu = 1.386176 (sec), leaf count = 230

$$\left\{\left\{y(x) \to \frac{\sqrt[4]{-1} c_1 x\, {}_0F_3\left(;\frac{1}{2},\frac{3}{2}-\frac{n}{2},\frac{n}{2}+\frac{3}{2};\frac{x^4}{64}\right)}{2\sqrt{2}} + c_3 (-1)^{\frac{1}{4}(-2n-1)} 2^{2n+\frac{1}{2}(2n+1)+1} x^{-2n-1}\, {}_0F_3\left(;1-n,\frac{1}{2}-\frac{n}{2},\right.\right.$$

Maple: cpu = 0.156 (sec), leaf count = 156

$$\left\{y(x) = \frac{\_C1 \left(\left(\mathrm{ber}_n(x)\right)^2 + \left(\mathrm{bei}_n(x)\right)^2\right)}{x} + \_C2\, x^3 {}_0\mathrm{F}_3(\ ;\frac{3}{2},2-\frac{n}{2},2+\frac{n}{2};\frac{x^4}{64}) + \_C3\, x {}_0\mathrm{F}_3(\ ;\frac{1}{2},\frac{3}{2}+\frac{n}{2},\right.$$

5.32 ODE No. 1565

$$x^4 d4y(x) + 6\,x^3 \frac{\mathrm{d}^3}{\mathrm{d}x^3} y(x) + \left(4\,x^4 + \left(-\rho^2 - \sigma^2 + 7\right) x^2\right) \frac{\mathrm{d}^2}{\mathrm{d}x^2} y(x) + \left(16\,x^3 + \left(-\rho^2 - \sigma^2 + 1\right) x\right) \frac{\mathrm{d}}{\mathrm{d}x} y(x) +$$

Mathematica: cpu = 0.518066 (sec), leaf count = 242

$$\left\{\left\{y(x) \to c_1 x^{-\rho}\, {}_2F_3\left(\frac{1}{2}-\frac{\rho}{2},1-\frac{\rho}{2};1-\rho,-\frac{\rho}{2}-\frac{\sigma}{2}+1,-\frac{\rho}{2}+\frac{\sigma}{2}+1;-x^2\right) + c_3 x^{-\sigma}\, {}_2F_3\left(\frac{1}{2}-\frac{\sigma}{2},1-\frac{\sigma}{2};\right.\right.$$

Maple: cpu = 0.171 (sec), leaf count = 85

$$\left\{y(x) = \_C1\, J_{\frac{\rho}{2}+\frac{\sigma}{2}}(x) J_{\frac{\rho}{2}-\frac{\sigma}{2}}(x) + \_C2\, J_{\frac{\rho}{2}+\frac{\sigma}{2}}(x) Y_{\frac{\rho}{2}-\frac{\sigma}{2}}(x) + \_C3\, Y_{\frac{\rho}{2}+\frac{\sigma}{2}}(x) J_{\frac{\rho}{2}-\frac{\sigma}{2}}(x) + \_C4\, Y_{\frac{\rho}{2}+\frac{\sigma}{2}}(x) Y_{\frac{\rho}{2}-\frac{\sigma}{2}}(\right.$$

5.33 ODE No. 1566

$$x^4 d4y(x) + 6\,x^3 \frac{\mathrm{d}^3}{\mathrm{d}x^3} y(x) + \left(4\,x^4 + \left(-2\,\mu^2 - 2\,\nu^2 + 7\right) x^2\right) \frac{\mathrm{d}^2}{\mathrm{d}x^2} y(x) + \left(16\,x^3 + \left(-2\,\mu^2 - 2\,\nu^2 + 1\right) x\right) \frac{\mathrm{d}}{\mathrm{d}x} y(x)$$

Mathematica: cpu = 0.620079 (sec), leaf count = 238

$$\left\{\left\{y(x) \to c_1 x^{-\mu-\nu}\, {}_2F_3\left(-\frac{\mu}{2}-\frac{\nu}{2}+\frac{1}{2},-\frac{\mu}{2}-\frac{\nu}{2}+1;1-\mu,1-\nu,-\mu-\nu+1;-x^2\right) + c_2 x^{\mu-\nu}\, {}_2F_3\left(\frac{\mu}{2}-\right.\right.$$

Maple: cpu = 0.156 (sec), leaf count = 37

$$\{y(x) = \_C1\, J_\nu(x) J_\mu(x) + \_C2\, J_\nu(x) Y_\mu(x) + \_C3\, Y_\nu(x) J_\mu(x) + \_C4\, Y_\nu(x) Y_\mu(x)\}$$

5.34 ODE No. 1567

$$\boxed{x^4 d4y(x) + 8\,x^3 \frac{\mathrm{d}^3}{\mathrm{d}x^3} y(x) + 12\,x^2 \frac{\mathrm{d}^2}{\mathrm{d}x^2} y(x) = 0}$$

Mathematica: cpu = 0.020503 (sec), leaf count = 30

$$\left\{\left\{y(x) \to \frac{1}{6}\left(\frac{c_1}{x^2} + \frac{3c_2}{x}\right) + c_4 x + c_3\right\}\right\}$$

Maple: cpu = 0.016 (sec), leaf count = 19

$$\left\{y(x) = \_C1 + \frac{\_C2}{x} + \frac{\_C3}{x^2} + \_C4\,x\right\}$$

5.35 ODE No. 1568

$$\boxed{x^4 d4y(x) + 8\,x^3 \frac{\mathrm{d}^3}{\mathrm{d}x^3} y(x) + 12\,x^2 \frac{\mathrm{d}^2}{\mathrm{d}x^2} y(x) + a y(x) = 0}$$

Mathematica: cpu = 0.157020 (sec), leaf count = 378

$$\left\{\left\{y(x) \to c_1 b^{\frac{a-c\mu-c\nu}{c}} \left(x^{2c}\right)^{\frac{a-c\mu-c\nu}{2c}}\ {}_2F_3\left(-\frac{\mu}{2} - \frac{\nu}{2} + \frac{1}{2}, -\frac{\mu}{2} - \frac{\nu}{2} + 1; 1-\mu, 1-\nu, -\mu-\nu+1; -b^2 x^{2c}\right) + c_2\right.\right.$$

Maple: cpu = 0.015 (sec), leaf count = 89

$$\left\{y(x) = \_C1\,x^{-\frac{1}{2}-\frac{1}{2}\sqrt{5-4\sqrt{1-a}}} + \_C2\,x^{-\frac{1}{2}+\frac{1}{2}\sqrt{5-4\sqrt{1-a}}} + \_C3\,x^{-\frac{1}{2}-\frac{1}{2}\sqrt{5+4\sqrt{1-a}}} + \_C4\,x^{-\frac{1}{2}+\frac{1}{2}\sqrt{5+4\sqrt{1-a}}}\right\}$$

5.36 ODE No. 1569

$$\boxed{x^4 d4y(x) + (6-4\,a)\,x^3 \frac{\mathrm{d}^3}{\mathrm{d}x^3} y(x) + \left(4\,b^2 c^2 x^{2\,c} + 6\,(a-1)^2 - 2\,c^2\left(\mu^2+\nu^2\right) + 1\right) x^2 \frac{\mathrm{d}^2}{\mathrm{d}x^2} y(x) + \left(4\,(3\,c - 2\,a\right.}$$

Mathematica: cpu = 0.152019 (sec), leaf count = 378

$$\left\{\left\{y(x) \to c_1 b^{\frac{a-c\mu-c\nu}{c}} \left(x^{2c}\right)^{\frac{a-c\mu-c\nu}{2c}}\ {}_2F_3\left(-\frac{\mu}{2} - \frac{\nu}{2} + \frac{1}{2}, -\frac{\mu}{2} - \frac{\nu}{2} + 1; 1-\mu, 1-\nu, -\mu-\nu+1; -b^2 x^{2c}\right) + c_2\right.\right.$$

Maple: cpu = 0.218 (sec), leaf count = 81

$$\{y(x) = \_C1\,x^a J_\mu(x^c b) Y_\nu(x^c b) + \_C2\,x^a J_\nu(x^c b) J_\mu(x^c b) + \_C3\,x^a J_\nu(x^c b) Y_\mu(x^c b) + \_C4\,x^a Y_\nu(x^c b) Y_\mu(x^c$$

5.37 ODE No. 1570

$$x^4 d4y(x) + (6 - 4a - 4c) x^3 \frac{\mathrm{d}^3}{\mathrm{d}x^3} y(x) + \left(-2\nu^2 c^2 + 2a^2 + 4(a + c - 1)^2 + 4(a - 1)(c - 1) - 1\right) x^2 \frac{\mathrm{d}^2}{\mathrm{d}x^2} y$$

Mathematica: cpu = 0.154020 (sec), leaf count = 470

$$\left\{\left\{y(x) \to c_1 \Gamma(1 - \nu)(-1)^{\frac{a - c\nu}{4c}} 2^{-\frac{2(a - c\nu)}{c} - \nu - 1} b^{\frac{a - c\nu}{c} + \nu} \left(x^{4c}\right)^{\frac{a - c\nu}{4c} + \frac{\nu}{4}} \left(J_{-\nu}\left(b\sqrt[4]{x^{4c}}\right) + I_{-\nu}\left(b\sqrt[4]{x^{4c}}\right)\right) + c_2 \Gamma(2 -\right.$$

Maple: cpu = 0.047 (sec), leaf count = 57

$$\{y(x) = \_C1\, x^a J_\nu(x^c b) + \_C2\, x^a Y_\nu(x^c b) + \_C3\, x^a J_\nu(ibx^c) + \_C4\, x^a Y_\nu(ibx^c)\}$$

5.38 ODE No. 1571

$$\nu^4 x^4 d4y(x) + (4\nu - 2)\nu^3 x^3 \frac{\mathrm{d}^3}{\mathrm{d}x^3} y(x) + (\nu - 1)(2\nu - 1)\nu^2 x^2 \frac{\mathrm{d}^2}{\mathrm{d}x^2} y(x) - 1/16\, b^4 x^{2\nu^{-1}} y(x) = 0$$

Mathematica: cpu = 0.094012 (sec), leaf count = 390

$$\left\{\left\{y(x) \to c_1\, {}_0F_3\left(;1 - \frac{v}{2}, 1 - \frac{v}{2\nu}, -\frac{v}{2\nu} - \frac{v}{2} + 1; \frac{b^4 v^4 x^{2/v}}{256\nu^4}\right) + c_2 \left(\frac{i}{16}\right)^v v^{2v} b^{2v} \nu^{-2v} \left(x^{2/v}\right)^{v/2}\, {}_0F_3\left(;\frac{v}{2} + 1,\right.\right.\right.$$

Maple: cpu = 0.093 (sec), leaf count = 151

$$\left\{y(x) = \_C1\, \sqrt{x} J_{(\lfloor \nu^{-1} \rfloor)^{-1}}\left(\frac{1}{\lfloor \nu^{-1} \rfloor}\sqrt{\frac{b^2}{\nu^2}} x^{\frac{\lfloor \nu^{-1} \rfloor}{2}}\right) + \_C2\, \sqrt{x} Y_{(\lfloor \nu^{-1} \rfloor)^{-1}}\left(\frac{1}{\lfloor \nu^{-1} \rfloor}\sqrt{\frac{b^2}{\nu^2}} x^{\frac{\lfloor \nu^{-1} \rfloor}{2}}\right) + \_C3\, \sqrt{x} J_{(\lfloor}\right.$$

5.39 ODE No. 1572

$$\left(x^2 - 1\right)^2 d4y(x) + 10\, x\left(x^2 - 1\right) \frac{\mathrm{d}^3}{\mathrm{d}x^3} y(x) + \left(24x^2 - 8 - 2\left(\mu(\mu + 1) + \nu(\nu + 1)\right)\left(x^2 - 1\right)\right) \frac{\mathrm{d}^2}{\mathrm{d}x^2} y(x) - 6$$

Mathematica: cpu = 93.272844 (sec), leaf count = 174

$$\left\{\left\{y(x) \to \text{DifferentialRoot}\left(\{y, x\}, \left\{(\mu - \nu - 1)(\mu - \nu + 1)(\mu + \nu)(\mu + \nu + 2) y(x) - 6x\left(\mu^2 + \mu + \nu^2 + \nu\right.\right.\right.\right.$$

Maple: cpu = 0.203 (sec), leaf count = 37

$$\{y(x) = \_C1\ LegendreP(\nu, x)\ LegendreP(\mu, x) + \_C2\ LegendreP(\nu, x)\ LegendreQ(\mu, x) + \_C3\ Legendre$$

5.40 ODE No. 1573

$$(\mathrm{e}^{x}+2\,x)\,d4y(x)+4\,(\mathrm{e}^{x}+2)\,\frac{\mathrm{d}^{3}}{\mathrm{d}x^{3}}y(x)+6\,\mathrm{e}^{x}\frac{\mathrm{d}^{2}}{\mathrm{d}x^{2}}y(x)+4\,\mathrm{e}^{x}\frac{\mathrm{d}}{\mathrm{d}x}y(x)+y(x)\,\mathrm{e}^{x}-x^{-5}=0$$

Mathematica: cpu = 0.054507 (sec), leaf count = 59

$$\text{DSolve}\left[-\frac{1}{x^5}+(2x+e^x)\,y^{(4)}(x)+4(e^x+2)\,y^{(3)}(x)+6e^xy''(x)+4e^xy'(x)+e^xy(x)=0,y(x),x\right]$$

Maple: cpu = 0.016 (sec), leaf count = 65

$$\left\{y(x)=\frac{\_C4}{\mathrm{e}^{x}+2\,x}+\frac{\_C1\,x^{3}}{\mathrm{e}^{x}+2\,x}+\frac{\_C2\,x^{2}}{\mathrm{e}^{x}+2\,x}+\frac{\_C3\,x}{\mathrm{e}^{x}+2\,x}+\frac{1}{(24\,\mathrm{e}^{x}+48\,x)\,x}\right\}$$

6 Kamke chapter 5. Linear fifth and higher order

6.1 ODE No. 1574

$$d4y(x) \left(\sin \left(x\right)\right)^{4}+2 \left(\frac{\mathrm{d}^{3}}{\mathrm{d}x^{3}}y(x)\right) \left(\sin \left(x\right)\right)^{3} \cos \left(x\right)+\left(\frac{\mathrm{d}^{2}}{\mathrm{d}x^{2}}y(x)\right) \left(\sin \left(x\right)\right)^{2} \left(\left(\sin \left(x\right)\right)^{2}-3\right)+\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)$$

Mathematica: cpu = 0.206526 (sec), leaf count = 73

$$\text{DSolve}\left[y(x) \left(a^4 \sin ^4(x)-3\right)+y^{(4)}(x) \sin ^4(x)+2 y^{(3)}(x) \sin ^3(x) \cos (x)+\left(\sin ^2(x)-3\right) \sin ^2(x) y''(x)+(2 s\right.$$

Maple: cpu = 0.639 (sec), leaf count = 345

$$\left\{y(x) = \_C1 \ \sin \left(x\right) {}_2\mathrm{F}_1(\frac{3}{4}+\frac{1}{4} \sqrt{-i \left(-4 \sqrt{a+i} \sqrt{a-i} \sqrt{a-1} \sqrt{a+1}+5 i\right)}, \frac{3}{4}-\frac{1}{4} \sqrt{-i \left(-4 \sqrt{a+i} \sqrt{a}\right.}\right.$$

6.2 ODE No. 1575

$$d4y(x) \left(\sin \left(x\right)\right)^{6}+4 \left(\frac{\mathrm{d}^{3}}{\mathrm{d}x^{3}}y(x)\right) \left(\sin \left(x\right)\right)^{5} \cos \left(x\right)-6 \left(\frac{\mathrm{d}^{2}}{\mathrm{d}x^{2}}y(x)\right) \left(\sin \left(x\right)\right)^{6}-4 \left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right) \left(\sin \left(x\right)\right)^{5} \cos$$

Mathematica: cpu = 0.067008 (sec), leaf count = 61

$$\text{DSolve}\left[-f(x)+y^{(4)}(x) \sin ^6(x)+4 y^{(3)}(x) \sin ^5(x) \cos (x)-6 \sin ^6(x) y''(x)-4 \sin ^5(x) \cos (x) y'(x)+y(x) \text{si}\right.$$

Maple: cpu = 0.265 (sec), leaf count = 1277

$$\left\{y(x) = -\frac{f\left(-12 \cos \left(x\right) \left(\sin \left(x\right)\right)^{2} \mathrm{e}^{6 i x} x^{3}+80 \left(\sin \left(x\right)\right)^{4} \ln \left(1+\mathrm{e}^{i x}\right) \mathrm{e}^{6 i x} x-80 \left(\sin \left(x\right)\right)^{4} \ln \left(1-\mathrm{e}^{i x}\right) \mathrm{e}^{6 i x} x\right.}{\_}\right.$$

6.3 ODE No. 1576

$$f\left(d4y(x)-2 a^{2} \frac{\mathrm{d}^{2}}{\mathrm{d}x^{2}}y(x)+a^{4} y(x)\right)+2 df \left(\frac{\mathrm{d}^{3}}{\mathrm{d}x^{3}}y(x)-a^{2} \frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)=0$$

Mathematica: cpu = 0.246031 (sec), leaf count = 50

$$\text{DSolve}\left[2 f'(x) \left(y^{(3)}(x)-a^2 y'(x)\right)+f(x) \left(a^4 y(x)-2 a^2 y''(x)+y^{(4)}(x)\right)=0, y(x), x\right]$$

Maple: cpu = 0.016 (sec), leaf count = 67

$$\left\{y(x) = \_C1 \ \mathrm{e}^{a x}+\_C2 \ \mathrm{e}^{-a x}+\_C3 \ \mathrm{e}^{\frac{x}{f} \left(-df+\sqrt{a^{2} f^{2}+df^{2}}\right)}+\_C4 \ \mathrm{e}^{-\frac{x}{f} \left(df+\sqrt{a^{2} f^{2}+df^{2}}\right)}\right\}$$

6.4 ODE No. 1577

$$\boxed{f\frac{\mathrm{d}^4}{\mathrm{d}x^4}y(x)=0}$$

Mathematica: cpu = 1.265661 (sec), leaf count = 44

$$\left\{\left\{y(x)\to \int_1^x \left(\int_1^{K[2]} \left(\frac{c_1}{f(K[1])}+\frac{c_2 K[1]}{f(K[1])}\right) dK[1]\right) dK[2]+c_4 x+c_3\right\}\right\}$$

Maple: cpu = 0.016 (sec), leaf count = 21

$$\left\{y(x)=\frac{\_C1\, x^3}{6}+\frac{\_C2\, x^2}{2}+\_C3\, x+\_C4\right\}$$

6.5 ODE No. 1578

$$\boxed{d4y(x)-2\,a^2\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+a^4y(x)-\lambda\,(ax-b)\left(\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)-a^2y(x)\right)=0}$$

Mathematica: cpu = 438.074128 (sec), leaf count = 139

$$\left\{\left\{y(x)\to c_3 e^{-ax}\int_1^x 2ae^{2aK[1]}\int e^{-aK[1]}\mathrm{Ai}\left(\frac{a^2+\lambda K[1]a-b\lambda}{(a\lambda)^{2/3}}\right) dK[1]\,dK[1]+c_4 e^{-ax}\int_1^x 2ae^{2aK[2]}\int e^{-}\right.\right.$$

Maple: cpu = 0.764 (sec), leaf count = 92

$$\left\{y(x)=\mathrm{e}^{ax}\left(\int \mathrm{e}^{-2\,ax}\left(\int \_C3\,\mathrm{e}^{ax}\mathrm{Ai}\left(-\frac{\lambda\,(ax-b)+a^2}{a\lambda}\sqrt[3]{-a\lambda}\right)+\_C4\,\mathrm{e}^{ax}\mathrm{Bi}\left(-\frac{\lambda\,(ax-b)+a^2}{a\lambda}\sqrt[3]{-a\lambda}\right)\right.\right.\right.$$

6.6 ODE No. 1579

$$\boxed{\frac{\mathrm{d}^5}{\mathrm{d}x^5}y(x)+2\,\frac{\mathrm{d}^3}{\mathrm{d}x^3}y(x)+\frac{\mathrm{d}}{\mathrm{d}x}y(x)-ax-b\sin(x)-c\cos(x)=0}$$

Mathematica: cpu = 0.621079 (sec), leaf count = 104

$$\left\{\left\{y(x)\to \frac{ax^2}{2}+\frac{1}{8}b\left(x^2-2\right)\cos(x)-\frac{3}{8}bx\sin(x)-\frac{5}{16}b\cos(x)-\frac{1}{8}c\left(x^2-2\right)\sin(x)+c_2 x\sin(x)+\frac{9}{16}c\,\mathrm{si}\right.\right.$$

Maple: cpu = 0.156 (sec), leaf count = 78

$$\left\{y(x)=-\frac{\sin(x)\,bx}{2}-\frac{3\,b\cos(x)}{4}-\frac{\cos(x)\,cx}{2}-\frac{\sin(x)\,cx^2}{8}+\frac{21\,\sin(x)\,c}{32}+\frac{\cos(x)\,bx^2}{8}+\frac{ax^2}{2}+\_C1\ \mathrm{si}\right.$$

6.7 ODE No. 1580

$$\boxed{\frac{\mathrm{d}^6}{\mathrm{d}x^6}y(x)+y(x)-\sin\left(3/2\,x\right)\sin\left(x/2\right)=0}$$

Mathematica: cpu = 0.839106 (sec), leaf count = 234

$$\left\{\left\{y(x)\to c_4e^{-\frac{\sqrt{3}x}{2}}\sin\left(\frac{x}{2}\right)+c_6e^{\frac{\sqrt{3}x}{2}}\sin\left(\frac{x}{2}\right)+c_5\sin(x)+c_1e^{\frac{\sqrt{3}x}{2}}\cos\left(\frac{x}{2}\right)+c_3e^{-\frac{\sqrt{3}x}{2}}\cos\left(\frac{x}{2}\right)+c_2\cos(x)\right.\right.$$

Maple: cpu = 0.375 (sec), leaf count = 164

$$\left\{y(x)=\left(\frac{\mathrm{e}^{\frac{i}{2}x}}{24}+\frac{\mathrm{e}^{-\frac{i}{2}x}}{24}\right)\cos\left(\frac{x}{2}\right)+\left(\frac{\mathrm{e}^{\frac{i}{2}x}}{56}+\frac{\mathrm{e}^{-\frac{i}{2}x}}{56}\right)\cos\left(\frac{3\,x}{2}\right)+\left(\frac{i}{24}\mathrm{e}^{\frac{i}{2}x}-\frac{i}{24}\mathrm{e}^{-\frac{i}{2}x}\right)\sin\left(\frac{x}{2}\right)+\left(-\frac{11\,i}{168}\mathrm{e}\right.\right.$$

6.8 ODE No. 1581

$$\boxed{\frac{\mathrm{d}^5}{\mathrm{d}x^5}y(x)-axy(x)-b=0}$$

Mathematica: cpu = 0.152519 (sec), leaf count = 61

$$\left\{\left\{y(x)\to \text{DifferentialRoot}\left(\{y,x\},\left\{-b-xay(x)+y^{(5)}(x)=0,y(0)=c_1,y'(0)=c_2,y''(0)=c_3,y^{(3)}(0)=\right.\right.\right.$$

Maple: cpu = 0 (sec), leaf count = 0

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6.9 ODE No. 1582

$$\boxed{\frac{\mathrm{d}^5}{\mathrm{d}x^5}y(x)+ax^{\nu}\frac{\mathrm{d}}{\mathrm{d}x}y(x)+a\nu\,x^{\nu-1}y(x)=0}$$

Mathematica: cpu = 0.337543 (sec), leaf count = 787

$$\left\{\left\{y(x)\to c_5\left(\frac{4}{\nu}+1\right)^{-\frac{16}{\nu+4}}\nu^{-\frac{16}{\nu+4}}a^{\frac{4}{\nu+4}}(x^{\nu})^{\frac{4\left(\frac{4}{\nu}+1\right)}{\nu+4}}\,{}_1F_4\left(\frac{4}{\nu\left(1+\frac{4}{\nu}\right)}+\frac{1}{1+\frac{4}{\nu}};1+\frac{1}{\left(1+\frac{4}{\nu}\right)\nu},1+\frac{2}{\left(1+\frac{4}{\nu}\right)\nu},1\right.\right.\right.$$

Maple: cpu = 0.047 (sec), leaf count = 41

$$\left\{y(x)=DESol\left(\left\{\frac{\mathrm{d}^5}{\mathrm{d}x^5}\_Y(x)+ax^{\nu}\frac{\mathrm{d}}{\mathrm{d}x}\_Y(x)+a\nu\,x^{\nu-1}\_Y(x)\right\},\{\_Y(x)\}\right)\right\}$$

6.10 ODE No. 1583

$$\boxed{\frac{\mathrm{d}^5}{\mathrm{d}x^5}y(x)+a\frac{\mathrm{d}^4}{\mathrm{d}x^4}y(x)-f=0}$$

Mathematica: cpu = 1218.103679 (sec), leaf count = 117

$$\{\{y(x)\to (\text{Integrate\$\$a\$3645023}-1)(\text{Integrate\$\$a\$3818055}-1)(\text{Integrate\$\$a\$3863942}-1)(x-1)e^{-}$$

Maple: cpu = 0.015 (sec), leaf count = 40

$$\left\{y(x)=\frac{\mathrm{e}^{-ax}\_C1}{a^4}+\frac{fx^4}{24\,a}+\frac{\_C2\,x^3}{6}+\frac{\_C3\,x^2}{2}+\_C4\,x+\_C5\right\}$$

6.11 ODE No. 1584

$$\boxed{x\frac{\mathrm{d}^5}{\mathrm{d}x^5}y(x)-5\,m\frac{\mathrm{d}^4}{\mathrm{d}x^4}y(x)+axy(x)=0}$$

Mathematica: cpu = 2.837860 (sec), leaf count = 216

$$\left\{\left\{y(x)\to c_5 5^{-5m-4}a^{\frac{1}{5}(5m+4)}x^{5m+4}\,{}_0F_4\left(;m+\frac{6}{5},m+\frac{7}{5},m+\frac{8}{5},m+\frac{9}{5};-\frac{ax^5}{3125}\right)+\frac{1}{125}a^{3/5}c_4x^3\,{}_0F_4\left(;\frac{6}{5},\right.\right.$$

Maple: cpu = 0.124 (sec), leaf count = 118

$$\left\{y(x)=\_C1\,{}_0\mathrm{F}_4(\ ;\ \frac{2}{5},\frac{3}{5},\frac{4}{5},\frac{1}{5}-m;\ -\frac{x^5a}{3125})+\_C2\,x{}_0\mathrm{F}_4(\ ;\ \frac{3}{5},\frac{4}{5},\frac{6}{5},\frac{2}{5}-m;\ -\frac{x^5a}{3125})+\_C3\,x^2{}_0\mathrm{F}_4(\ ;\ \frac{4}{5},\right.$$

6.12 ODE No. 1585

$$\boxed{x\left(a\frac{\mathrm{d}}{\mathrm{d}x}y(x)+b\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+c\frac{\mathrm{d}^3}{\mathrm{d}x^3}y(x)+ed4y(x)\right)y(x)=0}$$

Mathematica: cpu = 0.247031 (sec), leaf count = 214

$$\left\{\{y(x)\to 0\},\left\{y(x)\to \frac{c_1e^{x\text{Root}\left[\#1^3+\frac{\#1^2c}{e}+\frac{\#1b}{e}+\frac{a}{e}\&,1\right]}}{\text{Root}\left[\#1^3+\frac{\#1^2c}{e}+\frac{\#1b}{e}+\frac{a}{e}\&,1\right]}+\frac{c_2e^{x\text{Root}\left[\#1^3+\frac{\#1^2c}{e}+\frac{\#1b}{e}+\frac{a}{e}\&,2\right]}}{\text{Root}\left[\#1^3+\frac{\#1^2c}{e}+\frac{\#1b}{e}+\frac{a}{e}\&,2\right]}+\frac{c_3e\right.\right.$$

Maple: cpu = 0.016 (sec), leaf count = 806

$$\left\{y(x)=0,y(x)=\_C1+\_C2\,\mathrm{e}^{-\frac{x}{12\,e}\left(i\left(12\sqrt{3}\sqrt{27\,a^2e^2-18\,abce+4\,ac^3+4\,b^3e-b^2c^2}e-108\,ae^2+36\,bce-8\,c^3\right)^{\frac{2}{3}}\sqrt{3}+12\,i\sqrt{3}be-4\,i\right.\right.$$

6.13 ODE No. 1586

$$x\frac{\mathrm{d}^5}{\mathrm{d}x^5}y(x)-(aA_1-A_0)\,x-A_1-((aA_2-A_1)\,x+A_2)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)-((aA_3-A_2)\,x+A_3)\,\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)-((aA_4$$

Mathematica: cpu = 84.450724 (sec), leaf count = 148

$$\{\{y(x)\to \text{DifferentialRoot}\big(\{y,x\},\{xA(0)-xaA(1)-A(1)+(xA(1)-xaA(2)-A(2))y'(x)+(xA(2)$$

Maple: cpu = 0.124 (sec), leaf count = 119

$$\left\{y(x)=\int DESol\left(\left\{-\frac{(axA_2-xA_1+A_2)\_Y(x)}{x}-\frac{(axA_3-xA_2+A_3)\,\frac{\mathrm{d}}{\mathrm{d}x}\_Y(x)}{x}-\frac{(axA_4-xA_3+A$$

6.14 ODE No. 1587

$$x^5\frac{\mathrm{d}^{10}}{\mathrm{d}x^{10}}y(x)-ay(x)=0$$

Mathematica: cpu = 0.311540 (sec), leaf count = 492

$$\left\{\left\{y(x)\to \frac{(-1)^{4/5}a^{9/5}c_1x^9\,{}_0F_9\left(;\frac{6}{5},\frac{7}{5},\frac{8}{5},\frac{9}{5},2,\frac{11}{5},\frac{12}{5},\frac{13}{5},\frac{14}{5};\frac{ax^5}{9765625}\right)}{3814697265625}+\frac{(-1)^{3/5}a^{8/5}c_3x^8\,{}_0F_9\left(;\frac{4}{5},\frac{6}{5},\frac{7}{5},\frac{8}{5},\frac{9}{5},2\right.}{152587890625}\right.$$

Maple: cpu = 0.265 (sec), leaf count = 200

$$\left\{y(x)=\_C1\,x^{\frac{5}{2}}I_5\left(2\,a^{1/10}\sqrt{x}\right)+\_C2\,x^{\frac{5}{2}}Y_5\left(2\,ia^{\frac{1}{10}}\sqrt{x}\right)+\_C3\,x^{\frac{5}{2}}I_5\left(2\,\mathrm{e}^{i/5\pi}a^{1/10}\sqrt{x}\right)+\_C4\,x^{\frac{5}{2}}I_5\left(2\,\mathrm{e}^{2/5\,i}\right.\right.$$

6.15 ODE No. 1588

$$x^{10}\frac{\mathrm{d}^5}{\mathrm{d}x^5}y(x)-ay(x)=0$$

Mathematica: cpu = 6.345306 (sec), leaf count = 114

$$\left\{\left\{y(x)\to c_1x^4e^{-\frac{\sqrt[5]{a}}{x}}+c_2x^4e^{\frac{\sqrt[5]{-1}\,\sqrt[5]{a}}{x}}+c_3x^4e^{-\frac{(-1)^{2/5}\,\sqrt[5]{a}}{x}}+c_4x^4e^{\frac{(-1)^{3/5}\,\sqrt[5]{a}}{x}}+c_5x^4e^{-\frac{(-1)^{4/5}\,\sqrt[5]{a}}{x}}\right\}\right\}$$

Maple: cpu = 0.078 (sec), leaf count = 90

$$\left\{y(x)=\_C1\,{}_0\mathrm{F}_4(\,;\frac{6}{5},\frac{7}{5},\frac{8}{5},\frac{9}{5};-\frac{a}{3125\,x^5})+\_C2\,x\,{}_0\mathrm{F}_4(\,;\frac{4}{5},\frac{6}{5},\frac{7}{5},\frac{8}{5};-\frac{a}{3125\,x^5})+\_C3\,x^2\,{}_0\mathrm{F}_4(\,;\frac{3}{5},\frac{4}{5},\frac{6}{5}\right.$$

6.16 ODE No. 1589

$$\boxed{x^{11/2}\frac{\mathrm{d}^{11}}{\mathrm{d}x^{11}}y(x)-ay(x)=0}$$

Mathematica: cpu = 0.040505 (sec), leaf count = 670

$$\left\{\left\{y(x)\to \frac{4}{121}(-1)^{2/11}a^{2/11}c_2x\,{}_0F_{10}\left(;-\frac{7}{11},-\frac{5}{11},-\frac{3}{11},-\frac{1}{11},\frac{1}{11},\frac{3}{11},\frac{5}{11},\frac{7}{11},\frac{9}{11},\frac{13}{11};\frac{2048ax^{11/2}}{285311670611}\right)-\right.\right.$$

Maple: cpu = 6.380 (sec), leaf count = 27500

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6.17 ODE No. 1590

$$\boxed{(x-a)^5\,(x-b)^5\,\frac{\mathrm{d}^5}{\mathrm{d}x^5}y(x)-cy(x)=0}$$

Mathematica: cpu = 343.290592 (sec), leaf count = 72

$$\left\{\left\{y(x)\to \text{DifferentialRoot}\left(\{y,x\},\left\{(a-x)^5(b-x)^5y^{(5)}(x)-cy(x)=0,y(0)=c_1,y'(0)=c_2,y''(0)=c_3\right.\right.\right.$$

Maple: cpu = 1.794 (sec), leaf count = 1258

$$\left\{y(x)=\mathit{ODESolStruc}\left(\mathrm{e}^{\int \frac{\left(\mathrm{e}^{(\int \_g(\_f)\,\mathrm{d}\_f+\_C1)a-(\int \_g(\_f)\,\mathrm{d}\_f+\_C1)b}\right)^2\_f+4\left(\mathrm{e}^{(\int \_g(\_f)\,\mathrm{d}\_f+\_C1)a-(\int \_g(\_f)\,\mathrm{d}\_f+\_C1)b}\right)^2 b-2\,\mathrm{e}^{(\int \_g(\_f)}}{\mathrm{e}^{(\int \_g(\_f)\,\mathrm{d}\_}}\right.\right.$$

7 Kamke chapter 6. Non-linear second order

7.1 ODE No. 1591

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) - (y(x))^2 = 0}$$

Mathematica: cpu = 0.039005 (sec), leaf count = 26

$$\left\{\left\{y(x) \to \sqrt[3]{6}\wp\left(\frac{x+c_1}{\sqrt[3]{6}};0,c_2\right)\right\}\right\}$$

Maple: cpu = 0.031 (sec), leaf count = 12

$$\{y(x) = 6\ \mathit{WeierstrassP}(x + \_C1, 0, \_C2)\}$$

7.2 ODE No. 1592

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) - 6\,(y(x))^2 = 0}$$

Mathematica: cpu = 0.030004 (sec), leaf count = 14

$$\{\{y(x) \to \wp(x + c_1; 0, c_2)\}\}$$

Maple: cpu = 0.016 (sec), leaf count = 10

$$\{y(x) = \mathit{WeierstrassP}(x + \_C1, 0, \_C2)\}$$

7.3 ODE No. 1593

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) - 6\,(y(x))^2 - x = 0}$$

Mathematica: cpu = 0.162021 (sec), leaf count = 20

$$\text{DSolve}\left[y''(x) - 6y(x)^2 - x = 0, y(x), x\right]$$

Maple: cpu = 0.094 (sec), leaf count = 0

could not solve

7.4 ODE No. 1594

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) - 6\left(y(x)\right)^2 + 4\,y(x) = 0}$$

Mathematica: cpu = 0.366546 (sec), leaf count = 373

$$\text{Solve}\left[\frac{4\left(\text{Root}\left[4\#1^3 - 4\#1^2 + c_1\&, 2\right] - \text{Root}\left[4\#1^3 - 4\#1^2 + c_1\&, 3\right]\right)\left(y(x) - \text{Root}\left[4\#1^3 - 4\#1^2 + c_1\right.\right.}{\left(c_1 + 4y(x)^3 - 4y(x)^2\right)\left(\text{Root}\left[4\right.\right.}\right.$$

Maple: cpu = 0.110 (sec), leaf count = 59

$$\left\{\int^{y(x)} \frac{1}{\sqrt{4\_a^3 - 4\_a^2 + \_C1}}d\_a - x - \_C2 = 0, \int^{y(x)} -\frac{1}{\sqrt{4\_a^3 - 4\_a^2 + \_C1}}d\_a - x - \_C2 =\right.$$

7.5 ODE No. 1595

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) + a\left(y(x)\right)^2 + bx + c = 0}$$

Mathematica: cpu = 0.335543 (sec), leaf count = 21

$$\text{DSolve}\left[ay(x)^2 + bx + c + y''(x) = 0, y(x), x\right]$$

Maple: cpu = 0.124 (sec), leaf count = 0

could not solve

7.6 ODE No. 1596

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) - 2\left(y(x)\right)^3 - xy(x) + a = 0}$$

Mathematica: cpu = 0.968123 (sec), leaf count = 23

$$\text{DSolve}\left[a + y''(x) - 2y(x)^3 - xy(x) = 0, y(x), x\right]$$

Maple: cpu = 0.187 (sec), leaf count = 0

could not solve

7.7 ODE No. 1597

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) - a(y(x))^3 = 0}$$

Mathematica: cpu = 2.336797 (sec), leaf count = 242

$$\left\{\left\{y(x) \to -\frac{\sqrt[4]{2}\sqrt{c_1}\sqrt{\frac{i\sqrt{a}}{\sqrt{c_1}}}\mathrm{sn}\left(\frac{(-1)^{3/4}\sqrt{\sqrt{2}\sqrt{a}\sqrt{c_1}x^2+2\sqrt{2}\sqrt{a}\sqrt{c_1}c_2x+\sqrt{2}\sqrt{a}\sqrt{c_1}c_2^2}}{\sqrt{2}}\middle| -1\right)}{\sqrt{a}}\right\}, \left\{y(x) \to \frac{\sqrt[4]{2}\sqrt{c_1}\sqrt{\frac{i\sqrt{a}}{\sqrt{c_1}}}}\right.$$

Maple: cpu = 0.031 (sec), leaf count = 21

$$\left\{y(x) = \_C2\ JacobiSN\left(\left(\frac{x}{2}\sqrt{-2\,a} + \_C1\right)\_C2, i\right)\right\}$$

7.8 ODE No. 1598

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) - 2\,a^2(y(x))^3 + 2\,abxy(x) - b = 0}$$

Mathematica: cpu = 3.346425 (sec), leaf count = 30

$$\mathrm{DSolve}\left[-2a^2y(x)^3 + 2abxy(x) - b + y''(x) = 0, y(x), x\right]$$

Maple: cpu = 0.234 (sec), leaf count = 0

could not solve

7.9 ODE No. 1599

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) + d + bxy(x) + cy(x) + a(y(x))^3 = 0}$$

Mathematica: cpu = 2.855863 (sec), leaf count = 27

$$\mathrm{DSolve}\left[ay(x)^3 + bxy(x) + cy(x) + d + y''(x) = 0, y(x), x\right]$$

Maple: cpu = 0.250 (sec), leaf count = 0

could not solve

7.10 ODE No. 1600

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+d+b(y(x))^2+cy(x)+a(y(x))^3=0}$$

Mathematica: cpu = 2.224782 (sec), leaf count = 1017

$$\text{Solve}\left[\frac{4F\left(\sin^{-1}\left(\sqrt{\frac{(\text{Root}\left[3a\#1^4+4b\#1^3+6c\#1^2+12d\#1-6c_1\&,2\right]-\text{Root}\left[3a\#1^4+4b\#1^3+6c\#1^2+12d\#1-6c_1\&,4\right])(y(x)-\text{Root}\left[3a\right.}{(\text{Root}\left[3a\#1^4+4b\#1^3+6c\#1^2+12d\#1-6c_1\&,1\right]-\text{Root}\left[3a\#1^4+4b\#1^3+6c\#1^2+12d\#1-6c_1\&,4\right])(y(x)-\text{Root}\left[3a\right.}\right.\right.\right.$$

Maple: cpu = 0.063 (sec), leaf count = 89

$$\left\{\int^{y(x)}-6\,\frac{1}{\sqrt{-18\,\_a^4a-24\,b\_a^3-36\,c\_a^2-72\,d\_a+36\,\_C1}}d\_a-x-\_C2=0,\int^{y(x)}6\,\frac{}{\sqrt{-18\,\_a^4}}\right.$$

7.11 ODE No. 1601

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+ax^r(y(x))^n=0}$$

Mathematica: cpu = 0.037505 (sec), leaf count = 20

$$\text{DSolve}[ax^ry(x)^n+y''(x)=0,y(x),x]$$

Maple: cpu = 3.479 (sec), leaf count = 184

$$\left\{y(x)=ODESolStruc\left(\_a\,\mathrm{e}^{\int-b(\_a)\,\mathrm{d}\_a+\_C1},[\left\{\frac{\mathrm{d}}{\mathrm{d}\_a}\_b(\_a)=\frac{(\_a^nan^2-2\,\_a^nan+\_a\,rn+\_a\,r^2+\_}{(r-\right.\right.\right.$$

7.12 ODE No. 1602

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+(n+1)\,a^{2\,n}(y(x))^{2\,n+1}-y(x)=0}$$

Mathematica: cpu = 81.621865 (sec), leaf count = 46

$$\text{Solve}\left[\left(\int_1^{y(x)}\frac{1}{\sqrt{c_1-K[1]^2\left(a^{2n}K[1]^{2n}-1\right)}}\,dK[1]\right)^2=(c_2+x)^2,y(x)\right]$$

Maple: cpu = 0.125 (sec), leaf count = 73

$$\left\{\int^{y(x)}\frac{1}{\sqrt{-a^{2\,n}\_a^{2\,n+2}+\_a^2+\_C1}}d\_a-x-\_C2=0,\int^{y(x)}-\frac{1}{\sqrt{-a^{2\,n}\_a^{2\,n+2}+\_a^2+\_C1}}d\_a-x\right.$$

7.13 ODE No. 1603

$$\frac{d^2}{dx^2}y(x) - \left(a(y(x))^2 + bxy(x) + cx^2 + \alpha\, y(x) + \beta\, x + \gamma\right)^{-\frac{3}{2}} = 0$$

Mathematica: cpu = 60.655702 (sec), leaf count = 42

$$\text{DSolve}\left[y''(x) - \frac{1}{(ay(x)^2 + bxy(x) + cx^2 + dy(x) + ex + k)^{3/2}} = 0, y(x), x\right]$$

Maple: cpu = 59.530 (sec), leaf count = 13291

$$\left\{ y(x) = \frac{1}{32}\left(2\, RootOf\left(\frac{1}{} 4 \arctan\left(1/2 \frac{4\,acx - b^2x + 2\,a\beta - \alpha\, b}{\sqrt{a\left(-a\beta^2 + 4\,ac\gamma \ldots\right)}}\right) ac + \arctan\left(1/2 \ldots\right.\right.\right.\right. \quad \alpha\, b^3 c - 64 \int \frac{1}{64\_g^2a^4c^2 - 32\_g^2a^3b^2c + 4\_g^2a^2b^4 + 16\,a^2c^2 \ldots}$$

7.14 ODE No. 1604

$$\frac{d^2}{dx^2}y(x) - e^{y(x)} = 0$$

Mathematica: cpu = 0.060508 (sec), leaf count = 34

$$\left\{\left\{y(x) \to \log\left(\frac{1}{2}c_1\left(\tanh^2\left(\frac{1}{2}\sqrt{c_1\,(c_2 + x)^2}\right) - 1\right)\right)\right\}\right\}$$

Maple: cpu = 0.281 (sec), leaf count = 23

$$\left\{y(x) = \ln\left(\frac{1}{2\_C1^2}\left(\left(\tan\left(\frac{\_C2 + x}{2\_C1}\right)\right)^2 + 1\right)\right)\right\}$$

7.15 ODE No. 1605

$$\frac{d^2}{dx^2}y(x) + ae^x\sqrt{y\,(x)} = 0$$

Mathematica: cpu = 0.519566 (sec), leaf count = 22

$$\text{DSolve}\left[ae^x\sqrt{y(x)} + y''(x) = 0, y(x), x\right]$$

Maple: cpu = 0.811 (sec), leaf count = 109

$$\left\{y(x) = ODESolStruc\left(\frac{\_a}{e^{-2\int \_b(\_a)\, d\_a - 2\_C1}}, \left[\left\{\frac{d}{d\_a}\_b(\_a) = (\sqrt{\_a}a + 4\_a)\,(\_b(\_a))^3 + 4\,(\_b(\_a))\right.\right.\right.$$

7.16 ODE No. 1606

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+\mathrm{e}^x\sin\left(y(x)\right)=0}$$

Mathematica: cpu = 1.086138 (sec), leaf count = 18

$$\text{DSolve}[y''(x)+e^x\sin(y(x))=0,y(x),x]$$

Maple: cpu = 0.733 (sec), leaf count = 0

could not solve

7.17 ODE No. 1607

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+a\sin\left(y(x)\right)=0}$$

Mathematica: cpu = 0.108014 (sec), leaf count = 79

$$\left\{\left\{y(x)\to -2\text{am}\left(\frac{1}{2}\sqrt{(2a+c_1)\,(x+c_2)^{\,2}}|\frac{4a}{2a+c_1}\right)\right\},\left\{y(x)\to 2\text{am}\left(\frac{1}{2}\sqrt{(2a+c_1)\,(x+c_2)^{\,2}}|\frac{4a}{2a+c_1}\right)\right.\right.$$

Maple: cpu = 0.078 (sec), leaf count = 49

$$\left\{\int^{y(x)}\frac{1}{\sqrt{2\,a\cos\left(\_a\right)+\_C1}}d\_a-x-\_C2=0,\int^{y(x)}-\frac{1}{\sqrt{2\,a\cos\left(\_a\right)+\_C1}}d\_a-x-\_C2=0\right\}$$

7.18 ODE No. 1608

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+a^2\sin\left(y(x)\right)-b\sin\left(x\right)=0}$$

Mathematica: cpu = 0.050006 (sec), leaf count = 23

$$\text{DSolve}\left[a^2\sin(y(x))-b\sin(x)+y''(x)=0,y(x),x\right]$$

Maple: cpu = 1.248 (sec), leaf count = 0

could not solve

7.19 ODE No. 1609

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) + a^2 \sin\left(y(x)\right) - bf(x) = 0}$$

Mathematica: cpu = 0.035004 (sec), leaf count = 23

$$\text{DSolve}\left[a^2 \sin(y(x)) - bf(x) + y''(x) = 0, y(x), x\right]$$

Maple: cpu = 0.624 (sec), leaf count = 0

could not solve

7.20 ODE No. 1610

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) - \frac{1}{x^{3/2}}h\left(\frac{y(x)}{\sqrt{x}}\right) = 0}$$

Mathematica: cpu = 0 (sec), leaf count = 0

Hanged

Maple: cpu = 0.203 (sec), leaf count = 92

$$\left\{y(x) = \mathit{RootOf}\left(-\ln\left(x\right) - 2\int^{\_Z} \frac{1}{\sqrt{\_C1 + 8\int h\left(\_g\right)\,\mathrm{d}\_g + \_g^2}} d\_g + 2\,\_C2\right)\sqrt{x}, y(x) = \mathit{RootOf}\right.$$

7.21 ODE No. 1611

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) - 3\,\frac{\mathrm{d}}{\mathrm{d}x}y(x) - \left(y(x)\right)^2 - 2\,y(x) = 0}$$

Mathematica: cpu = 5.239165 (sec), leaf count = 27

$$\text{DSolve}\left[y''(x) - 3y'(x) - y(x)^2 - 2y(x) = 0, y(x), x\right]$$

Maple: cpu = 0.359 (sec), leaf count = 57

$$\left\{y(x) = \mathit{ODESolStruc}\left(\_a, [\left\{\left(\frac{\mathrm{d}}{\mathrm{d}\_a}\_b(\_a)\right)\_b(\_a) - 3\,\_b(\_a) - \_a^2 - 2\,\_a = 0\right\}, \left\{\_a = y(x), \_\right.\right.$$

7.22 ODE No. 1612

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) - 7\,\frac{\mathrm{d}}{\mathrm{d}x}y(x) - (y(x))^{3/2} + 12\,y(x) = 0}$$

Mathematica: cpu = 22.518860 (sec), leaf count = 29

$$\text{DSolve}\left[y''(x) - 7y'(x) - y(x)^{3/2} + 12y(x) = 0, y(x), x\right]$$

Maple: cpu = 0.811 (sec), leaf count = 57

$$\left\{y(x) = \mathit{ODESolStruc}\left(\_a, [\left\{\left(\frac{\mathrm{d}}{\mathrm{d}\_a}\_b(\_a)\right)\_b(\_a) - 7\,\_b(\_a) - \_a^{\frac{3}{2}} + 12\,\_a = 0\right\}, \left\{\_a = y(x)\,,\right.\right.$$

7.23 ODE No. 1613

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) + 5\,a\frac{\mathrm{d}}{\mathrm{d}x}y(x) - 6\,(y(x))^2 + 6\,a^2y(x) = 0}$$

Mathematica: cpu = 2.182777 (sec), leaf count = 31

$$\text{DSolve}\left[6a^2y(x) + 5ay'(x) + y''(x) - 6y(x)^2 = 0, y(x), x\right]$$

Maple: cpu = 0.016 (sec), leaf count = 27

$$\left\{y(x) = \mathit{WeierstrassP}\left(-\frac{\mathrm{e}^{-ax}}{a} + \_C1, 0, \_C2\right)\left(\mathrm{e}^{-ax}\right)^2\right\}$$

7.24 ODE No. 1614

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) + 3\,a\frac{\mathrm{d}}{\mathrm{d}x}y(x) - 2\,(y(x))^3 + 2\,a^2y(x) = 0}$$

Mathematica: cpu = 1.489689 (sec), leaf count = 31

$$\text{DSolve}\left[2a^2y(x) + 3ay'(x) + y''(x) - 2y(x)^3 = 0, y(x), x\right]$$

Maple: cpu = 0.047 (sec), leaf count = 33

$$\left\{y(x) = \frac{\_C2}{\mathrm{e}^{ax}}\mathit{JacobiSN}\left(\left(-\frac{1}{a}\sqrt{-\mathrm{e}^{-2\,ax}} + \_C1\right)\_C2, i\right)\right\}$$

7.25 ODE No. 1615

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)-\frac{(3\,n+4)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)}{n}-2\,\frac{(n+1)\,(n+2)\,y(x)}{n^2}\left((y(x))^{\frac{n}{n+1}}-1\right)=0}$$

Mathematica: cpu = 118.097997 (sec), leaf count = 50

$$\text{DSolve}\left[-\frac{2(n+1)(n+2)y(x)\left(y(x)^{\frac{n}{n+1}}-1\right)}{n^2}-\frac{(3n+4)y'(x)}{n}+y''(x)=0,y(x),x\right]$$

Maple: cpu = 3.526 (sec), leaf count = 116

$$\left\{y(x)=\mathit{ODESolStruc}\left(\_a,[\left\{\left(\frac{\mathrm{d}}{\mathrm{d}\_a}\_b(\_a)\right)\_b(\_a)-\frac{1}{n^2}\left(2\,\_a^{\frac{n}{n+1}}\_a\,n^2+3\,\_b(\_a)\,n^2+6\,\_a^{\frac{n}{n+1}}\_a\right.\right.\right.$$

7.26 ODE No. 1616

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+a\frac{\mathrm{d}}{\mathrm{d}x}y(x)+b(y(x))^n+1/4\left(a^2-1\right)y(x)=0}$$

Mathematica: cpu = 25.262208 (sec), leaf count = 34

$$\text{DSolve}\left[\frac{1}{4}\left(a^2-1\right)y(x)+ay'(x)+by(x)^n+y''(x)=0,y(x),x\right]$$

Maple: cpu = 0.889 (sec), leaf count = 63

$$\left\{y(x)=\mathit{ODESolStruc}\left(\_a,[\left\{\left(\frac{\mathrm{d}}{\mathrm{d}\_a}\_b(\_a)\right)\_b(\_a)+a\_b(\_a)+b\_a^n+\frac{\_a\,a^2}{4}-\frac{\_a}{4}=0\right\},\left\{\_a=\right.\right.\right.$$

7.27 ODE No. 1617

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+a\frac{\mathrm{d}}{\mathrm{d}x}y(x)+bx^r(y(x))^n=0}$$

Mathematica: cpu = 0.045006 (sec), leaf count = 26

$$\text{DSolve}[ay'(x)+bx^ry(x)^n+y''(x)=0,y(x),x]$$

Maple: cpu = 0.359 (sec), leaf count = 0

could not solve

7.28 ODE No. 1618

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+a\frac{\mathrm{d}}{\mathrm{d}x}y(x)+b\mathrm{e}^{y(x)}-2\,a=0}$$

Mathematica: cpu = 30.684396 (sec), leaf count = 26

$$\text{DSolve}\left[ay'(x)-2a+be^{y(x)}+y''(x)=0,y(x),x\right]$$

Maple: cpu = 1.107 (sec), leaf count = 56

$$\left\{y(x)=\mathit{ODESolStruc}\left(\_a,[\left\{\left(\frac{\mathrm{d}}{\mathrm{d}\_a}\_b(\_a)\right)\_b(\_a)+a\_b(\_a)+b\mathrm{e}^{-a}-2\,a=0\right\},\left\{\_a=y(x),\_b(\right.\right.\right.$$

7.29 ODE No. 1619

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+a\frac{\mathrm{d}}{\mathrm{d}x}y(x)+f(x)\sin\left(y(x)\right)=0}$$

Mathematica: cpu = 0.055507 (sec), leaf count = 23

$$\text{DSolve}[ay'(x)+f(x)\sin(y(x))+y''(x)=0,y(x),x]$$

Maple: cpu = 0.593 (sec), leaf count = 0

could not solve

7.30 ODE No. 1620

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+y(x)\frac{\mathrm{d}}{\mathrm{d}x}y(x)-\left(y(x)\right)^3=0}$$

Mathematica: cpu = 122.323033 (sec), leaf count = 24

$$\text{DSolve}\left[y''(x)+y(x)y'(x)-y(x)^3=0,y(x),x\right]$$

Maple: cpu = 0.078 (sec), leaf count = 253

$$\left\{\int^{y(x)}\left(\frac{-\_a^2}{2}+\frac{1}{2}\left(\sqrt[3]{\_C1+\sqrt{\_a^6+\_C1^2}}-\_a^2\frac{1}{\sqrt[3]{\_C1+\sqrt{\_a^6+\_C1^2}}}\right)^2\right)^{-1}d\_a-x-\_C2=\right.$$

7.31 ODE No. 1621

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+y(x)\frac{\mathrm{d}}{\mathrm{d}x}y(x)-(y(x))^3+ay(x)=0}$$

Mathematica: cpu = 100.138216 (sec), leaf count = 28

$$\text{DSolve}\left[ay(x)+y''(x)+y(x)y'(x)-y(x)^3=0,y(x),x\right]$$

Maple: cpu = 0.967 (sec), leaf count = 8191

7.32 ODE No. 1622

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+(y(x)+3\,a)\frac{\mathrm{d}}{\mathrm{d}x}y(x)-(y(x))^3+a(y(x))^2+2\,a^2y(x)=0}$$

Mathematica: cpu = 26.601378 (sec), leaf count = 41

$$\text{DSolve}\left[2a^2y(x)+(3a+y(x))y'(x)+ay(x)^2+y''(x)-y(x)^3=0,y(x),x\right]$$

Maple: cpu = 0.219 (sec), leaf count = 775

$$\left\{y(x)=\frac{1}{\mathrm{e}^{ax}}RootOf\left(\int^{\_Z}\frac{1}{-\_f^6+\_C1}\left(\_f^8-\_C1\,\_f^2+\left(-\_f^{12}+2\,\_C1\,\_f^6-\_C1^2+\sqrt{\frac{\_}{-\_f^6}}\right.\right.\right.\right.$$

7.33 ODE No. 1623

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+(y(x)+3\,f(x))\frac{\mathrm{d}}{\mathrm{d}x}y(x)-(y(x))^3+f(x)\,(y(x))^2+y(x)\left(\frac{\mathrm{d}}{\mathrm{d}x}f(x)+2\,(f(x))^2\right)=0}$$

Mathematica: cpu = 0.445557 (sec), leaf count = 50

$$\text{DSolve}\left[y(x)\left(f'(x)+2f(x)^2\right)+(3f(x)+y(x))y'(x)+f(x)y(x)^2+y''(x)-y(x)^3=0,y(x),x\right]$$

Maple: cpu = 2.340 (sec), leaf count = 0

could not solve

7.34 ODE No. 1624

$$\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+y(x)\frac{\mathrm{d}}{\mathrm{d}x}y(x)-(y(x))^3-\left(\frac{\frac{\mathrm{d}}{\mathrm{d}x}f(x)}{f(x)}+f(x)\right)\left(3\frac{\mathrm{d}}{\mathrm{d}x}y(x)+(y(x))^2\right)+\left(a(f(x))^2+3\frac{\mathrm{d}}{\mathrm{d}x}f(x)\right.$$

Mathematica: cpu = 1.426181 (sec), leaf count = 93

$$\text{DSolve}\left[y(x)\left(af(x)^2-\frac{f''(x)}{f(x)}+3f'(x)+\frac{3f'(x)^2}{f(x)^2}\right)+bf(x)^3-\left(\frac{f'(x)}{f(x)}+f(x)\right)\left(3y'(x)+y(x)^2\right)+y''(x\right.$$

Maple: cpu = 1.263 (sec), leaf count = 135

$$\left\{y(x)=\mathit{ODESolStruc}\left(f\left(\mathit{RootOf}\left(\int \_b(\_a)\,\mathrm{d}\_a+\_C1-\int^{\_Z} f(\_f)\,d\_f\right)\right)\_a,[\left\{\frac{\mathrm{d}}{\mathrm{d}\_a}\_b(\_a)=\right.\right.$$

7.35 ODE No. 1625

$$\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+\left(y(x)-3/2\frac{\frac{\mathrm{d}}{\mathrm{d}x}f(x)}{f(x)}\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)-(y(x))^3-1/2\frac{\left(\frac{\mathrm{d}}{\mathrm{d}x}f(x)\right)(y(x))^2}{f(x)}+1/2\frac{y(x)}{f(x)}\left(f(x)+\frac{\left(\frac{\mathrm{d}}{\mathrm{d}x}f(x\right.\right.$$

Mathematica: cpu = 0.963122 (sec), leaf count = 82

$$\text{DSolve}\left[y'(x)\left(y(x)-\frac{3f'(x)}{2f(x)}\right)-\frac{y(x)^2f'(x)}{2f(x)}+y(x)\left(-\frac{f''(x)}{2f(x)}+\frac{f'(x)^2}{f(x)^2}+f(x)\right)+y''(x)-y(x)^3=0,y(\right.$$

Maple: cpu = 0.343 (sec), leaf count = 0

could not solve

7.36 ODE No. 1626

$$\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+2\,y(x)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+f(x)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+\left(\frac{\mathrm{d}}{\mathrm{d}x}f(x)\right)y(x)=0$$

Mathematica: cpu = 52.088114 (sec), leaf count = 33

$$\text{DSolve}[y(x)f'(x)+f(x)y'(x)+y''(x)+2y(x)y'(x)=0,y(x),x]$$

Maple: cpu = 0.156 (sec), leaf count = 48

$$\left\{y(x)=\mathit{ODESolStruc}\left(\_b(\_a),[\left\{\frac{\mathrm{d}}{\mathrm{d}\_a}\_b(\_a)=-(\_b(\_a))^2-f(\_a)\_b(\_a)-\_C1\right\},\{\_a=x,\_\right.\right.$$

7.37 ODE No. 1627

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+2\,y(x)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)+f(x)\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)+(y(x))^2\right)-g(x)=0}$$

Mathematica: cpu = 0.325541 (sec), leaf count = 35

$$\text{DSolve}\left[f(x)\left(y'(x)+y(x)^2\right)-g(x)+y''(x)+2y(x)y'(x)=0,y(x),x\right]$$

Maple: cpu = 0.609 (sec), leaf count = 63

$$\left\{y(x)=ODESolStruc\left(\_b(\_a),[\left\{\mathrm{e}^{\int f(\_a)\,\mathrm{d}\_a}(\_b(\_a))^2+\mathrm{e}^{\int f(\_a)\,\mathrm{d}\_a}\frac{\mathrm{d}}{\mathrm{d}\_a}\_b(\_a)-\int\mathrm{e}^{\int f(\_a)\,\mathrm{d}\_a}g(\_a)\right.\right.$$

7.38 ODE No. 1628

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+3\,y(x)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)+(y(x))^3+f(x)\,y(x)-g(x)=0}$$

Mathematica: cpu = 7.278424 (sec), leaf count = 32

$$\text{DSolve}\left[f(x)y(x)-g(x)+y''(x)+3y(x)y'(x)+y(x)^3=0,y(x),x\right]$$

Maple: cpu = 0.0 (sec), leaf count = 63

$$\left\{y(x)=\frac{\frac{\mathrm{d}}{\mathrm{d}x}DESol\left(\left\{-g(x)\_Y(x)+f(x)\,\frac{\mathrm{d}}{\mathrm{d}x}\_Y(x)+\frac{\mathrm{d}^3}{\mathrm{d}x^3}\_Y(x)\right\},\{\_Y(x)\}\right)}{DESol\left(\left\{-g\left(x\right)\_Y\left(x\right)+f\left(x\right)\frac{\mathrm{d}}{\mathrm{d}x}\_Y\left(x\right)+\frac{\mathrm{d}^3}{\mathrm{d}x^3}\_Y\left(x\right)\right\},\{\_Y\left(x\right)\}\right)}\right\}$$

7.39 ODE No. 1629

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+(3\,y(x)+f(x))\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)+(y(x))^3+f(x)\,(y(x))^2=0}$$

Mathematica: cpu = 0.036505 (sec), leaf count = 34

$$\text{DSolve}\left[(f(x)+3y(x))y'(x)+f(x)y(x)^2+y''(x)+y(x)^3=0,y(x),x\right]$$

Maple: cpu = 0.015 (sec), leaf count = 38

$$\left\{y(x)=\frac{\int\_C1\,\mathrm{e}^{-\int f(x)\,\mathrm{d}x}\,\mathrm{d}x+\_C2}{\iint\_C1\,\mathrm{e}^{-\int f(x)\,\mathrm{d}x}\,\mathrm{d}x\,\mathrm{d}x+\_C2\,x+1}\right\}$$

7.40 ODE No. 1630

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) - 3\,y(x)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x) - 3\,a(y(x))^2 - 4\,a^2 y(x) - b = 0}$$

Mathematica: cpu = 11.895010 (sec), leaf count = 3227

$$\left\{\left\{y(x) \to -\frac{2\left((-1)^{\frac{a^{3/2}\sqrt{4a^3-3b}-2a^3}{4a^3}+1}2^{-\frac{3\left(a^{3/2}\sqrt{4a^3-3b}-2a^3\right)}{4a^3}+\frac{3\sqrt{4a^6-3a^3b}}{4a^3}+1}3^{\frac{a^{3/2}\sqrt{4a^3-3b}-2a^3}{4a^3}-\frac{\sqrt{4a^6-3a^3b}}{4a^3}}a^{-\frac{a^{3/2}\sqrt{4a^3-3b}-2a^3}{2a^3}}\right.\right.\right.$$

Maple: cpu = 0.405 (sec), leaf count = 803

$$\left\{\int^{y(x)} -6\,a^2\left(-12\,\_a\,a^3 - 9\,\_a^2 a^2 + \left(RootOf\left(2\,K_{1/2\,\frac{4\,a^3-3\,b}{\sqrt{\left(4\,a^3-3\,b\right)aa}}}\left(-1/2\,\frac{\_Z}{a^2}\right)\_C1\,a^2 + 3\,K_{1/2\,\frac{4\,a^3-3}{\sqrt{\left(4\,a^3-3\right.}}}\right.\right.\right.\right.$$

7.41 ODE No. 1631

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) - (3\,y(x) + f(x))\,\frac{\mathrm{d}}{\mathrm{d}x}y(x) + (y(x))^3 + f(x)\,(y(x))^2 = 0}$$

Mathematica: cpu = 0.032004 (sec), leaf count = 35

$$\text{DSolve}\left[-(f(x)+3y(x))y'(x) + f(x)y(x)^2 + y''(x) + y(x)^3 = 0, y(x), x\right]$$

Maple: cpu = 0.031 (sec), leaf count = 38

$$\left\{y(x) = \frac{-\int \_C1\,\mathrm{e}^{\int f(x)\,\mathrm{d}x}\,\mathrm{d}x - \_C2}{\iint \_C1\,\mathrm{e}^{\int f(x)\,\mathrm{d}x}\,\mathrm{d}x\,\mathrm{d}x + \_C2\,x + 1}\right\}$$

7.42 ODE No. 1632

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) - 2\,a y(x)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x) = 0}$$

Mathematica: cpu = 0.065008 (sec), leaf count = 46

$$\left\{\left\{y(x) \to \frac{\sqrt{c_1}\tan\left(\sqrt{a}\sqrt{c_1}x + \sqrt{a}\sqrt{c_1}c_2\right)}{\sqrt{a}}\right\}\right\}$$

Maple: cpu = 0.062 (sec), leaf count = 29

$$\left\{y(x) = \frac{1}{a}\tan\left(\_C2\,\sqrt{\_C1\,a} + x\sqrt{\_C1\,a}\right)\sqrt{\_C1\,a}\right\}$$

7.43 ODE No. 1633

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) + a y(x)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x) + b(y(x))^3 = 0}$$

Mathematica: cpu = 35.438000 (sec), leaf count = 25

$$\text{DSolve}\left[a y(x) y'(x) + b y(x)^3 + y''(x) = 0, y(x), x\right]$$

Maple: cpu = 0.188 (sec), leaf count = 97

$$\left\{\int^{y(x)}\left(RootOf\left(-2\,a\_a^2\,Artanh\left(\frac{\_a^2 a + 4\,\_Z}{\sqrt{\_a^4\,(a^2 - 8\,b)}}\right) - \ln\left(\_a^4 b + \_Z\,\_a^2 a + 2\,\_Z^2\right)\sqrt{\_a^4\,(a^2 - 8\,b)}\right.\right.$$

7.44 ODE No. 1634

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) + h(x, y(x))\,\frac{\mathrm{d}}{\mathrm{d}x}y(x) + j(x, y(x)) = 0}$$

Mathematica: cpu = 0.162521 (sec), leaf count = 24

$$\text{DSolve}[y'(x)h(x, y(x)) + j(x, y(x)) + y''(x) = 0, y(x), x]$$

Maple: cpu = 0.0 (sec), leaf count = 0

could not solve

7.45 ODE No. 1635

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+a\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+by(x)=0}$$

Mathematica: cpu = 101.517891 (sec), leaf count = 23

$$\text{DSolve}\left[ay'(x)^2+by(x)+y''(x)=0,y(x),x\right]$$

Maple: cpu = 0.109 (sec), leaf count = 79

$$\left\{\int^{y(x)}-2\,\frac{a}{\sqrt{4\,\mathrm{e}^{-2\,a\_a}\_C1\,a^2-4\,\_a\,ab+2\,b}}d\_a-x-\_C2=0,\int^{y(x)}2\,\frac{a}{\sqrt{4\,\mathrm{e}^{-2\,a\_a}\_C1\,a^2-4\,\_a\,ab+}\right.$$

7.46 ODE No. 1636

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+a\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)\left|\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right|+b\frac{\mathrm{d}}{\mathrm{d}x}y(x)+cy(x)=0}$$

Mathematica: cpu = 36.575645 (sec), leaf count = 32

$$\text{DSolve}[ay'(x)\,|y'(x)|+by'(x)+cy(x)+y''(x)=0,y(x),x]$$

Maple: cpu = 0.531 (sec), leaf count = 59

$$\left\{y(x)=\mathit{ODESolStruc}\left(\_a,[\left\{\left(\frac{\mathrm{d}}{\mathrm{d}\_a}\_b(\_a)\right)\_b(\_a)+a\_b(\_a)\,|\_b(\_a)|+\_b(\_a)\,b+c\_a=0\right\},\left\{\right.\right.\right.$$

7.47 ODE No. 1637

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+a\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+b\frac{\mathrm{d}}{\mathrm{d}x}y(x)+cy(x)=0}$$

Mathematica: cpu = 30.477870 (sec), leaf count = 29

$$\text{DSolve}\left[ay'(x)^2+by'(x)+cy(x)+y''(x)=0,y(x),x\right]$$

Maple: cpu = 0.359 (sec), leaf count = 58

$$\left\{y(x)=\mathit{ODESolStruc}\left(\_a,[\left\{\left(\frac{\mathrm{d}}{\mathrm{d}\_a}\_b(\_a)\right)\_b(\_a)+a(\_b(\_a))^2+\_b(\_a)\,b+c\_a=0\right\},\left\{\_a=\right.\right.\right.$$

7.48 ODE No. 1638

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+a\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+b\sin\left(y(x)\right)=0}$$

Mathematica: cpu = 100.155218 (sec), leaf count = 24

$$\text{DSolve}\left[ay'(x)^2+b\sin(y(x))+y''(x)=0,y(x),x\right]$$

Maple: cpu = 0.125 (sec), leaf count = 126

$$\left\{\int^{y(x)}(4\,a^2+1)\frac{1}{\sqrt{(4\,a^2+1)\left(4\,\mathrm{e}^{-2\,a\_a}\_C1\,a^2-4\,\sin\left(\_a\right)ab+2\,b\cos\left(\_a\right)+\mathrm{e}^{-2\,a\_a}\_C1\right)}}d\_a-x-\_\right.$$

7.49 ODE No. 1639

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+a\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)\left|\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right|+b\sin\left(y(x)\right)=0}$$

Mathematica: cpu = 41.170228 (sec), leaf count = 27

$$\text{DSolve}[ay'(x)\,|y'(x)|+b\sin(y(x))+y''(x)=0,y(x),x]$$

Maple: cpu = 2.246 (sec), leaf count = 56

$$\left\{y(x)=\mathit{ODESolStruc}\left(\_a,[\left\{\left(\frac{\mathrm{d}}{\mathrm{d}\_a}\_b(\_a)\right)\_b(\_a)+a\_b(\_a)\,|\_b(\_a)|+b\sin\left(\_a\right)=0\right\},\left\{\_a=\right.\right.$$

7.50 ODE No. 1640

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+ay(x)\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+by(x)=0}$$

Mathematica: cpu = 200.467956 (sec), leaf count = 25

$$\text{DSolve}\left[ay(x)y'(x)^2+by(x)+y''(x)=0,y(x),x\right]$$

Maple: cpu = 0.109 (sec), leaf count = 70

$$\left\{\int^{y(x)}a\frac{1}{\sqrt{a\left(\mathrm{e}^{-\_a^2a}\_C1\,a-b\right)}}d\_a-x-\_C2=0,\int^{y(x)}-a\frac{1}{\sqrt{a\left(\mathrm{e}^{-\_a^2a}\_C1\,a-b\right)}}d\_a-x-\_C2=\right.$$

7.51 ODE No. 1641

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+h(y(x))\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+g(x)\frac{\mathrm{d}}{\mathrm{d}x}y(x)=0}$$

Mathematica: cpu = 2.378802 (sec), leaf count = 57

$$\left\{\left\{y(x)\to \text{InverseFunction}\left[\int_1^{\#1} e^{-\int_1^{K[4]}-h(K[1])\,dK[1]}\,dK[4]\&\right]\left[\int_1^x c_1\left(-e^{-\int_1^{K[5]} g(K[2])\,dK[2]}\right)\,dK[5]+c_2\right]\right\}\right\}$$

Maple: cpu = 0.032 (sec), leaf count = 29

$$\left\{\int^{y(x)} \mathrm{e}^{\int h(\_b)\,\mathrm{d}\_b} d\_b-\_C1\int \mathrm{e}^{-\int g(x)\,\mathrm{d}x}\,\mathrm{d}x-\_C2=0\right\}$$

7.52 ODE No. 1642

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)-\frac{j(y(x))\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2}{h\left(y\left(x\right)\right)}+g(x)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+f(x)\,h(y(x))=0}$$

Mathematica: cpu = 1.082137 (sec), leaf count = 40

$$\text{DSolve}\left[f(x)h(y(x))+g(x)y'(x)-\frac{j(y(x))y'(x)^2}{h(y(x))}+y''(x)=0,y(x),x\right]$$

Maple: cpu = 0.203 (sec), leaf count = 0

could not solve

7.53 ODE No. 1643

$$\boxed{\frac{(1-\mathrm{D}(j)\left(y(x)\right))\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2}{j\left(y\left(x\right)\right)}+f(x)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+g(x)\,j(y(x))=0}$$

Mathematica: cpu = 0.409552 (sec), leaf count = 34

$$\text{DSolve}\left[f(x)y'(x)+g(x)j(y(x))+h(y(x))y'(x)^2+y''(x)=0,y(x),x\right]$$

Maple: cpu = 0.265 (sec), leaf count = 0

could not solve

7.54 ODE No. 1644

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+h(y(x))\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+j(y(x))\frac{\mathrm{d}}{\mathrm{d}x}y(x)+k(y(x))=0}$$

Mathematica: cpu = 62.318914 (sec), leaf count = 32

$$\text{DSolve}\left[h(y(x))y'(x)^2+j(y(x))y'(x)+k(y(x))+y''(x)=0,y(x),x\right]$$

Maple: cpu = 0.374 (sec), leaf count = 59

$$\left\{y(x)=ODESolStruc\left(\_a,[\left\{\left(\frac{\mathrm{d}}{\mathrm{d}\_a}\_b(\_a)\right)\_b(\_a)+h(\_a)\left(\_b(\_a)\right)^2+j(\_a)\_b(\_a)+k(\_a)=0\right.\right.\right.$$

7.55 ODE No. 1645

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+\left(\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+1\right)\left(h(x,y(x))\frac{\mathrm{d}}{\mathrm{d}x}y(x)+j(x,y(x))\right)=0}$$

Mathematica: cpu = 0.172522 (sec), leaf count = 34

$$\text{DSolve}\left[\left(y'(x)^2+1\right)\left(y'(x)h(x,y(x))+j(x,y(x))\right)+y''(x)=0,y(x),x\right]$$

Maple: cpu = 0.0 (sec), leaf count = 0

could not solve

7.56 ODE No. 1646

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+ay(x)\left(\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+1\right)^2=0}$$

Mathematica: cpu = 10.814373 (sec), leaf count = 262

$$\left\{\left\{y(x)\to \text{InverseFunction}\left[-\frac{\sqrt{\frac{\#1^2(-a)+2c_1+1}{2c_1+1}}\sqrt{2\#1^2a-4c_1}E\left(\sin^{-1}\left(\sqrt{\frac{a}{2c_1+1}}\#1\right)|1+\frac{1}{2c_1}\right)}{\sqrt{\frac{a}{2c_1+1}}\sqrt{\#1^2(-a)+2c_1+1}\sqrt{2-\frac{\#1^2a}{c_1}}}\&\right][c_2+x\right.\right.$$

Maple: cpu = 0.187 (sec), leaf count = 94

$$\left\{\int^{y(x)}a\left(\_a^2+2\_C1\right)\frac{1}{\sqrt{-a\left(\_a^2+2\_C1\right)\left(\_a^2a+2\_C1\,a-1\right)}}d\_a-x-\_C2=0,\int^{y(x)}-a\left(\_a^2\right.\right.$$

7.57 ODE No. 1647

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) - a\left(x\frac{\mathrm{d}}{\mathrm{d}x}y(x) - y(x)\right)^r = 0}$$

Mathematica: cpu = 48.122611 (sec), leaf count = 59

$$\left\{\left\{y(x) \to x\left(\int_1^x \left(\frac{1}{2}aK[2]^{2r} - \frac{1}{2}arK[2]^{2r} + c_1K[2]^{2r-2}\right)^{\frac{1}{1-r}} dK[2] + c_2\right)\right\}\right\}$$

Maple: cpu = 0.312 (sec), leaf count = 123

$$\left\{y(x) = \left(\int -\frac{ar}{2}2^{\frac{r}{r-1}}\left(\left(-arx^2 + ax^2 + \_C1\right)^{-1}\right)^{\frac{r}{r-1}} + \frac{a}{2}2^{\frac{r}{r-1}}\left(\left(-arx^2 + ax^2 + \_C1\right)^{-1}\right)^{\frac{r}{r-1}} + \frac{\_C1}{2\,x^2}2^{\frac{r}{r-}}\right.\right.$$

7.58 ODE No. 1648

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) - kx^a(y(x))^b\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^c = 0}$$

Mathematica: cpu = 0.086011 (sec), leaf count = 27

$$\text{DSolve}\left[y''(x) - kx^a y(x)^b y'(x)^c = 0, y(x), x\right]$$

Maple: cpu = 1.404 (sec), leaf count = 413

$$\left\{y(x) = ODESolStruc\left(\_a\,\mathrm{e}^{\int \_b(\_a)\,\mathrm{d}\_a + \_C1}, \left[\left\{\frac{\mathrm{d}}{\mathrm{d}\_a}\_b(\_a) = -\frac{(\_b(\_a))^3}{(a-c+2)^2}\left(\_a^b\left(-\frac{(a-c+2)\,(\_a\,\_\right.\right.\right.\right.$$

7.59 ODE No. 1649

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) + \left(\frac{\mathrm{d}}{\mathrm{d}x}y(x) - \frac{y(x)}{x}\right)^a h(x, y(x)) = 0}$$

Mathematica: cpu = 2.647336 (sec), leaf count = 30

$$\text{DSolve}\left[h(x, y(x))\left(y'(x) - \frac{y(x)}{x}\right)^a + y''(x) = 0, y(x), x\right]$$

Maple: cpu = 0.0 (sec), leaf count = 0

could not solve

7.60 ODE No. 1650

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)-a\sqrt{\left(\frac{\mathrm{d}}{\mathrm{d}x}y\left(x\right)\right)^2+1}=0}$$

Mathematica: cpu = 0.023503 (sec), leaf count = 30

$$\left\{\left\{y(x)\to \frac{\sinh\left(c_1\right)\sinh(ax)}{a}+\frac{\cosh\left(c_1\right)\cosh(ax)}{a}+c_2\right\}\right\}$$

Maple: cpu = 0.125 (sec), leaf count = 18

$$\left\{y(x)=\frac{\cosh\left(\_C1\,a+ax\right)}{a}+\_C2\right\}$$

7.61 ODE No. 1651

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)-a\sqrt{\left(\frac{\mathrm{d}}{\mathrm{d}x}y\left(x\right)\right)^2+1}-b=0}$$

Mathematica: cpu = 0.284036 (sec), leaf count = 414

$$\left\{\left\{y(x)\to \frac{a\text{InverseFunction}\left[\frac{\frac{b\tan^{-1}\left(\frac{\#1 b}{\sqrt{\#1^2+1}\sqrt{a^2-b^2}}\right)}{\sqrt{a^2-b^2}}-\frac{b\tan^{-1}\left(\frac{\#1 a}{\sqrt{a^2-b^2}}\right)}{\sqrt{a^2-b^2}}+\sinh^{-1}(\#1)}{a}\&\right]\left[c_1+x\right]^2-b\sqrt{\text{InverseFu}}}{a^2}\right\}\right\}$$

Maple: cpu = 0.109 (sec), leaf count = 31

$$\left\{y(x)=\int RootOf\left(x-\int^{\_Z}\left(a\sqrt{\_f^2+1}+b\right)^{-1}d\_f+\_C1\right)\mathrm{d}x+\_C2\right\}$$

7.62 ODE No. 1652

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) - a\sqrt{b\left(y\left(x\right)\right)^2 + \left(\frac{\mathrm{d}}{\mathrm{d}x}y\left(x\right)\right)^2} = 0}$$

Mathematica: cpu = 0.834106 (sec), leaf count = 31

$$\text{DSolve}\left[y''(x) - a\sqrt{by(x)^2 + y'(x)^2} = 0, y(x), x\right]$$

Maple: cpu = 0.203 (sec), leaf count = 36

$$\left\{y(x) = \mathrm{e}^{\int RootOf\left(x - \int^{-Z}\left(-\_f^2 + a\sqrt{\_f^2 + b}\right)^{-1} d\_f + \_C1\right)\mathrm{d}x + \_C2}\right\}$$

7.63 ODE No. 1653

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) - a\left(\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2 + 1\right)^{3/2} = 0}$$

Mathematica: cpu = 0.071509 (sec), leaf count = 75

$$\left\{\left\{y(x) \to c_2 - \frac{i\sqrt{a^2x^2 + 2ac_1x + c_1^2 - 1}}{a}\right\}, \left\{y(x) \to c_2 + \frac{i\sqrt{a^2x^2 + 2ac_1x + c_1^2 - 1}}{a}\right\}\right\}$$

Maple: cpu = 0.078 (sec), leaf count = 55

$$\left\{y(x) = \frac{\left(\_C1\, a + ax - 1\right)\left(\_C1\, a + ax + 1\right)}{a}\sqrt{-\left(\_C1^2 a^2 + 2\,\_C1\, a^2 x + a^2x^2 - 1\right)^{-1}} + \_C2\right\}$$

7.64 ODE No. 1654

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) - 2\,ax\left(\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2 + 1\right)^{3/2} = 0}$$

Mathematica: cpu = 0.311540 (sec), leaf count = 308

$$\left\{\left\{y(x) \to c_2 - \frac{\sqrt{\frac{ax^2+c_1-1}{c_1-1}}\sqrt{\frac{ax^2+c_1+1}{c_1+1}}\left(F\left(i\sinh^{-1}\left(x\sqrt{\frac{a}{c_1+1}}\right)|\frac{c_1+1}{c_1-1}\right) + (c_1-1)\,E\left(i\sinh^{-1}\left(x\sqrt{\frac{a}{c_1+1}}\right)|\frac{c_1}{c_1}\right.\right.\right.}{\sqrt{\frac{a}{c_1+1}}\sqrt{a^2x^4 + 2ac_1x^2 + c_1^2 - 1}}\right.\right.$$

Maple: cpu = 0.125 (sec), leaf count = 49

$$\left\{y(x) = \int\sqrt{-\left(a^2x^4 + 4\,\_C1\, a^2x^2 + 4\,\_C1^2 a^2 - 1\right)^{-1}}\, a\left(x^2 + 2\,\_C1\right)\,\mathrm{d}x + \_C2\right\}$$

7.65 ODE No. 1655

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) - ay(x)\left(\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2 + 1\right)^{3/2} = 0}$$

Mathematica: cpu = 0.887113 (sec), leaf count = 350

$$\left\{\left\{y(x) \to \text{InverseFunction}\left[-\frac{\sqrt{\frac{\#1^2 a+2c_1-2}{c_1-1}}\sqrt{\frac{\#1^2 a+2c_1+2}{c_1+1}}\left(F\left(i\sinh^{-1}\left(\sqrt{\frac{a}{2c_1+2}}\#1\right)|\frac{c_1+1}{c_1-1}\right)+(c_1-1)\,E\left(\right.\right.\right.\right.}{\sqrt{\frac{a}{2c_1+2}}\sqrt{\#1^4 a^2+4\#1^2 a c_1+4c_1^2-4}}$$

Maple: cpu = 0.140 (sec), leaf count = 106

$$\left\{\int^{y(x)} a\left(\_a^2+2\,\_C1\right)\frac{1}{\sqrt{-\_a^4 a^2-4\,\_C1\,\_a^2 a^2-4\,\_C1^2 a^2+4}}d\_a - x - \_C2 = 0, \int^{y(x)} -a\left(\_a^2 + \right.\right.$$

7.66 ODE No. 1656

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) - a(c+bx+y(x))\left(\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2 + 1\right)^{3/2} = 0}$$

Mathematica: cpu = 100.341242 (sec), leaf count = 33

$$\text{DSolve}\left[y''(x) - a\left(y'(x)^2+1\right)^{3/2}(bx+c+y(x)) = 0, y(x), x\right]$$

Maple: cpu = 0.499 (sec), leaf count = 771

$$\left\{y(x) = -bx + \mathit{RootOf}\left(-x + \int^{\_Z}\frac{1}{\left(\_f^4 a^2+4\,\_f^3 a^2 c+4\,\_f^2 a^2 c^2-4\,\_C1\,\_f^2 a^2-8\,\_C1\,\_f\,a^2 c+4\,\right.\right.\right.$$

7.67 ODE No. 1657

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) + (y(x))^3\frac{\mathrm{d}}{\mathrm{d}x}y(x) - y(x)\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)\sqrt{(y(x))^4 + 4\frac{\mathrm{d}}{\mathrm{d}x}y(x)} = 0}$$

Mathematica: cpu = 0.152019 (sec), leaf count = 33

$$\left\{\left\{y(x) \to \sqrt{2}e^{c_1}\tan\left(2\sqrt{2}e^{3c_1}(c_2+x)\right)\right\}\right\}$$

Maple: cpu = 0.187 (sec), leaf count = 47

$$\left\{y(x) = \frac{1}{\_C1}\tan\left(\_C2\left(\_C1^{-2}\right)^{\frac{3}{2}} + x\left(\_C1^{-2}\right)^{\frac{3}{2}}\right), y(x) = \frac{1}{\_C1}\tanh\left(\_C2\left(\_C1^{-2}\right)^{\frac{3}{2}} + x\left(\_C1^{-2}\right)^{\frac{3}{2}}\right.\right.$$

7.68 ODE No. 1658

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) - h\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\,, ax + by(x)\right) = 0}$$

Mathematica: cpu = 0.130517 (sec), leaf count = 26

$$\text{DSolve}[y''(x) - h(y'(x), ax + by(x)) = 0, y(x), x]$$

Maple: cpu = 0.094 (sec), leaf count = 117

$$\left\{y(x) = \mathit{ODESolStruc}\left(-\frac{a(\int \_b(\_a)\ \mathrm{d}\_a + \_C1) - b\_a}{b}, [\left\{\frac{\mathrm{d}}{\mathrm{d}\_a}\_b(\_a) = -h\left(-\frac{a\_b(\_a) - b}{\_b\,(\_a)\,b}, b\_a\right.\right.\right.$$

7.69 ODE No. 1659

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) - y(x)\,h\left(x, \frac{\frac{\mathrm{d}}{\mathrm{d}x}y(x)}{y\,(x)}\right) = 0}$$

Mathematica: cpu = 12.591099 (sec), leaf count = 26

$$\text{DSolve}\left[y''(x) - y(x)h\left(x, \frac{y'(x)}{y(x)}\right) = 0, y(x), x\right]$$

Maple: cpu = 0.063 (sec), leaf count = 60

$$\left\{y(x) = \mathit{ODESolStruc}\left(\mathrm{e}^{\int \_b(\_a)\,\mathrm{d}\_a + \_C1}, [\left\{\frac{\mathrm{d}}{\mathrm{d}\_a}\_b(\_a) = -(\_b(\_a))^2 + h(\_a, \_b(\_a))\right\}, \left\{\_a = x, \_\right.\right.\right.$$

7.70 ODE No. 1660

$$\boxed{\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) - x^{n-2}h\left(\frac{y(x)}{x^n}, \frac{\frac{\mathrm{d}}{\mathrm{d}x}y(x)}{x^{n-1}}\right) = 0}$$

Mathematica: cpu = 3.899495 (sec), leaf count = 39

$$\text{DSolve}\left[y''(x) - x^{n-2}h\left(x^{-n}y(x), x^{1-n}y'(x)\right) = 0, y(x), x\right]$$

Maple: cpu = 0.640 (sec), leaf count = 132

$$\left\{y(x) = \mathit{ODESolStruc}\left(\frac{\_a}{\mathrm{e}^{-(\int \_b(\_a)\,\mathrm{d}\_a + \_C1)\,n}}, [\left\{\frac{\mathrm{d}}{\mathrm{d}\_a}\_b(\_a) = \left(\_a\,n^2 - \_a\,n - h\left(\_a, \frac{\_b(\_a)\,\_a\,n + \right.\right.\right.\right.$$

7.71 ODE No. 1661

$$\boxed{8\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+9\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^4=0}$$

Mathematica: cpu = 0.034004 (sec), leaf count = 92

$$\left\{\left\{y(x)\to c_2-\frac{1}{3}\sqrt[3]{-\frac{1}{3}}(9x-8c_1)^{2/3}\right\},\left\{y(x)\to\frac{(9x-8c_1)^{2/3}}{3\sqrt[3]{3}}+c_2\right\},\left\{y(x)\to\frac{(-1)^{2/3}(9x-8c_1)^{2/3}}{3\sqrt[3]{3}}\right.\right.$$

Maple: cpu = 0.062 (sec), leaf count = 51

$$\left\{y(x)=(\_C1+x)^{\frac{2}{3}}+\_C2,y(x)=\frac{i\sqrt{3}-1}{2}(\_C1+x)^{\frac{2}{3}}+\_C2,y(x)=-\frac{i\sqrt{3}+1}{2}(\_C1+x)^{\frac{2}{3}}+\_C2\right.$$

7.72 ODE No. 1662

$$\boxed{a\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+h\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)+cy(x)=0}$$

Mathematica: cpu = 1.537195 (sec), leaf count = 22

$$\text{DSolve}[ay''(x)+cy(x)+h(y'(x))=0,y(x),x]$$

Maple: cpu = 0.266 (sec), leaf count = 56

$$\left\{y(x)=ODESolStruc\left(\_a,[\left\{\left(\frac{\mathrm{d}}{\mathrm{d}\_a}\_b(\_a)\right)\_b(\_a)+\frac{h(\_b(\_a))+c\_a}{a}=0\right\},\left\{\_a=y(x),\_b(\_a\right.\right.\right.$$

7.73 ODE No. 1663

$$\boxed{x\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+2\frac{\mathrm{d}}{\mathrm{d}x}y(x)-x(y(x))^n=0}$$

Mathematica: cpu = 0.037005 (sec), leaf count = 26

$$\text{DSolve}[-xy(x)^n+xy''(x)+2y'(x)=0,y(x),x]$$

Maple: cpu = 0.593 (sec), leaf count = 151

$$\left\{y(x)=ODESolStruc\left(\_a\,\mathrm{e}^{\int\_b(\_a)\,\mathrm{d}\_a+\_C1},[\left\{\frac{\mathrm{d}}{\mathrm{d}\_a}\_b(\_a)=\left(-\frac{\_a^n n^2}{4}+\frac{\_a^n n}{2}-\frac{\_a\,n}{2}-\frac{\_a^n}{4}+\frac{3\_}{2}\right.\right.\right.\right.$$

7.74 ODE No. 1664

$$\boxed{x\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+2\frac{\mathrm{d}}{\mathrm{d}x}y(x)+ax^m(y(x))^n=0}$$

Mathematica: cpu = 0.537568 (sec), leaf count = 28

$$\text{DSolve}[ax^m y(x)^n+xy''(x)+2y'(x)=0,y(x),x]$$

Maple: cpu = 2.355 (sec), leaf count = 185

$$\left\{y(x)=ODESolStruc\left(\_a\,\mathrm{e}^{\int \_b(\_a)\,\mathrm{d}\_a+\_C1},[\left\{\frac{\mathrm{d}}{\mathrm{d}\_a}\_b(\_a)=\frac{(\_a^n an^2-2\,\_a^n an+\_a\,m^2-\_a\,mn+\right.\right.\right.$$
$$(m$$

7.75 ODE No. 1665

$$\boxed{x\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+2\frac{\mathrm{d}}{\mathrm{d}x}y(x)+x\mathrm{e}^{y(x)}=0}$$

Mathematica: cpu = 0.400051 (sec), leaf count = 25

$$\text{DSolve}\left[xy''(x)+2y'(x)+xe^{y(x)}=0,y(x),x\right]$$

Maple: cpu = 0.405 (sec), leaf count = 84

$$\left\{y(x)=ODESolStruc\left(\_a-2\int \_b(\_a)\,\mathrm{d}\_a-2\,\_C1,[\left\{\frac{\mathrm{d}}{\mathrm{d}\_a}\_b(\_a)=(\mathrm{e}^{-a}-2)\,(\_b(\_a))^3+(\_b(\right.\right.\right.$$

7.76 ODE No. 1666

$$\boxed{x\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+a\frac{\mathrm{d}}{\mathrm{d}x}y(x)+bx\mathrm{e}^{y(x)}=0}$$

Mathematica: cpu = 0.593575 (sec), leaf count = 26

$$\text{DSolve}\left[ay'(x)+bxe^{y(x)}+xy''(x)=0,y(x),x\right]$$

Maple: cpu = 0.608 (sec), leaf count = 93

$$\left\{y(x)=ODESolStruc\left(\_a-2\int \_b(\_a)\,\mathrm{d}\_a-2\,\_C1,[\left\{\frac{\mathrm{d}}{\mathrm{d}\_a}\_b(\_a)=(b\mathrm{e}^{-a}-2\,a+2)\,(\_b(\_a))^3-\right.\right.\right.$$

7.77 ODE No. 1667

$$\boxed{x\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+a\frac{\mathrm{d}}{\mathrm{d}x}y(x)+bx^{5-2\,a}\mathrm{e}^{y(x)}=0}$$

Mathematica: cpu = 0.640581 (sec), leaf count = 32

$$\text{DSolve}\left[bx^{5-2a}e^{y(x)}+ay'(x)+xy''(x)=0,y(x),x\right]$$

Maple: cpu = 0.983 (sec), leaf count = 124

$$\left\{y(x)=ODESolStruc\left(\_a+2\,a\left(\int \_b(\_a)\ \mathrm{d}\_a+\_C1\right)-6\int \_b(\_a)\ \mathrm{d}\_a-6\,\_C1,[\left\{\frac{\mathrm{d}}{\mathrm{d}\_a}\_b(\_a\right.\right.\right.$$

7.78 ODE No. 1668

$$\boxed{x\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)-(1-y(x))\frac{\mathrm{d}}{\mathrm{d}x}y(x)=0}$$

Mathematica: cpu = 0.082010 (sec), leaf count = 60

$$\left\{\left\{y(x)\to\sqrt{2}\sqrt{c_1+2}\tanh\left(\frac{1}{2}\left(\sqrt{2}\sqrt{c_1+2}\log(x)-2\sqrt{2}\sqrt{c_1+2}c_2\right)\right)+2\right\}\right\}$$

Maple: cpu = 0.109 (sec), leaf count = 24

$$\left\{y(x)=\frac{1}{\_C1}\left(2\,\_C1+\tanh\left(\frac{\ln(x)-\_C2}{2\,\_C1}\right)\right)\right\}$$

7.79 ODE No. 1669

$$\boxed{x\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)-x^2\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+2\frac{\mathrm{d}}{\mathrm{d}x}y(x)+(y(x))^2=0}$$

Mathematica: cpu = 103.487141 (sec), leaf count = 126

$$\text{Solve}\left[\int_1^{y(x)}-\frac{x}{c_1e^{xK[1]}+2xK[1]+1}\,dK[1]-\int_1^x\left(-\frac{y(x)}{c_1e^{y(x)K[2]}+2y(x)K[2]+1}-\frac{c_1e^{y(x)K[2]}+y(x)}{K[2]\left(c_1e^{y(x)K[2]}+2y(\right.\right.\right.$$

Maple: cpu = 0.094 (sec), leaf count = 32

$$\left\{y(x)=\frac{1}{x}RootOf\left(-\ln(x)+\_C2+\int^{\_Z}-\left(\mathrm{e}^{\_f}\_C1-2\,\_f-1\right)^{-1}d\_f\right)\right\}$$

7.80 ODE No. 1670

$$\boxed{x\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+a\left(x\frac{\mathrm{d}}{\mathrm{d}x}y(x)-y(x)\right)^2-b=0}$$

Mathematica: cpu = 90.651011 (sec), leaf count = 50

$$\left\{\left\{y(x)\to x\left(\int_1^x\frac{\sqrt{-\frac{b}{a}}\tan\left(c_1-a\sqrt{-\frac{b}{a}}K[2]\right)}{K[2]^2}\,dK[2]+c_2\right)\right\}\right\}$$

Maple: cpu = 0.281 (sec), leaf count = 35

$$\left\{y(x)=\left(\int\frac{i}{x^2}\tan\left(-i\sqrt{a}\sqrt{b}x+\_C1\right)\sqrt{b}\frac{1}{\sqrt{a}}\,\mathrm{d}x+\_C2\right)x\right\}$$

7.81 ODE No. 1671

$$\boxed{2\,x\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^3+\frac{\mathrm{d}}{\mathrm{d}x}y(x)=0}$$

Mathematica: cpu = 0.042505 (sec), leaf count = 59

$$\left\{\left\{y(x)\to c_2-2ie^{c_1}\sqrt{e^{2c_1}-x}\right\},\left\{y(x)\to c_2+2ie^{c_1}\sqrt{e^{2c_1}-x}\right\}\right\}$$

Maple: cpu = 0.063 (sec), leaf count = 35

$$\left\{y(x)=-2\,\frac{\sqrt{\_C1\,x-1}}{\_C1}+\_C2,y(x)=2\,\frac{\sqrt{\_C1\,x-1}}{\_C1}+\_C2\right\}$$

7.82 ODE No. 1672

$$\boxed{x^2\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)-a((y(x))^n-y(x))=0}$$

Mathematica: cpu = 19.524479 (sec), leaf count = 27

$$\text{DSolve}\left[x^2y''(x)-a(y(x)^n-y(x))=0,y(x),x\right]$$

Maple: cpu = 0.702 (sec), leaf count = 67

$$\left\{y(x)=ODESolStruc\left(\_a,\left[\left\{\frac{\mathrm{d}}{\mathrm{d}\_a}\_b(\_a)=(-\_a^na+a\_a)\left(\_b(\_a)\right)^3-\left(\_b(\_a)\right)^2\right\},\left\{\_a=y(x),\right.\right.\right.$$

7.83 ODE No. 1673

$$\boxed{x^2 \frac{\mathrm{d}^2}{\mathrm{d}x^2} y(x) + a\left(\mathrm{e}^{y(x)} - 1\right) = 0}$$

Mathematica: cpu = 35.890057 (sec), leaf count = 23

$$\text{DSolve}\left[a\left(e^{y(x)} - 1\right) + x^2 y''(x) = 0, y(x), x\right]$$

Maple: cpu = 0.514 (sec), leaf count = 65

$$\left\{y(x) = \mathit{ODESolStruc}\left(\_a, [\left\{\frac{\mathrm{d}}{\mathrm{d}\_a}\_b(\_a) = (a\mathrm{e}^{-a} - a)\left(\_b(\_a)\right)^3 - \left(\_b(\_a)\right)^2\right\}, \left\{\_a = y(x), \_b(\_\right.\right.$$

7.84 ODE No. 1674

$$\boxed{x^2 \frac{\mathrm{d}^2}{\mathrm{d}x^2} y(x) - (2\,a + b - 1)\, x \frac{\mathrm{d}}{\mathrm{d}x} y(x) + \left(c^2 b^2 x^{2\,b} + a(a + b)\right) y(x) = 0}$$

Mathematica: cpu = 0.066008 (sec), leaf count = 106

$$\left\{\left\{y(x) \to c_2 2^{-\frac{a+b}{b}} c^{\frac{a+b}{b}-1} \left(x^{2b}\right)^{\frac{a+b}{2b}-\frac{1}{2}} \sin\left(c\sqrt{x^{2b}}\right) + c_1 2^{-\frac{a}{b}} c^{a/b} \left(x^{2b}\right)^{\frac{a}{2b}} \cos\left(c\sqrt{x^{2b}}\right)\right\}\right\}$$

Maple: cpu = 0.047 (sec), leaf count = 27

$$\left\{y(x) = \_C1\ \sin\left(x^b c\right) x^a + \_C2\ \cos\left(x^b c\right) x^a\right\}$$

7.85 ODE No. 1675

$$\boxed{x^2 \frac{\mathrm{d}^2}{\mathrm{d}x^2} y(x) + (a + 1)\, x \frac{\mathrm{d}}{\mathrm{d}x} y(x) - x^k h\left(x^k y(x), x \frac{\mathrm{d}}{\mathrm{d}x} y(x) + k y(x)\right) = 0}$$

Mathematica: cpu = 3.448438 (sec), leaf count = 47

$$\text{DSolve}\left[x^k\left(-h\left(x^k y(x), k y(x) + x y'(x)\right)\right) + (a+1) x y'(x) + x^2 y''(x) = 0, y(x), x\right]$$

Maple: cpu = 1.638 (sec), leaf count = 0

could not solve

7.86 ODE No. 1676

$$\boxed{x^2 \frac{\mathrm{d}^2}{\mathrm{d}x^2} y(x) + a\left(x \frac{\mathrm{d}}{\mathrm{d}x} y(x) - y(x)\right)^2 - bx^2 = 0}$$

Mathematica: cpu = 54.698946 (sec), leaf count = 133

$$\left\{\left\{y(x) \to x\left(c_2 + \int_1^x \frac{i\sqrt{a}\sqrt{b}Y_1\left(-i\sqrt{a}\sqrt{b}K[2]\right) - i\sqrt{a}\sqrt{b}c_1 J_1\left(i\sqrt{a}\sqrt{b}K[2]\right)}{aK[2]\left(c_1 J_0\left(i\sqrt{a}\sqrt{b}K[2]\right) + Y_0\left(-i\sqrt{a}\sqrt{b}K[2]\right)\right)}\, dK[2]\right)\right\}\right\}$$

Maple: cpu = 0.920 (sec), leaf count = 110

$$\left\{y(x) = \left(\int -\frac{\_C1}{ax} Y_1\left(\sqrt{-ab}x\right)\sqrt{-ab}\left(\_C1\, Y_0\left(\sqrt{-ab}x\right) + J_0\left(\sqrt{-ab}x\right)\right)^{-1} - \frac{1}{ax} J_1\left(\sqrt{-ab}x\right)\sqrt{-ab}\left(\_\right.\right.$$

7.87 ODE No. 1677

$$\boxed{x^2 \frac{\mathrm{d}^2}{\mathrm{d}x^2} y(x) + ay(x)\left(\frac{\mathrm{d}}{\mathrm{d}x} y(x)\right)^2 + bx = 0}$$

Mathematica: cpu = 46.986967 (sec), leaf count = 28

$$\text{DSolve}\left[ay(x)y'(x)^2 + bx + x^2 y''(x) = 0, y(x), x\right]$$

Maple: cpu = 2.309 (sec), leaf count = 101

$$\left\{y(x) = \mathit{ODESolStruc}\left(\_a\, \mathrm{e}^{\int \_b(\_a)\, \mathrm{d}\_a + \_C1}, \left[\left\{\frac{\mathrm{d}}{\mathrm{d}\_a}\_b(\_a) = \left(a\_a^3 + b\right)\left(\_b(\_a)\right)^3 + \left(2\_a^2 a + 1\right)\left(\_\right.\right.\right.\right.$$

7.88 ODE No. 1678

$$\boxed{x^2 \frac{\mathrm{d}^2}{\mathrm{d}x^2} y(x) - \sqrt{ax^2\left(\frac{\mathrm{d}}{\mathrm{d}x} y(x)\right)^2 + b\left(y(x)\right)^2} = 0}$$

Mathematica: cpu = 1.836733 (sec), leaf count = 39

$$\text{DSolve}\left[x^2 y''(x) - \sqrt{ax^2 y'(x)^2 + by(x)^2} = 0, y(x), x\right]$$

Maple: cpu = 1.622 (sec), leaf count = 60

$$\left\{y(x) - \mathrm{e}^{\int^{\ln(x)} \mathit{RootOf}\left(\int^{\_Z} -y(x)\left(\_a^2 y(x) - \_a\, y(x) - \sqrt{(y(x))^2(\_a^2 a + b)}\right)^{-1} d\_a - \_b + \_C1\right) d\_b + \_C2} = 0\right\}$$

7.89 ODE No. 1679

$$\boxed{\left(x^2+1\right)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+1=0}$$

Mathematica: cpu = 0.042005 (sec), leaf count = 33

$$\left\{\left\{y(x)\to -x\cot\left(c_1\right)+\csc^2\left(c_1\right)\log\left(-x\sin\left(c_1\right)-\cos\left(c_1\right)\right)+c_2\right\}\right\}$$

Maple: cpu = 0.826 (sec), leaf count = 27

$$\left\{y(x)=\frac{x}{\_C1}+\ln\left(x\_C1-1\right)+\frac{\ln\left(x\_C1-1\right)}{\_C1^2}+\_C2\right\}$$

7.90 ODE No. 1680

$$\boxed{4\,x^2\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)-x^4\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+4\,y(x)=0}$$

Mathematica: cpu = 10.873881 (sec), leaf count = 31

$$\text{DSolve}\left[x^4\left(-y'(x)^2\right)+4x^2y''(x)+4y(x)=0,y(x),x\right]$$

Maple: cpu = 1.092 (sec), leaf count = 103

$$\left\{y(x)=ODESolStruc\left(\frac{\_a}{\left(\mathrm{e}^{\int \_b(\_a)\,\mathrm{d}\_a+\_C1}\right)^2},\left[\left\{\frac{\mathrm{d}}{\mathrm{d}\_a}\_b(\_a)=\left(-\_a^2+7\,\_a\right)\left(\_b(\_a)\right)^3+\left(\_a-5\right)\left(\_\right.\right.\right.\right.$$

7.91 ODE No. 1681

$$\boxed{9\,x^2\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+a(y(x))^3+2\,y(x)=0}$$

Mathematica: cpu = 3.482442 (sec), leaf count = 26

$$\text{DSolve}\left[ay(x)^3+9x^2y''(x)+2y(x)=0,y(x),x\right]$$

Maple: cpu = 0.780 (sec), leaf count = 31

$$\left\{y(x)=\_C2\;JacobiSN\left(\left(\frac{\sqrt{2}}{2\,x^3}\sqrt{x^{\frac{20}{3}}a}+\_C1\right)\_C2,i\right)\sqrt[3]{x}\right\}$$

7.92 ODE No. 1682

$$\boxed{x^3\left(\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+y(x)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)-(y(x))^3\right)+12\,xy(x)+24=0}$$

Mathematica: cpu = 22.595369 (sec), leaf count = 35

$$\text{DSolve}\left[x^3\left(y''(x)+y(x)y'(x)-y(x)^3\right)+12xy(x)+24=0,y(x),x\right]$$

Maple: cpu = 1.186 (sec), leaf count = 102

$$\left\{y(x)=ODESolStruc\left(\_a\,\mathrm{e}^{\int \_b(\_a)\,\mathrm{d}\_a+\_C1},\left[\left\{\frac{\mathrm{d}}{\mathrm{d}\_a}\_b(\_a)=\left(-\_a^3-\_a^2+14\,\_a+24\right)(\_b(\_a))^3-\right.\right.\right.$$

7.93 ODE No. 1683

$$\boxed{x^3\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)-a\left(x\frac{\mathrm{d}}{\mathrm{d}x}y(x)-y(x)\right)^2=0}$$

Mathematica: cpu = 0.068509 (sec), leaf count = 26

$$\left\{\left\{y(x)\to-\frac{x\log\left(a\left(-\frac{c_1}{x}-c_2\right)\right)}{a}\right\}\right\}$$

Maple: cpu = 0.796 (sec), leaf count = 23

$$\left\{y(x)=-\frac{x}{a}\ln\left(\frac{a(\_C1\,x-\_C2)}{x}\right)\right\}$$

7.94 ODE No. 1684

$$\boxed{2\,x^3\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+x^2(9+2\,xy(x))\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)+b+xy(x)\left(a+3\,xy(x)-2\,x^2(y(x))^2\right)=0}$$

Mathematica: cpu = 53.614308 (sec), leaf count = 52

$$\text{DSolve}\left[xy(x)\left(a-2x^2y(x)^2+3xy(x)\right)+b+2x^3y''(x)+x^2(2xy(x)+9)y'(x)=0,y(x),x\right]$$

Maple: cpu = 1.810 (sec), leaf count = 108

$$\left\{y(x)=ODESolStruc\left(\_a\,\mathrm{e}^{\int \_b(\_a)\,\mathrm{d}\_a+\_C1},\left[\left\{\frac{\mathrm{d}}{\mathrm{d}\_a}\_b(\_a)=\left(-\_a^3+\frac{\_a^2}{2}+\frac{a\_a}{2}-\frac{5\_a}{2}+\frac{b}{2}\right)(\_b\right.\right.\right.$$

7.95 ODE No. 1685

$$2\left(-x^k+4x^3\right)\left(\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+y(x)\frac{\mathrm{d}}{\mathrm{d}x}y(x)-(y(x))^3\right)-\left(kx^{k-1}-12x^2\right)\left(3\frac{\mathrm{d}}{\mathrm{d}x}y(x)+(y(x))^2\right)+axy(x)$$

Mathematica: cpu = 4.994134 (sec), leaf count = 70

$$\text{DSolve}\left[axy(x)+b-\left(kx^{k-1}-12x^2\right)\left(3y'(x)+y(x)^2\right)+2\left(4x^3-x^k\right)\left(y''(x)+y(x)y'(x)-y(x)^3\right)=0,y(\right.$$

Maple: cpu = 3.650 (sec), leaf count = 0

could not solve

7.96 ODE No. 1686

$$x^4\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+a^2(y(x))^n=0$$

Mathematica: cpu = 0.032504 (sec), leaf count = 23

$$\text{DSolve}\left[a^2y(x)^n+x^4y''(x)=0,y(x),x\right]$$

Maple: cpu = 0.764 (sec), leaf count = 160

$$\left\{y(x)=ODESolStruc\left(\_a\,\mathrm{e}^{\int\_b(\_a)\,\mathrm{d}\_a+\_C1},\left[\left\{\frac{\mathrm{d}}{\mathrm{d}\_a}\_b(\_a)=\left(\frac{\_a^n n^2a^2}{4}-\frac{\_a^n na^2}{2}+\frac{\_a^n a^2}{4}-\frac{\_a\,n}{2}-\right.\right.\right.\right.$$

7.97 ODE No. 1687

$$x^4\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)-x\left(x^2+2\,y(x)\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+4\,(y(x))^2=0$$

Mathematica: cpu = 0.069509 (sec), leaf count = 262

$$\left\{\left\{y(x)\to-\frac{x^3\left(i\left(-\frac{\sqrt{-c_1-1}}{\sqrt{c_1}}+\frac{i}{\sqrt{c_1}}\right)\sqrt{c_1}c_2x^{-1+i\left(-\frac{\sqrt{-c_1-1}}{\sqrt{c_1}}+\frac{i}{\sqrt{c_1}}\right)\sqrt{c_1}}+i\left(\frac{\sqrt{-c_1-1}}{\sqrt{c_1}}+\frac{i}{\sqrt{c_1}}\right)\sqrt{c_1}x^{-1+i\left(\frac{\sqrt{-c_1-1}}{\sqrt{c_1}}+\right.\right.\right.}{c_2x^{i\left(-\frac{\sqrt{-c_1-1}}{\sqrt{c_1}}+\frac{i}{\sqrt{c_1}}\right)\sqrt{c_1}}+x^{i\left(\frac{\sqrt{-c_1-1}}{\sqrt{c_1}}+\frac{i}{\sqrt{c_1}}\right)\sqrt{c_1}}}\right.\right.\right.$$

Maple: cpu = 1.544 (sec), leaf count = 23

$$\left\{y(x)=\tanh\left(-\ln(x)\_C1+\_C2\,\_C1\right)x^2\_C1+x^2\right\}$$

7.98 ODE No. 1688

$$\boxed{x^4 \frac{\mathrm{d}^2}{\mathrm{d}x^2} y(x) - x^2 \left(x + \frac{\mathrm{d}}{\mathrm{d}x} y(x) \right) \frac{\mathrm{d}}{\mathrm{d}x} y(x) + 4 \left(y(x) \right)^2 = 0}$$

Mathematica: cpu = 283.320477 (sec), leaf count = 166

$$\text{Solve}\left[\int_1^{y(x)} \frac{1}{c_1 x^2 \left(-e^{\frac{K[1]}{x^2}} \right) + 4K[1] + 2x^2} \, dK[1] - \int_1^{x} \left(\frac{K[2] \left(c_1 e^{\frac{y(x)}{K[2]^2}} + 2\left(-\frac{y(x)}{K[2]^2} - 1 \right) \right)}{c_1 K[2]^2 \left(-e^{\frac{y(x)}{K[2]^2}} \right) + 2K[2]^2 + 4y(x)} + 2 \left(\frac{}{K[2]} \right. \right. \right.$$

Maple: cpu = 1.638 (sec), leaf count = 32

$$\left\{ y(x) = \mathit{RootOf}\left(-\ln(x) + \_C2 - \int^{\_Z} \left(\mathrm{e}^{-f} \_C1 + 4\_f + 2 \right)^{-1} d\_f \right) x^2 \right\}$$

7.99 ODE No. 1689

$$\boxed{x^4 \frac{\mathrm{d}^2}{\mathrm{d}x^2} y(x) + \left(x \frac{\mathrm{d}}{\mathrm{d}x} y(x) - y(x) \right)^3 = 0}$$

Mathematica: cpu = 0.642582 (sec), leaf count = 329

$$\left\{ \left\{ y(x) \to -ix \log\left(-\frac{\sqrt{-8ic_1 x^2 - \sinh(2c_2) - \cosh(2c_2)}}{4c_1 x} - \frac{i \sinh(c_2)}{4c_1 x} - \frac{i \cosh(c_2)}{4c_1 x} \right) \right\}, \left\{ y(x) \to -ix \right.$$

Maple: cpu = 1.623 (sec), leaf count = 37

$$\left\{ y(x) = \left(-\arctan\left(\frac{1}{\sqrt{\_C1\, x^2 - 1}} \right) + \_C2 \right) x, y(x) = \left(\arctan\left(\frac{1}{\sqrt{\_C1\, x^2 - 1}} \right) + \_C2 \right) x \right\}$$

7.100 ODE No. 1690

$$\boxed{\left(\frac{\mathrm{d}^2}{\mathrm{d}x^2} y(x) \right) \sqrt{x} - \left(y(x) \right)^{3/2} = 0}$$

Mathematica: cpu = 22.744388 (sec), leaf count = 25

$$\text{DSolve}\left[\sqrt{x} y''(x) - y(x)^{3/2} = 0, y(x), x \right]$$

Maple: cpu = 3.479 (sec), leaf count = 97

$$\left\{ y(x) = \mathit{ODESolStruc}\left(\frac{\_a}{\left(\mathrm{e}^{\int \_b(\_a)\, \mathrm{d}\_a + \_C1} \right)^3}, \left[\left\{ \frac{\mathrm{d}}{\mathrm{d}\_a} \_b(\_a) = \left(-\_a^{\frac{3}{2}} + 12\,\_a \right) (\_b(\_a))^3 - 7\,(\_b(\_a \right. \right. \right.$$

7.101 ODE No. 1691

$$\boxed{\left(ax^2+bx+c\right)^{3/2}\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)-F\left(\frac{y(x)}{\sqrt{ax^2+bx+c}}\right)=0}$$

Mathematica: cpu = 61.997373 (sec), leaf count = 46

$$\text{DSolve}\left[y''(x)\left(ax^2+bx+c\right)^{3/2}-f\left(\frac{y(x)}{\sqrt{ax^2+bx+c}}\right)=0,y(x),x\right]$$

Maple: cpu = 0.795 (sec), leaf count = 254

$$\left\{y(x)=RootOf\left(-2\,a\arctan\left(\frac{2\,ax+b}{\sqrt{4\,ac-b^2}}\right)-2\int^{-Z}\frac{a}{\sqrt{4\_C1\,a^2-4\,c\_g^2a+b^2\_g^2+8\int F\left(\_g\right)\,\mathrm{d}\_g}}\right.\right.$$

7.102 ODE No. 1692

$$\boxed{x^{\frac{n}{n+1}}\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)-\left(y(x)\right)^{\frac{2n+1}{n+1}}=0}$$

Mathematica: cpu = 0.083011 (sec), leaf count = 37

$$\text{DSolve}\left[x^{\frac{n}{n+1}}y''(x)-y(x)^{\frac{2n+1}{n+1}}=0,y(x),x\right]$$

Maple: cpu = 3.370 (sec), leaf count = 165

$$\left\{y(x)=ODESolStruc\left(\_a\left(\mathrm{e}^{\frac{\left(\int\_b(\_a)\,\mathrm{d}\_a+\_C1\right)(n+2)}{n}}\right)^{-1},\left[\left\{\frac{\mathrm{d}}{\mathrm{d}\_a}\_b(\_a)=-\frac{\left(\_b(\_a)\right)^3}{n^2}\left(\_a^{\frac{2n+1}{n+1}}n^2-2\,\_a\,n\right.\right.\right.$$

7.103 ODE No. 1693

$$\boxed{\left(f(x)\right)^2\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+f(x)\left(\frac{\mathrm{d}}{\mathrm{d}x}f(x)\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)-h\left(y(x),f(x)\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)=0}$$

Mathematica: cpu = 0.952121 (sec), leaf count = 39

$$\text{DSolve}\left[-h(y(x),f(x)y'(x))+f(x)f'(x)y'(x)+f(x)^2y''(x)=0,y(x),x\right]$$

Maple: cpu = 0.218 (sec), leaf count = 68

$$\left\{y(x)=ODESolStruc\left(\_a,\left[\left\{\frac{\mathrm{d}}{\mathrm{d}\_a}\_b(\_a)=-h\left(\_a,\left(\_b(\_a)\right)^{-1}\right)\left(\_b(\_a)\right)^3\right\},\left\{\_a=y(x),\_b(\_a)\right.\right.\right.$$

7.104 ODE No. 1694

$$\boxed{\left(\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)\right)y(x)-a=0}$$

Mathematica: cpu = 0.196025 (sec), leaf count = 115

$$\left\{\left\{y(x)\to \exp\left(\frac{-c_1-2a\mathrm{erf}^{-1}\left(-i\sqrt{\frac{2}{\pi}}\sqrt{ae^{\frac{c_1}{a}}\left(c_2+x\right)^2}\right)^2}{2a}\right)\right\},\left\{y(x)\to \exp\left(\frac{-c_1-2a\mathrm{erf}^{-1}\left(i\sqrt{\frac{2}{\pi}}\sqrt{}\right.\right.\right.$$

Maple: cpu = 1.669 (sec), leaf count = 55

$$\left\{\int^{y(x)}\frac{1}{\sqrt{2\,a\ln\left(\_a\right)-2\,\_C1\,a}}d\_a-x-\_C2=0,\int^{y(x)}-\frac{1}{\sqrt{2\,a\ln\left(\_a\right)-2\,\_C1\,a}}d\_a-x-\_C2=\right.$$

7.105 ODE No. 1695

$$\boxed{\left(\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)\right)y(x)-ax=0}$$

Mathematica: cpu = 25.610752 (sec), leaf count = 18

$$\text{DSolve}[y(x)y''(x)-ax=0,y(x),x]$$

Maple: cpu = 2.090 (sec), leaf count = 103

$$\left\{y(x)=ODESolStruc\left(\_a\left(\mathrm{e}^{\int -b(\_a)\,\mathrm{d}\_a+\_C1}\right)^{\frac{3}{2}},[\left\{\frac{\mathrm{d}}{\mathrm{d}\_a}\_b(\_a)=\frac{\left(3\,\_a^2-4\,a\right)\left(\_b(\_a)\right)^3}{4\,\_a}+2\left(\_b(\_a\right.\right.\right.$$

7.106 ODE No. 1696

$$\boxed{\left(\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)\right)y(x)-ax^2=0}$$

Mathematica: cpu = 24.305086 (sec), leaf count = 20

$$\text{DSolve}\left[y(x)y''(x)-ax^2=0,y(x),x\right]$$

Maple: cpu = 1.856 (sec), leaf count = 102

$$\left\{y(x)=ODESolStruc\left(\_a\left(\mathrm{e}^{\int -b(\_a)\,\mathrm{d}\_a+\_C1}\right)^2,[\left\{\frac{\mathrm{d}}{\mathrm{d}\_a}\_b(\_a)=\frac{\left(2\,\_a^2-a\right)\left(\_b(\_a)\right)^3}{\_a}+3\left(\_b(\_a)\right)\right.\right.\right.$$

7.107 ODE No. 1697

$$\boxed{\left(\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)\right)y(x)+\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2-a=0}$$

Mathematica: cpu = 0.062508 (sec), leaf count = 94

$$\left\{\left\{y(x)\to -\frac{\sqrt{2a^2c_2x+a^2c_2^2+a^2x^2-e^{2c_1}}}{\sqrt{a}}\right\},\left\{y(x)\to \frac{\sqrt{2a^2c_2x+a^2c_2^2+a^2x^2-e^{2c_1}}}{\sqrt{a}}\right\}\right\}$$

Maple: cpu = 1.669 (sec), leaf count = 39

$$\left\{y(x)=\sqrt{ax^2-2\_C1\,x+2\_C2},y(x)=-\sqrt{ax^2-2\_C1\,x+2\_C2}\right\}$$

7.108 ODE No. 1698

$$\boxed{\left(\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)\right)y(x)+(y(x))^2-ax-b=0}$$

Mathematica: cpu = 0.039505 (sec), leaf count = 72

$$\left\{\left\{y(x)\to -\frac{\sqrt{ax^3+3bx^2+3c_2x+6c_1}}{\sqrt{3}}\right\},\left\{y(x)\to \frac{\sqrt{ax^3+3bx^2+3c_2x+6c_1}}{\sqrt{3}}\right\}\right\}$$

Maple: cpu = 1.669 (sec), leaf count = 0

could not solve

7.109 ODE No. 1699

$$\boxed{\left(\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)\right)y(x)+\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2-\frac{\mathrm{d}}{\mathrm{d}x}y(x)=0}$$

Mathematica: cpu = 0.037505 (sec), leaf count = 40

$$\left\{\left\{y(x)\to c_1\left(-W\left(-\frac{e^{-\frac{x}{c_1}-\frac{c_2}{c_1}-1}}{c_1}\right)\right)-c_1\right\}\right\}$$

Maple: cpu = 1.622 (sec), leaf count = 33

$$\left\{y(x)=-\_C1\left(lambertW\left(-\frac{\mathrm{e}^{-1}}{\_C1}\left(\mathrm{e}^{\frac{\_C2}{\_C1}}\right)^{-1}\left(\mathrm{e}^{\frac{x}{\_C1}}\right)^{-1}\right)+1\right)\right\}$$

7.110 ODE No. 1700

$$\boxed{\left(\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)\right)y(x)-\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+1=0}$$

Mathematica: cpu = 0.073009 (sec), leaf count = 44

$$\left\{\left\{y(x)\to -e^{-c_1}\sinh\left(e^{c_1}(c_2+x)\right)\right\},\left\{y(x)\to e^{-c_1}\sinh\left(e^{c_1}(c_2+x)\right)\right\}\right\}$$

Maple: cpu = 1.669 (sec), leaf count = 79

$$\left\{y(x)=\frac{\_C1}{2}\left(1\left(\mathrm{e}^{\frac{\_C2}{\_C1}}\right)^{-2}\left(\mathrm{e}^{\frac{x}{\_C1}}\right)^{-2}-1\right)\mathrm{e}^{\frac{\_C2}{\_C1}}\mathrm{e}^{\frac{x}{\_C1}},y(x)=\frac{\_C1}{2}\left(\left(\mathrm{e}^{\frac{\_C2}{\_C1}}\right)^{2}\left(\mathrm{e}^{\frac{x}{\_C1}}\right)^{2}-1\right)\left(\mathrm{e}^{\frac{\_C2}{\_C1}}\right)^{-1}\left(\mathrm{e}\right.\right.$$

7.111 ODE No. 1701

$$\boxed{\left(\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)\right)y(x)-\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2-1=0}$$

Mathematica: cpu = 0.180523 (sec), leaf count = 97

$$\left\{\left\{y(x)\to\frac{1}{2}e^{-e^{c_1}x-2c_1-e^{c_1}c_2}\left(e^{2e^{c_1}(c_2+x)}+e^{2c_1}\right)\right\},\left\{y(x)\to\frac{1}{2}\left(e^{-e^{c_1}x-2c_1-e^{c_1}c_2}+e^{e^{c_1}x+e^{c_1}c_2}\right)\right\}\right\}$$

Maple: cpu = 1.654 (sec), leaf count = 79

$$\left\{y(x)=\frac{\_C1}{2}\left(1\left(\mathrm{e}^{\frac{\_C2}{\_C1}}\right)^{-2}\left(\mathrm{e}^{\frac{x}{\_C1}}\right)^{-2}+1\right)\mathrm{e}^{\frac{\_C2}{\_C1}}\mathrm{e}^{\frac{x}{\_C1}},y(x)=\frac{\_C1}{2}\left(\left(\mathrm{e}^{\frac{\_C2}{\_C1}}\right)^{2}\left(\mathrm{e}^{\frac{x}{\_C1}}\right)^{2}+1\right)\left(\mathrm{e}^{\frac{\_C2}{\_C1}}\right)^{-1}\left(\mathrm{e}\right.\right.$$

7.112 ODE No. 1702

$$\boxed{\left(\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)\right)y(x)-\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+\mathrm{e}^{x}y(x)\left(c(y(x))^2+d\right)+\mathrm{e}^{2x}\left(b+a(y(x))^4\right)=0}$$

Mathematica: cpu = 5.336178 (sec), leaf count = 50

$$\text{DSolve}\left[e^{2x}\left(ay(x)^4+b\right)+e^{x}y(x)\left(cy(x)^2+d\right)+y(x)y''(x)-y'(x)^2=0,y(x),x\right]$$

Maple: cpu = 3.448 (sec), leaf count = 0

$$\text{could not solve}$$

7.113 ODE No. 1703

$$\boxed{\left(\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)\right)y(x)-\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2-(y(x))^2\ln(y(x))=0}$$

Mathematica: cpu = 0.094512 (sec), leaf count = 63

$$\left\{\left\{y(x)\to e^{\frac{1}{2}\left(e^{c_2+x}-c_1e^{-c_2-x}\right)}\right\},\left\{y(x)\to e^{\frac{1}{2}\left(e^{-c_2-x}-c_1e^{c_2+x}\right)}\right\}\right\}$$

Maple: cpu = 0.047 (sec), leaf count = 25

$$\left\{y(x)=\mathrm{e}^{-\frac{\mathrm{e}^{2x}\_C1}{2\mathrm{e}^x}}\mathrm{e}^{\frac{\_C2}{2\mathrm{e}^x}}\right\}$$

7.114 ODE No. 1704

$$\boxed{\left(\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)\right)y(x)-\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2-\frac{\mathrm{d}}{\mathrm{d}x}y(x)+f(x)(y(x))^3+(y(x))^2\left(\frac{\frac{\mathrm{d}^2}{\mathrm{d}x^2}f(x)}{f(x)}-\frac{\left(\frac{\mathrm{d}}{\mathrm{d}x}f(x)\right)^2}{(f(x))^2}\right)=0}$$

Mathematica: cpu = 41.261240 (sec), leaf count = 62

$$\text{DSolve}\left[y(x)^2\left(\frac{f''(x)}{f(x)}-\frac{f'(x)^2}{f(x)^2}\right)+f(x)y(x)^3+y(x)y''(x)-y'(x)^2-y'(x)=0,y(x),x\right]$$

Maple: cpu = 0.390 (sec), leaf count = 0

could not solve

7.115 ODE No. 1705

$$\boxed{\left(\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)\right)y(x)-\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+f(x)\frac{\mathrm{d}}{\mathrm{d}x}y(x)-\left(\frac{\mathrm{d}}{\mathrm{d}x}f(x)\right)y(x)-(y(x))^3=0}$$

Mathematica: cpu = 0.244531 (sec), leaf count = 43

$$\text{DSolve}\left[-y(x)f'(x)+f(x)y'(x)+y(x)y''(x)-y'(x)^2-y(x)^3=0,y(x),x\right]$$

Maple: cpu = 0.375 (sec), leaf count = 0

could not solve

7.116 ODE No. 1706

$$\left(\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)\right)y(x)-\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+\left(\frac{\mathrm{d}}{\mathrm{d}x}f(x)\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)-\left(\frac{\mathrm{d}^2}{\mathrm{d}x^2}f(x)\right)y(x)+f(x)\left(y(x)\right)^3-\left(y(x)\right)^4=0$$

Mathematica: cpu = 0.482561 (sec), leaf count = 52

$$\text{DSolve}\left[-y(x)f''(x)+f'(x)y'(x)+f(x)y(x)^3+y(x)y''(x)-y'(x)^2-y(x)^4=0,y(x),x\right]$$

Maple: cpu = 0.390 (sec), leaf count = 0

could not solve

7.117 ODE No. 1707

$$\left(\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)\right)y(x)-\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+ay(x)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+b\left(y(x)\right)^2=0$$

Mathematica: cpu = 0.072509 (sec), leaf count = 31

$$\left\{\left\{y(x)\to c_2e^{-\frac{bx}{a}-\frac{c_1e^{-ax}}{a}}\right\}\right\}$$

Maple: cpu = 1.545 (sec), leaf count = 39

$$\left\{y(x)=1\mathrm{e}^{\frac{\mathrm{e}^{-ax}\_C1}{a}}\mathrm{e}^{\frac{b}{a^2}}\left(\mathrm{e}^{\frac{bx}{a}}\right)^{-1}\left(\mathrm{e}^{-\frac{\_C2}{a}}\right)^{-1}\right\}$$

7.118 ODE No. 1708

$$\left(\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)\right)y(x)-\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+ay(x)\frac{\mathrm{d}}{\mathrm{d}x}y(x)-2\,a\left(y(x)\right)^2+b\left(y(x)\right)^3=0$$

Mathematica: cpu = 46.194866 (sec), leaf count = 43

$$\text{DSolve}\left[ay(x)y'(x)-2ay(x)^2+by(x)^3+y(x)y''(x)-y'(x)^2=0,y(x),x\right]$$

Maple: cpu = 2.106 (sec), leaf count = 73

$$\left\{y(x)=ODESolStruc\left(\_a,\left[\left\{\left(\frac{\mathrm{d}}{\mathrm{d}\_a}\_b(\_a)\right)\_b(\_a)-\frac{\left(\_b(\_a)\right)^2-\_a\,\_b(\_a)\,a-b\_a^3+2\,\_a^2a}{\_a}=\right.\right.\right.$$

7.119 ODE No. 1709

$$\left(\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)\right)y(x)-\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2-(-1+ay(x))\frac{\mathrm{d}}{\mathrm{d}x}y(x)+2a^2(y(x))^2-2b^2(y(x))^3+ay(x)=0$$

Mathematica: cpu = 61.278281 (sec), leaf count = 56

$$\text{DSolve}\left[2a^2y(x)^2-(ay(x)-1)y'(x)+ay(x)-2b^2y(x)^3+y(x)y''(x)-y'(x)^2=0,y(x),x\right]$$

Maple: cpu = 2.792 (sec), leaf count = 84

$$\left\{y(x)=ODESolStruc\left(\_a,[\left\{\left(\frac{\mathrm{d}}{\mathrm{d}\_a}\_b(\_a)\right)\_b(\_a)-\frac{2b^2\_a^3-2\_a^2a^2+\_a\_b(\_a)a+(\_b(\_a)\right.\right.\right.$$

7.120 ODE No. 1710

$$\left(\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)\right)y(x)-\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+(-1+ay(x))\frac{\mathrm{d}}{\mathrm{d}x}y(x)-y(x)(1+y(x))\left(b^2(y(x))^2-a^2\right)=0$$

Mathematica: cpu = 104.391256 (sec), leaf count = 55

$$\text{DSolve}\left[-y(x)(y(x)+1)\left(b^2y(x)^2-a^2\right)+(ay(x)-1)y'(x)+y(x)y''(x)-y'(x)^2=0,y(x),x\right]$$

Maple: cpu = 4.383 (sec), leaf count = 91

$$\left\{y(x)=ODESolStruc\left(\_a,[\left\{\left(\frac{\mathrm{d}}{\mathrm{d}\_a}\_b(\_a)\right)\_b(\_a)-\frac{\_a^4b^2+b^2\_a^3-\_a^2a^2-\_a\_b(\_a)a-\_a\right.\right.\right.$$

7.121 ODE No. 1711

$$\left(\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)\right)y(x)-\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+(\tan(x)+\cot(x))y(x)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+\left((\cos(x))^2-n^2(\cot(x))^2\right)(y(x))^2\ln$$

Mathematica: cpu = 635.571707 (sec), leaf count = 915

$$\left\{\left\{\left\{y(x)\to e^e\right.\right.\right.$$

$$c_2+\int_1^x-\frac{\frac{(-1)^{1-n}2^{n+1}\left(\frac{1}{2}(-n-1)+\frac{1}{2}\right)K_n\left(\sqrt{\cos^2(K[2])-1}\right)\cos(K[2])\left(2\cos^2(K[2])-2\right)^{\frac{n+1}{2}}\sin(K[2])\left(\cos^2(K[2])-1\right)^{\frac{1}{2}(-n-1)-\frac{1}{2}}}{\sqrt{1-\cos^2(K[2])}}+\frac{(-1$$

Maple: cpu = 0.390 (sec), leaf count = 81

$$\left\{ y(x) = 1 \mathrm{e}^{\frac{Y_n(\sin(x))\_C2}{\sin(x)\left(J_n(\sin(x))Y_{n+1}(\sin(x))-J_{n+1}(\sin(x))Y_n(\sin(x))\right)}} \left(\mathrm{e}^{\frac{J_n(\sin(x))\_C1}{\sin(x)\left(J_n(\sin(x))Y_{n+1}(\sin(x))-J_{n+1}(\sin(x))Y_n(\sin(x))\right)}} \right)^{-1} \right\}$$

7.122 ODE No. 1712

$$\boxed{\left(\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)\right) y(x) - \left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2 - f(x)\, y(x)\, \frac{\mathrm{d}}{\mathrm{d}x}y(x) - g(x)\, (y(x))^2 = 0}$$

Mathematica: cpu = 10.804372 (sec), leaf count = 70

$$\left\{ \left\{ y(x) \to c_2 \exp\left(\int_1^x \left(c_1 e^{\int_1^{K[3]} f(K[1])\, dK[1]} + e^{\int_1^{K[3]} f(K[1])\, dK[1]} \int_1^{K[3]} g(K[2]) e^{-\int_1^{K[2]} f(K[1])\, dK[1]}\, dK[2] \right) dK \right.\right.$$

Maple: cpu = 0.063 (sec), leaf count = 61

$$\left\{ y(x) = \frac{\_C2}{\mathrm{e}^{\_C1 \int \mathrm{e}^{\int f(x)\,\mathrm{d}x}\,\mathrm{d}x}} \mathrm{e}^{\int \mathrm{e}^{\int f(x)\,\mathrm{d}x}\,\mathrm{d}x \int \frac{g(x)}{\mathrm{e}^{\int f(x)\,\mathrm{d}x}}\,\mathrm{d}x} \left(\mathrm{e}^{\int \frac{\int \mathrm{e}^{\int f(x)\,\mathrm{d}x}\,\mathrm{d}x g(x)}{\mathrm{e}^{\int f(x)\,\mathrm{d}x}}\,\mathrm{d}x} \right)^{-1} \right\}$$

7.123 ODE No. 1713

$$\boxed{\left(\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)\right) y(x) - \left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2 + \left(g(x) + f(x)\, (y(x))^2\right) \frac{\mathrm{d}}{\mathrm{d}x}y(x) - y(x) \left(\frac{\mathrm{d}}{\mathrm{d}x}g(x) - \left(\frac{\mathrm{d}}{\mathrm{d}x}f(x)\right) (y(x))^2\right)}$$

Mathematica: cpu = 21.002667 (sec), leaf count = 56

$$\text{DSolve}\left[-y(x)\left(g'(x) - y(x)^2 f'(x)\right) + y'(x)\left(f(x)y(x)^2 + g(x)\right) + y(x)y''(x) - y'(x)^2 = 0, y(x), x\right]$$

Maple: cpu = 0.234 (sec), leaf count = 60

$$\left\{ y(x) = \mathit{ODESolStruc}\left(\_b(\_a), \left[\left\{ \frac{\frac{\mathrm{d}}{\mathrm{d}\_a}\_b(\_a)}{\_b(\_a)} + \frac{f(\_a)\,(\_b(\_a))^2 + \_C1\ \_b(\_a) - g(\_a)}{\_b(\_a)} = 0 \right\}, \{\_ \right.\right.$$

7.124 ODE No. 1714

$$\boxed{\left(\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)\right)y(x)-3\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+3\,y(x)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)-(y(x))^2=0}$$

Mathematica: cpu = 0.060508 (sec), leaf count = 25

$$\left\{\left\{y(x)\to\frac{c_2e^x}{\sqrt{1-2e^{c_1+x}}}\right\}\right\}$$

Maple: cpu = 1.513 (sec), leaf count = 67

$$\left\{y(x)=-\frac{\sqrt{2}}{2\_C1\,\mathrm{e}^x-2\_C2}\sqrt{(\_C1\,\mathrm{e}^x-\_C2)\,\mathrm{e}^{2\,x}},y(x)=\frac{\sqrt{2}}{2\_C1\,\mathrm{e}^x-2\_C2}\sqrt{(\_C1\,\mathrm{e}^x-\_C2)\,\mathrm{e}^{2\,x}}\right\}$$

7.125 ODE No. 1715

$$\boxed{\left(\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)\right)y(x)-a\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2=0}$$

Mathematica: cpu = 0.034504 (sec), leaf count = 26

$$\left\{\left\{y(x)\to c_2(-ax-c_1+x)^{\frac{1}{1-a}}\right\}\right\}$$

Maple: cpu = 1.638 (sec), leaf count = 25

$$\left\{y(x)=\left(\frac{1}{(1-a)\,(\_C1\,x+\_C2)}\right)^{(a-1)^{-1}}\right\}$$

7.126 ODE No. 1716

$$\boxed{\left(\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)\right)y(x)+a\left(\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+1\right)=0}$$

Mathematica: cpu = 0.645082 (sec), leaf count = 172

$$\left\{\left\{y(x)\to\text{InverseFunction}\left[-\frac{\#1\sqrt{1-e^{2c_1}\#1^{-2a}}\,{}_2F_1\left(\frac{1}{2},-\frac{1}{2a};1-\frac{1}{2a};e^{2c_1}\#1^{-2a}\right)}{\sqrt{e^{2c_1}\#1^{-2a}-1}}\&\right][c_2+x]\right\},\left\{y(x)-\right.$$

Maple: cpu = 1.622 (sec), leaf count = 68

$$\left\{\int^{y(x)}\frac{1}{\_a^{-a}}\frac{1}{\sqrt{-\_a^{2\,a}+\_C1}}d\_a-x-\_C2=0,\int^{y(x)}-\frac{1}{\_a^{-a}}\frac{1}{\sqrt{-\_a^{2\,a}+\_C1}}d\_a-x-\_C2=0\right\}$$

7.127 ODE No. 1717

$$\boxed{\left(\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)\right)y(x)+a\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+b(y(x))^3=0}$$

Mathematica: cpu = 1.553697 (sec), leaf count = 290

$$\left\{\left\{y(x)\to \text{InverseFunction}\left[-\frac{\sqrt{2a+3}\#1^{a+1}\sqrt{\frac{-2b\#1^{2a+3}+2ac_1+3c_1}{(2a+3)c_1}}\,{}_2F_1\left(\frac{1}{2},\frac{a+1}{2a+3};\frac{a+1}{2a+3}+1;\frac{2b\#1^{2a+3}}{2ac_1+3c_1}\right)}{(a+1)\sqrt{-2b\#1^{2a+3}+2ac_1+3c_1}}\&\right][c_2\right.$$

Maple: cpu = 1.716 (sec), leaf count = 108

$$\left\{\int^{y(x)}(2\,a+3)\,\_a^{2\,a}\frac{1}{\sqrt{-(2\,a+3)\,\_a^{2\,a}\,(2\,\_a^{2\,a+3}b-\_C1)}}d\_a-x-\_C2=0,\int^{y(x)}-(2\,a+3)\,\_a^{2\,a}\right.$$

7.128 ODE No. 1718

$$\boxed{\left(\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)\right)y(x)+a\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+by(x)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+c(y(x))^2+d(y(x))^{1-a}=0}$$

Mathematica: cpu = 1.508191 (sec), leaf count = 744

$$\left\{\left\{y(x)\to\left(-\frac{ad\exp\left(\frac{1}{2}x\left(\sqrt{-4ac+b^2-4c}+b\right)-\frac{x\left(b\sqrt{-4ac+b^2-4c}-4(a+1)c+b^2\right)}{\sqrt{-4ac+b^2-4c}+b}-\frac{2(a+1)cx}{\sqrt{-4ac+b^2-4c}+b}\right)}{(a+1)c}-\frac{d\exp\right.\right.\right.$$

Maple: cpu = 0.187 (sec), leaf count = 158

$$\left\{y(x)=1\left(c^2\left(-4\,ac+b^2-4\,c\right)\left(\_C2\,c\mathrm{e}^{-\frac{x}{2}\left(-b+\sqrt{-4\,ac+b^2-4\,c}\right)}a-\mathrm{e}^{\frac{x}{2}\left(b+\sqrt{-4\,ac+b^2-4\,c}\right)}\_C1\,ac+\_C2\,c\mathrm{e}^{-\frac{x}{2}}\right.\right.\right.$$

7.129 ODE No. 1719

$$\boxed{\left(\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)\right)y(x)+a\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+f(x)\,y(x)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)+g(x)\,(y(x))^2=0}$$

Mathematica: cpu = 41.860316 (sec), leaf count = 38

$$\text{DSolve}\left[ay'(x)^2+f(x)y(x)y'(x)+g(x)y(x)^2+y(x)y''(x)=0,y(x),x\right]$$

Maple: cpu = 0.374 (sec), leaf count = 70

$$\left\{y(x)=ODESolStruc\left(\mathrm{e}^{\int \_b(\_a)\,\mathrm{d}\_a+\_C1},[\left\{\frac{\mathrm{d}}{\mathrm{d}\_a}\_b(\_a)=(-a-1)\,(\_b(\_a))^2-f(\_a)\,\_b(\_a)-g(\_\right.\right.\right.$$

7.130 ODE No. 1720

$$\boxed{\left(\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)\right)y(x)+a\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+b(y(x))^2\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)+c(y(x))^4=0}$$

Mathematica: cpu = 89.226830 (sec), leaf count = 38

$$\text{DSolve}\left[ay'(x)^2+by(x)^2y'(x)+cy(x)^4+y(x)y''(x)=0,y(x),x\right]$$

Maple: cpu = 1.747 (sec), leaf count = 174

$$\left\{\int^{y(x)}(2\,a+4)\left(\tan\left(RootOf\left(2\,\_Z\,b\_a^2-2\,a\ln(\_a)\,\sqrt{\_a^4\,(4\,ac-b^2+8\,c)}-\ln\left(\frac{\_a^4\left(4\,ac(\tan(\_\right.\right.\right.\right.\right.$$

7.131 ODE No. 1721

$$\boxed{\left(\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)\right)y(x)-\frac{(a-1)\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2}{a}-f(x)\,(y(x))^2\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)+\frac{a(f(x))^2\,(y(x))^4}{(a+2)^2}-\frac{a\left(\frac{\mathrm{d}}{\mathrm{d}x}f(x)\right)(y(x))^3}{a+2}=}$$

Mathematica: cpu = 0.927618 (sec), leaf count = 71

$$\text{DSolve}\left[-\frac{ay(x)^3f'(x)}{a+2}+\frac{af(x)^2y(x)^4}{(a+2)^2}-\frac{(a-1)y'(x)^2}{a}-f(x)y(x)^2y'(x)+y(x)y''(x)=0,y(x),x\right]$$

Maple: cpu = 1.856 (sec), leaf count = 0

could not solve

7.132 ODE No. 1722

$$\boxed{\left(\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)\right)y(x)-\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2-1-2\,ay(x)\left(\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+1\right)^{3/2}=0}$$

Mathematica: cpu = 1.926745 (sec), leaf count = 797

$$\left\{\left\{y(x)\to \text{InverseFunction}\left[-\frac{\left(\left(4c_1a^2+\sqrt{8c_1a^2+1}+1\right)E\left(i\sinh^{-1}\left(\sqrt{2}\sqrt{\frac{a^2}{-4c_1a^2+\sqrt{8c_1a^2+1}-1}}\#1\right)\right|\frac{4c_1a^2}{4c_1a^2}\right.\right.\right.\right.$$

Maple: cpu = 3.339 (sec), leaf count = 98

$$\left\{\int^{y(x)}(\_a^2a+\_C1)\frac{1}{\sqrt{-\_a^4a^2-2\_C1\,\_a^2a-\_C1^2+\_a^2}}d\_a-x-\_C2=0,\int^{y(x)}-(\_a^2a+\_C\right.$$

7.133 ODE No. 1723

$$\boxed{\left(\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)\right)(y(x)+x)+\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2-\frac{\mathrm{d}}{\mathrm{d}x}y(x)=0}$$

Mathematica: cpu = 1.971750 (sec), leaf count = 1033

$$\left\{\left\{y(x)\to -\frac{1}{2}e^{-c_1}(2e^{c_1}x-1)+\frac{\sqrt{-4e^{2c_1}x^2-4x^2+4e^{-c_1}x+4e^{c_1}x+e^{-2c_1}-4e^{-c_1}c_2^2+4e^{c_1}c_2^2+1}}{2\sqrt{2}}-\frac{1}{2}\right.\right.$$

Maple: cpu = 1.591 (sec), leaf count = 16

$$\left\{y(x)=\sqrt{\_C1+2\,x}\_C2+\_C1+x\right\}$$

7.134 ODE No. 1724

$$\boxed{\left(\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)\right)(x-y(x))+2\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)+1\right)=0}$$

Mathematica: cpu = 0.198525 (sec), leaf count = 38

$$\left\{\left\{y(x)\to -\frac{e^{-c_1}(e^{c_1}c_2x+e^{c_1}c_2^2+1)}{c_2+x}\right\}\right\}$$

Maple: cpu = 1.919 (sec), leaf count = 21

$$\left\{y(x)=\frac{\_C2^2-\_C2\,x+\_C1}{\_C2-x}\right\}$$

7.135 ODE No. 1725

$$\boxed{\left(\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)\right)(x-y(x))-\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)+1\right)\left(\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+1\right)=0}$$

Mathematica: cpu = 0.327042 (sec), leaf count = 75

$$\left\{\left\{y(x)\to -\sqrt{-2c_2x+e^{2c_1}-c_2^2-x^2}-c_2\right\},\left\{y(x)\to \sqrt{-2c_2x+e^{2c_1}-c_2^2-x^2}-c_2\right\}\right\}$$

Maple: cpu = 1.997 (sec), leaf count = 105

$$\left\{y(x)=x+RootOf\left(-x+\int^{\_Z}(\_C1^2\_f^2-1)\left(-\_C1^2\_f^2+\_C1\sqrt{-\_C1^2\_f^2+2}\_f+2\right)^{-1}d\_f\right.\right.$$

7.136 ODE No. 1726

$$\boxed{\left(\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)\right)(x-y(x))-h\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)=0}$$

Mathematica: cpu = 0.753596 (sec), leaf count = 75

$$\text{Solve}\left[\left\{x=\int\frac{\exp\left(-\int_1^{\text{K\$6747475}}\frac{K[3]-1}{h(K[3])}dK[3]-c_1\right)}{h(\text{K\$6747475})}d\text{K\$6747475}+c_2,y(x)=x-\exp\left(-\int_1^{\text{K\$6747475}}\frac{K}{h}\right.\right.\right.$$

Maple: cpu = 0.078 (sec), leaf count = 39

$$\left\{y(x)=x+RootOf\left(-x+\int^{\_Z}\left(-1+RootOf\left(\int^{\_Z}\frac{\_a-1}{h\left(\_a\right)}d\_a+\ln\left(-\_g\right)+\_C1\right)\right)^{-1}d\_g+\_C2\right.\right.$$

7.137 ODE No. 1727

$$\boxed{2\left(\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)\right)y(x)+\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+1=0}$$

Mathematica: cpu = 0.172522 (sec), leaf count = 129

$$\left\{\left\{y(x)\to \text{InverseFunction}\left[e^{2c_1}\tan^{-1}\left(\frac{\sqrt{\#1}}{\sqrt{e^{2c_1}-\#1}}\right)-\sqrt{\#1}\sqrt{e^{2c_1}-\#1}\&\right][c_2+x]\right\},\left\{y(x)\to \text{Invers}\right.\right.$$

Maple: cpu = 1.716 (sec), leaf count = 95

$$\left\{-\sqrt{\_C1\,y\left(x\right)-\left(y\left(x\right)\right)^2}+\frac{\_C1}{2}\arctan\left(1\left(y(x)-\frac{\_C1}{2}\right)\frac{1}{\sqrt{\_C1\,y\left(x\right)-\left(y\left(x\right)\right)^2}}\right)-x-\_C2=0,\right.$$

7.138 ODE No. 1728

$$\boxed{2\left(\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)\right)y(x)-\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+a=0}$$

Mathematica: cpu = 0.005501 (sec), leaf count = 31

$$\left\{\left\{y(x)\to\frac{x^2(c_1^2-a)}{4c_2}+c_1x+c_2\right\}\right\}$$

Maple: cpu = 1.622 (sec), leaf count = 24

$$\left\{y(x)=\frac{\left(\_C1^2-a\right)x^2}{4\_C2}+\_C1\,x+\_C2\right\}$$

7.139 ODE No. 1729

$$\boxed{2\left(\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)\right)y(x)-\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+f(x)\left(y(x)\right)^2+a=0}$$

Mathematica: cpu = 0.022503 (sec), leaf count = 31

$$\text{DSolve}\left[a+f(x)y(x)^2+2y(x)y''(x)-y'(x)^2=0,y(x),x\right]$$

Maple: cpu = 0.359 (sec), leaf count = 0

could not solve

7.140 ODE No. 1730

$$\boxed{2\left(\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)\right)y(x)-\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2-8\left(y(x)\right)^3=0}$$

Mathematica: cpu = 0.483061 (sec), leaf count = 127

$$\left\{\left\{y(x)\to-\frac{1}{2}i\sqrt{c_1}\text{ns}\left(\frac{1}{2}\left(-(-1)^{3/4}\sqrt{2}\sqrt[4]{c_1}x-(-1)^{3/4}\sqrt{2}\sqrt[4]{c_1}c_2\right)\middle|-1\right)^2\right\},\left\{y(x)\to-\frac{1}{2}i\sqrt{c_1}\text{ns}\left(\frac{1}{2}\left((-\right.\right.\right.$$

Maple: cpu = 1.669 (sec), leaf count = 53

$$\left\{\int^{y(x)}\frac{1}{\sqrt{4\_a^3+\_C1\,\_a}}d\_a-x-\_C2=0,\int^{y(x)}-\frac{1}{\sqrt{4\_a^3+\_C1\,\_a}}d\_a-x-\_C2=0\right\}$$

7.141 ODE No. 1731

$$\boxed{2\left(\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)\right)y(x)-\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2-8\left(y(x)\right)^3-4\left(y(x)\right)^2=0}$$

Mathematica: cpu = 1.403178 (sec), leaf count = 359

$$\left\{\left\{y(x)\to \text{InverseFunction}\left[-\frac{2i\#1\sqrt{\frac{c_1}{\#1(2-2\sqrt{1-c_1})}+1}\sqrt{\frac{c_1}{\#1(2\sqrt{1-c_1}+2)}+1}F\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{c_1}{2\sqrt{1-c_1}+2}}}{\sqrt{\#1}}\right)\middle|\frac{\sqrt{1-}}{1-\sqrt{}}\right.\right.\right.\right.$$

Maple: cpu = 1.653 (sec), leaf count = 63

$$\left\{\int^{y(x)}\frac{1}{\sqrt{4\_a^3+\_a\_C1+4\_a^2}}d\_a-x-\_C2=0,\int^{y(x)}-\frac{1}{\sqrt{4\_a^3+\_a\_C1+4\_a^2}}d\_a-x-\_\right.$$

7.142 ODE No. 1732

$$\boxed{2\left(\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)\right)y(x)-\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2-4\left(x+2\,y(x)\right)\left(y(x)\right)^2=0}$$

Mathematica: cpu = 1.657711 (sec), leaf count = 35

$$\text{DSolve}\left[2y(x)y''(x)-y'(x)^2-4(2y(x)+x)y(x)^2=0,y(x),x\right]$$

Maple: cpu = 1.825 (sec), leaf count = 0

could not solve

7.143 ODE No. 1733

$$\boxed{2\left(\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)\right)y(x)-\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+\left(ay(x)+b\right)\left(y(x)\right)^2=0}$$

Mathematica: cpu = 2.552324 (sec), leaf count = 437

$$\left\{\left\{y(x)\to \text{InverseFunction}\left[-\frac{i\sqrt{2}\#1^{3/2}\sqrt{\frac{4c_1}{\#1\left(\sqrt{2ac_1+b^2}-b\right)}+2}\sqrt{1-\frac{2c_1}{\#1\left(\sqrt{2ac_1+b^2}+b\right)}}F\left(i\sinh^{-1}\left(\frac{\sqrt{2}\sqrt{\frac{}{\sqrt{b^2}}}\right.\right.\right.\right.\right.$$

Maple: cpu = 1.560 (sec), leaf count = 71

$$\left\{\int^{y(x)} -2\frac{1}{\sqrt{-2\,a\_a^3-4\,b\_a^2+4\,\_a\,\_C1}}d\_a-x-\_C2=0,\int^{y(x)} 2\frac{1}{\sqrt{-2\,a\_a^3-4\,b\_a^2+4\,\_a\,\_C}\right.$$

7.144 ODE No. 1734

$$\boxed{2\left(\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)\right)y(x)-\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+1+2\,x(y(x))^2+a(y(x))^3=0}$$

Mathematica: cpu = 1.481688 (sec), leaf count = 37

$$\text{DSolve}\left[ay(x)^3+2y(x)y''(x)-y'(x)^2+2xy(x)^2+1=0,y(x),x\right]$$

Maple: cpu = 1.841 (sec), leaf count = 0

could not solve

7.145 ODE No. 1735

$$\boxed{2\left(\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)\right)y(x)-\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+(ay(x)+bx)\,(y(x))^2=0}$$

Mathematica: cpu = 1.244158 (sec), leaf count = 36

$$\text{DSolve}\left[y(x)^2(ay(x)+bx)+2y(x)y''(x)-y'(x)^2=0,y(x),x\right]$$

Maple: cpu = 1.638 (sec), leaf count = 0

could not solve

7.146 ODE No. 1736

$$\boxed{2\left(\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)\right)y(x)-\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2-3\,(y(x))^4=0}$$

Mathematica: cpu = 8.595591 (sec), leaf count = 285

$$\left\{\left\{y(x)\to \text{InverseFunction}\left[-\frac{2i\#1^{3/2}\sqrt{(-1)^{5/6}\left(\frac{\sqrt[3]{-c_1}}{\#1}-1\right)}\sqrt{\frac{(-c_1)^{2/3}}{\#1^2}+\frac{\sqrt[3]{-c_1}}{\#1}+1}F\left(\sin^{-1}\left(\frac{\sqrt{-\frac{i\sqrt[3]{-c_1}}{\#1}-}}{\sqrt[4]{3}}\right.\right.\right.\right.\right.$$

Maple: cpu = 1.654 (sec), leaf count = 49

$$\left\{\int^{y(x)} \frac{1}{\sqrt{\_a^4+\_a\_C1}}d\_a-x-\_C2=0, \int^{y(x)} -\frac{1}{\sqrt{\_a^4+\_a\_C1}}d\_a-x-\_C2=0\right\}$$

7.147 ODE No. 1737

$$2\left(\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)\right)y(x)-\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+b-4\left(x^2+a\right)(y(x))^2-8\,x(y(x))^3-3\,(y(x))^4=0$$

Mathematica: cpu = 1.182650 (sec), leaf count = 48

$$\text{DSolve}\left[-4\left(a+x^2\right)y(x)^2+b+2y(x)y''(x)-y'(x)^2-3y(x)^4-8xy(x)^3=0,y(x),x\right]$$

Maple: cpu = 1.779 (sec), leaf count = 0

could not solve

7.148 ODE No. 1738

$$2\left(\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)\right)y(x)-\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+3\,f(x)\,y(x)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+2\left((f(x))^2+\frac{\mathrm{d}}{\mathrm{d}x}f(x)\right)(y(x))^2-8\,(y(x))^3=0$$

Mathematica: cpu = 0.550070 (sec), leaf count = 54

$$\text{DSolve}\left[2y(x)^2\left(f'(x)+f(x)^2\right)+3f(x)y(x)y'(x)+2y(x)y''(x)-y'(x)^2-8y(x)^3=0,y(x),x\right]$$

Maple: cpu = 1.217 (sec), leaf count = 0

could not solve

7.149 ODE No. 1739

$$2\left(\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)\right)y(x)-\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+4\,(y(x))^2\frac{\mathrm{d}}{\mathrm{d}x}y(x)+1+f(x)\,(y(x))^2+(y(x))^4=0$$

Mathematica: cpu = 0.050506 (sec), leaf count = 45

$$\text{DSolve}\left[f(x)y(x)^2+2y(x)y''(x)+4y(x)^2y'(x)-y'(x)^2+y(x)^4+1=0,y(x),x\right]$$

Maple: cpu = 0.265 (sec), leaf count = 0

could not solve

7.150 ODE No. 1740

$$\boxed{2\left(\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)\right)y(x)-3\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2=0}$$

Mathematica: cpu = 0.026503 (sec), leaf count = 16

$$\left\{\left\{y(x)\to\frac{c_2}{(2c_1+x)^2}\right\}\right\}$$

Maple: cpu = 1.513 (sec), leaf count = 13

$$\left\{y(x)=4\left(\_C1\,x+\_C2\right)^{-2}\right\}$$

7.151 ODE No. 1741

$$\boxed{2\left(\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)\right)y(x)-3\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2-4\left(y(x)\right)^2=0}$$

Mathematica: cpu = 0.092012 (sec), leaf count = 17

$$\left\{\left\{y(x)\to c_2\sec^2\left(2c_1+x\right)\right\}\right\}$$

Maple: cpu = 1.638 (sec), leaf count = 37

$$\left\{y(x)=4\left(\_C1^2(\sin(x))^2-\_C2^2(\sin(x))^2-2\,\_C1\,\_C2\,\sin(x)\cos(x)+\_C2^2\right)^{-1}\right\}$$

7.152 ODE No. 1742

$$\boxed{2\left(\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)\right)y(x)-3\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+f(x)\left(y(x)\right)^2=0}$$

Mathematica: cpu = 11.134414 (sec), leaf count = 30

$$\text{DSolve}\left[f(x)y(x)^2+2y(x)y''(x)-3y'(x)^2=0,y(x),x\right]$$

Maple: cpu = 0.140 (sec), leaf count = 60

$$\left\{y(x)=ODESolStruc\left(\mathrm{e}^{\int\_b(\_a)\,\mathrm{d}\_a+\_C1},\left[\left\{\frac{\mathrm{d}}{\mathrm{d}\_a}\_b(\_a)=\frac{\left(\_b(\_a)\right)^2}{2}-\frac{f(\_a)}{2}\right\},\left\{\_a=x,\_b(\_a)=\right.\right.\right.$$

7.153 ODE No. 1743

$$\boxed{2\left(\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)\right)y(x)-6\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+\left(1+a(y(x))^3\right)(y(x))^2=0}$$

Mathematica: cpu = 18.186309 (sec), leaf count = 2761

$$\left\{\text{Solve}\left[-\frac{4\left(F\left(\sin^{-1}\left(\sqrt{\frac{(\text{Root}\left[4c_1\#1^4+4a\#1^3+1\&,2\right]-\text{Root}\left[4c_1\#1^4+4a\#1^3+1\&,4\right])(y(x)-\text{Root}\left[4c_1\#1^4+4a\#1^3+1\&,1\right])}{(\text{Root}\left[4c_1\#1^4+4a\#1^3+1\&,1\right]-\text{Root}\left[4c_1\#1^4+4a\#1^3+1\&,4\right])(y(x)-\text{Root}\left[4c_1\#1^4+4a\#1^3+1\&,2\right])}}\right)\right)\right|+\right.\right.$$

Maple: cpu = 1.638 (sec), leaf count = 71

$$\left\{\int^{y(x)}-2\frac{1}{\sqrt{4\_C1\,\_a^4+4\,a\_a^3+1}\_a}d\_a-x-\_C2=0,\int^{y(x)}2\frac{1}{\sqrt{4\_C1\,\_a^4+4\,a\_a^3+1}\_a}d\_a\right.$$

7.154 ODE No. 1744

$$\boxed{2\left(\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)\right)y(x)-\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2\left(\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+1\right)=0}$$

Mathematica: cpu = 0.974624 (sec), leaf count = 173

$$\left\{\left\{y(x)\to\text{InverseFunction}\left[-ie^{-c_1}\left(\sqrt{\#1}\sqrt{\#1e^{2c_1}-1}-e^{-c_1}\log\left(\sqrt{\#1}e^{2c_1}+e^{c_1}\sqrt{\#1e^{2c_1}-1}\right)\right)\&\right][c_2\right.\right.$$

Maple: cpu = 1.670 (sec), leaf count = 95

$$\left\{-\frac{\_C1}{2}\arctan\left(1\left(y(x)-\frac{\_C1}{2}\right)\frac{1}{\sqrt{\_C1\,y(x)-(y(x))^2}}\right)-\sqrt{\_C1\,y(x)-(y(x))^2}-x-\_C2=0,\right.$$

7.155 ODE No. 1745

$$\boxed{2\left(y(x)-a\right)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+1=0}$$

Mathematica: cpu = 0.294537 (sec), leaf count = 204

$$\left\{\left\{y(x)\to\text{InverseFunction}\left[-\sqrt{2}\left(\frac{1}{2}\sqrt{a-\#1}\sqrt{e^{2c_1}-2(a-\#1)}-\frac{e^{2c_1}\tan^{-1}\left(\frac{\sqrt{2}\sqrt{a-\#1}}{\sqrt{e^{2c_1}-2(a-\#1)}}\right)}{2\sqrt{2}}\right)\&\right][c\right.\right.$$

Maple: cpu = 1.763 (sec), leaf count = 293

$$\left\{-\sqrt{-\left(y\left(x\right)\right)^{2}+\left(2\,a+\_C1\right)y\left(x\right)-a\left(\_C1+a\right)}+\arctan\left(1\left(y(x)-a-\frac{\_C1}{2}\right)\frac{}{\sqrt{-\left(y\left(x\right)\right)^{2}+\left(2\,a\right.}}\right.\right.$$

7.156 ODE No. 1746

$$\boxed{3\left(\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)\right)y(x)-2\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2-ax^2-bx-c=0}$$

Mathematica: cpu = 0.040505 (sec), leaf count = 36

$$\text{DSolve}\left[-ax^2-bx-c+3y(x)y''(x)-2y'(x)^2=0,y(x),x\right]$$

Maple: cpu = 1.903 (sec), leaf count = 207

$$\left\{y(x)=RootOf\left(-2\arctan\left(\frac{2\,ax+b}{\sqrt{4\,ac-b^2}}\right)b-2\int^{\_Z}\frac{b}{\sqrt{4\,\_f^{4/3}\_C1\,b^2-36\,c\_f^2a+9\,b^2\_f^2-2}}d\_f\sqrt{}\right.\right.$$

7.157 ODE No. 1747

$$\boxed{3\left(\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)\right)y(x)-5\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2=0}$$

Mathematica: cpu = 0.027504 (sec), leaf count = 20

$$\left\{\left\{y(x)\to\frac{c_2}{\left(3c_1+2x\right)^{3/2}}\right\}\right\}$$

Maple: cpu = 1.576 (sec), leaf count = 17

$$\left\{-\frac{3}{2}(y(x))^{-\frac{2}{3}}-\_C1\,x-\_C2=0\right\}$$

7.158 ODE No. 1748

$$\boxed{4\left(\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)\right)y(x)-3\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+4\,y(x)=0}$$

Mathematica: cpu = 0.093512 (sec), leaf count = 43

$$\left\{\left\{y(x)\to\frac{\left(c_1^2x^2+2c_2c_1^2x+c_2^2c_1^2-64\right)^2}{256c_1^2}\right\}\right\}$$

Maple: cpu = 1.654 (sec), leaf count = 67

$$\left\{-4\,\frac{\sqrt{\_C1\ \left(y\left(x\right)\right)^{3/2}+4\,y\left(x\right)}}{\sqrt{y\left(x\right)}\_C1}-x-\_C2=0,4\,\frac{\sqrt{\_C1\ \left(y\left(x\right)\right)^{3/2}+4\,y\left(x\right)}}{\sqrt{y\left(x\right)}\_C1}-x-\_C2=0,y(x)=0\right.$$

7.159 ODE No. 1749

$$\boxed{4\left(\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)\right)y(x)-3\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2-12\left(y(x)\right)^3=0}$$

Mathematica: cpu = 0.547069 (sec), leaf count = 181

$$\left\{\left\{y(x)\to\text{InverseFunction}\left[-\frac{4\sqrt{\frac{4\#1^{3/2}}{c_1}+1}\sqrt{\#1^{3/2}c_1+4\#1^3}\,{}_2F_1\left(\frac{1}{6},\frac{1}{2};\frac{7}{6};-\frac{4\#1^{3/2}}{c_1}\right)}{4\#1^2+\sqrt{\#1}c_1}\&\right][c_2+x]\right\},\left\{y(\right.\right.$$

Maple: cpu = 1.684 (sec), leaf count = 57

$$\left\{\int^{y(x)}\frac{1}{\sqrt{\_C1\ \_a^{\frac{3}{2}}+4\,\_a^3}}d\_a-x-\_C2=0,\int^{y(x)}-\frac{1}{\sqrt{\_C1\ \_a^{\frac{3}{2}}+4\,\_a^3}}d\_a-x-\_C2=0\right\}$$

7.160 ODE No. 1750

$$\boxed{4\left(\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)\right)y(x)-3\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+a(y(x))^3+b(y(x))^2+cy(x)=0}$$

Mathematica: cpu = 3.890994 (sec), leaf count = 2281

$$\left\{\text{Solve}\left[-\frac{4F\left(\sin^{-1}\left(\sqrt{\frac{(\text{Root}[a\#1^4+3b\#1^2-3c_1\#1-3c\&,2]-\text{Root}[a\#1^4+3b\#1^2-3c_1\#1-3c\&,4])\left(\sqrt{y(x)}-\text{Root}[a\#1^4+3b\#1^2-\right.\right.\right.\right.}{(\text{Root}[a\#1^4+3b\#1^2-3c_1\#1-3c\&,1]-\text{Root}[a\#1^4+3b\#1^2-3c_1\#1-3c\&,4])\left(\sqrt{y(x)}-\text{Root}[a\#1^4+3b\#1^2-\right.\right.\right.\right.}\right.\right.\right.\right.$$

Maple: cpu = 1.716 (sec), leaf count = 87

$$\left\{ \int^{y(x)} -3 \frac{1}{\sqrt{9 \_C1 \_a^{3/2} - 3 a \_a^3 - 9 b \_a^2 + 9 c \_a}} d\_a - x - \_C2 = 0, \int^{y(x)} 3 \frac{1}{\sqrt{9 \_C1 \_a^{3/2} - 3 a \_}} \right.$$

7.161 ODE No. 1751

$$4 \left(\frac{\mathrm{d}^2}{\mathrm{d}x^2} y(x) \right) y(x) - 3 \left(\frac{\mathrm{d}}{\mathrm{d}x} y(x) \right)^2 + \left(6 (y(x))^2 - 2 \frac{\left(\frac{\mathrm{d}}{\mathrm{d}x} f(x) \right) y(x)}{f(x)} \right) \frac{\mathrm{d}}{\mathrm{d}x} y(x) + (y(x))^4 - 2 (y(x))^2 \frac{\mathrm{d}}{\mathrm{d}x} y($$

Mathematica: cpu = 0.742594 (sec), leaf count = 73

$$\text{DSolve}\left[y'(x) \left(6y(x)^2 - \frac{2y(x)f'(x)}{f(x)} \right) + f(x)y(x) + g(x)y(x)^2 + 4y(x)y''(x) - 2y(x)^2 y'(x) - 3y'(x)^2 + y(\right.$$

Maple: cpu = 0.483 (sec), leaf count = 0

could not solve

7.162 ODE No. 1752

$$4 \left(\frac{\mathrm{d}^2}{\mathrm{d}x^2} y(x) \right) y(x) - 5 \left(\frac{\mathrm{d}}{\mathrm{d}x} y(x) \right)^2 + a (y(x))^2 = 0$$

Mathematica: cpu = 0.129016 (sec), leaf count = 26

$$\left\{ \left\{ y(x) \to c_2 \text{sech}^4 \left(\frac{1}{4} \sqrt{a} (x - 4c_1) \right) \right\} \right\}$$

Maple: cpu = 1.575 (sec), leaf count = 33

$$\left\{ y(x) = 16 \frac{\left(\mathrm{e}^{1/4 \sqrt{a} x} \right)^4 a^2}{\left(\mathrm{e}^{1/2 \sqrt{a} x} \_C1 - \_C2 \right)^4} \right\}$$

7.163 ODE No. 1753

$$\boxed{12\left(\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)\right)y(x)-15\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+8\left(y(x)\right)^3=0}$$

Mathematica: cpu = 0.321041 (sec), leaf count = 43

$$\left\{\left\{y(x)\to\frac{2304c_1^2}{\left(3c_1^2x^2+6c_2c_1^2x+3c_2^2c_1^2+128\right)^2}\right\}\right\}$$

Maple: cpu = 1.575 (sec), leaf count = 147

$$\left\{-12\,\frac{y(x)\left(8\sqrt{y\left(x\right)}-\_C1\right)\sqrt{8\,y\left(x\right)-\_C1\,\sqrt{y\left(x\right)}}}{\sqrt{-24\,\left(y\left(x\right)\right)^3+3\,\_C1\,\left(y\left(x\right)\right)^{5/2}}\_C1\,\sqrt{\sqrt{y\left(x\right)}\left(8\sqrt{y\left(x\right)}-\_C1\right)}}-x-\_C2=0,12\,\frac{}{\sqrt{-24\,(}}\right.$$

7.164 ODE No. 1754

$$\boxed{ny(x)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)-(n-1)\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2=0}$$

Mathematica: cpu = 0.033504 (sec), leaf count = 17

$$\{\{y(x)\to c_2(x-c_1n)^n\}\}$$

Maple: cpu = 1.544 (sec), leaf count = 15

$$\left\{y(x)=\left(\frac{\_C1\,x+\_C2}{n}\right)^n\right\}$$

7.165 ODE No. 1755

$$\boxed{ay(x)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+b\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+c4\,\left(y(x)\right)^4+c3\,\left(y(x)\right)^3+c2\,\left(y(x)\right)^2+c1\,y(x)+c0=0}$$

Mathematica: cpu = 104.001206 (sec), leaf count = 46

$$\text{DSolve}\left[ay(x)y''(x)+by'(x)^2+\text{c0}+\text{c1}y(x)+\text{c2}y(x)^2+\text{c3}y(x)^3+\text{c4}y(x)^4=0,y(x),x\right]$$

Maple: cpu = 1.810 (sec), leaf count = 1028

$$\left\{\int^{y(x)}b\left(6\,a^4+25\,a^3b+35\,a^2b^2+20\,ab^3+4\,b^4\right)\_a^{2\,\frac{b}{a}}\frac{}{\sqrt{-\_a^{2\,\frac{b}{a}}b\left(6\,a^4+25\,a^3b+35\,a^2b^2+20\,ab^3+4\,b^4\right)}}\right.$$

7.166 ODE No. 1756

$$\boxed{ay(x)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+b\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2-\frac{y(x)\frac{\mathrm{d}}{\mathrm{d}x}y(x)}{\sqrt{c^2+x^2}}=0}$$

Mathematica: cpu = 0.662084 (sec), leaf count = 126

$$\left\{\left\{y(x)\to c_2\left(-a^2\left(x\left(\sqrt{c^2+x^2}+x\right)^{\frac{1}{a}}+c_1\right)+a\left(\sqrt{c^2+x^2}+x\right)^{\frac{1}{a}}\left(\sqrt{c^2+x^2}-bx\right)+b\sqrt{c^2+x^2}\left(\sqrt{c^2\right.\right.\right.$$

Maple: cpu = 3.074 (sec), leaf count = 79

$$\left\{y(x)=\left(\left(\frac{a}{a+b}\left(\_C1\,\sqrt[a]{2}x^{a^{-1}+1}{}_2\mathrm{F}_1(-\frac{1}{2\,a},-\frac{1}{2\,a}-\frac{1}{2};\,1-a^{-1};\,-\frac{c^2}{x^2})(-a^{-1}-1)^{-1}+\_C2\right)^{-1}\right)^{\frac{a}{a+b}}\right.$$

7.167 ODE No. 1757

$$\boxed{ay(x)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)-(a-1)\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+(a+2)\,f(x)\,(y(x))^2\frac{\mathrm{d}}{\mathrm{d}x}y(x)+(f(x))^2\,(y(x))^4+a\left(\frac{\mathrm{d}}{\mathrm{d}x}f(x)\right)(y($$

Mathematica: cpu = 0.827105 (sec), leaf count = 59

$$\text{DSolve}\left[(a+2)f(x)y(x)^2y'(x)+ay(x)y''(x)+ay(x)^3y'(x)-(a-1)y'(x)^2+f(x)^2y(x)^4=0,y(x),x\right]$$

Maple: cpu = 1.123 (sec), leaf count = 0

could not solve

7.168 ODE No. 1758

$$\boxed{(ay(x)+b)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+c\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2=0}$$

Mathematica: cpu = 0.062008 (sec), leaf count = 36

$$\left\{\left\{y(x)\to\frac{(c_1(-(a+c))\,(-c_2-x))^{\frac{a}{a+c}}-b}{a}\right\}\right\}$$

Maple: cpu = 1.529 (sec), leaf count = 88

$$\left\{y(x)=-\frac{1}{a}\left(-\_C1\,ax-\_C1\,xc+b\left(\left(\frac{1}{(a+c)\,(\_C1\,x+\_C2)}\right)^{\frac{c}{a}\left(1+\frac{c}{a}\right)^{-1}}\right)^{-1}-\_C2\,a-\_C2\,c\right)\left(\right.\right.$$

7.169 ODE No. 1759

$$\boxed{xy(x)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+x\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2-y(x)\frac{\mathrm{d}}{\mathrm{d}x}y(x)=0}$$

Mathematica: cpu = 0.036505 (sec), leaf count = 18

$$\left\{\left\{y(x)\to c_2\sqrt{c_1+x^2}\right\}\right\}$$

Maple: cpu = 1.498 (sec), leaf count = 31

$$\left\{y(x)=\sqrt{\_C1\,x^2+2\,\_C2},y(x)=-\sqrt{\_C1\,x^2+2\,\_C2}\right\}$$

7.170 ODE No. 1760

$$\boxed{xy(x)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+x\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+ay(x)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+f(x)=0}$$

Mathematica: cpu = 11.966520 (sec), leaf count = 104

$$\left\{\left\{y(x)\to-\sqrt{2}\sqrt{\int_1^x K[2]^{-a}\left(-\left(\int_1^{K[2]}K[1]^{a-1}f(K[1])\,dK[1]+c_1\right)\right)\,dK[2]+c_2}\right\},\left\{y(x)\to\sqrt{2}\sqrt{\right.\right.$$

Maple: cpu = 0.063 (sec), leaf count = 114

$$\left\{y(x)=\frac{\sqrt{2}}{a-1}\sqrt{(a-1)\left(x^{1-a}\int\frac{x^a f\left(x\right)}{x}\,\mathrm{d}x+x^{1-a}\_C1-\int f\left(x\right)\,\mathrm{d}x-\_C2\right)},y(x)=-\frac{\sqrt{2}}{a-1}\sqrt{(a-1}\right.$$

7.171 ODE No. 1761

$$\boxed{xy(x)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)-x\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+y(x)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+x\left(d+a(y(x))^4\right)+y(x)\left(c+b(y(x))^2\right)=0}$$

Mathematica: cpu = 1.733720 (sec), leaf count = 52

$$\text{DSolve}\left[x\left(ay(x)^4+d\right)+y(x)\left(by(x)^2+c\right)+xy(x)y''(x)-xy'(x)^2+y(x)y'(x)=0,y(x),x\right]$$

Maple: cpu = 2.184 (sec), leaf count = 0

could not solve

7.172 ODE No. 1762

$$\boxed{xy(x)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)-x\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+ay(x)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+bx(y(x))^3=0}$$

Mathematica: cpu = 52.685690 (sec), leaf count = 39

$$\text{DSolve}\left[ay(x)y'(x)+bxy(x)^3+xy(x)y''(x)-xy'(x)^2=0,y(x),x\right]$$

Maple: cpu = 2.215 (sec), leaf count = 106

$$\left\{y(x)=ODESolStruc\left(\frac{\_a}{\left(\mathrm{e}^{\int \_b(\_a)\,\mathrm{d}\_a+\_C1}\right)^2},[\left\{\frac{\mathrm{d}}{\mathrm{d}\_a}\_b(\_a)=\_a\left(b\_a-2\,a+2\right)\left(\_b(\_a)\right)^3+(a-1)\right.\right.\right.$$

7.173 ODE No. 1763

$$\boxed{xy(x)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+2\,x\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+ay(x)\frac{\mathrm{d}}{\mathrm{d}x}y(x)=0}$$

Mathematica: cpu = 0.139018 (sec), leaf count = 35

$$\left\{\left\{y(x)\to c_2\exp\left(\frac{1}{3}(\log\left(3x-(a-1)c_1x^a\right)-a\log(x))\right)\right\}\right\}$$

Maple: cpu = 1.560 (sec), leaf count = 234

$$\left\{y(x)=\frac{1}{(a-1)\,x^a}\sqrt[3]{\left(3\_C2\,x^a a-3\_C2\,x^a-3\_C1\,x\right)(a-1)^2\left(x^a\right)^2},y(x)=-\frac{1}{(-2+2\,a)\,x^a}\sqrt[3]{(3\_C2\right.$$

7.174 ODE No. 1764

$$\boxed{xy(x)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)-2\,x\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+(1+y(x))\frac{\mathrm{d}}{\mathrm{d}x}y(x)=0}$$

Mathematica: cpu = 0.064508 (sec), leaf count = 52

$$\left\{\left\{y(x)\to\frac{\tan\left(\frac{1}{2}\left(\sqrt{2}\sqrt{c_1}\log(x)-\sqrt{2}\sqrt{c_1}c_2\right)\right)}{\sqrt{2}\sqrt{c_1}}\right\}\right\}$$

Maple: cpu = 1.638 (sec), leaf count = 18

$$\left\{y(x)=\_C1\,\tanh\left(\frac{\ln(x)-\_C2}{2\,\_C1}\right)\right\}$$

7.175 ODE No. 1765

$$\boxed{xy(x)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)-2x\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+ay(x)\frac{\mathrm{d}}{\mathrm{d}x}y(x)=0}$$

Mathematica: cpu = 0.127516 (sec), leaf count = 24

$$\left\{\left\{y(x)\to\frac{c_2x^a}{(a-1)c_1x^a+x}\right\}\right\}$$

Maple: cpu = 1.513 (sec), leaf count = 31

$$\left\{y(x)=-\frac{(a-1)\,x^a}{\_C2\,x^a a-\_C2\,x^a-\_C1\,x}\right\}$$

7.176 ODE No. 1766

$$\boxed{xy(x)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)-4x\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+4y(x)\frac{\mathrm{d}}{\mathrm{d}x}y(x)=0}$$

Mathematica: cpu = 0.046506 (sec), leaf count = 21

$$\left\{\left\{y(x)\to\frac{c_2x}{\sqrt[3]{c_1x^3+1}}\right\}\right\}$$

Maple: cpu = 1.529 (sec), leaf count = 84

$$\left\{y(x)=\left(-\frac{1}{2}\frac{1}{\sqrt[3]{-3\_C2\,x^3+\_C1}}-\frac{i}{2}\sqrt{3}\frac{1}{\sqrt[3]{-3\_C2\,x^3+\_C1}}\right)x,y(x)=\left(-\frac{1}{2}\frac{1}{\sqrt[3]{-3\_C2\,x^3+\_C1}}-\right.\right.$$

7.177 ODE No. 1767

$$\boxed{xy(x)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+\left(\frac{ax}{\sqrt{b^2-x^2}}-x\right)\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2-y(x)\frac{\mathrm{d}}{\mathrm{d}x}y(x)=0}$$

Mathematica: cpu = 0.075510 (sec), leaf count = 55

$$\left\{\left\{y(x)\to c_2\exp\left(\frac{c_1\log\left(a\sqrt{b^2-x^2}-c_1\right)}{a^2}+\frac{\sqrt{b^2-x^2}}{a}\right)\right\}\right\}$$

Maple: cpu = 3.182 (sec), leaf count = 50

$$\left\{y(x)=\_C2\,\mathrm{e}^{\int-x\sqrt{b^2-x^2}\left(ab^2-ax^2+\_C1\sqrt{b^2-x^2}\right)^{-1}\mathrm{d}x}\right\}$$

7.178 ODE No. 1768

$$\boxed{x(y(x)+x)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+x\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+(x-y(x))\frac{\mathrm{d}}{\mathrm{d}x}y(x)-y(x)=0}$$

Mathematica: cpu = 0.113014 (sec), leaf count = 87

$$\left\{\left\{y(x)\to -x-\sqrt{-e^{2c_2}x^2-2ic_1x^2+e^{2c_2}+x^2}\right\},\left\{y(x)\to -x+\sqrt{-e^{2c_2}x^2-2ic_1x^2+e^{2c_2}+x^2}\right\}\right\}$$

Maple: cpu = 1.544 (sec), leaf count = 43

$$\left\{y(x)=-x-\sqrt{-\_C2\,x^2+x^2+\_C1},y(x)=-x+\sqrt{-\_C2\,x^2+x^2+\_C1}\right\}$$

7.179 ODE No. 1769

$$\boxed{2\,xy(x)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)-x\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+y(x)\frac{\mathrm{d}}{\mathrm{d}x}y(x)=0}$$

Mathematica: cpu = 0.045506 (sec), leaf count = 18

$$\left\{\left\{y(x)\to c_2\left(c_1+\sqrt{x}\right)^2\right\}\right\}$$

Maple: cpu = 1.575 (sec), leaf count = 21

$$\left\{y(x)=\_C1\,\sqrt{x}\_C2+\_C1^2x+\frac{\_C2^2}{4}\right\}$$

7.180 ODE No. 1770

$$\boxed{x^2(-1+y(x))\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)-2\,x^2\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2-2\,x(-1+y(x))\frac{\mathrm{d}}{\mathrm{d}x}y(x)-2\,y(x)\,(-1+y(x))^2=0}$$

Mathematica: cpu = 0.792101 (sec), leaf count = 28

$$\left\{\left\{y(x)\to \frac{1}{x^2\left(-\frac{c_1}{x}+c_2-\frac{1}{x^2}\right)}+1\right\}\right\}$$

Maple: cpu = 1.560 (sec), leaf count = 26

$$\left\{y(x)=\frac{x(\_C1\,x-\_C2)}{\_C1\,x^2-\_C2\,x-1}\right\}$$

7.181 ODE No. 1771

$$\boxed{x^2(y(x)+x)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)-\left(x\frac{\mathrm{d}}{\mathrm{d}x}y(x)-y(x)\right)^2=0}$$

Mathematica: cpu = 0.082010 (sec), leaf count = 21

$$\left\{\left\{y(x)\to c_2 x e^{\frac{c_1}{x}}-x\right\}\right\}$$

Maple: cpu = 1.685 (sec), leaf count = 21

$$\left\{y(x)=\frac{x\mathrm{e}^{-1}}{\_C1}\mathrm{e}^{\frac{\_C2}{x}}-x\right\}$$

7.182 ODE No. 1772

$$\boxed{x^2(x-y(x))\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+a\left(x\frac{\mathrm{d}}{\mathrm{d}x}y(x)-y(x)\right)^2=0}$$

Mathematica: cpu = 0.866110 (sec), leaf count = 37

$$\left\{\left\{y(x)\to x\left(\left((a-1)\left(\frac{(-1)^{a+1}c_1}{x}-c_2\right)\right)^{\frac{1}{1-a}}+1\right)\right\}\right\}$$

Maple: cpu = 1.670 (sec), leaf count = 47

$$\left\{\_C1+(ax-x)\_C2-x^a y(x)\left(x-y(x)\right)^{-a}+x^{a+1}(x-y(x))^{-a}=0\right\}$$

7.183 ODE No. 1773

$$\boxed{2\,x^2y(x)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)-x^2\left(\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+1\right)+(y(x))^2=0}$$

Mathematica: cpu = 0.189524 (sec), leaf count = 44

$$\left\{\left\{y(x)\to\frac{x\left(c_1^2\log^2(x)-2c_2c_1^2\log(x)+c_2^2c_1^2+4\right)}{4c_1}\right\}\right\}$$

Maple: cpu = 1.638 (sec), leaf count = 28

$$\left\{y(x)=\frac{\left(\_C1^2+1\right)x}{4\,\_C2}+\_C1\,x\ln(x)+\_C2\,x(\ln(x))^2\right\}$$

7.184 ODE No. 1774

$$\boxed{ax^2y(x)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+bx^2\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+cxy(x)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+d(y(x))^2=0}$$

Mathematica: cpu = 1.339670 (sec), leaf count = 93

$$\left\{\left\{y(x)\to c_2\exp\left(-\frac{\log(x)\left(a\sqrt{\frac{a^2-2ac-4ad-4bd+c^2}{a^2}}-a+c\right)-2a\log\left(x\sqrt{\frac{a^2-2ac-4ad-4bd+c^2}{a^2}}+c_1\right)}{2(a+b)}\right)\right\}\right\}$$

Maple: cpu = 1.653 (sec), leaf count = 155

$$\left\{y(x)=x^{-\frac{1}{2a+2b}\sqrt{a^2-2ac-4da-4db+c^2}}x^{\frac{a}{2a+2b}}x^{-\frac{c}{2a+2b}}\left((a^2-2ac-4da-4db+c^2)\left(x^{\frac{1}{a}\sqrt{a^2-2ac-4da-4db+c^2}}\_\right.\right.\right.$$

7.185 ODE No. 1775

$$\boxed{x(1+x)^2y(x)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)-x(1+x)^2\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+2(1+x)^2y(x)\frac{\mathrm{d}}{\mathrm{d}x}y(x)-a(x+2)(y(x))^2=0}$$

Mathematica: cpu = 0.135017 (sec), leaf count = 29

$$\left\{\left\{y(x)\to c_2e^{\frac{-a-c_1}{x}+a\log(x+1)}\right\}\right\}$$

Maple: cpu = 1.544 (sec), leaf count = 31

$$\left\{y(x)=\frac{(1+x)^a}{\_C1\,\mathrm{e}^a}\mathrm{e}^{\frac{\_C2}{x}}\left(\mathrm{e}^{\frac{a}{x}}\right)^{-1}\right\}$$

7.186 ODE No. 1776

$$\boxed{8\left(-x^3+1\right)y(x)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)-4\left(-x^3+1\right)\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2-12x^2y(x)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+3x(y(x))^2=0}$$

Mathematica: cpu = 0 (sec), leaf count = 0

Hanged

Maple: cpu = 1.825 (sec), leaf count = 88

$$\left\{y(x)=\frac{\_C2^2x}{4\_C1}\left(LegendreP\left(-\frac{1}{6},\frac{1}{3},\sqrt{-(x-1)(x^2+x+1)}\right)\right)^2+\_C1\left(LegendreQ\left(-\frac{1}{6},\frac{1}{3},\sqrt{-(x\right.\right.\right.$$

7.187 ODE No. 1777

$$\boxed{f0(x)\,y(x)\,\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+f1(x)\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+f2(x)\,y(x)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x)+f3(x)\,(y(x))^2=0}$$

Mathematica: cpu = 49.431277 (sec), leaf count = 41

$$\text{DSolve}\left[\text{f0}(x)y(x)y''(x)+\text{f1}(x)y'(x)^2+\text{f2}(x)y(x)y'(x)+\text{f3}(x)y(x)^2=0,y(x),x\right]$$

Maple: cpu = 0.530 (sec), leaf count = 83

$$\left\{y(x)=ODESolStruc\left(\mathrm{e}^{\int \_b(\_a)\,\mathrm{d}\_a+\_C1},\left[\left\{\frac{\mathrm{d}}{\mathrm{d}\_a}\_b(\_a)=-\frac{(f1(\_a)+f0(\_a))\,(\_b(\_a))^2}{f0\,(\_a)}-\frac{f2(\_a)\,\_\right.\right.\right.$$

7.188 ODE No. 1778

$$\boxed{(y(x))^2\,\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)-a=0}$$

Mathematica: cpu = 0.537568 (sec), leaf count = 75

$$\text{Solve}\left[\left(\frac{y(x)\sqrt{c_1-\frac{2a}{y(x)}}}{c_1}+\frac{a\log\left(\sqrt{c_1}y(x)\sqrt{c_1-\frac{2a}{y(x)}}-a+c_1y(x)\right)}{c_1^{3/2}}\right)^2=(c_2+x)^2,y(x)\right]$$

Maple: cpu = 1.950 (sec), leaf count = 369

$$\left\{y(x)=\frac{\_C1\left(\_C1^2a^2+2\,\_C1\,a\mathrm{e}^{RootOf\left(csgn(\_C1^{-1})\_C1^4a^2-2\,\_Z\,\_C1^3a\mathrm{e}^{-\_Z}-csgn(\_C1^{-1})\,(\mathrm{e}^{-\_Z})^2\_C1^2-2\,csgn(\_C1\right.\right.}}{2\,\mathrm{e}^{RootOf\left(csgn(\_C1^{-1})\_C1^4a^2-2\,\_Z\right.}}\right.$$

7.189 ODE No. 1779

$$\boxed{(y(x))^2\,\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+y(x)\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+ax=0}$$

Mathematica: cpu = 3.996008 (sec), leaf count = 28

$$\text{DSolve}\left[ax+y(x)^2y''(x)+y(x)y'(x)^2=0,y(x),x\right]$$

Maple: cpu = 1.872 (sec), leaf count = 130

$$\left\{\ln(x)-\int^{\frac{y(x)}{x}}\frac{1}{2\sqrt{3}\_g^3+2\sqrt{3}a}\left(3\,\_g^2\sqrt[3]{\frac{a}{\_g^3}}\tan\left(RootOf\left(-2\,\_Z\sqrt{3}+\ln\left(\frac{(\tan(\_Z))^2+\right.\right.\right.\right.$$

7.190 ODE No. 1780

$$\boxed{(y(x))^2 \frac{\mathrm{d}^2}{\mathrm{d}x^2} y(x) + y(x) \left(\frac{\mathrm{d}}{\mathrm{d}x} y(x)\right)^2 - ax - b = 0}$$

Mathematica: cpu = 0.488562 (sec), leaf count = 32

$$\text{DSolve}\left[-ax - b + y(x)^2 y''(x) + y(x) y'(x)^2 = 0, y(x), x\right]$$

Maple: cpu = 2.012 (sec), leaf count = 172

$$\left\{\frac{b \ln(ax+b)}{a} - \int^{\frac{y(x)}{ax+b}} \frac{1}{2\sqrt{3}\_g^3 a^2 - 2\sqrt{3}} \left(3 b^2 \_g^2 \sqrt[3]{-\frac{a}{\_g^3 b^3}} \tan\left(\mathit{RootOf}\left(6 b^2 \int \frac{\_g^2}{\_g^3 a^2 - 1}\left(-\frac{a}{\_g^3 b^3}\right.\right.\right.\right.$$

7.191 ODE No. 1781

$$\boxed{\left((y(x))^2 + 1\right) \frac{\mathrm{d}^2}{\mathrm{d}x^2} y(x) + (1 - 2\,y(x)) \left(\frac{\mathrm{d}}{\mathrm{d}x} y(x)\right)^2 = 0}$$

Mathematica: cpu = 0.085011 (sec), leaf count = 19

$$\{\{y(x) \to \tan(\log(-c_1(-c_2 - x)))\}\}$$

Maple: cpu = 1.528 (sec), leaf count = 11

$$\{y(x) = \tan(\ln(\_C1\, x + \_C2))\}$$

7.192 ODE No. 1782

$$\boxed{\left((y(x))^2 + 1\right) \frac{\mathrm{d}^2}{\mathrm{d}x^2} y(x) - 3\,y(x) \left(\frac{\mathrm{d}}{\mathrm{d}x} y(x)\right)^2 = 0}$$

Mathematica: cpu = 0.088011 (sec), leaf count = 93

$$\left\{\left\{y(x) \to -\frac{i c_1 (c_2 + x)}{\sqrt{c_1^2 x^2 + 2 c_2 c_1^2 x + c_2^2 c_1^2 - 1}}\right\}, \left\{y(x) \to \frac{i c_1 (c_2 + x)}{\sqrt{c_1^2 x^2 + 2 c_2 c_1^2 x + c_2^2 c_1^2 - 1}}\right\}\right\}$$

Maple: cpu = 1.638 (sec), leaf count = 56

$$\left\{y(x) = \_C1\, x \sqrt{-\left(\_C1^2 x^2 + 2\,\_C1\,\_C2\, x + \_C2^2 - 1\right)^{-1}} + \_C2 \sqrt{-\left(\_C1^2 x^2 + 2\,\_C1\,\_C2\, x + \_\right.}\right.$$

7.193 ODE No. 1783

$$\boxed{\left(x+(y(x))^2\right)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)-2\left(x-(y(x))^2\right)\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^3+\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)\left(1+4\,y(x)\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)=0}$$

Mathematica: cpu = 1.423181 (sec), leaf count = 26

$$\text{Solve}\left[x=c_2e^{e^{-c_1}y(x)}-y(x)^2,y(x)\right]$$

Maple: cpu = 1.670 (sec), leaf count = 23

$$\left\{\frac{-\_C1\,y(x)+\ln\left(x+(y(x))^2\right)+\_C2+2}{y\left(x\right)}=0\right\}$$

7.194 ODE No. 1784

$$\boxed{\left((y(x))^2+x^2\right)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)-\left(\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+1\right)\left(x\frac{\mathrm{d}}{\mathrm{d}x}y(x)-y(x)\right)=0}$$

Mathematica: cpu = 0.264034 (sec), leaf count = 74

$$\text{Solve}\left[\frac{1}{2}\left(i\cot\left(c_1\right)\left(\log\left(1-\frac{iy(x)}{x}\right)-\log\left(1+\frac{iy(x)}{x}\right)\right)+\log\left(1-\frac{iy(x)}{x}\right)+\log\left(1+\frac{iy(x)}{x}\right)\right)=c_2\right.$$

Maple: cpu = 2.324 (sec), leaf count = 52

$$\left\{y(x)=\frac{x\left(i\_C1+i-\mathrm{e}^{RootOf\left(\ln(x)\_C1+\_C2\,\_C1+\_Z\,\_C1-\ln\left(\left(2\,i\_C1+2\,i-\mathrm{e}^{-\_Z}\right)x\right)-\_C2\right)}\right)}{\_C1+1}\right\}$$

7.195 ODE No. 1785

$$\boxed{\left((y(x))^2+x^2\right)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)-2\left(\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+1\right)\left(x\frac{\mathrm{d}}{\mathrm{d}x}y(x)-y(x)\right)=0}$$

Mathematica: cpu = 0.363546 (sec), leaf count = 95

$$\left\{\left\{y(x)\to\frac{1}{2}\left(-\sqrt{4x\left(e^{c_2}-x\right)+e^{2c_2}\cot^2\left(c_1\right)}-e^{c_2}\cot\left(c_1\right)\right)\right\},\left\{y(x)\to\frac{1}{2}\left(\sqrt{4x\left(e^{c_2}-x\right)+e^{2c_2}\cot^2\left(c\right.\right.\right.$$

Maple: cpu = 1.810 (sec), leaf count = 83

$$\left\{y(x)=\frac{1}{4\_C2}\left(\_C1+1-\sqrt{8\,i\_C2\,\_C1\,x-16\,\_C2^2x^2+\_C1^2-8\,i\_C2\,x+2\,\_C1+1}\right),y(x)=\right.$$

7.196 ODE No. 1786

$$2\,y(x)\,(1-y(x))\,\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)-(1-2\,y(x))\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+y(x)\,(1-y(x))\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)f(x)=0$$

Mathematica: cpu = 1.028631 (sec), leaf count = 95

$$\left\{\left\{y(x)\to\frac{1}{4}\exp\left(-i\int_1^x c_1\left(-e^{-\int_1^{K[3]}\frac{1}{2}f(K[1])\,dK[1]}\right)dK[3]-ic_2\right)\left(1+\exp\left(i\int_1^x c_1\left(-e^{-\int_1^{K[3]}\frac{1}{2}f(K[1])\,dK[}\right.\right.\right.\right.$$

Maple: cpu = 0.094 (sec), leaf count = 59

$$\left\{y(x)=\frac{1}{8\_C2}\left(4\left(\mathrm{e}^{-C1\int\mathrm{e}^{-1/2\int f(x)\,\mathrm{d}x}\,\mathrm{d}x}\right)^2\_C2^2+4\,\mathrm{e}^{-C1\int\mathrm{e}^{-1/2\int f(x)\,\mathrm{d}x}\,\mathrm{d}x}\_C2+1\right)\left(\mathrm{e}^{-C1\int\mathrm{e}^{-\frac{\int f(x)\,\mathrm{d}x}{2}}\,\mathrm{d}x}\right)^-\right.$$

7.197 ODE No. 1787

$$2\,y(x)\,(1-y(x))\,\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)-(1-3\,y(x))\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+h(y(x))=0$$

Mathematica: cpu = 36.216099 (sec), leaf count = 166

$$\left\{\left\{y(x)\to\text{InverseFunction}\left[\int_1^{\#1}-\frac{1}{(K[2]-1)\sqrt{K[2]}\sqrt{2\int_1^{K[2]}\frac{h(K[1])e^{-2\left(\log(1-K[1])+\frac{1}{2}\log(K[1])\right)}}{2(K[1]-1)K[1]}\,dK[1]+c_1}}dK\right.\right.$$

Maple: cpu = 0.187 (sec), leaf count = 84

$$\left\{\int^{y(x)}\frac{1}{\_b-1}\frac{1}{\sqrt{\int\frac{h(\_b)}{\_b^2(\_b-1)^3}\,\mathrm{d}\_b\_b+\_C1\,\_b}}d\_b-x-\_C2=0,\int^{y(x)}-\frac{1}{\_b-1}\frac{1}{\sqrt{\int\frac{h(\_b)}{\_b^2(\_b-1)^3}\,\mathrm{d}\_b\_}}\right.$$

7.198 ODE No. 1788

$$2\,y(x)\,(-1+y(x))\,\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)-(3\,y(x)-1)\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+4\,y(x)\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)(f(x)\,y(x)+g(x))+4\,(y(x))$$

Mathematica: cpu = 1.564699 (sec), leaf count = 85

$$\text{DSolve}\left[-4(1-y(x))y(x)^2\left(-f'(x)-f(x)^2-g'(x)+g(x)^2\right)+4y(x)y'(x)(f(x)y(x)+g(x))-2(1-y(x)\right.$$

Maple: cpu = 0.219 (sec), leaf count = 113

$$\left\{ \sqrt{y\left(x\right)}-2\,\frac{\frac{\partial }{\partial x}DESol\left(\left\{-1/4\,{\mathrm{e}^{-2\,\int f(x)\,\mathrm{d}x+2\,\int g(x)\,\mathrm{d}x}}\_C1^{2}\_Y(x)-2\,g(x)\,\frac{\mathrm{d}}{\mathrm{d}x}\_Y(x)+\frac{\mathrm{d}^2}{\mathrm{d}x^2}\_Y(x\right.\right.}{DESol\left(\left\{-1/4\,{\mathrm{e}^{-2\,\int f(x)\,\mathrm{d}x+2\,\int g(x)\,\mathrm{d}x}}\_C1^{2}\_Y\left(x\right)-2\,g\left(x\right)\frac{\mathrm{d}}{\mathrm{d}x}\_Y\left(x\right)+\frac{\mathrm{d}^2}{\mathrm{d}x^2}\_Y\left(x\right)\right\},\{\_Y\left(x\right.} \right.$$

7.199 ODE No. 1789

$$-2\,y(x)\left(1-y(x)\right)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+\left(1-3\,y(x)\right)\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2-4\,y(x)\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)\left(f(x)\,y(x)+g(x)\right)+(1-y(x$$

Mathematica: cpu = 8.823120 (sec), leaf count = 110

$$\text{DSolve}\left[4y(x)^2(1-y(x))\left(-f'(x)+f(x)^2-g'(x)-g(x)^2\right)-4y(x)y'(x)(f(x)y(x)+g(x))+(1-y(x))^3\right.$$

Maple: cpu = 11.169 (sec), leaf count = 0

could not solve

7.200 ODE No. 1790

$$3\,y(x)\left(1-y(x)\right)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)-2\left(1-2\,y(x)\right)\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2-h(y(x))=0$$

Mathematica: cpu = 21.362213 (sec), leaf count = 182

$$\left\{\left\{y(x)\to \text{InverseFunction}\left[\int_1^{\#1}-\frac{1}{(1-K[2])^{2/3}K[2]^{2/3}\sqrt{2\int_1^{K[2]}-\frac{h(K[1])\exp\left(-2\left(\frac{2}{3}\log(1-K[1])+\frac{2}{3}\log(K[1])\right)\right)}{3(K[1]-1)K[1]}\,d\right.}}\right.\right.$$

Maple: cpu = 0.171 (sec), leaf count = 219

$$\left\{\int^{y(x)}-3\,\frac{1}{\sqrt{-6\_b^2\sqrt[3]{\_b\left(\_b-1\right)}\int\frac{h(\_b)}{\left(\_b^2-\_b\right)^{4/3}\_b\left(\_b-1\right)}\,\mathrm{d}\_b+9\_b^2\sqrt[3]{\_b\left(\_b-1\right)}\_C1+6\_b\sqrt[3]{\_b\left(\_b\right.}}\right.$$

7.201 ODE No. 1791

$$(1-y(x))\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)-3\left(1-2\,y(x)\right)\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2-h(y(x))=0$$

Mathematica: cpu = 20.225068 (sec), leaf count = 164

$$\left\{\left\{y(x)\to \text{InverseFunction}\left[\int_1^{\#1}-\frac{e^{\frac{1}{2}(12-12K[2])}}{(K[2]-1)^3\sqrt{2\int_1^{K[2]}-\frac{h(K[1])\exp(-2(6(K[1]-1)+3\log(K[1]-1)))}{K[1]-1}\,dK[1]+c_1}}\right.\right.$$

Maple: cpu = 0.249 (sec), leaf count = 90

$$\left\{\int^{y(x)}\frac{1}{(\_b-1)^3\left(\mathrm{e}^{-\_b}\right)^6}\frac{1}{\sqrt{-2\int\frac{h(\_b)}{\left(\mathrm{e}^{-\_b}\right)^{12}(\_b-1)^7}\,\mathrm{d}\_b+\_C1}}d\_b-x-\_C2=0,\int^{y(x)}-\frac{1}{(\_b-1)^3\left(\mathrm{e}^{-\_b}\right)^6}\right.$$

7.202 ODE No. 1792

$$ay(x)\left(-1+y(x)\right)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+(by(x)+c)\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+h(y(x))=0$$

Mathematica: cpu = 25.014176 (sec), leaf count = 222

$$\left\{\left\{y(x)\to \text{InverseFunction}\left[\int_1^{\#1}-\frac{K[2]^{-\frac{c}{a}}(1-K[2])^{\frac{1}{2}\left(\frac{2b}{a}+\frac{2c}{a}\right)}}{\sqrt{2\int_1^{K[2]}-\frac{h(K[1])\exp\left(-\frac{2(c\log(K[1])-(b+c)\log(1-K[1]))}{a}\right)}{a(K[1]-1)K[1]}\,dK[1]+c_1}}dK[2]\&\right]\right.\right.$$

Maple: cpu = 0.562 (sec), leaf count = 192

$$\left\{\int^{y(x)}a\frac{1}{\sqrt{-a\left(-\_C1\,a+2\int\frac{h(\_b)}{\_b(\_b-1)}\left((\_b-1)^{\frac{b}{a}}\right)^2\left((\_b-1)^{\frac{c}{a}}\right)^2\left(\_b^{\frac{c}{a}}\right)^{-2}\mathrm{d}\_b\right)}}\left(\_b^{\frac{c}{a}}\right)^{-1}\left((\_b-1)\right.\right.$$

7.203 ODE No. 1793

$$ay(x)\left(-1+y(x)\right)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)-(a-1)\left(2\,y(x)-1\right)\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+fy(x)\left(-1+y(x)\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)=0$$

Mathematica: cpu = 1.371674 (sec), leaf count = 113

$$\left\{\left\{y(x)\to \text{InverseFunction}\left[-\frac{a(1-\#1)^{-1/a}(-(\#1-1)\#1)^{\frac{1}{a}}\left((a+1)\,{}_2F_1\left(-\frac{1}{a},\frac{1}{a};1+\frac{1}{a};\#1\right)+\#1\,{}_2F_1\right.\right.\right.}{a+1}$$

Maple: cpu = 1.747 (sec), leaf count = 40

$$\left\{\_C1\,\mathrm{e}^{-\frac{fx}{a}}-\_C2+\int^{y(x)}\frac{\sqrt[a]{\_a\,(\_a-1)}}{\_a\,(\_a-1)}d\_a=0\right\}$$

7.204 ODE No. 1794

$$aby(x)\left(-1+y(x)\right)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)-\left((2\,ab-a-b)\,y(x)+(1-a)\,b\right)\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+fy(x)\left(-1+y(x)\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)$$

Mathematica: cpu = 1.296165 (sec), leaf count = 98

$$\left\{\left\{y(x)\to \text{InverseFunction}\left[-\frac{a\#1^{\frac{1}{a}}\left((a+1)\,{}_2F_1\left(\frac{1}{a},-\frac{1}{b};1+\frac{1}{a};\#1\right)+\#1\,{}_2F_1\left(1+\frac{1}{a},\frac{b-1}{b};2+\frac{1}{a};\#1\right)\right)}{a+1}\&\right]\right.\right.$$

Maple: cpu = 1.669 (sec), leaf count = 46

$$\left\{\_C1\,\mathrm{e}^{-\frac{fx}{ab}}-\_C2+\int^{y(x)}\frac{\sqrt[a]{\_a}\sqrt[b]{\_a-1}}{\_a\,(\_a-1)}d\_a=0\right\}$$

7.205 ODE No. 1795

$$x(y(x))^2\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)-a=0$$

Mathematica: cpu = 0.259533 (sec), leaf count = 116

$$\text{Solve}\left[-\frac{\sqrt{-\frac{2ay(x)}{x}-\frac{2c_1y(x)^2}{x^2}}}{2c_1}-\frac{a\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c_1}\left(\frac{a}{2c_1}+\frac{y(x)}{x}\right)}{\sqrt{-\frac{2ay(x)}{x}-\frac{2c_1y(x)^2}{x^2}}}\right)}{2\sqrt{2}c_1^{3/2}}-c_2-\frac{1}{x}=0,y(x)\right]$$

Maple: cpu = 2.262 (sec), leaf count = 793

$$\left\{ y(x) = \frac{\_C1\, x \left(81\, \_C1^{2} a^{2} + 18\, a \_C1\, \mathrm{e}^{RootOf\left(243\, csgn\left(\_C1^{-1}\right) \_C1^{4} a^{2} x - 54\, \_Z\, \mathrm{e}^{-Z} a x \_C1^{3} - 3\, csgn\left(\_C1^{-1}\right) \left(\mathrm{e}^{-Z}\right)^{2} \_C\right.} \right.}{2\, \mathrm{e}^{RootOf\left(243\, csgn\left(\_C1^{-1}\right) \_\right.}} \right\}$$

7.206 ODE No. 1796

$$\left(a^{2}-x^{2}\right)\left(a^{2}-(y(x))^{2}\right)\frac{\mathrm{d}^{2}}{\mathrm{d}x^{2}}y(x)+\left(a^{2}-x^{2}\right)y(x)\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^{2}-x\left(a^{2}-(y(x))^{2}\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)=0$$

Mathematica: cpu = 0.340043 (sec), leaf count = 66

$$\left\{\left\{y(x)\to \frac{1}{2}e^{-c_2}\left(\sqrt{x^2-a^2}+x\right)^{-c_1}\left(a^2\left(\sqrt{x^2-a^2}+x\right)^{2c_1}+e^{2c_2}\right)\right\}\right\}$$

Maple: cpu = 1.732 (sec), leaf count = 51

$$\left\{ y(x) = \frac{1}{2\_C2} \left(\left(\left(x + \sqrt{-a^{2} + x^{2}} \right)^{-\_C1} \right)^{2} \_C2^{2} + a^{2} \right) \left(\left(x + \sqrt{-a^{2} + x^{2}} \right)^{-\_C1} \right)^{-1} \right\}$$

7.207 ODE No. 1797

$$2\,x^{2}y(x)\left(-1+y(x)\right)\frac{\mathrm{d}^{2}}{\mathrm{d}x^{2}}y(x)-x^{2}(3\,y(x)-1)\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^{2}+2\,xy(x)\left(-1+y(x)\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+\left(a(y(x))^{2}+\right.$$

Mathematica: cpu = 23.559992 (sec), leaf count = 91

$$\text{DSolve}\left[(y(x)-1)^3\left(ay(x)^2+b\right)+cxy(x)^2(y(x)-1)+dx^2y(x)^2(y(x)+1)+2x^2y(x)(y(x)-1)y''(x)-x\right.$$

Maple: cpu = 5.881 (sec), leaf count = 0

could not solve

7.208 ODE No. 1798

$$\boxed{x^3(y(x))^2 \frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) + (y(x)+x)\left(x\frac{\mathrm{d}}{\mathrm{d}x}y(x) - y(x)\right)^3 = 0}$$

Mathematica: cpu = 38.092837 (sec), leaf count = 37

$$\text{DSolve}\left[x^3 y(x)^2 y''(x) + (y(x)+x)\left(xy'(x) - y(x)\right)^3 = 0, y(x), x\right]$$

Maple: cpu = 1.716 (sec), leaf count = 166

$$\left\{y(x) = RootOf\left(-2\ln(x) - \int^{-Z} 1\left(i\sqrt{3}Y_{i\sqrt{3}}\left(2\sqrt{\_f}\right)\_C1\sqrt{\_f} + i\sqrt{3}J_{i\sqrt{3}}\left(2\sqrt{\_f}\right)\sqrt{\_f} + Y_{i\sqrt{3}}\left(2\sqrt{\right.\right.\right.\right.$$

7.209 ODE No. 1799

$$\boxed{(y(x))^3 \frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) - a = 0}$$

Mathematica: cpu = 1.945247 (sec), leaf count = 88

$$\left\{\left\{y(x) \to -\frac{\sqrt{a + c_1^2x^2 + 2c_2c_1^2x + c_2^2c_1^2}}{\sqrt{c_1}}\right\}, \left\{y(x) \to \frac{\sqrt{a + c_1^2x^2 + 2c_2c_1^2x + c_2^2c_1^2}}{\sqrt{c_1}}\right\}\right\}$$

Maple: cpu = 1.762 (sec), leaf count = 70

$$\left\{y(x) = \frac{1}{\_C1}\sqrt{\_C1\ \left(\_C1^2\_C2^2 + 2\_C1^2\_C2\,x + \_C1^2x^2 + a\right)}, y(x) = -\frac{1}{\_C1}\sqrt{\_C1\ \left(\_C1^2\_C2\right.\right.}$$

7.210 ODE No. 1800

$$\boxed{y(x)\left((y(x))^2+1\right)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) + \left(1 - 3(y(x))^2\right)\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2 = 0}$$

Mathematica: cpu = 0.521066 (sec), leaf count = 84

$$\left\{\left\{y(x) \to -\frac{\sqrt{-2c_1x - 2c_2c_1 - 1}}{\sqrt{2}\sqrt{c_1x + c_2c_1}}\right\}, \left\{y(x) \to \frac{\sqrt{-2c_1x - 2c_2c_1 - 1}}{\sqrt{2}\sqrt{c_1x + c_2c_1}}\right\}\right\}$$

Maple: cpu = 1.607 (sec), leaf count = 67

$$\left\{y(x) = -\frac{1}{2\_C1\,x + 2\_C2}\sqrt{-(2\_C1\,x + 2\_C2)(2\_C1\,x + 2\_C2 + 1)}, y(x) = \frac{1}{2\_C1\,x + 2\_C2}\right.$$

7.211 ODE No. 1801

$$\boxed{2\left(y(x)\right)^3 \frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) + \left(y(x)\right)^4 - a^2 x \left(y(x)\right)^2 - 1 = 0}$$

Mathematica: cpu = 20.022043 (sec), leaf count = 32

$$\text{DSolve}\left[-a^2 x y(x)^2 + 2y(x)^3 y''(x) + y(x)^4 - 1 = 0, y(x), x\right]$$

Maple: cpu = 1.794 (sec), leaf count = 0

could not solve

7.212 ODE No. 1802

$$\boxed{2\left(y(x)\right)^3 \frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) + \left(y(x)\right)^2 \left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2 - ax^2 - bx - c = 0}$$

Mathematica: cpu = 0.357545 (sec), leaf count = 41

$$\text{DSolve}\left[-ax^2 - bx - c + 2y(x)^3 y''(x) + y(x)^2 y'(x)^2 = 0, y(x), x\right]$$

Maple: cpu = 1.903 (sec), leaf count = 0

could not solve

7.213 ODE No. 1803

$$\boxed{2\left(c - y(x)\right)\left(-y(x) + b\right)\left(-y(x) + a\right)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) + \left(\left(-y(x) + a\right)\left(-y(x) + b\right) + \left(c - y(x)\right)\left(-y(x) + a\right) + \left(-\right.\right.}$$

Mathematica: cpu = 18.332328 (sec), leaf count = 10387

$$\left\{\text{Solve}\left[-\frac{2F\left(\sin^{-1}\left(\sqrt{\frac{(\text{Root}\left[\text{a0}\#1^4+(-a\text{a0}-b\text{a0}-c\text{a0}-c_1)\#1^3+(-\text{a1}-\text{a2}-\text{a3}+a\text{a0}b+a\text{a0}c+\text{a0}bc+ac_1+bc_1+cc_1)\#1^2+(a\text{a2}+c\text{a2}+\right.\right.\right.\right.}{(\text{Root}\left[\text{a0}\#1^4+(-a\text{a0}-b\text{a0}-c\text{a0}-c_1)\#1^3+(-\text{a1}-\text{a2}-\text{a3}+a\text{a0}b+a\text{a0}c+\text{a0}bc+ac_1+bc_1+cc_1)\#1^2+(a\text{a2}+c\text{a2}+\right.\right.\right.\right.}$$

Maple: cpu = 5.288 (sec), leaf count = 230971

Result too large for latex to process

7.214 ODE No. 1804

$$\left(4\left(y(x)\right)^3-ay(x)-b\right)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)-\left(6\left(y(x)\right)^2-a/2\right)\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2=0$$

Mathematica: cpu = 2.998381 (sec), leaf count = 415

$$\text{Solve}\left[\frac{2\sqrt{\frac{y(x)-\text{Root}\left[4\#1^3-\#1a-b\&,1\right]}{\text{Root}\left[4\#1^3-\#1a-b\&,3\right]-\text{Root}\left[4\#1^3-\#1a-b\&,1\right]}}\sqrt{\frac{y(x)-\text{Root}\left[4\#1^3-\#1a-b\&,2\right]}{\text{Root}\left[4\#1^3-\#1a-b\&,3\right]-\text{Root}\left[4\#1^3-\#1a-b\&,2\right]}}\left(y(x)-\text{Root}\left[4\right.\right.\right.}{c_1\sqrt{2ay(x)+2b-8y(x)}}$$

Maple: cpu = 0.031 (sec), leaf count = 31

$$\left\{\int^{y(x)}\frac{1}{\sqrt{4\_a^3-a\_a-b}}d\_a-\_C1\,x-\_C2=0\right\}$$

7.215 ODE No. 1805

$$\left(4\left(y(x)\right)^3-ay(x)-b\right)\left(\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+f\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)-\left(6\left(y(x)\right)^2-a/2\right)\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2=0$$

Mathematica: cpu = 1.882239 (sec), leaf count = 436

$$\text{Solve}\left[\frac{2\sqrt{\frac{y(x)-\text{Root}\left[4\#1^3-\#1a-b\&,1\right]}{\text{Root}\left[4\#1^3-\#1a-b\&,3\right]-\text{Root}\left[4\#1^3-\#1a-b\&,1\right]}}\sqrt{\frac{y(x)-\text{Root}\left[4\#1^3-\#1a-b\&,2\right]}{\text{Root}\left[4\#1^3-\#1a-b\&,3\right]-\text{Root}\left[4\#1^3-\#1a-b\&,2\right]}}\left(y(x)-\text{Root}\left[4\right.\right.\right.}{\sqrt{ay(x)+b-4y(x)^3}\sqrt{}}$$

Maple: cpu = 0.031 (sec), leaf count = 34

$$\left\{\_C1\,\mathrm{e}^{-fx}-\_C2+\int^{y(x)}\frac{1}{\sqrt{4\_a^3-a\_a-b}}d\_a=0\right\}$$

7.216 ODE No. 1806

$$-2\,xy(x)\,(1-x)\,(1-y(x))\,(x-y(x))\,\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+x(1-x)\left(x-2\,xy(x)-2\,y(x)+3\,(y(x))^2\right)\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)$$

Mathematica: cpu = 18.424840 (sec), leaf count = 123

$$\text{DSolve}\left[-f(x)((y(x)-1)y(x)(y(x)-x))^{3/2}+2(1-y(x))\left(x^2-2xy(x)+y(x)\right)y(x)y'(x)-2(1-x)x(1\right.$$

Maple: cpu = 3.073 (sec), leaf count = 916

$$\left\{\left(\frac{3}{4}\int\frac{1}{x-1}\mathrm{e}^{\int\frac{1}{x(x-1)}\mathit{EllipticE}\left(\sqrt{x}\right)\left(\mathit{EllipticK}\left(\sqrt{x}\right)\right)^{-1}\mathrm{d}x}\int x^{\frac{3}{2}}\int^{y(x)}\frac{1}{\left(-\_a+x\right)^2}\frac{1}{\sqrt{\_a^3-\_a^2x-\_a^2+\_a\,x}}d\_\right.\right.$$

7.217 ODE No. 1807

$$2\,x^2y(x)\,(1-x)^2\,(1-y(x))\,(x-y(x))\,\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)-x^2(1-x)^2\left(x-2\,xy(x)-2\,y(x)+3\,(y(x))^2\right)\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x\right.$$

Mathematica: cpu = 33.961813 (sec), leaf count = 185

$$\text{DSolve}\left[a(1-y(x))^2(x-y(x))^2y(x)^2+bx(1-y(x))^2(x-y(x))^2-c(1-x)(x-y(x))^2y(x)^2-d(1-x)x\right.$$

Maple: cpu = 136.267 (sec), leaf count = 0

could not solve

7.218 ODE No. 1808

$$\left((y(x))^2-1\right)\left(a^2(y(x))^2-1\right)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+b\sqrt{\left(1-\left(y\left(x\right)\right)^2\right)\left(1-a^2\left(y\left(x\right)\right)^2\right)}\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+\left(1+a^2-2\,a^2\right.$$

Mathematica: cpu = 103.724671 (sec), leaf count = 172

$$\text{Solve}\left[\log(x)-b\left(\frac{\log\left(bc_1\sqrt{1-y(x)^2}\sqrt{1-a^2y(x)^2}+\sqrt{y(x)^2-1}\sqrt{a^2y(x)^2-1}\exp\left(\frac{b\sqrt{1-y(x)^2}\sqrt{1-a^2y(x)^2}}{\sqrt{y(x)^2-1}\sqrt{a}}\right.\right.\right.\right.$$

Maple: cpu = 0.110 (sec), leaf count = 72

$$\left\{\int^{y(x)}\mathrm{e}^{\int\frac{1}{\left(\_b^2-1\right)\left(\_b^2a^2-1\right)}\left(-2\,\_b^3a^2+\_b\,a^2+b\sqrt{\left(\_b^2-1\right)\left(\_b^2a^2-1\right)}+\_b\right)\mathrm{d}\_b}d\_b-\_C1\,x-\_C2=0\right\}$$

7.219 ODE No. 1809

$$\boxed{\left(c+2\,bx+ax^2+\left(y(x)\right)^2\right)^2\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+dy(x)=0}$$

Mathematica: cpu = 43.116975 (sec), leaf count = 33

$$\text{DSolve}\left[y''(x)\left(ax^2+2bx+c+y(x)^2\right)^2+dy(x)=0,y(x),x\right]$$

Maple: cpu = 0.437 (sec), leaf count = 382

$$\left\{y(x)=RootOf\left(-\int^{\_Z}\frac{a}{-\_f^4ac+\_f^4b^2+\_C1\,\_f^2a^2-c\_f^2a+b^2\_f^2+\_C1\,a^2+d}\sqrt{-\_f^6ac+\_f\right.\right.$$

7.220 ODE No. 1810

$$\boxed{\sqrt{y\left(x\right)}\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)-a=0}$$

Mathematica: cpu = 0.060008 (sec), leaf count = 1677

$$\left\{\left\{y(x)\to\frac{3c_1^2}{16a^2}+\frac{\sqrt[3]{-\frac{221184c_1^6}{a^6}+\frac{159252480x^2c_1^3}{a^2}+\frac{159252480c_2^2c_1^3}{a^2}+\frac{318504960xc_2c_1^3}{a^2}+2293235712a^2x^4+2293235\right.\right.$$

Maple: cpu = 0.109 (sec), leaf count = 55

$$\left\{\int^{y(x)}\frac{1}{\sqrt{4\sqrt{\_a}a-\_C1}}d\_a-x-\_C2=0,\int^{y(x)}-\frac{1}{\sqrt{4\sqrt{\_a}a-\_C1}}d\_a-x-\_C2=0\right\}$$

7.221 ODE No. 1811

$$\boxed{\sqrt{\left(y\left(x\right)\right)^2+x^2}\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)-a\left(\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+1\right)^{3/2}=0}$$

Mathematica: cpu = 0 (sec), leaf count = 0

Hanged

Maple: cpu = 3.026 (sec), leaf count = 1864

$$\left\{ y(x) = RootOf\left(-\ln\left(x\right) + \int^{-Z} \frac{1}{\_g^2+1} \left(RootOf\left(\arctan\left(\_g\right) + \int^{-Z} \frac{1}{\left(\_f^2 a^2 + a^2 - 1\right)\left(\_f^2+1\right)} \left(1 \right.\right.\right.\right.$$

7.222 ODE No. 1812

$$\boxed{y(x)\left(1-\ln\left(y(x)\right)\right)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) + \left(1+\ln\left(y(x)\right)\right)\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2 = 0}$$

Mathematica: cpu = 0.027003 (sec), leaf count = 29

$$\left\{ \left\{ y(x) \to e^{\frac{c_1 x + c_2 c_1 - 1}{c_1 (c_2 + x)}} \right\} \right\}$$

Maple: cpu = 0.031 (sec), leaf count = 19

$$\left\{ y(x) = \mathrm{e}^{\frac{\_C1\, x + \_C2 - 1}{\_C1\, x + \_C2}} \right\}$$

7.223 ODE No. 1813

$$\boxed{\left(b + a(\sin\left(y(x)\right))^2\right)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) + a\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2 \cos\left(y(x)\right)\sin\left(y(x)\right) + Ay(x)\left(c + a(\sin\left(y(x)\right))^2\right) = 0}$$

Mathematica: cpu = 100.860808 (sec), leaf count = 48

$$\text{DSolve}\left[Ay(x)\left(a\sin^2(y(x)) + c\right) + y''(x)\left(a\sin^2(y(x)) + b\right) + ay'(x)^2\sin(y(x))\cos(y(x)) = 0, y(x), x\right]$$

Maple: cpu = 0.265 (sec), leaf count = 146

$$\left\{ \int^{y(x)} \sqrt{2}\left(b + a(\sin\left(\_a\right))^2\right) \frac{1}{\sqrt{\left(b + a\left(\sin\left(\_a\right)\right)^2\right)\left(2\,Aa\_a\,\cos\left(\_a\right)\sin\left(\_a\right) - Aa\left(\sin\left(\_a\right)\right)^2 - Aa\_a^2\right.}} \right.$$

7.224 ODE No. 1814

$$\boxed{h(y(x))\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+a\mathrm{D}(h)(y(x))\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+j(y(x))=0}$$

Mathematica: cpu = 13.253683 (sec), leaf count = 116

$$\left\{\left\{y(x)\to \text{InverseFunction}\left[\int_1^{\#1}-\frac{e^{aK[2]}}{\sqrt{2\int_1^{K[2]}-\frac{e^{2aK[1]}j(K[1])}{h(K[1])}\,dK[1]+c_1}}\,dK[2]\&\right][c_2+x]\right\},\left\{y(x)\to \text{Inv}\right.\right.$$

Maple: cpu = 0.125 (sec), leaf count = 90

$$\left\{\int^{y(x)}\frac{1}{(h(\_b))^{-a}}\frac{1}{\sqrt{-2\int\frac{((h(\_b))^a)^2j(\_b)}{h(\_b)}\,\mathrm{d}\_b+\_C1}}d\_b-x-\_C2=0,\int^{y(x)}-\frac{1}{(h(\_b))^{-a}}\frac{}{\sqrt{-2\int\frac{((h(\_\right.$$

7.225 ODE No. 1815

$$\boxed{h(y(x))\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)-\mathrm{D}(h)(y(x))\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2-(h(y(x)))^2j\left(x,\frac{\frac{\mathrm{d}}{\mathrm{d}x}y(x)}{h(y(x))}\right)=0}$$

Mathematica: cpu = 1.169649 (sec), leaf count = 45

$$\text{DSolve}\left[h(y(x))^2\left(-j\left(x,\frac{y'(x)}{h(y(x))}\right)\right)+h(y(x))y''(x)-h(y(x))y'(x)^2=0,y(x),x\right]$$

Maple: cpu = 0.780 (sec), leaf count = 74

$$\left\{y(x)=\mathit{ODESolStruc}\left(\mathit{RootOf}\left(\int\_b(\_a)\,\mathrm{d}\_a+\_C1-\int^{\_Z}(h(\_f))^{-1}d\_f\right),[\left\{\frac{\mathrm{d}}{\mathrm{d}\_a}\_b(\_a)=j(\_\right.\right.$$

7.226 ODE No. 1816

$$\boxed{\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)-x^2y(x)\frac{\mathrm{d}}{\mathrm{d}x}y(x)-x(y(x))^2=0}$$

Mathematica: cpu = 63.610077 (sec), leaf count = 34

$$\text{DSolve}\left[x^2(-y(x))y'(x)+y'(x)y''(x)-xy(x)^2=0,y(x),x\right]$$

Maple: cpu = 0.874 (sec), leaf count = 46

$$\left\{y(x)=\mathit{ODESolStruc}\left(\_b(\_a),[\left\{-(\_b(\_a))^2\_a^2+\left(\frac{\mathrm{d}}{\mathrm{d}\_a}\_b(\_a)\right)^2+\_C1=0\right\},\{\_a=x,\_b(\_\right.\right.$$

7.227 ODE No. 1817

$$\boxed{\left(x\frac{\mathrm{d}}{\mathrm{d}x}y(x)-y(x)\right)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+4\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2=0}$$

Mathematica: cpu = 14.420831 (sec), leaf count = 31

$$\text{DSolve}\left[4y'(x)^2+(xy'(x)-y(x))\,y''(x)=0,y(x),x\right]$$

Maple: cpu = 0.156 (sec), leaf count = 40

$$\left\{y(x)=\mathrm{e}^{\int^{\ln(x)}\mathrm{e}^{RootOf\left(\ln\left(\mathrm{e}^{\_Z}-1\right)\mathrm{e}^{\_Z}+\_C1\,\mathrm{e}^{\_Z}-\_Z\,\mathrm{e}^{\_Z}-\_b\,\mathrm{e}^{\_Z}+2\right)}-1d\_b+\_C2}\right\}$$

7.228 ODE No. 1818

$$\boxed{\left(x\frac{\mathrm{d}}{\mathrm{d}x}y(x)-y(x)\right)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)-\left(\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+1\right)^2=0}$$

Mathematica: cpu = 1.402678 (sec), leaf count = 35

$$\text{DSolve}\left[(xy'(x)-y(x))\,y''(x)-\left(y'(x)^2+1\right)^2=0,y(x),x\right]$$

Maple: cpu = 0.265 (sec), leaf count = 66

$$\left\{y(x)=RootOf\left(-\ln(x)+\int^{-Z}\frac{-\_f+RootOf\left(-\tan\left(\_Z^{-1}\right)\_C1\,\_Z+\_f\,\_C1\,\tan\left(\_Z^{-1}\right)+\tan\right.}{\_f^2+}\right.\right.$$

7.229 ODE No. 1819

$$\boxed{ax^3\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+b(y(x))^2=0}$$

Mathematica: cpu = 90.744523 (sec), leaf count = 26

$$\text{DSolve}\left[ax^3y'(x)y''(x)+by(x)^2=0,y(x),x\right]$$

Maple: cpu = 0.047 (sec), leaf count = 42

$$\left\{y(x)=\mathrm{e}^{\int^{\ln(x)}RootOf\left(-\int^{-Z}\frac{\_a\_a}{\_a\_a^3-\_a^2a+b}d\_a-\_b+\_C1\right)d\_b+\_C2}\right\}$$

7.230 ODE No. 1820

$$\left(f1\frac{d}{dx}y(x)+f2\,y(x)\right)\frac{d^2}{dx^2}y(x)+f3\left(\frac{d}{dx}y(x)\right)^2+f4(x)\,y(x)\frac{d}{dx}y(x)+f5(x)\,(y(x))^2=0$$

Mathematica: cpu = 0 (sec), leaf count = 0

Hanged

Maple: cpu = 0.780 (sec), leaf count = 81

$$\left\{y(x)=ODESolStruc\left(e^{\int \_b(\_a)\,d\_a+\_C1},[\left\{\frac{d}{d\_a}\_b(\_a)=-\frac{(\_b(\_a))^3 f1+(f2+f3)(\_b(\_a))^2+f4(\right.}{\_b(\_a)f1+f2}\right.\right.$$

7.231 ODE No. 1821

$$\left(2(y(x))^2\frac{d}{dx}y(x)+x^2\right)\frac{d^2}{dx^2}y(x)+2\,y(x)\left(\frac{d}{dx}y(x)\right)^3+3\,x\frac{d}{dx}y(x)+y(x)=0$$

Mathematica: cpu = 42.477894 (sec), leaf count = 45

$$\text{DSolve}\left[\left(x^2+2y(x)^2y'(x)\right)y''(x)+2y(x)y'(x)^3+3xy'(x)+y(x)=0,y(x),x\right]$$

Maple: cpu = 1.529 (sec), leaf count = 54

$$\left\{y(x)=ODESolStruc\left(\_b(\_a),[\left\{(\_b(\_a))^2\left(\frac{d}{d\_a}\_b(\_a)\right)^2+\_a^2\frac{d}{d\_a}\_b(\_a)+\_a\,\_b(\_a)+\_C\right.\right.\right.$$

7.232 ODE No. 1822

$$\left(\left(\frac{d}{dx}y(x)\right)^2+(y(x))^2\right)\frac{d^2}{dx^2}y(x)+(y(x))^3=0$$

Mathematica: cpu = 1.083138 (sec), leaf count = 371

$$\left\{\left\{y(x)\to c_2\exp\left(\frac{1}{12}\left(-2\sqrt{3}\tan^{-1}\left(\frac{1+2\text{InverseFunction}\left[\frac{\left(\sqrt{3}-i\right)\tan^{-1}\left(\frac{\#1}{\sqrt{\frac{1}{2}\left(1-i\sqrt{3}\right)}}\right)}{\sqrt{6\left(1-i\sqrt{3}\right)}}+\frac{\left(\sqrt{3}+i\right)\tan^{-1}\left(\right.}{\sqrt{6\left(1+i\sqrt{3}\right.}}\right.}{\sqrt{3}}\right.\right.\right.\right.\right.$$

Maple: cpu = 0.842 (sec), leaf count = 295

$$\left\{y(x) = \_C2 \left(1 + \left(\tan\left(\sqrt{3}x\right)\right)^2\right)^{-\frac{\_C1^2}{4\_C1^2+4}} \left(\_C1 + \tan\left(\sqrt{3}x\right)\right)^{\frac{\_C1^2}{2\_C1^2+2}} \left(1 + \left(\tan\left(\sqrt{3}x\right)\right)^2\right)^{-\frac{1}{4\_C1^2+}}\right.$$

7.233 ODE No. 1823

$$\boxed{\left(\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2 + a\left(x\frac{\mathrm{d}}{\mathrm{d}x}y(x) - y(x)\right)\right)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) - b = 0}$$

Mathematica: cpu = 0.170022 (sec), leaf count = 35

$$\text{DSolve}\left[y''(x)\left(a(xy'(x) - y(x)) + y'(x)^2\right) - b = 0, y(x), x\right]$$

Maple: cpu = 0.281 (sec), leaf count = 423

$$\left\{y(x) = -\frac{ax^2}{4} + RootOf\left(-x - \int^{\_Z} \frac{1}{\_f^2a^2 - 4\_f\,b + 2\_C1}\sqrt{\_f^3a^3 - 4\,a\_f^2b + 2\,a\_f\,\_C1 - \sqrt{4\_}\right.\right.$$

7.234 ODE No. 1824

$$\boxed{\left(a\sqrt{\left(\frac{\mathrm{d}}{\mathrm{d}x}y\left(x\right)\right)^2 + 1} - x\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) - \left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2 - 1 = 0}$$

Mathematica: cpu = 0.352545 (sec), leaf count = 347

$$\left\{\left\{y(x) \to \frac{-2\sqrt{x^2\left(a^2 + c_1^2 - x^2\right)} + c_1 x\log\left(-c_1\left(\sqrt{x^2\left(a^2 + c_1^2 - x^2\right)} + c_1 x\right) + a^2(-x) + ax^2\right) + c_1 x\log\right.\right.$$

Maple: cpu = 0.717 (sec), leaf count = 99

$$\left\{y(x) = \int \frac{1}{a\left(a^2 - x^2\right)}\left(-\_C1\,a^2 + x\sqrt{a^2\left(\_C1^2 + a^2 - x^2\right)}\right)\mathrm{d}x + \_C2, y(x) = \int -\frac{1}{a\left(a^2 - x^2\right)}\left(\_C1\right.\right.$$

7.235 ODE No. 1825

$$\boxed{h\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+j(y(x))\frac{\mathrm{d}}{\mathrm{d}x}y(x)+f=0}$$

Mathematica: cpu = 0.040505 (sec), leaf count = 27

$$\text{DSolve}[f(x)+y''(x)h(y'(x))+j(y(x))y'(x)=0,y(x),x]$$

Maple: cpu = 0.702 (sec), leaf count = 50

$$\left\{y(x)=ODESolStruc\left(\_f(\_b),[\left\{\int^{\_f(\_b)}j(\_a)\,d\_a+\int^{\frac{\mathrm{d}}{\mathrm{d}\_b}\_f(\_b)}h(\_a)\,d\_a+\_b\,f+\_C1=0\right\},\{\_\right.\right.$$

7.236 ODE No. 1826

$$\boxed{\left(\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)\right)^2-ay(x)-b=0}$$

Mathematica: cpu = 0.773098 (sec), leaf count = 233

$$\left\{\text{Solve}\left[\frac{3(ay(x)+b)^2\left(3c_1-\frac{4(ay(x)+b)^{3/2}}{a}\right)\left(1-\frac{4(ay(x)+b)^{3/2}}{3ac_1}\right){}_2F_1\left(\frac{1}{2},\frac{2}{3};\frac{5}{3};\frac{4(b+ay(x))^{3/2}}{3ac_1}\right)^2}{\left(4(ay(x)+b)^{3/2}-3ac_1\right)^2}=(c_2+x)^2,y(x\right.\right.$$

Maple: cpu = 0.203 (sec), leaf count = 201

$$\left\{\int^{y(x)}a\sqrt{3}\frac{1}{\sqrt{a\left(4\_a\sqrt{a\_a+b}a+4\,b\sqrt{a\_a+b}-\_C1\right)}}d\_a-x-\_C2=0,\int^{y(x)}-3\frac{}{\sqrt{-3\,a\left(4\_a\sqrt{}\right.}}\right.$$

7.237 ODE No. 1827

$$\boxed{a^2\left(\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)\right)^2-2\,ax\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+\frac{\mathrm{d}}{\mathrm{d}x}y(x)=0}$$

Mathematica: cpu = 0.768097 (sec), leaf count = 29

$$\text{DSolve}\left[a^2y''(x)^2-2axy''(x)+y'(x)=0,y(x),x\right]$$

Maple: cpu = 2.169 (sec), leaf count = 81

$$\left\{y(x)=\int RootOf\left(-\int_{\_g}^{\_Z}\left(x\sqrt{x^2-\_f}-x^2+2\,a\_f\right)^{-1}\mathrm{d}\_f+\_C1\right)\mathrm{d}x+\_C2,y(x)=\int RootOf\left(\right.\right.$$

7.238 ODE No. 1828

$$2\left(x^2+1\right)\left(\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)\right)^2-x\left(\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)\right)\left(x+4\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)+2\left(x+\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)-2\,y(x)=0$$

Mathematica: cpu = 0.012502 (sec), leaf count = 32

$$\left\{\left\{y(x)\to-\frac{1}{2}\sqrt{c_2-c_1^2}x^2+c_1x+c_2\right\}\right\}$$

Maple: cpu = 1.045 (sec), leaf count = 20

$$\left\{y(x)=\frac{\_C1\,x^2}{2}+\_C2\,x+\_C1^2+\_C2^2\right\}$$

7.239 ODE No. 1829

$$3\,x^2\left(\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)\right)^2-2\left(3\,x\frac{\mathrm{d}}{\mathrm{d}x}y(x)+y(x)\right)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+4\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2=0$$

Mathematica: cpu = 0.006001 (sec), leaf count = 24

$$\left\{\left\{y(x)\to\frac{c_1^2x^2}{c_2}+c_1x+c_2\right\}\right\}$$

Maple: cpu = 0.234 (sec), leaf count = 32

$$\left\{y(x)=x^{\frac{2\sqrt{3}}{3}}\_C1\,x,y(x)=\frac{\_C1^2x^2}{\_C2}+\_C1\,x+\_C2\right\}$$

7.240 ODE No. 1830

$$x^2(2-9\,x)\left(\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)\right)^2-6\,x(1-6\,x)\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+6\left(\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)\right)y(x)-36\,x\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2=0$$

Mathematica: cpu = 0.029004 (sec), leaf count = 24

$$\left\{\left\{y(x)\to\frac{c_1^2x^3}{c_2}+c_1x+c_2\right\}\right\}$$

Maple: cpu = 0.390 (sec), leaf count = 312

$$\left\{y(x)=27\,\_C1\left(\left(9\,x-1\right)\sqrt{9}+9\sqrt{9\,x^2-2\,x}\right)^{-2/9\sqrt{9}}\left(\left(9\,x-1\right)\sqrt{9}+9\sqrt{x\left(9\,x-2\right)}\right)^{-\frac{5\sqrt{9}}{18}}\sqrt{1\left(1+1\right.}\right.$$

7.241 ODE No. 1831

$$\boxed{(F_{1,1})(x)\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+\left(((F_{2,1})(x)+(F_{1,2})(x))\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+y(x)((F_{1,0})(x)+(F_{0,1})(x))\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x)+(F}$$

Mathematica: cpu = 230.453764 (sec), leaf count = 90

$$\text{DSolve}\left[y(x)(xF(0,2)+xF(2,0))y''(x)+xF(2,2)y''(x)^2+xF(1,1)y''(x)+y'(x)\left((xF(1,2)+xF(2,1))y\right.\right.$$

Maple: cpu = 1.731 (sec), leaf count = 191

$$\left\{y(x)=ODESolStruc\left(\mathrm{e}^{\int \_b(\_a)\,\mathrm{d}\_a+\_C1},\left[\left\{\frac{\mathrm{d}}{\mathrm{d}\_a}\_b(\_a)=-(\_b(\_a))^2-\frac{((F_{2,1})(\_a)+(F_{1,2})(\_a))\,\_(}{2\,(F_{2,2})(\_a)}\right.\right.\right.$$

7.242 ODE No. 1832

$$\boxed{y(x)\left(\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)\right)^2-a\mathrm{e}^{2x}=0}$$

Mathematica: cpu = 0.682087 (sec), leaf count = 24

$$\text{DSolve}\left[y(x)y''(x)^2-ae^{2x}=0,y(x),x\right]$$

Maple: cpu = 0.608 (sec), leaf count = 117

$$\left\{y(x)=ODESolStruc\left(\_a\left(\mathrm{e}^{-\frac{2\int \_b(\_a)\,\mathrm{d}\_a}{3}-\frac{2\_C1}{3}}\right)^{-1},\left[\left\{\frac{\mathrm{d}}{\mathrm{d}\_a}\_b(\_a)=-\frac{(\_b(\_a))^3}{9\_a}\left(-4\_a^2+9\sqrt{a\_a}\right)\right.\right.\right.$$

7.243 ODE No. 1833

$$\boxed{\left(a^2(y(x))^2-b^2\right)\left(\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)\right)^2-2\,a^2y(x)\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+\left(a^2\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2-1\right)\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2=0}$$

Mathematica: cpu = 0 (sec), leaf count = 0

Hanged

Maple: cpu = 2.465 (sec), leaf count = 145

$$\left\{y(x)=\_C1,y(x)=b\left(\mathrm{e}^{\frac{-C2+x}{b}\sqrt{\_C1^2a^2-1}}-\_C1\right)\frac{1}{\sqrt{\_C1^2a^2-1}},y(x)=\frac{b}{a}\tan\left(\frac{\_C1-x}{ab}\sqrt{a^2}\right)\frac{}{\sqrt{\left(\mathrm{ta}\right.}}\right.$$

7.244 ODE No. 1834

$$\left((y(x))^2-x^2\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+x^2y(x)\,\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)\right)^2-4\,xy(x)\left(x\frac{\mathrm{d}}{\mathrm{d}x}y(x)-y(x)\right)^3=0$$

Mathematica: cpu = 16.501095 (sec), leaf count = 53

$$\text{DSolve}\left[\left(x^2y(x)y''(x)+x^2\left(-y'(x)^2\right)+y(x)^2\right)^2-4xy(x)\left(xy'(x)-y(x)\right)^3=0,y(x),x\right]$$

Maple: cpu = 0.343 (sec), leaf count = 86

$$\left\{y(x)=ODESolStruc\left(\mathrm{e}^{\int\_b(\_a)\,\mathrm{d}\_a+\_C1},\left[\left\{\frac{\mathrm{d}}{\mathrm{d}\_a}\_b(\_a)=2\,\frac{\sqrt{\_a\,\left(\_a\,\_b\left(\_a\right)-1\right)}\_b(\_a)}{\_a}-\frac{1}{\_a^2}\left(2\right.\right.\right.\right.$$

7.245 ODE No. 1835

$$\left(2\left(\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)\right)y(x)-\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2\right)^3+32\left(\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)\right)\left(x\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)-\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^3=0$$

Mathematica: cpu = 0.114015 (sec), leaf count = 143

$$\left\{\left\{y(x)\to\frac{1}{4}\left(-\frac{8c_1^3}{\sqrt[3]{3}\sqrt[3]{\sqrt{3}\sqrt{27c_1^{10}c_2^{10}-64c_1^9c_2^9}-9c_1^5c_2^5}}+\frac{c_1^2}{c_2}-\frac{2\sqrt[3]{\sqrt{3}\sqrt{27c_1^{10}c_2^{10}-64c_1^9c_2^9}-9c_1^5c_2^5}}{3^{2/3}c_2^3}\right)x^2+\right.\right.$$

Maple: cpu = 0 (sec), leaf count = 0

hanged

7.246 ODE No. 1836

$$\sqrt{a\left(\frac{\mathrm{d}^2}{\mathrm{d}x^2}y\left(x\right)\right)^2+b\left(\frac{\mathrm{d}}{\mathrm{d}x}y\left(x\right)\right)^2}+cy(x)\,\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+d\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2=0$$

Mathematica: cpu = 14.719369 (sec), leaf count = 44

$$\text{DSolve}\left[\sqrt{ay''(x)^2+by'(x)^2}+cy(x)y''(x)+dy'(x)^2=0,y(x),x\right]$$

Maple: cpu = 0.297 (sec), leaf count = 94

$$\left\{y(x)=ODESolStruc\left(\_a,\left[\left\{\left(\frac{\mathrm{d}}{\mathrm{d}\_a}\_b(\_a)\right)\_b(\_a)+\frac{\_b(\_a)}{c^2\_a^2-a}\left(\_a\,cd\_b(\_a)-\sqrt{\_a^2bc^2+(\_b\,(\right.\right.\right.\right.$$

8 Kamke chapter 7. Non-linear third and higher order

8.1 ODE No. 1837

$$\boxed{\frac{\mathrm{d}^3}{\mathrm{d}x^3}y(x)-a^2\left(\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^5+2\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^3+\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)=0}$$

Mathematica: cpu = 10.857379 (sec), leaf count = 35

$$\text{DSolve}\left[y^{(3)}(x)-a^2\left(y'(x)^5+2y'(x)^3+y'(x)\right)=0,y(x),x\right]$$

Maple: cpu = 0.265 (sec), leaf count = 95

$$\left\{y(x)=\int \mathit{RootOf}\left(-3\int^{\_Z}\frac{1}{\sqrt{3\_f^6a^2+9\_f^4a^2+9\_f^2a^2+9\_C1}}d\_f+x+\_C2\right)\mathrm{d}x+\_C3,y(x)\right.$$

8.2 ODE No. 1838

$$\boxed{\frac{\mathrm{d}^3}{\mathrm{d}x^3}y(x)+\left(\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)\right)y(x)-\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+1=0}$$

Mathematica: cpu = 0.032504 (sec), leaf count = 27

$$\text{DSolve}\left[y^{(3)}(x)+y(x)y''(x)-y'(x)^2+1=0,y(x),x\right]$$

Maple: cpu = 0.453 (sec), leaf count = 73

$$\left\{y(x)=\mathit{ODESolStruc}\left(\_a,\left[\left\{\left(\frac{\mathrm{d}^2}{\mathrm{d}\_a^2}\_b(\_a)\right)(\_b(\_a))^2+\left(\frac{\mathrm{d}}{\mathrm{d}\_a}\_b(\_a)\right)^2\_b(\_a)+\left(\frac{\mathrm{d}}{\mathrm{d}\_a}\_b(\_a)\right.\right.\right.\right.$$

8.3 ODE No. 1839

$$\boxed{\frac{\mathrm{d}^3}{\mathrm{d}x^3}y(x)-\left(\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)\right)y(x)+\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2=0}$$

Mathematica: cpu = 0.030004 (sec), leaf count = 25

$$\text{DSolve}\left[y^{(3)}(x)-y(x)y''(x)+y'(x)^2=0,y(x),x\right]$$

Maple: cpu = 0.655 (sec), leaf count = 127

$$\left\{ y(x) = \mathit{ODESolStruc}\left(\mathrm{e}^{\int \_g(\_f)\,\mathrm{d}\_f + \_C2}, [\left\{ \frac{\mathrm{d}}{\mathrm{d}\_f}\_g(\_f) = (6\,\_f - 1)\,(\_g(\_f))^3 + \frac{(7\,\_f - 1)\,(\_g(\_f))}{\_f} \right.\right.\right.$$

8.4 ODE No. 1840

$$\boxed{\frac{\mathrm{d}^3}{\mathrm{d}x^3}y(x) + a y(x) \frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) = 0}$$

Mathematica: cpu = 0.026503 (sec), leaf count = 19

$$\text{DSolve}\left[a y(x) y''(x) + y^{(3)}(x) = 0, y(x), x\right]$$

Maple: cpu = 0.655 (sec), leaf count = 129

$$\left\{ y(x) = \mathit{ODESolStruc}\left(\mathrm{e}^{\int \_g(\_f)\,\mathrm{d}\_f + \_C2}, [\left\{ \frac{\mathrm{d}}{\mathrm{d}\_f}\_g(\_f) = (6\,\_f + 2\,a)\,(\_g(\_f))^3 + \frac{(7\,\_f + a)\,(\_g(\_f}{\_f} \right.\right.\right.$$

8.5 ODE No. 1841

$$\boxed{x^2 \frac{\mathrm{d}^3}{\mathrm{d}x^3}y(x) + x \frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) + (2\,x y(x) - 1)\,\frac{\mathrm{d}}{\mathrm{d}x}y(x) + (y(x))^2 - f(x) = 0}$$

Mathematica: cpu = 0.087511 (sec), leaf count = 41

$$\text{DSolve}\left[-f(x) + x^2 y^{(3)}(x) + x y''(x) + (2xy(x) - 1)y'(x) + y(x)^2 = 0, y(x), x\right]$$

Maple: cpu = 0.406 (sec), leaf count = 60

$$\left\{ y(x) = \mathit{ODESolStruc}\left(\_b(\_a), [\left\{ \_a^2 \frac{\mathrm{d}^2}{\mathrm{d}\_a^2}\_b(\_a) + \_a\,(\_b(\_a))^2 - \_a \frac{\mathrm{d}}{\mathrm{d}\_a}\_b(\_a) - \int f(\_a)\ \mathrm{d}\_ \right.\right.\right.$$

8.6 ODE No. 1842

$$\boxed{x^2 \frac{\mathrm{d}^3}{\mathrm{d}x^3}y(x) + x(-1+y(x)) \frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) + x\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2 + (1-y(x)) \frac{\mathrm{d}}{\mathrm{d}x}y(x) = 0}$$

Mathematica: cpu = 0.166521 (sec), leaf count = 286

$$\left\{\left\{y(x) \to \frac{2x\left(c_3\left(J_{\frac{\sqrt{c_2+2}}{\sqrt{2}}}\left(-\frac{1}{2}ix\sqrt{c_1}\right) - \frac{1}{4}i\sqrt{c_1}x\left(J_{\frac{\sqrt{c_2+2}}{\sqrt{2}}-1}\left(-\frac{1}{2}ix\sqrt{c_1}\right) - J_{\frac{\sqrt{c_2+2}}{\sqrt{2}}+1}\left(-\frac{1}{2}ix\sqrt{c_1}\right)\right)\right) + Y_{\frac{\sqrt{c_2}}{\sqrt{2}}}\right.}{c_3 x J_{\frac{\sqrt{c_2+2}}{\sqrt{2}}}\left(-\frac{1}{2}ix\sqrt{c_1}\right) + xY_{\frac{\sqrt{c_2+2}}{\sqrt{2}}}}\right.\right.$$

Maple: cpu = 0.421 (sec), leaf count = 190

$$\left\{\ln(x) + 2\int^{y(x)} \left(2\left(RootOf\left(-2\,Y_{1/2\sqrt{4+\_C1}}\left(1/2\sqrt{2}\_Z\right)\sqrt{4+\_C1}\_C2 + 2\,Y_{1/2\sqrt{4+\_C1}}\left(1/2\sqrt{2}\_Z\right)\right.\right.\right.$$

8.7 ODE No. 1843

$$\boxed{y(x) \frac{\mathrm{d}^3}{\mathrm{d}x^3}y(x) - \left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right) \frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) + (y(x))^3 \frac{\mathrm{d}}{\mathrm{d}x}y(x) = 0}$$

Mathematica: cpu = 2.969877 (sec), leaf count = 409

$$\left\{\left\{y(x) \to \text{InverseFunction}\left[-\frac{2i\sqrt{\frac{\#1^2}{2\left(\sqrt{c_2^2-c_1}-c_2\right)}+1}\sqrt{1-\frac{\#1^2}{2\left(c_2+\sqrt{c_2^2-c_1}\right)}}F\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{1}{\sqrt{c_2^2-c_1}-c_2}}\#1}{\sqrt{2}}\right)\middle|\frac{c_2}{c_2}\right.\right.\right.\right.$$

Maple: cpu = 0.234 (sec), leaf count = 77

$$\left\{\int^{y(x)} -2\frac{1}{\sqrt{-\_a^4 + 4\_C2\,\_a^2 - 4\_C2^2 + 4\_C1}}d\_a - x - \_C3 = 0, \int^{y(x)} 2\frac{1}{\sqrt{-\_a^4 + 4\_C2\,\_a^2}}\right.$$

8.8 ODE No. 1844

$$\boxed{4\left(y(x)\right)^2\frac{\mathrm{d}^3}{\mathrm{d}x^3}y(x)-18\,y(x)\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+15\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^3=0}$$

Mathematica: cpu = 0.075010 (sec), leaf count = 37

$$\text{DSolve}\left[4y(x)^2y^{(3)}(x)+15y'(x)^3-18y(x)y'(x)y''(x)=0,y(x),x\right]$$

Maple: cpu = 0.203 (sec), leaf count = 26

$$\left\{y(x)=\frac{\_C3}{\left(-\_C2^2-2\,\_C2\,x-x^2+4\,\_C1\right)^2}\right\}$$

8.9 ODE No. 1845

$$\boxed{9\left(y(x)\right)^2\frac{\mathrm{d}^3}{\mathrm{d}x^3}y(x)-45\,y(x)\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)+40\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^3=0}$$

Mathematica: cpu = 0.074009 (sec), leaf count = 37

$$\text{DSolve}\left[9y(x)^2y^{(3)}(x)+40y'(x)^3-45y(x)y'(x)y''(x)=0,y(x),x\right]$$

Maple: cpu = 0.187 (sec), leaf count = 22

$$\left\{y(x)=\_C3\left(\_C2^2+2\,\_C2\,x+x^2-9\,\_C1\right)^{-\frac{3}{2}}\right\}$$

8.10 ODE No. 1846

$$\boxed{2\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)\frac{\mathrm{d}^3}{\mathrm{d}x^3}y(x)-3\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2=0}$$

Mathematica: cpu = 0.040505 (sec), leaf count = 51

$$\left\{\left\{y(x)\to c_1\right\},\left\{y(x)\to\sqrt{\frac{2}{3}}e^{-\sqrt{\frac{3}{2}}x}\left(c_1e^{\sqrt{6}x}-c_2\right)+c_3\right\}\right\}$$

Maple: cpu = 0.0 (sec), leaf count = 28

$$\left\{y(x)=\_C1,y(x)=\_C1+\_C2\,\mathrm{e}^{\frac{\sqrt{6}x}{2}}+\_C3\,\mathrm{e}^{-\frac{\sqrt{6}x}{2}}\right\}$$

8.11 ODE No. 1847

$$\boxed{\left(\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+1\right)\frac{\mathrm{d}^3}{\mathrm{d}x^3}y(x)-3\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)\left(\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)\right)^2=0}$$

Mathematica: cpu = 0.124016 (sec), leaf count = 95

$$\left\{\left\{y(x)\to c_3-\frac{i\sqrt{c_1^2x^2+2c_2c_1^2x+c_2^2c_1^2-1}}{c_1}\right\},\left\{y(x)\to c_3+\frac{i\sqrt{c_1^2x^2+2c_2c_1^2x+c_2^2c_1^2-1}}{c_1}\right\}\right\}$$

Maple: cpu = 0.171 (sec), leaf count = 49

$$\left\{y(x)=-\sqrt{-\_C2^2-2\_C2\,x-x^2+\_C1}+\_C3,y(x)=\sqrt{-\_C2^2-2\_C2\,x-x^2+\_C1}+\_C3\right\}$$

8.12 ODE No. 1848

$$\boxed{\left(\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^2+1\right)\frac{\mathrm{d}^3}{\mathrm{d}x^3}y(x)-\left(3\frac{\mathrm{d}}{\mathrm{d}x}y(x)+a\right)\left(\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)\right)^2=0}$$

Mathematica: cpu = 594.052935 (sec), leaf count = 37

$$\text{DSolve}\left[y''(x)^2\left(-a-3y'(x)\right)+y^{(3)}(x)\left(y'(x)^2+1\right)=0,y(x),x\right]$$

Maple: cpu = 0.843 (sec), leaf count = 789

$$\left\{y(x)=\int\frac{\sin\left(RootOf\left(\mathrm{e}^{2\_Za}\_C1^2\_C2^2a^4+2\,\mathrm{e}^{2\_Za}\_C1^2\_C2\,a^4x+\mathrm{e}^{2\_Za}\_C1^2a^4x^2+2\,\mathrm{e}^{2\_Za}\_C1\right.\right.}{\cos\left(RootOf\left(\mathrm{e}^{2\_Za}\_C1^2\_C2^2a^4+2\,\mathrm{e}^{2\_Za}\_C1^2\_C2\,a^4x+\mathrm{e}^{2\_Za}\_C1^2a^4x^2+2\,\mathrm{e}^{2\_Za}\_C1\right.\right.}$$

8.13 ODE No. 1849

$$\boxed{\left(\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)\right)\frac{\mathrm{d}^3}{\mathrm{d}x^3}y(x)-a\sqrt{b^2\left(\frac{\mathrm{d}^2}{\mathrm{d}x^2}y\left(x\right)\right)^2+1}=0}$$

Mathematica: cpu = 0.591575 (sec), leaf count = 426

$$\left\{\left\{y(x)\to\frac{\frac{(a^2b^4x^2+2ab^4c_1x+b^4c_1^2-1)^{3/2}}{3ab^2}+\frac{\sqrt{a^2b^4x^2+2ab^4c_1x+b^4c_1^2-1}}{ab^2}-\frac{c_1\log\left(\sqrt{a^2b^4x^2+2ab^4c_1x+b^4c_1^2-1}+ab^2x+b^2c_1\right)}{a}-x\,\text{lo}}{2ab^3}\right.\right.$$

Maple: cpu = 0.125 (sec), leaf count = 337

$$\left\{y(x)=\int-\frac{x}{2\,b}\sqrt{\_C1^2a^2b^4+2\,\_C1\,a^2b^4x+a^2b^4x^2-1}-\frac{\_C1}{2\,b}\sqrt{\_C1^2a^2b^4+2\,\_C1\,a^2b^4x+a^2b^4x^2-}\right.$$

8.14 ODE No. 1850

$$\boxed{\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right) d4y(x) - \left(\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)\right)\frac{\mathrm{d}^3}{\mathrm{d}x^3}y(x) + \left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)^3\frac{\mathrm{d}^3}{\mathrm{d}x^3}y(x) = 0}$$

Mathematica: cpu = 0.083511 (sec), leaf count = 37

$$\text{DSolve}\left[y^{(4)}(x)y'(x) - y^{(3)}(x)y''(x) + y^{(3)}(x)y'(x)^3 = 0, y(x), x\right]$$

Maple: cpu = 1.092 (sec), leaf count = 165

$$\left\{y(x) = \mathit{ODESolStruc}\left(\int \frac{\_j(\_h)}{\mathrm{e}^{\int \_j(\_h)\,\mathrm{d}\_h + \_C2}\,\_h}\,\mathrm{d}\_h + \_C3, [\left\{\frac{\mathrm{d}}{\mathrm{d}\_h}\_j(\_h) = (12\,\_h + 3)\,(\_j(\_h))^3 + \right.\right.$$

8.15 ODE No. 1851

$$\boxed{\left(\frac{\mathrm{d}}{\mathrm{d}x}y(x)\right)\left(\left(\frac{\mathrm{d}^3}{\mathrm{d}x^3}f(x)\right)\frac{\mathrm{d}}{\mathrm{d}x}y(x) + 3\left(\frac{\mathrm{d}^2}{\mathrm{d}x^2}f(x)\right)\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x) + 3\left(\frac{\mathrm{d}}{\mathrm{d}x}f(x)\right)\frac{\mathrm{d}^3}{\mathrm{d}x^3}y(x) + f(x)\frac{\mathrm{d}^4}{\mathrm{d}x^4}y(x)\right) -}$$

Mathematica: cpu = 0.806102 (sec), leaf count = 141

$$\text{DSolve}\left[y'(x)^3\left(f'(x)y'(x) + f(x)y''(x)\right) - y''(x)\left(f''(x)y'(x) + 2f'(x)y''(x) + f(x)y^{(3)}(x)\right) + y'(x)\left(f^{(3)}(x)\right.\right.$$

Maple: cpu = 2.589 (sec), leaf count = 0

$$\text{could not solve}$$

8.16 ODE No. 1852

$$\boxed{3\left(\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)\right) d4y(x) - 5\left(\frac{\mathrm{d}^3}{\mathrm{d}x^3}y(x)\right)^2 = 0}$$

Mathematica: cpu = 0.036505 (sec), leaf count = 28

$$\left\{\left\{y(x) \to c_2\left(-\sqrt{3c_1 + 2x}\right) + c_4 x + c_3\right\}\right\}$$

Maple: cpu = 0.203 (sec), leaf count = 30

$$\left\{y(x) = 3\,(\_C2 + x)\,\sqrt{6}\_C1^{\,2}\sqrt{-\frac{\_C1}{\_C2 + x}} + \_C3\,x + \_C4\right\}$$

8.17 ODE No. 1853

$$\boxed{9\left(\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)\right)^2\frac{\mathrm{d}^5}{\mathrm{d}x^5}y(x)-45\left(\frac{\mathrm{d}^2}{\mathrm{d}x^2}y(x)\right)\left(\frac{\mathrm{d}^3}{\mathrm{d}x^3}y(x)\right)d4y(x)+40\frac{\mathrm{d}^3}{\mathrm{d}x^3}y(x)=0}$$

Mathematica: cpu = 0.074009 (sec), leaf count = 41

$$\text{DSolve}\left[40y^{(3)}(x)^3+9y^{(5)}(x)y''(x)^2-45y^{(4)}(x)y^{(3)}(x)y''(x)=0,y(x),x\right]$$

Maple: cpu = 0.515 (sec), leaf count = 110

$$\left\{y(x)=\iint RootOf\left(-\int^{\_Z}\left(RootOf\left(-20\ln\left(\_f\right)+\int^{\_Z}\_k\left(\mathrm{e}^{RootOf\left(81\_k^2\mathrm{e}^{-\_Z}+20\,\mathrm{e}^{-\_Z}\ln\left(\mathrm{e}^{-\_Z}+27\right)-40\,\mathrm{e}^{-\_Z}\ln(\right.\right.\right.\right.\right.\right.$$

8.18 ODE No. 1854

$$\boxed{\frac{\mathrm{d}^n}{\mathrm{d}x^n}y(x)-f\left(\frac{\mathrm{d}^{n-1}}{\mathrm{d}x^{n-1}}y(x)\right)=0}$$

Mathematica: cpu = 0 (sec), leaf count = 1

not solved

Maple: cpu = 0.515 (sec), leaf count = 0

could not solve

8.19 ODE No. 1855

$$\boxed{\frac{\mathrm{d}^n}{\mathrm{d}x^n}y(x)=f\left(\frac{\mathrm{d}^{n-2}}{\mathrm{d}x^{n-2}}y(x)\right)=0}$$

Mathematica: cpu = 0 (sec), leaf count = 1

not solved

Maple: cpu = 0.515 (sec), leaf count = 0

could not solve

9 Kamke chapter 8. System of linear differential equations

9.1 ODE No. 1856

$$\boxed{\left\{\frac{\mathrm{d}}{\mathrm{d}t}x(t)=ax(t)\,,\frac{\mathrm{d}}{\mathrm{d}t}y(t)=b\right\}}$$

Mathematica: cpu = 0.005001 (sec), leaf count = 22

$$\left\{\left\{x(t)\to c_1e^{at},y(t)\to bt+c_2\right\}\right\}$$

Maple: cpu = 0.015 (sec), leaf count = 19

$$\left\{\left\{x(t)=\_C1\,\mathrm{e}^{at},y(t)=bt+\_C2\right\}\right\}$$

9.2 ODE No. 1857

$$\boxed{\left\{\frac{\mathrm{d}}{\mathrm{d}t}x(t)=ay(t)\,,\frac{\mathrm{d}}{\mathrm{d}t}y(t)=-ax(t)\right\}}$$

Mathematica: cpu = 0.039505 (sec), leaf count = 39

$$\{\{x(t)\to c_2\sin(at)+c_1\cos(at),y(t)\to c_2\cos(at)-c_1\sin(at)\}\}$$

Maple: cpu = 0.047 (sec), leaf count = 35

$$\{\{x(t)=\_C1\,\sin\left(at\right)+\_C2\,\cos\left(at\right),y(t)=\cos\left(at\right)\_C1-\sin\left(at\right)\_C2\}\}$$

9.3 ODE No. 1858

$$\boxed{\left\{\frac{\mathrm{d}}{\mathrm{d}t}x(t)=ay(t)\,,\frac{\mathrm{d}}{\mathrm{d}t}y(t)=bx(t)\right\}}$$

Mathematica: cpu = 0.010501 (sec), leaf count = 182

$$\left\{\left\{x(t)\to\frac{1}{2}c_1e^{-\sqrt{a}\sqrt{b}t}\left(e^{2\sqrt{a}\sqrt{b}t}+1\right)+\frac{\sqrt{a}c_2e^{-\sqrt{a}\sqrt{b}t}\left(e^{2\sqrt{a}\sqrt{b}t}-1\right)}{2\sqrt{b}},y(t)\to\frac{\sqrt{b}c_1e^{-\sqrt{a}\sqrt{b}t}\left(e^{2\sqrt{a}\sqrt{b}t}-1\right)}{2\sqrt{a}}+\right.\right.$$

Maple: cpu = 0.047 (sec), leaf count = 64

$$\left\{\left\{x(t)=\_C1\,\mathrm{e}^{\sqrt{a}\sqrt{b}t}+\_C2\,\mathrm{e}^{-\sqrt{a}\sqrt{b}t},y(t)=1\sqrt{b}\left(\_C1\,\mathrm{e}^{\sqrt{a}\sqrt{b}t}-\_C2\,\mathrm{e}^{-\sqrt{a}\sqrt{b}t}\right)\frac{1}{\sqrt{a}}\right\}\right\}$$

9.4 ODE No. 1859

$$\boxed{\left\{\frac{\mathrm{d}}{\mathrm{d}t}x(t) = ax(t) - y(t)\,, \frac{\mathrm{d}}{\mathrm{d}t}y(t) = x(t) + ay(t)\right\}}$$

Mathematica: cpu = 0.005001 (sec), leaf count = 51

$$\left\{\left\{x(t) \to c_1 e^{at}\cos(t) - c_2 e^{at}\sin(t), y(t) \to c_1 e^{at}\sin(t) + c_2 e^{at}\cos(t)\right\}\right\}$$

Maple: cpu = 0.031 (sec), leaf count = 37

$$\left\{\left\{x(t) = \mathrm{e}^{at}(\_C1\ \sin(t) + \_C2\ \cos(t))\,, y(t) = \mathrm{e}^{at}(\sin(t)\ \_C2 - \cos(t)\ \_C1)\right\}\right\}$$

9.5 ODE No. 1860

$$\boxed{\left\{\frac{\mathrm{d}}{\mathrm{d}t}x(t) = ax(t) + by(t)\,, \frac{\mathrm{d}}{\mathrm{d}t}y(t) = cx(t) + by(t)\right\}}$$

Mathematica: cpu = 0.045506 (sec), leaf count = 696

$$\left\{\left\{x(t) \to \frac{c_1\left(a\left(-e^{\frac{1}{2}t\left(-\sqrt{a^2-2ab+b^2+4bc}+a+b\right)}\right) + ae^{\frac{1}{2}t\left(\sqrt{a^2-2ab+b^2+4bc}+a+b\right)} + be^{\frac{1}{2}t\left(-\sqrt{a^2-2ab+b^2+4bc}+a+b\right)} + \sqrt{}\right.\right.\right.$$

Maple: cpu = 0.046 (sec), leaf count = 237

$$\left\{\left\{x(t) = \_C1\ \mathrm{e}^{\frac{t}{2}\left(a+b+\sqrt{a^2-2\,ab+b^2+4\,bc}\right)} + \_C2\ \mathrm{e}^{-\frac{t}{2}\left(-a-b+\sqrt{a^2-2\,ab+b^2+4\,bc}\right)}, y(t) = \left(\frac{1}{2} + \frac{1}{b}\left(\frac{1}{2}\sqrt{a^2-2\,ab+\right.\right.\right.\right.$$

9.6 ODE No. 1861

$$\boxed{\left\{a\frac{\mathrm{d}}{\mathrm{d}t}x(t) + b\frac{\mathrm{d}}{\mathrm{d}t}y(t) = \alpha\,x(t) + \beta\,y(t)\,, b\frac{\mathrm{d}}{\mathrm{d}t}x(t) - a\frac{\mathrm{d}}{\mathrm{d}t}y(t) = \beta\,x(t) - \alpha\,y(t)\right\}}$$

Mathematica: cpu = 0.011001 (sec), leaf count = 183

$$\left\{\left\{x(t) \to c_2 e^{\frac{t(a\alpha+b\beta)}{a^2+b^2}}\sin\left(\frac{t(a\beta-\alpha b)}{a^2+b^2}\right) + c_1 e^{\frac{t(a\alpha+b\beta)}{a^2+b^2}}\cos\left(\frac{t(a\beta-\alpha b)}{a^2+b^2}\right), y(t) \to c_2 e^{\frac{t(a\alpha+b\beta)}{a^2+b^2}}\cos\left(\frac{t(a\beta-\alpha b}{a^2+b^2}\right.\right.\right.$$

Maple: cpu = 0.062 (sec), leaf count = 144

$$\left\{\left\{x(t) = \_C1\ \mathrm{e}^{\frac{(ia\beta-i\alpha\,b+a\alpha+\beta\,b)t}{a^2+b^2}} + \_C2\ \mathrm{e}^{-\frac{(ia\beta-i\alpha\,b-a\alpha-\beta\,b)t}{a^2+b^2}}, y(t) = i\left(\_C1\ \mathrm{e}^{\frac{(ia\beta-i\alpha\,b+a\alpha+\beta\,b)t}{a^2+b^2}} - \_C2\ \mathrm{e}^{-\frac{(ia\beta-i\alpha\,b-a\right.\right.\right.\right.$$

9.7 ODE No. 1862

$$\boxed{\left\{\frac{\mathrm{d}}{\mathrm{d}t}x(t) = -y(t)\,, \frac{\mathrm{d}}{\mathrm{d}t}y(t) = 2\,x(t) + 2\,y(t)\right\}}$$

Mathematica: cpu = 0.042005 (sec), leaf count = 52

$$\{\{x(t) \to c_1 e^t(\cos(t) - \sin(t)) - c_2 e^t \sin(t), y(t) \to 2c_1 e^t \sin(t) + c_2 e^t(\sin(t) + \cos(t))\}\}$$

Maple: cpu = 0.032 (sec), leaf count = 42

$$\{\{x(t) = \mathrm{e}^t(\sin(t)\_C1 + \cos(t)\_C2)\,, y(t) = -\mathrm{e}^t(\sin(t)\_C1 - \sin(t)\_C2 + \cos(t)\_C1 + \cos(t)\_C$$

9.8 ODE No. 1863

$$\boxed{\left\{\frac{\mathrm{d}}{\mathrm{d}t}x(t) + 3\,x(t) + 4\,y(t) = 0, \frac{\mathrm{d}}{\mathrm{d}t}y(t) + 2\,x(t) + 5\,y(t) = 0\right\}}$$

Mathematica: cpu = 0.007001 (sec), leaf count = 84

$$\left\{\left\{x(t) \to \frac{1}{3}c_1 e^{-7t}\left(2e^{6t} + 1\right) - \frac{2}{3}c_2 e^{-7t}\left(e^{6t} - 1\right), y(t) \to \frac{1}{3}c_2 e^{-7t}\left(e^{6t} + 2\right) - \frac{1}{3}c_1 e^{-7t}\left(e^{6t} - 1\right)\right\}\right\}$$

Maple: cpu = 0.031 (sec), leaf count = 35

$$\left\{\left\{x(t) = \_C1\,\mathrm{e}^{-t} + \_C2\,\mathrm{e}^{-7\,t}, y(t) = -\frac{\_C1\,\mathrm{e}^{-t}}{2} + \_C2\,\mathrm{e}^{-7\,t}\right\}\right\}$$

9.9 ODE No. 1864

$$\boxed{\left\{\frac{\mathrm{d}}{\mathrm{d}t}x(t) = -5\,x(t) - 2\,y(t)\,, \frac{\mathrm{d}}{\mathrm{d}t}y(t) = x(t) - 7\,y(t)\right\}}$$

Mathematica: cpu = 0.013002 (sec), leaf count = 59

$$\{\{x(t) \to c_1 e^{-6t}(\sin(t) + \cos(t)) - 2c_2 e^{-6t} \sin(t), y(t) \to c_1 e^{-6t} \sin(t) + c_2 e^{-6t}(\cos(t) - \sin(t))\}\}$$

Maple: cpu = 0.031 (sec), leaf count = 46

$$\left\{\left\{x(t) = \mathrm{e}^{-6\,t}(\sin(t)\_C1 + \cos(t)\_C2)\,, y(t) = \frac{\mathrm{e}^{-6\,t}(\sin(t)\_C1 + \sin(t)\_C2 - \cos(t)\_C1 + \cos(t)}{2}\right.\right.$$

9.10 ODE No. 1865

$$\left\{\frac{\mathrm{d}}{\mathrm{d}t}x(t) = a1\,x(t) + b1\,y(t) + c1, \frac{\mathrm{d}}{\mathrm{d}t}y(t) = a2\,x(t) + b2\,y(t) + c2\right\}$$

Mathematica: cpu = 1.201653 (sec), leaf count = 2062

$$\left\{\left\{x(t) \to -\frac{\mathrm{b1}e^{-\frac{1}{2}\left(\mathrm{a1}+\mathrm{b2}+\sqrt{\mathrm{a1}^2-2\mathrm{b2a1}+\mathrm{b2}^2+4\mathrm{a2b1}}\right)t}\left(\frac{2\left(\left(\mathrm{a1}-\mathrm{b2}+\sqrt{\mathrm{a1}^2-2\mathrm{b2a1}+\mathrm{b2}^2+4\mathrm{a2b1}}\right)\mathrm{c2}-2\mathrm{a2c1}\right)e^{\sqrt{\mathrm{a1}^2-2\mathrm{b2a1}+\mathrm{b2}^2+4\mathrm{a2b}}}}{-\mathrm{a1}-\mathrm{b2}+\sqrt{\mathrm{a1}^2-2\mathrm{b2a1}+\mathrm{b2}^2+4\mathrm{a2b1}}}\right.}{2\left(\mathrm{a1}\right.}\right.\right.$$

Maple: cpu = 0.172 (sec), leaf count = 334

$$\left\{\left\{x(t) = \mathrm{e}^{\left(\frac{a1}{2}+\frac{b2}{2}+\frac{1}{2}\sqrt{a1^2-2\,a1\,b2+4\,a2\,b1+b2^2}\right)t}\_C2 + \mathrm{e}^{\left(\frac{a1}{2}+\frac{b2}{2}-\frac{1}{2}\sqrt{a1^2-2\,a1\,b2+4\,a2\,b1+b2^2}\right)t}\_C1 + \frac{c2\,b1 - b2\right.\right.$$

9.11 ODE No. 1866

$$\left\{\frac{\mathrm{d}}{\mathrm{d}t}x(t) + 2\,y(t) = 3\,t, \frac{\mathrm{d}}{\mathrm{d}t}y(t) - 2\,x(t) = 4\right\}$$

Mathematica: cpu = 0.027003 (sec), leaf count = 132

$$\left\{\left\{x(t) \to -c_2\sin(2t) + c_1\cos(2t) + \cos(2t)\left(\frac{3}{2}t\sin(2t) - \frac{5}{4}\cos(2t)\right) - \sin(2t)\left(\frac{5}{4}\sin(2t) + \frac{3}{2}t\cos(2t)\right)\right.\right.$$

Maple: cpu = 0.032 (sec), leaf count = 39

$$\left\{\left\{x(t) = \sin\left(2\,t\right)\_C2 + \cos\left(2\,t\right)\_C1 - \frac{5}{4}, y(t) = -\cos\left(2\,t\right)\_C2 + \sin\left(2\,t\right)\_C1 + \frac{3\,t}{2}\right\}\right\}$$

9.12 ODE No. 1867

$$\left\{\frac{\mathrm{d}}{\mathrm{d}t}y(t) - x(t) = -3\,t^2 + 3\,t + 1, \frac{\mathrm{d}}{\mathrm{d}t}x(t) + y(t) - t^2 + 6\,t + 1 = 0\right\}$$

Mathematica: cpu = 0.075510 (sec), leaf count = 124

$$\left\{\left\{x(t) \to -c_2\sin(t) + c_1\cos(t) + \cos(t)\left(\left(3t^2 - t - 13\right)\cos(t) + (t-12)t\sin(t)\right) - \sin(t)\left(\left(-3t^2 + t + 13\right.\right.\right.$$

Maple: cpu = 0.031 (sec), leaf count = 42

$$\left\{\left\{x(t) = \sin\left(t\right)\_C2 + \cos\left(t\right)\_C1 + 3\,t^2 - t - 13, y(t) = t^2 - \cos\left(t\right)\_C2 + \sin\left(t\right)\_C1 - 12\,t\right\}\right\}$$

9.13 ODE No. 1868

$$\boxed{\left\{\frac{\mathrm{d}}{\mathrm{d}t}x(t)+3\,x(t)-y(t)=\mathrm{e}^{2\,t},\frac{\mathrm{d}}{\mathrm{d}t}y(t)+x(t)+5\,y(t)=\mathrm{e}^{t}\right\}}$$

Mathematica: cpu = 0.046006 (sec), leaf count = 162

$$\left\{\left\{x(t)\to c_1e^{-4t}(t+1)+c_2e^{-4t}t-e^t(t+1)\left(\frac{t}{5}+\frac{1}{36}e^t(6t-7)-\frac{1}{25}\right)+e^tt\left(\frac{t}{5}+\frac{1}{36}e^t(6t-1)+\frac{4}{25}\right),\right.\right.$$

Maple: cpu = 0.047 (sec), leaf count = 64

$$\left\{\left\{x(t)=\mathrm{e}^{-4\,t}\_C2+\mathrm{e}^{-4\,t}t\_C1+\frac{7\,\mathrm{e}^{2\,t}}{36}+\frac{\mathrm{e}^{t}}{25},y(t)=-\frac{\mathrm{e}^{2\,t}}{36}-\mathrm{e}^{-4\,t}\_C2-\mathrm{e}^{-4\,t}t\_C1+\mathrm{e}^{-4\,t}\_C1+\frac{4\,\mathrm{e}^{t}}{25}\right\}\right.$$

9.14 ODE No. 1869

$$\boxed{\left\{\frac{\mathrm{d}}{\mathrm{d}t}x(t)+\frac{\mathrm{d}}{\mathrm{d}t}y(t)-x(t)+3\,y(t)=\mathrm{e}^{t}-1,\frac{\mathrm{d}}{\mathrm{d}t}x(t)+\frac{\mathrm{d}}{\mathrm{d}t}y(t)+2\,x(t)+y(t)=\mathrm{e}^{2\,t}+t\right\}}$$

Mathematica: cpu = 0.087511 (sec), leaf count = 118

$$\left\{\left\{x(t)\to\frac{5}{72}\left(c_1e^{-7t/5}+\frac{12(5712t+833e^t+2352e^{2t}-5508)}{20825}\right)+\frac{1}{5}\left(t-e^t+e^{2t}+1\right),y(t)\to\frac{5}{48}\left(c_1e^{-7\right.\right.\right.$$

Maple: cpu = 0.031 (sec), leaf count = 51

$$\left\{\left\{x(t)=\frac{5\,\mathrm{e}^{2\,t}}{17}-\frac{\mathrm{e}^{t}}{6}+\frac{3\,t}{7}-\frac{1}{49}+\mathrm{e}^{-\frac{7\,t}{5}}\_C1,y(t)=-\frac{\mathrm{e}^{2\,t}}{17}+\frac{\mathrm{e}^{t}}{4}+\frac{t}{7}-\frac{26}{49}+\frac{3\,\_C1}{2}\mathrm{e}^{-\frac{7\,t}{5}}\right\}\right\}$$

9.15 ODE No. 1870

$$\boxed{\left\{\frac{\mathrm{d}}{\mathrm{d}t}x(t)+\frac{\mathrm{d}}{\mathrm{d}t}y(t)-y(t)=\mathrm{e}^{t},2\,\frac{\mathrm{d}}{\mathrm{d}t}x(t)+\frac{\mathrm{d}}{\mathrm{d}t}y(t)+2\,y(t)=\cos\left(t\right)\right\}}$$

Mathematica: cpu = 0.127016 (sec), leaf count = 122

$$\left\{\left\{x(t)\to-\frac{3}{4}c_2\left(e^{4t}-1\right)+c_1+\frac{1}{68}e^{-4t}\left(e^{4t}-1\right)\left(34e^t+3\sin(t)-12\cos(t)\right)+\frac{1}{4}\left(2e^{-3t}+2e^t+\frac{3}{17}e^{-4t}\right.\right.\right.$$

Maple: cpu = 0.078 (sec), leaf count = 47

$$\left\{\left\{x(t)=\mathrm{e}^{t}+\frac{5\,\sin\left(t\right)}{17}-\frac{3\,\cos\left(t\right)}{17}+\frac{\mathrm{e}^{4\,t}\_C1}{4}+\_C2,y(t)=-\frac{2\,\mathrm{e}^{t}}{3}+\frac{4\,\cos\left(t\right)}{17}-\frac{\sin\left(t\right)}{17}-\frac{\mathrm{e}^{4\,t}\_C1}{3}\right\}\right\}$$

9.16 ODE No. 1871

$$\left\{3 \frac{\mathrm{d}}{\mathrm{d}t}x(t)+7 \frac{\mathrm{d}}{\mathrm{d}t}y(t)+x(t)+24 y(t)=3, 4 \frac{\mathrm{d}}{\mathrm{d}t}x(t)+9 \frac{\mathrm{d}}{\mathrm{d}t}y(t)+2 x(t)+31 y(t)=\mathrm{e}^{t}\right\}$$

Mathematica: cpu = 0.161521 (sec), leaf count = 180

$$\left\{\left\{x(t)\to -c_2 e^{-4 t} \sin (t)+c_1 e^{-4 t} (\cos (t)-\sin (t))+\frac{1}{442} \left(3 \left(153 e^t-754\right) \sin (t)+31 \left(17 e^t-78\right) \cos (t)\right) (c\right.\right.$$

Maple: cpu = 0.047 (sec), leaf count = 71

$$\left\{\left\{x(t)=\mathrm{e}^{-4 t} \sin \left(t\right) \_C2+\mathrm{e}^{-4 t} \cos \left(t\right) \_C1-\frac{93}{17}+\frac{31 \,\mathrm{e}^{t}}{26}, y(t)=-\mathrm{e}^{-4 t} \sin \left(t\right) \_C2-\mathrm{e}^{-4 t} \cos \left(t\right) \_C2\right.\right.$$

9.17 ODE No. 1872

$$\left\{3 \frac{\mathrm{d}}{\mathrm{d}t}x(t)+7 \frac{\mathrm{d}}{\mathrm{d}t}y(t)+8 x(t)+24 y(t)=\mathrm{e}^{2 t}, 4 \frac{\mathrm{d}}{\mathrm{d}t}x(t)+9 \frac{\mathrm{d}}{\mathrm{d}t}y(t)+11 x(t)+31 y(t)=\mathrm{e}^{t}\right\}$$

Mathematica: cpu = 0.059508 (sec), leaf count = 162

$$\left\{\left\{x(t)\to -c_1 e^{-4 t} (t-1)-c_2 e^{-4 t} t-e^t t\left(-\frac{4 t}{5}+\frac{1}{36} e^t (30 t+19)-\frac{11}{25}\right)-e^t (t-1) \left(\frac{4 t}{5}-\frac{1}{36} e^t (30 t+49\right.\right.$$

Maple: cpu = 0.047 (sec), leaf count = 65

$$\left\{\left\{x(t)=\mathrm{e}^{-4 t} \_C2+\mathrm{e}^{-4 t} t \_C1-\frac{49 \,\mathrm{e}^{2 t}}{36}+\frac{31 \,\mathrm{e}^{t}}{25}, y(t)=\frac{19 \,\mathrm{e}^{2 t}}{36}-\mathrm{e}^{-4 t} \_C2-\mathrm{e}^{-4 t} t \_C1-\mathrm{e}^{-4 t} \_C1-\frac{1}{}\right.\right.$$

9.18 ODE No. 1873

$$\left\{3 \frac{\mathrm{d}}{\mathrm{d}t}x(t)+7 \frac{\mathrm{d}}{\mathrm{d}t}y(t)+34 x(t)+38 y(t)=\mathrm{e}^{t}, 4 \frac{\mathrm{d}}{\mathrm{d}t}x(t)+9 \frac{\mathrm{d}}{\mathrm{d}t}y(t)+44 x(t)+49 y(t)=t\right\}$$

Mathematica: cpu = 0.045006 (sec), leaf count = 322

$$\left\{\left\{x(t)\to \frac{1}{5} c_1 e^{-6 t} \left(4 e^{5 t}+1\right)-\frac{1}{5} c_2 e^{-6 t} \left(e^{5 t}-1\right)-\frac{1}{5} e^{-6 t} \left(e^{5 t}-1\right) \left(\frac{16}{5} e^{6 t} \left(\frac{t}{6}-\frac{1}{36}\right)+4 e^{2 t}-\frac{4 e^{7 t}}{7}-\frac{31}{5} e\right.\right.\right.$$

Maple: cpu = 0.047 (sec), leaf count = 52

$$\left\{\left\{x(t)=\mathrm{e}^{-6 t} \_C2+\_C1 \,\mathrm{e}^{-t}-\frac{56}{9}+\frac{19 t}{3}-\frac{29 \,\mathrm{e}^{t}}{7}, y(t)=4 \mathrm{e}^{-6 t} \_C2-\_C1 \,\mathrm{e}^{-t}+\frac{55}{9}+\frac{24 \,\mathrm{e}^{t}}{7}-\frac{17 t}{3}\right\}\right\}$$

9.19 ODE No. 1874

$$\boxed{\left\{\frac{\mathrm{d}}{\mathrm{d}t}x(t) = x(t)\,f(t) + y(t)\,g(t)\,, \frac{\mathrm{d}}{\mathrm{d}t}y(t) = -x(t)\,g(t) + y(t)\,f(t)\right\}}$$

Mathematica: cpu = 0.062508 (sec), leaf count = 107

$$\left\{\left\{x(t) \to c_2 e^{\int_1^t f(K[2])\,dK[2]} \sin\left(\int_1^t g(K[1])\,dK[1]\right) + c_1 e^{\int_1^t f(K[2])\,dK[2]} \cos\left(\int_1^t g(K[1])\,dK[1]\right), y(t) \to c_2\right.\right.$$

Maple: cpu = 0.296 (sec), leaf count = 57

$$\left\{\left\{x(t) = \mathrm{e}^{\int \tan(\_C1 - \int g(t)\,\mathrm{d}t) g(t) + f(t)\,\mathrm{d}t} \_C2, y(t) = \tan\left(\_C1 - \int g(t)\,\mathrm{d}t\right) \mathrm{e}^{\int \tan(\_C1 - \int g(t)\,\mathrm{d}t) g(t) + f(t)\,\mathrm{d}t} \_C2\right.\right.$$

9.20 ODE No. 1875

$$\boxed{\left\{\frac{\mathrm{d}}{\mathrm{d}t}x(t) + (a x(t) + b y(t))\,f(t) = g(t)\,, \frac{\mathrm{d}}{\mathrm{d}t}y(t) + (c x(t) + d y(t))\,f(t) = h(t)\right\}}$$

Mathematica: cpu = 0.007001 (sec), leaf count = 48

$$\text{DSolve}[\{f(t)(a x(t) + b y(t)) + x'(t) = g(t), f(t)(c x(t) + d y(t)) + y'(t) = h(t)\}, \{x(t), y(t)\}, t]$$

Maple: cpu = 0.670 (sec), leaf count = 1633

$$\left\{\left\{x(t) = 1\left(\mathrm{e}^{\frac{1}{2\,da-2\,bc}\left(\sqrt{\frac{-a^2+2\,da-4\,bc-d^2}{da-bc}}(da-bc)+(a+d)\sqrt{-da+bc}\right)\int f(t)\sqrt{-da+bc}\,\mathrm{d}t} \_C2 \sqrt{-\frac{a^2-2\,da+4\,bc+d^2}{da-bc}}\sqrt{-\right.\right.\right.$$

9.21 ODE No. 1876

$$\boxed{\left\{\frac{\mathrm{d}}{\mathrm{d}t}x(t) = x(t)\cos(t)\,, \frac{\mathrm{d}}{\mathrm{d}t}y(t) = x(t)\,\mathrm{e}^{-\sin(t)}\right\}}$$

Mathematica: cpu = 0.074510 (sec), leaf count = 38

$$\left\{\left\{x(t) \to c_1 e^{\sin(t)}, y(t) \to c_1 \int_1^t e^{\sin(K[1]) - \sin(K[1])}\,dK[1] + c_2\right\}\right\}$$

Maple: cpu = 0.093 (sec), leaf count = 18

$$\left\{\left\{x(t) = \_C2\,\mathrm{e}^{\sin(t)}, y(t) = t \_C2 + \_C1\right\}\right\}$$

9.22 ODE No. 1877

$$\boxed{\left\{t\frac{\mathrm{d}}{\mathrm{d}t}x(t)+y(t)=0,t\frac{\mathrm{d}}{\mathrm{d}t}y(t)+x(t)=0\right\}}$$

Mathematica: cpu = 0.005001 (sec), leaf count = 31

$$\left\{\left\{x(t)\to c_1t+\frac{c_2}{t},y(t)\to\frac{c_2}{t}-c_1t\right\}\right\}$$

Maple: cpu = 0.032 (sec), leaf count = 31

$$\left\{\left\{x(t)=\frac{\_C2\,t^2+\_C1}{t},y(t)=\frac{-\_C2\,t^2+\_C1}{t}\right\}\right\}$$

9.23 ODE No. 1878

$$\boxed{\left\{t\frac{\mathrm{d}}{\mathrm{d}t}x(t)+2\,x(t)=t,t\frac{\mathrm{d}}{\mathrm{d}t}y(t)-(t+2)\,x(t)-ty(t)=-t\right\}}$$

Mathematica: cpu = 0.012502 (sec), leaf count = 39

$$\left\{\left\{x(t)\to\frac{c_1}{t^2}+\frac{t}{3},y(t)\to-\frac{c_1}{t^2}+c_2e^t-\frac{t}{3}\right\}\right\}$$

Maple: cpu = 0.047 (sec), leaf count = 39

$$\left\{\left\{x(t)=\frac{t}{3}+\frac{\_C2}{t^2},y(t)=\frac{3\,\_C1\,\mathrm{e}^tt^2-t^3-3\,\_C2}{3\,t^2}\right\}\right\}$$

9.24 ODE No. 1879

$$\boxed{\left\{t\frac{\mathrm{d}}{\mathrm{d}t}x(t)+2\,x(t)-2\,y(t)=t,t\frac{\mathrm{d}}{\mathrm{d}t}y(t)+x(t)+5\,y(t)=t^2\right\}}$$

Mathematica: cpu = 0.057507 (sec), leaf count = 58

$$\left\{\left\{x(t)\to\frac{c_1}{t^4}+\frac{c_2}{t^3}+\frac{1}{30}t(2t+9),y(t)\to-\frac{c_1}{t^4}-\frac{c_2}{2t^3}+\frac{1}{60}t(8t-3)\right\}\right\}$$

Maple: cpu = 0.046 (sec), leaf count = 54

$$\left\{\left\{x(t)=\frac{2\,t^6+9\,t^5+30\,t\_C2+30\,\_C1}{30\,t^4},y(t)=-\frac{-8\,t^6+3\,t^5+30\,t\_C2+60\,\_C1}{60\,t^4}\right\}\right\}$$

9.25 ODE No. 1880

$$\left\{t^2(1-\sin(t))\frac{\mathrm{d}}{\mathrm{d}t}x(t) = t(1-2\sin(t))x(t) + t^2 y(t), t^2(1-\sin(t))\frac{\mathrm{d}}{\mathrm{d}t}y(t) = (t\cos(t)-\sin(t))x(t) +\right.$$

Mathematica: cpu = 0.021503 (sec), leaf count = 79

DSolve$\left[\left\{t^2(1-\sin(t))x'(t) = t^2 y(t) + tx(t)(1-2\sin(t)), t^2(1-\sin(t))y'(t) = x(t)(t\cos(t)-\sin(t)) + ty\right.\right.$

Maple: cpu = 0 (sec), leaf count = 0

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9.26 ODE No. 1881

$$\left\{\frac{\mathrm{d}}{\mathrm{d}t}x(t) + \frac{\mathrm{d}}{\mathrm{d}t}y(t) + y(t) = f(t), \frac{\mathrm{d}^2}{\mathrm{d}t^2}x(t) + \frac{\mathrm{d}^2}{\mathrm{d}t^2}y(t) + \frac{\mathrm{d}}{\mathrm{d}t}y(t) + x(t) + y(t) = g(t)\right\}$$

Mathematica: cpu = 0.058507 (sec), leaf count = 44

$$\{\{x(t) \to -f''(t) - f'(t) - f(t) + g'(t) + g(t), y(t) \to f''(t) + f(t) - g'(t)\}\}$$

Maple: cpu = 0.015 (sec), leaf count = 48

$$\left\{\left\{x(t) = -\frac{\mathrm{d}}{\mathrm{d}t}f(t) + g(t) - f(t) - \frac{\mathrm{d}^2}{\mathrm{d}t^2}f(t) + \frac{\mathrm{d}}{\mathrm{d}t}g(t), y(t) = f(t) + \frac{\mathrm{d}^2}{\mathrm{d}t^2}f(t) - \frac{\mathrm{d}}{\mathrm{d}t}g(t)\right\}\right\}$$

9.27 ODE No. 1882

$$\left\{\frac{\mathrm{d}^2}{\mathrm{d}t^2}x(t) + \frac{\mathrm{d}}{\mathrm{d}t}y(t) - 2y(t) = \mathrm{e}^{2t}, 2\frac{\mathrm{d}}{\mathrm{d}t}x(t) + \frac{\mathrm{d}}{\mathrm{d}t}y(t) - 3x(t) = 0\right\}$$

Mathematica: cpu = 0.419553 (sec), leaf count = 928

$$\left\{\left\{x(t) \to \frac{1}{46}e^{t/2}c_1\left(23\cos\left(\frac{\sqrt{23}t}{2}\right) + 23e^{t/2} - 3\sqrt{23}\sin\left(\frac{\sqrt{23}t}{2}\right)\right) + \frac{e^{3t/2}\left(23e^{t/2}\cos\left(\frac{\sqrt{23}t}{2}\right) - 7\sqrt{23}e\right.\right.\right.$$

Maple: cpu = 0.047 (sec), leaf count = 118

$$\left\{\left\{x(t) = \frac{\mathrm{e}^{2t}}{4} + \_C1\,\mathrm{e}^{t} + \_C2\,\mathrm{e}^{\frac{t}{2}}\cos\left(\frac{\sqrt{23}t}{2}\right) + \_C3\,\mathrm{e}^{\frac{t}{2}}\sin\left(\frac{\sqrt{23}t}{2}\right), y(t) = -\frac{\mathrm{e}^{2t}}{8} + \_C1\,\mathrm{e}^{t} - \frac{7\_C2}{4}\right.\right.$$

9.28 ODE No. 1883

$$\boxed{\left\{\frac{\mathrm{d}}{\mathrm{d}t}x(t)-\frac{\mathrm{d}}{\mathrm{d}t}y(t)+x(t)=2\,t,\frac{\mathrm{d}^2}{\mathrm{d}t^2}x(t)+\frac{\mathrm{d}}{\mathrm{d}t}y(t)-9\,x(t)+3\,y(t)=\sin\left(2\,t\right)\right\}}$$

Mathematica: cpu = 0.590075 (sec), leaf count = 614

$$\left\{\left\{x(t)\to \frac{1}{16}c_1e^{-3t}\left(20e^{4t}t+7e^{4t}+9\right)+\frac{1}{16}c_2e^{-3t}\left(4e^{4t}t+3e^{4t}-3\right)-\frac{3}{16}c_3e^{-3t}\left(4e^{4t}t-e^{4t}+1\right)+\frac{e^{-4t}(2\right.\right.$$

Maple: cpu = 0.094 (sec), leaf count = 80

$$\left\{\left\{x(t)=-\frac{2\,\cos\left(2\,t\right)}{325}+4-\frac{36\,\sin\left(2\,t\right)}{325}+2\,t+\_C1\,\mathrm{e}^{t}+\_C2\,\mathrm{e}^{-3\,t}+\_C3\,\mathrm{e}^{t}t,y(t)=\frac{16\,\cos\left(2\,t\right)}{325}-\frac{37}{}\right.\right.$$

9.29 ODE No. 1884

$$\boxed{\left\{\frac{\mathrm{d}^2}{\mathrm{d}t^2}x(t)-2\,\frac{\mathrm{d}}{\mathrm{d}t}y(t)=2\,t-\cos\left(2\,t\right),\frac{\mathrm{d}}{\mathrm{d}t}x(t)-x(t)+2\,y(t)=0\right\}}$$

Mathematica: cpu = 0.180523 (sec), leaf count = 226

$$\left\{\left\{x(t)\to 7\left(c_2+t^2-\frac{1}{2}\sin(2t)\right)+8\left(c_1e^{t/2}+c_2\left(e^{t/2}-1\right)+\frac{1}{68}e^{-t/2}\left(e^{t/2}\cos(2t)-2\left(17\left(2e^{t/2}t^2+e^{t/2}(\right.\right.\right.\right.\right.$$

Maple: cpu = 0.078 (sec), leaf count = 69

$$\left\{\left\{x(t)=\frac{\sin\left(2\,t\right)}{34}+\frac{2\,\cos\left(2\,t\right)}{17}-t^2+2\,\_C1\,\mathrm{e}^{t/2}-4\,t+\_C2,y(t)=\frac{\cos\left(2\,t\right)}{34}+\frac{9\,\sin\left(2\,t\right)}{68}-t+\frac{\_C1}{2}\mathrm{e}\right.\right.$$

9.30 ODE No. 1885

$$\boxed{\left\{t\frac{\mathrm{d}^2}{\mathrm{d}t^2}x(t)+2\,\frac{\mathrm{d}}{\mathrm{d}t}x(t)+tx(t)=0,t\frac{\mathrm{d}}{\mathrm{d}t}x(t)-t\frac{\mathrm{d}}{\mathrm{d}t}y(t)-2\,y(t)=0\right\}}$$

Mathematica: cpu = 0.022503 (sec), leaf count = 47

$$\text{DSolve}[\{tx'(t)-ty'(t)-2y(t)=0,tx''(t)+2x'(t)+tx(t)=0\},\{x(t),y(t)\},t]$$

Maple: cpu = 0.078 (sec), leaf count = 47

$$\left\{\left\{x(t)=\frac{\sin\left(t\right)\_C2+\_C3\,\cos\left(t\right)}{t},y(t)=\frac{\sin\left(t\right)\_C2\,t+\cos\left(t\right)\_C3\,t-2\,\_C3\,\sin\left(t\right)+2\,\cos\left(t\right)\_C}{t^2}\right.\right.$$

9.31 ODE No. 1886

$$\boxed{\left\{\frac{\mathrm{d}^2}{\mathrm{d}t^2}x(t)+ay(t)=0,\frac{\mathrm{d}^2}{\mathrm{d}t^2}y(t)-a^2y(t)=0\right\}}$$

Mathematica: cpu = 0.021003 (sec), leaf count = 115

$$\left\{\left\{x(t)\to -\frac{c_4e^{-at}(-2ate^{at}+e^{2at}-1)}{2a^2}-\frac{c_3e^{-at}(e^{at}-1)^2}{2a}+c_2t+c_1,y(t)\to \frac{1}{2}c_3e^{-at}\left(e^{2at}+1\right)+\frac{c_4e^{-at}(\right.\right.$$

Maple: cpu = 0.062 (sec), leaf count = 50

$$\left\{\left\{x(t)=-\frac{-\_C1\,ta+\_C3\,\mathrm{e}^{at}+\_C4\,\mathrm{e}^{-at}-\_C2\,a}{a},y(t)=\_C3\,\mathrm{e}^{at}+\_C4\,\mathrm{e}^{-at}\right\}\right\}$$

9.32 ODE No. 1887

$$\boxed{\left\{\frac{\mathrm{d}^2}{\mathrm{d}t^2}x(t)=ax(t)+by(t),\frac{\mathrm{d}^2}{\mathrm{d}t^2}y(t)=cx(t)+dy(t)\right\}}$$

Mathematica: cpu = 0.480061 (sec), leaf count = 5748

$$\left\{\left\{x(t)\to \frac{e^{-\frac{\sqrt{a+d-\sqrt{a^2-2da+d^2+4bct}}}{\sqrt{2}}-\frac{\sqrt{a+d+\sqrt{a^2-2da+d^2+4bct}}}{\sqrt{2}}}\left(e^{\frac{\sqrt{a+d-\sqrt{a^2-2da+d^2+4bct}}}{\sqrt{2}}}a-e^{\frac{\sqrt{a+d+\sqrt{a^2-2da+d^2+4bct}}}{\sqrt{2}}}a-e^{\sqrt{}}\right.\right.\right.$$

Maple: cpu = 0.094 (sec), leaf count = 418

$$\left\{\left\{x(t)=\_C1\,\mathrm{e}^{-\frac{t}{2}\sqrt{-2\sqrt{a^2-2\,da+4\,bc+d^2}+2\,a+2\,d}}+\_C2\,\mathrm{e}^{\frac{t}{2}\sqrt{-2\sqrt{a^2-2\,da+4\,bc+d^2}+2\,a+2\,d}}+\_C3\,\mathrm{e}^{-\frac{t}{2}\sqrt{2\sqrt{a^2-2\,da+4\,b}}}\right.\right.$$

9.33 ODE No. 1888

$$\boxed{\left\{\frac{\mathrm{d}^2}{\mathrm{d}t^2}x(t)=a1\,x(t)+b1\,y(t)+c1,\frac{\mathrm{d}^2}{\mathrm{d}t^2}y(t)=a2\,x(t)+b2\,y(t)+c2\right\}}$$

Mathematica: cpu = 25.510739 (sec), leaf count = 37858

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Maple: cpu = 0.171 (sec), leaf count = 634

$$\left\{\left\{x(t)=\_C4\,\mathrm{e}^{\frac{t}{2}\sqrt{2\sqrt{a1^2-2\,a1\,b2+4\,a2\,b1+b2^2}+2\,a1+2\,b2}}+\_C3\,\mathrm{e}^{-\frac{t}{2}\sqrt{2\sqrt{a1^2-2\,a1\,b2+4\,a2\,b1+b2^2}+2\,a1+2\,b2}}+\_C2\right.\right.$$

9.34 ODE No. 1889

$$\left\{\frac{\mathrm{d}^2}{\mathrm{d}t^2}x(t)+x(t)+y(t)=-5,\frac{\mathrm{d}^2}{\mathrm{d}t^2}y(t)-4\,x(t)-3\,y(t)=-3\right\}$$

Mathematica: cpu = 0.103513 (sec), leaf count = 554

$$\left\{\left\{x(t)\to -\frac{1}{4}c_4e^{-t}\left(e^{2t}t+t-e^{2t}+1\right)-\frac{1}{2}c_1e^{-t}\left(e^{2t}t-t-e^{2t}-1\right)-\frac{1}{2}c_2e^{-t}\left(e^{2t}t+t-2e^{2t}+2\right)-\frac{1}{4}c_3e\right.\right.$$

Maple: cpu = 0.032 (sec), leaf count = 72

$$\{\{x(t)=18+\_C1\,\mathrm{e}^{t}+\_C2\,\mathrm{e}^{-t}+\_C3\,\mathrm{e}^{t}t+\_C4\,\mathrm{e}^{-t}t,y(t)=-2\,\_C1\,\mathrm{e}^{t}-2\,\_C2\,\mathrm{e}^{-t}-2\,\_C3\,\mathrm{e}^{t}t-2\,$$

9.35 ODE No. 1890

$$\left\{\frac{\mathrm{d}^2}{\mathrm{d}t^2}x(t)=\left(3\left(\cos\left(at+b\right)\right)^2-1\right)c^2x(t)+3/2\,c^2y(t)\sin\left(2\,atb\right),\frac{\mathrm{d}^2}{\mathrm{d}t^2}y(t)=\left(3\left(\sin\left(at+b\right)\right)^2-1\right)c^2y(t)\right.$$

Mathematica: cpu = 0.009501 (sec), leaf count = 86

$$\text{DSolve}\left[\left\{x''(t)=c^2x(t)\left(3\cos^2(at+b)-1\right)+\frac{3}{2}c^2y(t)\sin(2abt),y''(t)=\frac{3}{2}c^2x(t)\sin(2abt)+c^2y(t)\left(3\sin^2\right.\right.\right.$$

Maple: cpu = 13.666 (sec), leaf count = 1445

$$\left\{\left\{x(t)=DESol\left(\left\{\frac{\mathrm{d}^4}{\mathrm{d}t^4}\_Y(t)+\left(2\,\frac{\sin\left(atb\right)ab}{\cos\left(atb\right)}-2\,\frac{ab\cos\left(atb\right)}{\sin\left(atb\right)}\right)\frac{\mathrm{d}^3}{\mathrm{d}t^3}\_Y(t)+\left(2\,c^2-3\left(\sin\left(at\right)\right)^2c^2(\mathrm{co}\right.\right.\right.\right.$$

9.36 ODE No. 1891

$$\left\{\frac{\mathrm{d}^2}{\mathrm{d}t^2}x(t)+6\,x(t)+7\,y(t)=0,\frac{\mathrm{d}^2}{\mathrm{d}t^2}y(t)+3\,x(t)+2\,y(t)=2\,t\right\}$$

Mathematica: cpu = 0.445557 (sec), leaf count = 766

$$\left\{\left\{x(t)\to -\frac{7}{60}c_4e^{-t}\left(3e^{2t}-2e^{t}\sin(3t)-3\right)+\frac{1}{60}c_2e^{-t}\left(9e^{2t}+14e^{t}\sin(3t)-9\right)-\frac{7}{20}c_3e^{-t}\left(e^{2t}-2e^{t}\cos(3\right.\right.$$

Maple: cpu = 0.047 (sec), leaf count = 64

$$\left\{\left\{x(t)=\frac{14\,t}{9}+\_C1\,\mathrm{e}^{t}+\_C2\,\cos\left(3\,t\right)+\_C3\,\mathrm{e}^{-t}+\_C4\,\sin\left(3\,t\right),y(t)=-\_C1\,\mathrm{e}^{t}+\frac{3\,\_C2\,\cos\left(3\,t\right)}{7}\right.\right.$$

9.37 ODE No. 1892

$$\left\{\frac{\mathrm{d}^2}{\mathrm{d}t^2}x(t)-a\frac{\mathrm{d}}{\mathrm{d}t}y(t)+bx(t)=0,\frac{\mathrm{d}^2}{\mathrm{d}t^2}y(t)+a\frac{\mathrm{d}}{\mathrm{d}t}x(t)+by(t)=0\right\}$$

Mathematica: cpu = 0.370547 (sec), leaf count = 4815

$$\left\{\left\{x(t)\to \frac{e^{-\frac{\sqrt{-a^2-2b-\sqrt{a^2\left(a^2+4b\right)}}t}{\sqrt{2}}-\frac{\sqrt{-a^2-2b+\sqrt{a^2\left(a^2+4b\right)}}t}{\sqrt{2}}}\left(e^{\frac{\sqrt{-a^2-2b-\sqrt{a^2\left(a^2+4b\right)}}t}{\sqrt{2}}}a^2-e^{\frac{\sqrt{-a^2-2b+\sqrt{a^2\left(a^2+4b\right)}}t}{\sqrt{2}}}a^2-e^{\sqrt{2}}\right.\right.\right.$$

Maple: cpu = 0.094 (sec), leaf count = 868

$$\left\{\left\{x(t)=\_C1\,\mathrm{e}^{-\frac{t}{2}\sqrt{-2\,a^2-2\,\sqrt{a^2(a^2+4\,b)}-4\,b}}+\_C2\,\mathrm{e}^{\frac{t}{2}\sqrt{-2\,a^2-2\,\sqrt{a^2(a^2+4\,b)}-4\,b}}+\_C3\,\mathrm{e}^{-\frac{t}{2}\sqrt{-2\,a^2+2\,\sqrt{a^2(a^2+4\,b)}-4\,b}}\right.\right.$$

9.38 ODE No. 1893

$$\left\{a1\,\frac{\mathrm{d}^2}{\mathrm{d}t^2}x(t)+b1\,\frac{\mathrm{d}}{\mathrm{d}t}x(t)+c1\,x(t)-A\frac{\mathrm{d}}{\mathrm{d}t}y(t)=B\mathrm{e}^{i\omega t},a2\,\frac{\mathrm{d}^2}{\mathrm{d}t^2}y(t)+b2\,\frac{\mathrm{d}}{\mathrm{d}t}y(t)+c2\,y(t)+A\frac{\mathrm{d}}{\mathrm{d}t}x(t)=0\right.$$

Mathematica: cpu = 369.474917 (sec), leaf count = 5538

Maple: cpu = 0.858 (sec), leaf count = 4516

9.39 ODE No. 1894

$$\left\{\frac{\mathrm{d}^2}{\mathrm{d}t^2}x(t)+a\left(\frac{\mathrm{d}}{\mathrm{d}t}x(t)-\frac{\mathrm{d}}{\mathrm{d}t}y(t)\right)+b1\,x(t)=c1\,\mathrm{e}^{i\omega\,t},\frac{\mathrm{d}^2}{\mathrm{d}t^2}y(t)+a\left(\frac{\mathrm{d}}{\mathrm{d}t}y(t)-\frac{\mathrm{d}}{\mathrm{d}t}x(t)\right)+b2\,y(t)=c2\,\mathrm{e}^{i\omega}\right.$$

Mathematica: cpu = 0 (sec), leaf count = 0

Hanged

Maple: cpu = 0.671 (sec), leaf count = 2511

$$\left\{\left\{x(t)=\frac{i\mathrm{e}^{i\omega\,t}ac1\,\omega+i\mathrm{e}^{i\omega\,t}ac2\,\omega-\mathrm{e}^{i\omega\,t}c1\,\omega^2+\mathrm{e}^{i\omega\,t}b2\,c1}{-2\,ia\omega^3+iab1\,\omega+iab2\,\omega+\omega^4-b1\,\omega^2-b2\,\omega^2+b2\,b1}+\_C1\,\mathrm{e}^{RootOf(\_Z^4+2\,a\_Z^3+(b1+b2)\_Z^2}\right.\right.$$

9.40 ODE No. 1895

$$\left\{a11\,\frac{\mathrm{d}^2}{\mathrm{d}t^2}x(t)+b11\,\frac{\mathrm{d}}{\mathrm{d}t}x(t)+c11\,x(t)+a12\,\frac{\mathrm{d}^2}{\mathrm{d}t^2}y(t)+b12\,\frac{\mathrm{d}}{\mathrm{d}t}y(t)+c12\,y(t)=0,a21\,\frac{\mathrm{d}^2}{\mathrm{d}t^2}x(t)+b21\,\frac{\mathrm{d}}{\mathrm{d}t}\right.$$

Mathematica: cpu = 0.449557 (sec), leaf count = 7517

Result too large for latex to process

Maple: cpu = 0.156 (sec), leaf count = 1187

$$\left\{\left\{x(t)=\sum_{\_a=1}^{4}\mathrm{e}^{RootOf((a22\,a11-a12\,a21)\_Z^4+(a11\,b22-a12\,b21-a21\,b12+a22\,b11)\_Z^3+(a11\,c22-a12\,c21-a21\,c12+a22\,c11+}\right.\right.$$

9.41 ODE No. 1896

$$\left\{\frac{\mathrm{d}^3}{\mathrm{d}t^3}y(t)-\frac{\mathrm{d}^2}{\mathrm{d}t^2}y(t)+2\,\frac{\mathrm{d}}{\mathrm{d}t}x(t)-x(t)=t,\frac{\mathrm{d}^2}{\mathrm{d}t^2}x(t)-2\,\frac{\mathrm{d}}{\mathrm{d}t}x(t)-\frac{\mathrm{d}}{\mathrm{d}t}y(t)+y(t)=0\right\}$$

Mathematica: cpu = 0.197525 (sec), leaf count = 1132

$$\left\{\left\{x(t)\to\frac{1}{64}e^{-t}\left(2e^{2t}t^2-6e^{2t}t+7e^{2t}+1\right)\left(e^t(1-t)+e^{-t}\left(-2t^3-8t^2-17t-17\right)\right)+\frac{1}{64}e^{-t}\left(2e^{2t}t^2+6e\right.\right.\right.$$

Maple: cpu = 0.031 (sec), leaf count = 75

$$\left\{\left\{x(t)=-2-t-\_C3\,\mathrm{e}^t-6\,\_C5\,\mathrm{e}^t-\frac{2\,\_C2\,\mathrm{e}^{-t}}{3}-2\,\_C4\,\mathrm{e}^t t-3\,\_C5\,\mathrm{e}^t t^2,y(t)=-2+\_C1\,\mathrm{e}^t+\_C\right.\right.$$

9.42 ODE No. 1897

$$\left\{2\frac{\mathrm{d}^2}{\mathrm{d}t^2}x(t)+\frac{\mathrm{d}^2}{\mathrm{d}t^2}y(t)=2\,t,\frac{\mathrm{d}^2}{\mathrm{d}t^2}x(t)+\frac{\mathrm{d}^2}{\mathrm{d}t^2}y(t)+\frac{\mathrm{d}}{\mathrm{d}t}y(t)=\sinh\left(2\,t\right)\right\}$$

Mathematica: cpu = 0.114015 (sec), leaf count = 284

$$\left\{\left\{x(t)\to\frac{1}{4}c_4e^{-2t}\left(2e^{2t}t-e^{2t}+1\right)+c_2t+c_1+t\left(\frac{t^2}{2}+\frac{t}{2}-\frac{e^{4t}}{8}+e^{2t}\left(\frac{t}{2}-\frac{1}{4}\right)\right)+\frac{1}{48}e^{-2t}\left(-4e^{2t}\left(4t^2-3\right.\right.\right.\right.$$

Maple: cpu = 0.110 (sec), leaf count = 98

$$\left\{\left\{x(t)=-\frac{\sinh\left(2\,t\right)}{16}-\frac{\cosh\left(2\,t\right)}{16}-\frac{5\,\mathrm{e}^{-2\,t}}{16}-\frac{\mathrm{e}^{-2\,t}t}{4}+\frac{t^3}{6}+\frac{\mathrm{e}^{-2\,t}\_C2}{4}+\frac{t^2}{4}+\_C3\,t+\_C4,y(t)=\frac{3\,\cos\right.\right.\right.$$

9.43 ODE No. 1898

$$\left\{\frac{\mathrm{d}^2}{\mathrm{d}t^2}x(t)+\frac{\mathrm{d}^2}{\mathrm{d}t^2}y(t)-x(t)=0,\frac{\mathrm{d}^2}{\mathrm{d}t^2}x(t)-\frac{\mathrm{d}}{\mathrm{d}t}x(t)+\frac{\mathrm{d}}{\mathrm{d}t}y(t)=0\right\}$$

Mathematica: cpu = 0.037505 (sec), leaf count = 420

$$\left\{\left\{x(t)\to-\frac{1}{5}c_1e^{\frac{t}{2}-\frac{\sqrt{5}t}{2}}\left(\sqrt{5}e^{\sqrt{5}t}-5e^{\frac{\sqrt{5}t}{2}+\frac{t}{2}}-\sqrt{5}\right)+\frac{c_2e^{\frac{t}{2}-\frac{\sqrt{5}t}{2}}\left(e^{\sqrt{5}t}-1\right)}{\sqrt{5}}-\frac{1}{10}c_4e^{\frac{t}{2}-\frac{\sqrt{5}t}{2}}\left(5e^{\sqrt{5}t}+\sqrt{5}e^{\sqrt{5}t}\right.\right.\right.$$

Maple: cpu = 0.063 (sec), leaf count = 73

$$\left\{\left\{x(t)=\left(-\frac{1}{2}-\frac{\sqrt{5}}{2}\right)\_C3\,\mathrm{e}^{\frac{\left(\sqrt{5}+1\right)t}{2}}+\left(\frac{\sqrt{5}}{2}-\frac{1}{2}\right)\_C4\,\mathrm{e}^{-\frac{\left(\sqrt{5}-1\right)t}{2}}+\_C1\,\mathrm{e}^{t},y(t)=\_C2+\_C3\,\mathrm{e}^{\frac{\left(\sqrt{5}+1\right.}{2}}\right.\right.$$

9.44 ODE No. 1899

$$\left\{\frac{\mathrm{d}}{\mathrm{d}t}x(t)=2\,x(t),\frac{\mathrm{d}}{\mathrm{d}t}y(t)=3\,x(t)-2\,y(t),\frac{\mathrm{d}}{\mathrm{d}t}z(t)=2\,y(t)+3\,z(t)\right\}$$

Mathematica: cpu = 0.010501 (sec), leaf count = 112

$$\left\{\left\{x(t)\to c_1e^{2t},y(t)\to\frac{3}{4}c_1e^{-2t}\left(e^{4t}-1\right)+c_2e^{-2t},z(t)\to\frac{3}{10}c_1e^{-2t}\left(2e^{t}+3e^{2t}+4e^{3t}+1\right)\left(e^{t}-1\right)^2+\frac{2}{5}c_{\right.}\right.\right.$$

Maple: cpu = 0.078 (sec), leaf count = 52

$$\left\{\left\{x(t)=\_C3\,\mathrm{e}^{2\,t},y(t)=\frac{3\,\_C3\,\mathrm{e}^{2\,t}}{4}+\mathrm{e}^{-2\,t}\_C2,z(t)=\_C1\,\mathrm{e}^{3\,t}-\frac{3\,\_C3\,\mathrm{e}^{2\,t}}{2}-\frac{2\,\mathrm{e}^{-2\,t}\_C2}{5}\right\}\right\}$$

9.45 ODE No. 1900

$$\boxed{\left\{\frac{\mathrm{d}}{\mathrm{d}t}x(t) = 4\,x(t)\,, \frac{\mathrm{d}}{\mathrm{d}t}y(t) = x(t) - 2\,y(t)\,, \frac{\mathrm{d}}{\mathrm{d}t}z(t) = x(t) - 4\,y(t) + z(t)\right\}}$$

Mathematica: cpu = 0.009501 (sec), leaf count = 94

$$\left\{\left\{x(t) \to c_1 e^{4t}, y(t) \to \frac{1}{6}c_1 e^{-2t}\left(e^{6t} - 1\right) + c_2 e^{-2t}, z(t) \to \frac{1}{9}c_1 e^{-2t}\left(e^{3t} + e^{6t} - 2\right) - \frac{4}{3}c_2 e^{-2t}\left(e^{3t} - 1\right) + c_3 e\right.\right.$$

Maple: cpu = 0.062 (sec), leaf count = 50

$$\left\{\left\{x(t) = \_C3\,\mathrm{e}^{4\,t}, y(t) = \frac{\_C3\,\mathrm{e}^{4\,t}}{6} + \mathrm{e}^{-2\,t}\_C2, z(t) = \frac{\_C3\,\mathrm{e}^{4\,t}}{9} + \_C1\,\mathrm{e}^{t} + \frac{4\,\mathrm{e}^{-2\,t}\_C2}{3}\right\}\right\}$$

9.46 ODE No. 1901

$$\boxed{\left\{\frac{\mathrm{d}}{\mathrm{d}t}x(t) = y(t) - z(t)\,, \frac{\mathrm{d}}{\mathrm{d}t}y(t) = x(t) + y(t)\,, \frac{\mathrm{d}}{\mathrm{d}t}z(t) = x(t) + z(t)\right\}}$$

Mathematica: cpu = 0.010001 (sec), leaf count = 105

$$\left\{\left\{x(t) \to c_2\left(e^{t} - 1\right) + c_3\left(1 - e^{t}\right) + c_1, y(t) \to c_1\left(e^{t} - 1\right) + c_2\left(e^{t}t + 1\right) + c_3\left(-e^{t}t + e^{t} - 1\right), z(t) \to c_1\left(e^{t}\right.\right.\right.$$

Maple: cpu = 0.047 (sec), leaf count = 48

$$\left\{\left\{x(t) = \_C2 + \_C3\,\mathrm{e}^{t}, y(t) = \_C3\,\mathrm{e}^{t}t + \_C1\,\mathrm{e}^{t} - \_C2, z(t) = \_C3\,\mathrm{e}^{t}t + \_C1\,\mathrm{e}^{t} - \_C3\,\mathrm{e}^{t} - \_C2\right\}\right\}$$

9.47 ODE No. 1902

$$\boxed{\left\{\frac{\mathrm{d}}{\mathrm{d}t}x(t) - y(t) + z(t) = 0, \frac{\mathrm{d}}{\mathrm{d}t}y(t) - x(t) - y(t) = t, \frac{\mathrm{d}}{\mathrm{d}t}z(t) - x(t) - z(t) = t\right\}}$$

Mathematica: cpu = 0.014002 (sec), leaf count = 226

$$\left\{\left\{x(t) \to c_2\left(e^{t} - 1\right) + c_3\left(1 - e^{t}\right) + c_1 + e^{-t}\left(1 - e^{t}\right)(-t - 1) + e^{-t}\left(e^{t} - 1\right)(-t - 1), y(t) \to c_3\left(-e^{t}t + e^{t}\right.\right.\right.$$

Maple: cpu = 0.047 (sec), leaf count = 56

$$\left\{\left\{x(t) = \_C2 + \_C3\,\mathrm{e}^{t}, y(t) = \_C3\,\mathrm{e}^{t}t + \_C1\,\mathrm{e}^{t} - \_C2 - t - 1, z(t) = \_C3\,\mathrm{e}^{t}t + \_C1\,\mathrm{e}^{t} - \_C3\,\mathrm{e}^{t} -\right.\right.$$

9.48 ODE No. 1903

$$\left\{a\frac{\mathrm{d}}{\mathrm{d}t}x(t)=bc(y(t)-z(t)),b\frac{\mathrm{d}}{\mathrm{d}t}y(t)=ca(z(t)-x(t)),c\frac{\mathrm{d}}{\mathrm{d}t}z(t)=ab(x(t)-y(t))\right\}$$

Mathematica: cpu = 0.090011 (sec), leaf count = 1304

$$\left\{\left\{x(t)\to\frac{e^{-i\sqrt{a^2+b^2+c^2}t}\left(2e^{i\sqrt{a^2+b^2+c^2}t}a^2+b^2e^{2i\sqrt{a^2+b^2+c^2}t}+c^2e^{2i\sqrt{a^2+b^2+c^2}t}+b^2+c^2\right)c_1}{2\left(a^2+b^2+c^2\right)}-\frac{be^{-i\sqrt{a^2+b^2+c^2}t}\right.\right.$$

Maple: cpu = 0.109 (sec), leaf count = 312

$$\left\{\left\{x(t)=\_C1+\_C2\sin\left(\sqrt{a^2+b^2+c^2}t\right)+\_C3\cos\left(\sqrt{a^2+b^2+c^2}t\right),y(t)=-\frac{1}{b\left(b^2+c^2\right)}\left(\sin\left(\sqrt{a}\right.\right.\right.$$

9.49 ODE No. 1904

$$\left\{\frac{\mathrm{d}}{\mathrm{d}t}x(t)=cy(t)-bz(t),\frac{\mathrm{d}}{\mathrm{d}t}y(t)=az(t)-cx(t),\frac{\mathrm{d}}{\mathrm{d}t}z(t)=bx(t)-ay(t)\right\}$$

Mathematica: cpu = 0.065008 (sec), leaf count = 1445

$$\left\{\left\{x(t)\to\frac{e^{-\sqrt{-a^2-b^2-c^2}t}\left(2e^{\sqrt{-a^2-b^2-c^2}t}a^2+b^2e^{2\sqrt{-a^2-b^2-c^2}t}+c^2e^{2\sqrt{-a^2-b^2-c^2}t}+b^2+c^2\right)c_1}{2\left(a^2+b^2+c^2\right)}-\frac{e^{-\sqrt{-a^2-b^2-}}\right.\right.$$

Maple: cpu = 0.062 (sec), leaf count = 312

$$\left\{\left\{x(t)=\_C1+\_C2\sin\left(\sqrt{a^2+b^2+c^2}t\right)+\_C3\cos\left(\sqrt{a^2+b^2+c^2}t\right),y(t)=-\frac{1}{a\left(b^2+c^2\right)}\left(\sin\left(\sqrt{a}\right.\right.\right.$$

9.50 ODE No. 1905

$$\left\{\frac{\mathrm{d}}{\mathrm{d}t}x(t)=h(t)\,y(t)-g(t)\,z(t),\frac{\mathrm{d}}{\mathrm{d}t}y(t)=f(t)\,z(t)-h(t)\,x(t),\frac{\mathrm{d}}{\mathrm{d}t}z(t)=x(t)\,g(t)-y(t)\,f(t)\right\}$$

Mathematica: cpu = 0.006501 (sec), leaf count = 61

$$\text{DSolve}[\{x'(t)=h(t)y(t)-g(t)z(t),y'(t)=f(t)z(t)-h(t)x(t),z'(t)=g(t)x(t)-f(t)y(t)\},\{x(t),y(t),z$$

Maple: cpu = 0.530 (sec), leaf count = 2014

$$\left\{\left\{x(t)=DESol\left(\left\{\frac{\mathrm{d}^3}{\mathrm{d}t^3}\_Y(t)+\left(\frac{\left(\frac{\mathrm{d}}{\mathrm{d}t}f(t)\right)(g(t))^2}{-(h(t))^2f(t)-f(t)(g(t))^2+h(t)\frac{\mathrm{d}}{\mathrm{d}t}g(t)-\left(\frac{\mathrm{d}}{\mathrm{d}t}h(t)\right)g(t)}+\frac{\right.\right.\right.\right.\right.$$

9.51 ODE No. 1906

$$\left\{\frac{\mathrm{d}}{\mathrm{d}t}x(t) = x(t) + y(t) - z(t), \frac{\mathrm{d}}{\mathrm{d}t}y(t) = y(t) + z(t) - x(t), \frac{\mathrm{d}}{\mathrm{d}t}z(t) = z(t) + x(t) - y(t)\right\}$$

Mathematica: cpu = 0.052007 (sec), leaf count = 278

$$\left\{\left\{x(t) \to \frac{1}{3}c_1 e^t\left(2\cos\left(\sqrt{3}t\right)+1\right) - \frac{1}{3}c_2 e^t\left(-\sqrt{3}\sin\left(\sqrt{3}t\right)+\cos\left(\sqrt{3}t\right)-1\right) - \frac{1}{3}c_3 e^t\left(\sqrt{3}\sin\left(\sqrt{3}t\right)+\right.\right.\right.$$

Maple: cpu = 0.063 (sec), leaf count = 128

$$\left\{\left\{x(t) = \mathrm{e}^t\left(\sin\left(\sqrt{3}t\right)\_C2 + \cos\left(\sqrt{3}t\right)\_C3 + \_C1\right), y(t) = -\frac{\mathrm{e}^t\left(\sin\left(\sqrt{3}t\right)\sqrt{3}\_C3 - \cos\left(\sqrt{3}t\right)\sqrt{3}\right.\right.\right.$$

9.52 ODE No. 1907

$$\left\{\frac{\mathrm{d}}{\mathrm{d}t}x(t) = -3\,x(t) + 48\,y(t) - 28\,z(t), \frac{\mathrm{d}}{\mathrm{d}t}y(t) = -4\,x(t) + 40\,y(t) - 22\,z(t), \frac{\mathrm{d}}{\mathrm{d}t}z(t) = -6\,x(t) + 57\,y(t)\right.$$

Mathematica: cpu = 0.009501 (sec), leaf count = 179

$$\left\{\left\{x(t) \to c_1\left(-e^t\right)\left(2e^{2t}-3\right) + 6c_2 e^t\left(2e^t+3e^{2t}-5\right) - 2c_3 e^t\left(4e^t+5e^{2t}-9\right), y(t) \to -2c_1 e^t\left(e^{2t}-1\right) + c\right.\right.$$

Maple: cpu = 0.046 (sec), leaf count = 66

$$\left\{\left\{x(t) = \_C1\,\mathrm{e}^{3t} + \_C2\,\mathrm{e}^{2t} + \_C3\,\mathrm{e}^t, y(t) = \_C1\,\mathrm{e}^{3t} + \frac{\_C2\,\mathrm{e}^{2t}}{4} + \frac{2\_C3\,\mathrm{e}^t}{3}, z(t) = \frac{3\_C1\,\mathrm{e}^{3t}}{2} + \frac{\_C\right.\right.$$

9.53 ODE No. 1908

$$\left\{\frac{\mathrm{d}}{\mathrm{d}t}x(t) = 6\,x(t) - 72\,y(t) + 44\,z(t), \frac{\mathrm{d}}{\mathrm{d}t}y(t) = 4\,x(t) - 4\,y(t) + 26\,z(t), \frac{\mathrm{d}}{\mathrm{d}t}z(t) = 6\,x(t) - 63\,y(t) + 38\,z\right.$$

Mathematica: cpu = 0.019502 (sec), leaf count = 551

Result too large for latex to process

Maple: cpu = 0.468 (sec), leaf count = 3207

9.54 ODE No. 1909

$$\left\{\frac{\mathrm{d}}{\mathrm{d}t}x(t)=a x(t)+g y(t)+\beta\, z(t)\,,\frac{\mathrm{d}}{\mathrm{d}t}y(t)=g x(t)+b y(t)+\alpha\, z(t)\,,\frac{\mathrm{d}}{\mathrm{d}t}z(t)=\beta\, x(t)+\alpha\, y(t)+c z(t)\right\}$$

Mathematica: cpu = 0.060008 (sec), leaf count = 1630

$$\left\{\left\{x(t)\to -c_2\text{RootSum}\left[\#1^3-a\#1^2-b\#1^2-c\#1^2-\alpha^2\#1-\beta^2\#1-g^2\#1+ab\#1+ac\#1+bc\#1-\right.\right.\right.$$

Maple: cpu = 23.774 (sec), leaf count = 33085

Result too large for latex to process

9.55 ODE No. 1910

$$\left\{t\frac{\mathrm{d}}{\mathrm{d}t}x(t)=2\,x(t)-t,t^3\frac{\mathrm{d}}{\mathrm{d}t}y(t)=-x(t)+t^2y(t)+t,t^4\frac{\mathrm{d}}{\mathrm{d}t}z(t)=-x(t)-t^2y(t)+t^3z(t)+t\right\}$$

Mathematica: cpu = 0.009501 (sec), leaf count = 39

$$\left\{\left\{x(t)\to c_3t^2+t,y(t)\to c_2t+c_3,z(t)\to c_1t+\frac{c_3}{t}+c_2\right\}\right\}$$

Maple: cpu = 0.063 (sec), leaf count = 37

$$\left\{\left\{x(t)=\_C3\,t^2+t,y(t)=t\_C2+\_C3,z(t)=\frac{\_C1\,t^2+t\_C2+\_C3}{t}\right\}\right\}$$

9.56 ODE No. 1911

$$\left\{at\frac{\mathrm{d}}{\mathrm{d}t}x(t)=bc(y(t)-z(t))\,,bt\frac{\mathrm{d}}{\mathrm{d}t}y(t)=ca(z(t)-x(t))\,,ct\frac{\mathrm{d}}{\mathrm{d}t}z(t)=ab(x(t)-y(t))\right\}$$

Mathematica: cpu = 0.037505 (sec), leaf count = 64

DSolve[$\{atx'(t)=bc(y(t)-z(t)),bty'(t)=ac(z(t)-x(t)),ctz'(t)=ab(x(t)-y(t))\}\,,\{x(t),y(t),z(t)\},t$]

Maple: cpu = 0.110 (sec), leaf count = 322

$$\left\{\left\{x(t)=\_C1+\_C2\,\sin\left(\sqrt{a^2+b^2+c^2}\ln(t)\right)+\_C3\,\cos\left(\sqrt{a^2+b^2+c^2}\ln(t)\right),y(t)=\frac{1}{b\left(b^2+c^2\right)}\left(c\right.\right.\right.$$

9.57 ODE No. 1912

$$\left\{ \frac{\mathrm{d}}{\mathrm{d}t} x1(t) = ax2(t) + bx3(t)\cos(ct) + bx4(t)\sin(ct), \frac{\mathrm{d}}{\mathrm{d}t} x2(t) = -ax1(t) + bx3(t)\sin(ct) - bx4(t)\cos($$

Mathematica: cpu = 0.011001 (sec), leaf count = 122

DSolve[{x1′(t) = ax2(t) + bx3(t) cos(ct) + bx4(t) sin(ct), x2′(t) = −ax1(t) + bx3(t) sin(ct) − bx4(t) cos(ct

Maple: cpu = 1.716 (sec), leaf count = 11399

10 Kamke chapter 9. System of non-linear differential equations

10.1 ODE No. 1913

$$\boxed{\left\{\frac{\mathrm{d}}{\mathrm{d}t}x(t)=-x(t)\left(x(t)+y(t)\right),\frac{\mathrm{d}}{\mathrm{d}t}y(t)=y(t)\left(x(t)+y(t)\right)\right\}}$$

Mathematica: cpu = 0.032004 (sec), leaf count = 64

$$\{\{y(t)\to -\sqrt{c_1}\cot\left(\sqrt{c_1}t-\sqrt{c_1}c_2\right),x(t)\to -\sqrt{c_1}\tan\left(\sqrt{c_1}t-\sqrt{c_1}c_2\right)\}\}$$

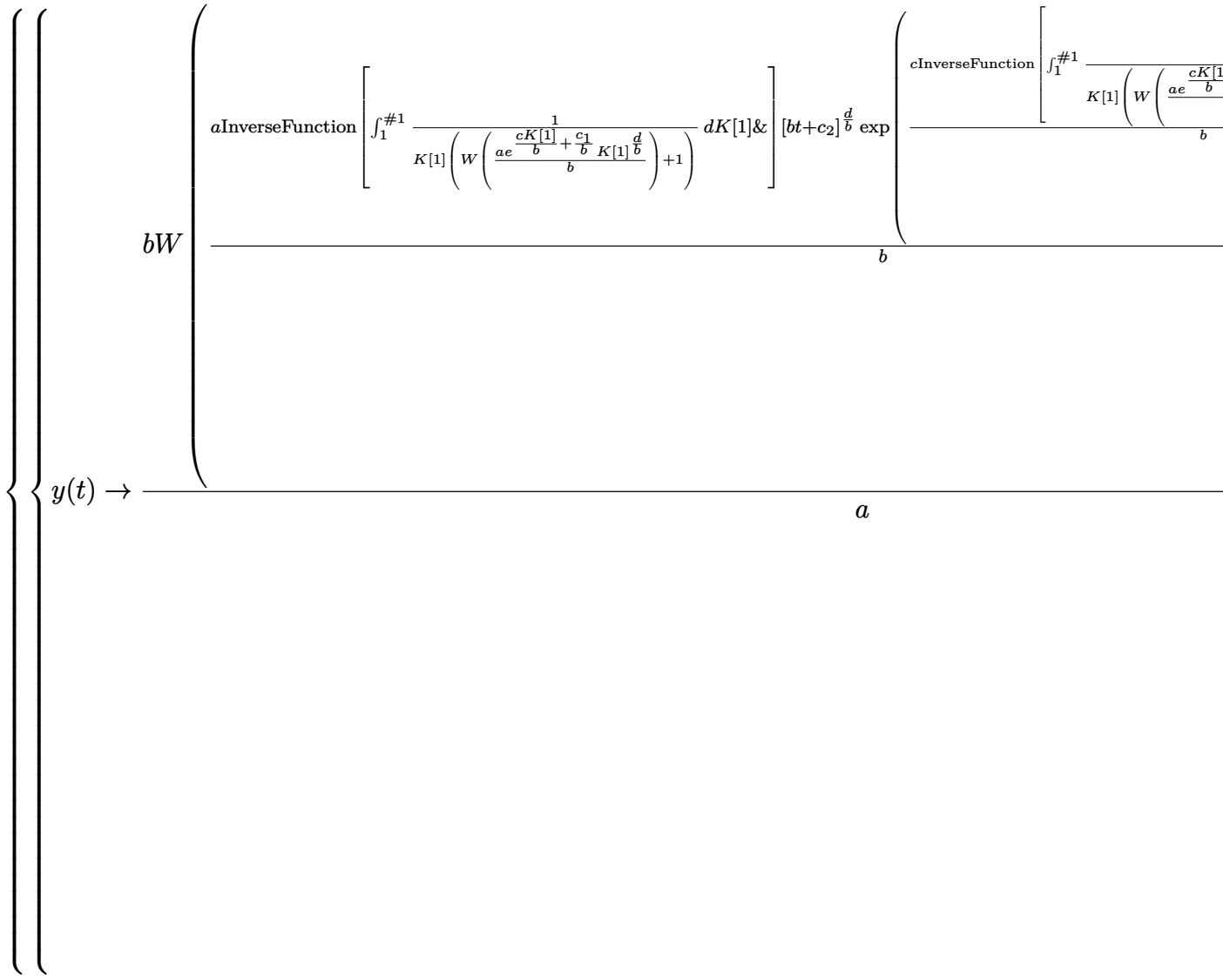
Maple: cpu = 0.109 (sec), leaf count = 54

$$\left\{[\{x(t)=0\},\{y(t)=(\_C1-t)^{-1}\}],[\left\{x(t)=\frac{1}{\_C1}\tanh\left(\frac{\_C2+t}{\_C1}\right)\right\},\left\{y(t)=-\frac{(x(t))^2+\frac{\mathrm{d}}{\mathrm{d}t}x(t)}{x\left(t\right)}\right\}\right]$$

10.2 ODE No. 1914

$$\boxed{\left\{\frac{\mathrm{d}}{\mathrm{d}t}x(t)=\left(ay(t)+b\right)x(t),\frac{\mathrm{d}}{\mathrm{d}t}y(t)=\left(cx(t)+d\right)y(t)\right\}}$$

Mathematica: cpu = 0.508065 (sec), leaf count = 201



Maple: cpu = 0.250 (sec), leaf count = 92

$$\left\{ [\{x(t)=0\},\{y(t)=\_C1\,\mathrm{e}^{dt}\}],[\left\{ x(t)=RootOf\left(-\int^{\_Z}\frac{1}{b\_a}\left(lambertW\left(\frac{\mathrm{e}^{-1}}{b}\mathrm{e}^{\frac{c\_a}{b}}\_a^{\frac{d}{b}}\mathrm{e}^{\frac{-C1}{b}} \right)+1 \right)^{-1}\right.\right.\right.$$

10.3 ODE No. 1915

$$\left\{ \frac{\mathrm{d}}{\mathrm{d}t}x(t) = x(t) \left(a(px(t) + qy(t)) + \alpha\right), \frac{\mathrm{d}}{\mathrm{d}t}y(t) = y(t) \left(\beta + b(px(t) + qy(t))\right) \right\}$$

Mathematica: cpu = 0 (sec), leaf count = 0

Hanged

Maple: cpu = 13.791 (sec), leaf count = 181

$$\left\{ [\{x(t) = 0\}, \left\{ y(t) = \frac{\beta}{\mathrm{e}^{-\beta t} \_C1 \, \beta - bq} \right\}], [\left\{ x(t) = ODESolStruc\left(\_b(\_a), [\left\{ (\_b(\_a))^{-\frac{a+b}{a}} \mathrm{e}^{-\frac{-a(a\beta - \alpha b}{a}} \right.\right.\right.$$

10.4 ODE No. 1916

$$\left\{ \frac{\mathrm{d}}{\mathrm{d}t}x(t) = h(a - x(t)) \left(c - x(t) - y(t)\right), \frac{\mathrm{d}}{\mathrm{d}t}y(t) = k(b - y(t)) \left(c - x(t) - y(t)\right) \right\}$$

Mathematica: cpu = 0 (sec), leaf count = 0

Hanged

Maple: cpu = 0.359 (sec), leaf count = 237

$$\left\{ [\{x(t) = a\}, \left\{ y(t) = -\frac{a\mathrm{e}^{\_C1 \, ka + \_C1 \, kb - \_C1 \, kc + akt + bkt - ckt} - c\mathrm{e}^{\_C1 \, ka + \_C1 \, kb - \_C1 \, kc + akt + bkt - ckt} + b}{-1 + \mathrm{e}^{\_C1 \, ka + \_C1 \, kb - \_C1 \, kc + akt + bkt - ckt}} \right\}], [\left\{ x \right.\right.$$

10.5 ODE No. 1917

$$\left\{ \frac{\mathrm{d}}{\mathrm{d}t}x(t) = (y(t))^2 - \cos\left(x(t)\right), \frac{\mathrm{d}}{\mathrm{d}t}y(t) = -y(t) \sin\left(x(t)\right) \right\}$$

Mathematica: cpu = 250.096758 (sec), leaf count = 35

$$\mathrm{DSolve}\left[\left\{ x'(t) = y(t)^2 - \cos(x(t)), y'(t) = y(t)(-\sin(x(t))) \right\}, \{x(t), y(t)\}, t \right]$$

Maple: cpu = 0.593 (sec), leaf count = 109

$$\left\{ [\left\{ x(t) = RootOf\left(2 \int^{\_Z} \left(\tan\left(RootOf\left(-3 \sqrt{-\left(\cos\left(\_f\right)\right)^2} \ln\left(9/4 \frac{\left(\cos\left(\_f\right)\right)^2}{\left(\cos\left(\_Z\right)\right)^2} \right) + 3 \_C1 \sqrt{-(\cos\right.\right.\right.\right.$$

10.6 ODE No. 1918

$$\left\{\frac{\mathrm{d}}{\mathrm{d}t}x(t) = -x(t)\left(y(t)\right)^2 + x(t) + y(t), \frac{\mathrm{d}}{\mathrm{d}t}y(t) = \left(x(t)\right)^2 y(t) - x(t) - y(t)\right\}$$

Mathematica: cpu = 0.090511 (sec), leaf count = 47

$$\text{DSolve}\left[\left\{x'(t) = -x(t)y(t)^2 + x(t) + y(t), y'(t) = x(t)^2 y(t) - x(t) - y(t)\right\}, \{x(t), y(t)\}, t\right]$$

Maple: cpu = 1.373 (sec), leaf count = 245

$$\left\{[\{x(t) = 0\}, \{y(t) = 0\}], [\left\{x(t) = \mathit{ODESolStruc}\left(\_a, [\left\{\left(\frac{\mathrm{d}}{\mathrm{d}\_a}\_b(\_a)\right)\_b(\_a) - \frac{1}{2\_a^2}\left(4\_b(\_a)\_\right.\right.\right.\right.$$

10.7 ODE No. 1919

$$\left\{\frac{\mathrm{d}}{\mathrm{d}t}x(t) = x(t) + y(t) - x(t)\left(\left(x(t)\right)^2 + \left(y(t)\right)^2\right), \frac{\mathrm{d}}{\mathrm{d}t}y(t) = -x(t) + y(t) - y(t)\left(\left(x(t)\right)^2 + \left(y(t)\right)^2\right)\right\}$$

Mathematica: cpu = 0.107014 (sec), leaf count = 56

$$\text{DSolve}\left[\left\{x'(t) = x(t)\left(-\left(x(t)^2 + y(t)^2\right)\right) + x(t) + y(t), y'(t) = -y(t)\left(x(t)^2 + y(t)^2\right) - x(t) + y(t)\right\}, \{x(t)\right.$$

Maple: cpu = 2.278 (sec), leaf count = 249

$$\left\{[\{x(t) = 0\}, \{y(t) = 0\}], [\left\{x(t) = \mathit{ODESolStruc}\left(\_a, [\left\{\left(\frac{\mathrm{d}}{\mathrm{d}\_a}\_b(\_a)\right)\_b(\_a) - \frac{1}{2\_a^3}\left(6\left(\_b(\_a)\right)\right.\right.\right.\right.$$

10.8 ODE No. 1920

$$\left\{\frac{\mathrm{d}}{\mathrm{d}t}x(t) = -y(t) + x(t)\left(\left(x(t)\right)^2 + \left(y(t)\right)^2 - 1\right), \frac{\mathrm{d}}{\mathrm{d}t}y(t) = x(t) + y(t)\left(\left(x(t)\right)^2 + \left(y(t)\right)^2 - 1\right)\right\}$$

Mathematica: cpu = 0.081510 (sec), leaf count = 52

$$\text{DSolve}\left[\left\{x'(t) = x(t)\left(x(t)^2 + y(t)^2 - 1\right) - y(t), y'(t) = y(t)\left(x(t)^2 + y(t)^2 - 1\right) + x(t)\right\}, \{x(t), y(t)\}, t\right]$$

Maple: cpu = 2.294 (sec), leaf count = 250

$$\left\{[\{x(t) = 0\}, \{y(t) = 0\}], [\left\{x(t) = \mathit{ODESolStruc}\left(\_a, [\left\{\left(\frac{\mathrm{d}}{\mathrm{d}\_a}\_b(\_a)\right)\_b(\_a) - \frac{1}{2\_a^3}\left(6\left(\_b(\_a)\right)\right.\right.\right.\right.$$

10.9 ODE No. 1921

$$\left\{ \frac{\mathrm{d}}{\mathrm{d}t}x(t) = -y(t)\left(\left(x(t)\right)^2 + \left(y(t)\right)^2\right), \frac{\mathrm{d}}{\mathrm{d}t}y(t) = \begin{cases} \left(x(t)\right)^2 + \left(y(t)\right)^2 & 2\,x(t) \leq (\\ \left(1/2\,x(t) - 1/2\,\frac{\left(y(t)\right)^2}{x(t)}\right)\left(\left(x(t)\right)^2 + \left(y(t)\right)^2\right) & \text{otherwise} \end{cases} \right.$$

Mathematica: cpu = 2.354299 (sec), leaf count = 86

$$\text{DSolve}\left[\left\{ x'(t) = -y(t)\left(x(t)^2 + y(t)^2\right), y'(t) = \left(\begin{cases} x(t)^2 + y(t)^2 & x(t)^2 + y(t)^2 \geq 2x(\\ \left(x(t)^2 + y(t)^2\right)\left(\frac{x(t)}{2} - \frac{y(t)^2}{2x(t)}\right) & \text{True} \end{cases} \right. \right.$$

Maple: cpu = 0 (sec), leaf count = 0

hanged

10.10 ODE No. 1922

$$\left\{ \frac{\mathrm{d}}{\mathrm{d}t}x(t) = -y(t) + \begin{cases} x(t)\left(\left(x(t)\right)^2 + \left(y(t)\right)^2 - 1\right)\sin\left(\left(\left(x(t)\right)^2 + \left(y(t)\right)^2\right)^{-1}\right) & \left(x(t)\right)^2 + \left(y(t)\right)^2 \neq 1 \\ 0 & \text{otherwise} \end{cases}, \frac{\mathrm{d}}{\mathrm{d}t} \right.$$

Mathematica: cpu = 11.112911 (sec), leaf count = 106

$$\text{DSolve}\left[\left\{ x'(t) = \left(\begin{cases} \sin\left(\frac{1}{x(t)^2 + y(t)^2}\right)x(t)\left(x(t)^2 + y(t)^2 - 1\right) & x(t)^2 + y(t)^2 \neq 1 \\ 0 & \text{True} \end{cases} \right) - y(t), y'(t) = \left(\right. \right.$$

Maple: cpu = 0 (sec), leaf count = 0

hanged

10.11 ODE No. 1923

$$\left\{ \left(t^2+1\right)\frac{\mathrm{d}}{\mathrm{d}t}x(t) = -tx(t) + y(t), \left(t^2+1\right)\frac{\mathrm{d}}{\mathrm{d}t}y(t) = -x(t) - ty(t) \right\}$$

Mathematica: cpu = 0.685587 (sec), leaf count = 53

$$\left\{ \left\{ x(t) \to \frac{c_1}{t^2+1} + \frac{c_2 t}{t^2+1}, y(t) \to \frac{c_2}{t^2+1} - \frac{c_1 t}{t^2+1} \right\} \right\}$$

Maple: cpu = 0.062 (sec), leaf count = 35

$$\left\{ \left\{ x(t) = \frac{\_C1\,t + \_C2}{t^2+1}, y(t) = \frac{-t\_C2 + \_C1}{t^2+1} \right\} \right\}$$

10.12 ODE No. 1924

$$\left\{\left((x(t))^2+(y(t))^2-t^2\right)\frac{\mathrm{d}}{\mathrm{d}t}x(t)=-2\,tx(t)\,,\left((x(t))^2+(y(t))^2-t^2\right)\frac{\mathrm{d}}{\mathrm{d}t}y(t)=-2\,ty(t)\right\}$$

Mathematica: cpu = 0.071009 (sec), leaf count = 191

$$\left\{\left\{y(t)\to\frac{c_1\left(e^{c_2}-\sqrt{-4c_1^2t^2+e^{2c_2}-4t^2}\right)}{2\left(c_1^2+1\right)},x(t)\to\frac{e^{c_2}-\sqrt{-4c_1^2t^2+e^{2c_2}-4t^2}}{2\left(c_1^2+1\right)}\right\},\left\{y(t)\to\frac{c_1\left(\sqrt{-4c_1^2}\right.\right.\right.$$

Maple: cpu = 0.234 (sec), leaf count = 186

$$\left\{[\{x(t)=0\},\left\{y(t)=\frac{1}{2\_C1}\left(1+\sqrt{-4\_C1^{\,2}t^2+1}\right),y(t)=-\frac{1}{2\_C1}\left(-1+\sqrt{-4\_C1^{\,2}t^2+1}\right)\right\}],[\left\{x\right.\right.$$

10.13 ODE No. 1925

$$\left\{\left(\frac{\mathrm{d}}{\mathrm{d}t}x(t)\right)\frac{\mathrm{d}}{\mathrm{d}t}y(t)+t\frac{\mathrm{d}}{\mathrm{d}t}y(t)-y(t)=0,\left(\frac{\mathrm{d}}{\mathrm{d}t}x(t)\right)^2+t\frac{\mathrm{d}}{\mathrm{d}t}x(t)+a\frac{\mathrm{d}}{\mathrm{d}t}y(t)-x(t)=0\right\}$$

Mathematica: cpu = 8.399567 (sec), leaf count = 55

$$\text{DSolve}\left[\left\{ay'(t)+tx'(t)-x(t)+y'(t)^2=0,x'(t)y'(t)+ty'(t)-y(t)=0\right\},\{x(t),y(t)\},t\right]$$

Maple: cpu = 0.219 (sec), leaf count = 226

$$\left\{[\left\{x(t)=-\frac{t^2}{3}\right\},\left\{y(t)=-\frac{t^3}{27\,a}\right\}],[\{x(t)=\_C1\,t+\_C2\},\left\{y(t)=\frac{-\left(\frac{\mathrm{d}}{\mathrm{d}t}x(t)\right)^3-2\left(\frac{\mathrm{d}}{\mathrm{d}t}x(t)\right)^2t-\left(\frac{\mathrm{d}}{\mathrm{d}t}x\right.\right.\right.}{a}$$

10.14 ODE No. 1926

$$\left\{x(t)=t\frac{\mathrm{d}}{\mathrm{d}t}x(t)+f\left(\frac{\mathrm{d}}{\mathrm{d}t}x(t)\,,\frac{\mathrm{d}}{\mathrm{d}t}y(t)\right),y(t)=t\frac{\mathrm{d}}{\mathrm{d}t}y(t)+g\left(\frac{\mathrm{d}}{\mathrm{d}t}x(t)\,,\frac{\mathrm{d}}{\mathrm{d}t}y(t)\right)\right\}$$

Mathematica: cpu = 0.005501 (sec), leaf count = 46

$$\text{DSolve}[\{x(t)=f(x'(t),y'(t))+tx'(t),y(t)=g(x'(t),y'(t))+ty'(t)\},\{x(t),y(t)\},t]$$

Maple: cpu = 0.078 (sec), leaf count = 96

$$\left\{[\left\{\int RootOf\left(t\frac{\mathrm{d}}{\mathrm{d}t}y(t)+g\left(\_Z,\frac{\mathrm{d}}{\mathrm{d}t}y(t)\right)-y(t)\right)\,\mathrm{d}t+\_C1=tRootOf\left(t\frac{\mathrm{d}}{\mathrm{d}t}y(t)+g\left(\_Z,\frac{\mathrm{d}}{\mathrm{d}t}y(t)\right)-y\right.\right.\right.$$

10.15 ODE No. 1927

$$\left\{\frac{\mathrm{d}^2}{\mathrm{d}t^2}x(t) = a\mathrm{e}^{2\,x(t)} - \mathrm{e}^{-x(t)} + \mathrm{e}^{-2\,x(t)}(\cos(y(t)))^2, \frac{\mathrm{d}^2}{\mathrm{d}t^2}y(t) = \mathrm{e}^{-2\,x(t)}\sin(y(t))\cos(y(t)) - \frac{\sin(y(t))}{(\cos(y(t)))^3}\right\}$$

Mathematica: cpu = 0 (sec), leaf count = 0

Hanged

Maple: cpu = 0 (sec), leaf count = 0

hanged

10.16 ODE No. 1928

$$\left\{\frac{\mathrm{d}^2}{\mathrm{d}t^2}x(t) = \frac{kx(t)}{\left((x(t))^2 + (y(t))^2\right)^{3/2}}, \frac{\mathrm{d}^2}{\mathrm{d}t^2}y(t) = \frac{ky(t)}{\left((x(t))^2 + (y(t))^2\right)^{3/2}}\right\}$$

Mathematica: cpu = 0.007001 (sec), leaf count = 52

$$\text{DSolve}\left[\left\{x''(t) = \frac{kx(t)}{(x(t)^2 + y(t)^2)^{3/2}}, y''(t) = \frac{ky(t)}{(x(t)^2 + y(t)^2)^{3/2}}\right\}, \{x(t), y(t)\}, t\right]$$

Maple: cpu = 0 (sec), leaf count = 0

hanged

10.17 ODE No. 1929

$$\left\{\frac{\mathrm{d}^2}{\mathrm{d}t^2}x(t) = -\frac{C(y(t))\,f\left(\sqrt{\left(\frac{\mathrm{d}}{\mathrm{d}t}y(t)\right)^2}\right)\frac{\mathrm{d}}{\mathrm{d}t}x(t)}{\sqrt{\left(\frac{\mathrm{d}}{\mathrm{d}t}y(t)\right)^2}}, \frac{\mathrm{d}^2}{\mathrm{d}t^2}y(t) = -\frac{C(y(t))\,f\left(\sqrt{\left(\frac{\mathrm{d}}{\mathrm{d}t}y(t)\right)^2}\right)\frac{\mathrm{d}}{\mathrm{d}t}y(t)}{\sqrt{\left(\frac{\mathrm{d}}{\mathrm{d}t}y(t)\right)^2}} - g\right\}$$

Mathematica: cpu = 0.008001 (sec), leaf count = 110

$$\text{DSolve}\left[\left\{x''(t) = -\frac{cy(t)x'(t)f\left(\sqrt{x'(t)^2 + y'(t)^2}\right)}{\sqrt{x'(t)^2 + y'(t)^2}}, y''(t) = -\frac{cy(t)y'(t)f\left(\sqrt{x'(t)^2 + y'(t)^2}\right)}{\sqrt{x'(t)^2 + y'(t)^2}} - g\right\}, \{x(t)\right.$$

Maple: cpu = 2.247 (sec), leaf count = 116

$$\left\{[\left\{y(t) = \mathit{ODESolStruc}\left(\_a, [\left\{\left(\frac{\mathrm{d}}{\mathrm{d}\_a}\_b(\_a)\right)\_b(\_a) + 1\left(C(\_a)\,f\left(\sqrt{(\_b(\_a))^2}\right)\_b(\_a) + g\sqrt{(\right.\right.\right.\right.$$

10.18 ODE No. 1930

$$\left\{\frac{\mathrm{d}}{\mathrm{d}t}x(t)=y(t)-z(t)\,,\frac{\mathrm{d}}{\mathrm{d}t}y(t)=(x(t))^2+y(t)\,,\frac{\mathrm{d}}{\mathrm{d}t}z(t)=(x(t))^2+z(t)\right\}$$

Mathematica: cpu = 0.052507 (sec), leaf count = 308

$$\left\{\left\{x(t)\to e^{-c_3}\left(e^{c_3}c_1+e^t\right),y(t)\to c_2\left(e^{-c_3}\left(e^{c_3}c_1+e^t\right)-c_1\right)+\left(e^{-c_3}\left(e^{c_3}c_1+e^t\right)-c_1\right)\left(-\frac{c_1^2}{e^{-c_3}\left(e^{c_3}c_1+e^t\right.}\right.\right.$$

Maple: cpu = 0.047 (sec), leaf count = 45

$$\left\{[\{x(t)=\_C2+\_C3\,\mathrm{e}^t\},\left\{y(t)=\left(\int(x(t))^2\,\mathrm{e}^{-t}\,\mathrm{d}t+\_C1\right)\mathrm{e}^t\right\},\left\{z(t)=-\frac{\mathrm{d}}{\mathrm{d}t}x(t)+y(t)\right\}]\right\}$$

10.19 ODE No. 1931

$$\left\{a\frac{\mathrm{d}}{\mathrm{d}t}x(t)=(b-c)\,y(t)\,z(t)\,,b\frac{\mathrm{d}}{\mathrm{d}t}y(t)=(c-a)\,z(t)\,x(t)\,,c\frac{\mathrm{d}}{\mathrm{d}t}z(t)=(a-b)\,x(t)\,y(t)\right\}$$

Mathematica: cpu = 6.037767 (sec), leaf count = 10101

$$\left\{\left\{\left\{x(t)\to\frac{\frac{\sqrt{2}b^2\sqrt{a(a-c)}c_1\mathrm{sn}\left(\frac{\frac{\sqrt{2}\sqrt{a}\sqrt{a-c}c\sqrt{c_2}t}{\sqrt{b}\sqrt{b-c}}-\frac{\sqrt{2}\sqrt{a}\sqrt{b}\sqrt{a-c}\sqrt{c_2}t}{\sqrt{b-c}}-\frac{\sqrt{2}\sqrt{a}\sqrt{a-c}c\sqrt{c_2}c_3}{\sqrt{b}\sqrt{b-c}}+\frac{\sqrt{2}\sqrt{a}\sqrt{b}\sqrt{a-c}\sqrt{c_2}c_3}{\sqrt{b-c}}}{a}\middle|-\frac{(a-b)bc_1}{(a-c)cc_2}\right)}{(a-c)\sqrt{b(b-c)c_1}}-\frac{\sqrt{2}b\sqrt{a(a-\right.}{a}\right.\right.\right.$$

Maple: cpu = 0.514 (sec), leaf count = 1356

$$\left\{[\{x(t)=0\},\{y(t)=0\},\{z(t)=\_C1\}],[\{x(t)=0\},\{y(t)=\_C1\},\{z(t)=0\}],[\{x(t)=\_C1\},\{y(t)\right.$$

10.20 ODE No. 1932

$$\left\{ \frac{\mathrm{d}}{\mathrm{d}t}x(t) = x(t)\left(y(t) - z(t)\right), \frac{\mathrm{d}}{\mathrm{d}t}y(t) = y(t)\left(z(t) - x(t)\right), \frac{\mathrm{d}}{\mathrm{d}t}z(t) = z(t)\left(x(t) - y(t)\right) \right\}$$

Mathematica: cpu = 2.251786 (sec), leaf count = 55

$$\text{DSolve}[\{x'(t) = x(t)(y(t) - z(t)), y'(t) = y(t)(z(t) - x(t)), z'(t) = z(t)(x(t) - y(t))\}, \{x(t), y(t), z(t)\}, t]$$

Maple: cpu = 0.686 (sec), leaf count = 393

Too large to display

10.21 ODE No. 1933

$$\left\{ \frac{\mathrm{d}}{\mathrm{d}t}x(t) + \frac{\mathrm{d}}{\mathrm{d}t}y(t) = x(t)\,y(t), \frac{\mathrm{d}}{\mathrm{d}t}x(t) + \frac{\mathrm{d}}{\mathrm{d}t}z(t) = x(t)\,z(t), \frac{\mathrm{d}}{\mathrm{d}t}y(t) + \frac{\mathrm{d}}{\mathrm{d}t}z(t) = y(t)\,z(t) \right\}$$

Mathematica: cpu = 126.589075 (sec), leaf count = 55

$$\text{DSolve}[\{x'(t) + y'(t) = x(t)y(t), y'(t) + z'(t) = y(t)z(t), x'(t) + z'(t) = x(t)z(t)\}, \{x(t), y(t), z(t)\}, t]$$

Maple: cpu = 1.529 (sec), leaf count = 17743

Too large to display

10.22 ODE No. 1934

$$\left\{ \frac{\mathrm{d}}{\mathrm{d}t}x(t) = 1/2\left(x(t)\right)^2 - 1/24\,y(t), \frac{\mathrm{d}}{\mathrm{d}t}y(t) = 2\,x(t)\,y(t) - 3\,z(t), \frac{\mathrm{d}}{\mathrm{d}t}z(t) = 3\,x(t)\,z(t) - 1/6\left(y(t)\right)^2 \right\}$$

Mathematica: cpu = 72.632223 (sec), leaf count = 66

$$\text{DSolve}\left[\left\{x'(t) = \frac{x(t)^2}{2} - \frac{y(t)}{24}, y'(t) = 2x(t)y(t) - 3z(t), z'(t) = 3x(t)z(t) - \frac{y(t)^2}{6}\right\}, \{x(t), y(t), z(t)\}, t\right]$$

Maple: cpu = 0.904 (sec), leaf count = 376

$$\left\{ [\{y(t) = 0\}, \{x(t) = 2\left(2\_C1 - t\right)^{-1}\}, \{z(t) = 0\}], [\{y(t) = 256\left(\_C1\,t + \_C2\right)^{-4}\}, \left\{ x(t) = \frac{1}{2\,y\left(t\right)} \right.\right.$$

10.23 ODE No. 1935

$$\left\{ \frac{\mathrm{d}}{\mathrm{d}t}x(t) = x(t)\left((y(t))^2 - (z(t))^2\right), \frac{\mathrm{d}}{\mathrm{d}t}y(t) = y(t)\left((z(t))^2 - (x(t))^2\right), \frac{\mathrm{d}}{\mathrm{d}t}z(t) = z(t)\left((x(t))^2 - (y(t))^2\right) \right\}$$

Mathematica: cpu = 0.050506 (sec), leaf count = 67

$$\text{DSolve}\left[\left\{x'(t) = x(t)\left(y(t)^2 - z(t)^2\right), y'(t) = y(t)\left(z(t)^2 - x(t)^2\right), z'(t) = z(t)\left(x(t)^2 - y(t)^2\right)\right\}, \{x(t), y(t)\right.$$

Maple: cpu = 1.357 (sec), leaf count = 741

$$\left\{ [\{x(t) = 0\}, \{y(t) = 0\}, \{z(t) = \_C1\}], \left[\{x(t) = 0\}, \left\{ y(t) = \frac{1}{\left(\mathrm{e}^{\_C2 - \_C1}\right)^2 \left(\mathrm{e}^{-\_C1\, t}\right)^2 - 1} \sqrt{\left(\left(\mathrm{e}^{\_C2 - \_C1}\right)^2 \right.\right.\right.\right.$$

10.24 ODE No. 1936

$$\left\{ \frac{\mathrm{d}}{\mathrm{d}t}x(t) = x(t)\left((y(t))^2 - (z(t))^2\right), \frac{\mathrm{d}}{\mathrm{d}t}y(t) = -y(t)\left((z(t))^2 + (x(t))^2\right), \frac{\mathrm{d}}{\mathrm{d}t}z(t) = z(t)\left((x(t))^2 + (y(t))^2\right) \right.$$

Mathematica: cpu = 0.048006 (sec), leaf count = 64

$$\text{DSolve}\left[\left\{x'(t) = x(t)\left(y(t)^2 - z(t)^2\right), y'(t) = -y(t)\left(x(t)^2 + z(t)^2\right), z'(t) = z(t)\left(x(t)^2 + y(t)^2\right)\right\}, \{x(t), y\right.$$

Maple: cpu = 0.531 (sec), leaf count = 704

$$\left\{ [\{x(t) = 0\}, \{y(t) = 0\}, \{z(t) = \_C1\}], \left[\{x(t) = 0\}, \left\{ y(t) = \frac{1}{\left(\mathrm{e}^{\_C2 - \_C1}\right)^2 \left(\mathrm{e}^{-\_C1\, t}\right)^2 - 1} \sqrt{-\left(\left(\mathrm{e}^{\_C2 - \_C1}\right)\right.\right.\right.\right.$$

10.25 ODE No. 1937

$$\begin{aligned} x'(t) &= -x(t)y(t)^2 + x(t) + y(t) \\ y'(t) &= x(t)^2 y(t) - x(t) - y(t) \\ z'(t) &= y(t)^2 - x(t)^2 \end{aligned}$$

Mathematica: cpu = 0.266534 (sec), leaf count = 65

$$\text{DSolve}\left[\left\{x'(t) = -x(t)y(t)^2 + x(t) + y(t), y'(t) = x(t)^2 y(t) - x(t) - y(t), z'(t) = y(t)^2 - x(t)^2\right\}, \{x(t), y(\right.$$

Maple: cpu = 0.608 (sec), leaf count = 304

$$\left\{ [\{x(t) = 0\}, \{y(t) = 0\}, \{z(t) = \_C1\}], [\left\{ x(t) = ODESolStruc\left(\_a, [\left\{ \left(\frac{\mathrm{d}}{\mathrm{d}\_a} \_b(\_a) \right) \_b(\_a) - \frac{1}{2\_} \right.\right.\right.\right.$$

10.26 ODE No. 1938

$$\boxed{\begin{aligned} x''(t) &= \tfrac{\partial F}{\partial x} \\ y''(t) &= \tfrac{\partial F}{\partial y} \\ z''(t) &= \tfrac{\partial F}{\partial z} \end{aligned}}$$

Where $F = F(r)$ and $r = \sqrt{x(t)^2 + y(t)^2 + z(t)^2}$

Mathematica: cpu = 0.011001 (sec), leaf count = 137

$$\left\{ \left\{ x(t) \to c_1 e^{-\frac{t\sqrt{f'(r)}}{\sqrt{r}}} + c_2 e^{\frac{t\sqrt{f'(r)}}{\sqrt{r}}}, y(t) \to c_3 e^{-\frac{t\sqrt{f'(r)}}{\sqrt{r}}} + c_4 e^{\frac{t\sqrt{f'(r)}}{\sqrt{r}}}, z(t) \to c_5 e^{-\frac{t\sqrt{f'(r)}}{\sqrt{r}}} + c_6 e^{\frac{t\sqrt{f'(r)}}{\sqrt{r}}} \right\} \right\}$$

Maple: cpu = 0.078 (sec), leaf count = 101

$$\left\{ \left\{ x(t) = \_C5\, \mathrm{e}^{t\sqrt{\frac{\mathrm{d}}{\mathrm{d}r}F(r)}\frac{1}{\sqrt{r}}} + \_C6\, \mathrm{e}^{-t\sqrt{\frac{\mathrm{d}}{\mathrm{d}r}F(r)}\frac{1}{\sqrt{r}}}, y(t) = \_C3\, \mathrm{e}^{t\sqrt{\frac{\mathrm{d}}{\mathrm{d}r}F(r)}\frac{1}{\sqrt{r}}} + \_C4\, \mathrm{e}^{-t\sqrt{\frac{\mathrm{d}}{\mathrm{d}r}F(r)}\frac{1}{\sqrt{r}}}, z(t) = \_C \right.\right.$$

10.27 ODE No. 1939

$$\boxed{\begin{aligned} (x(t) - y(t))(x(t) - z(t))x'(t) &= f(t) \\ (y(t) - x(t))(y(t) - z(t))y'(t) &= f(t) \\ (z(t) - x(t))(z(t) - y(t))z'(t) &= f(t) \end{aligned}}$$

Mathematica: cpu = 0.011501 (sec), leaf count = 76

DSolve[{$(x(t) - y(t))(x(t) - z(t))x'(t) = f(t), (y(t) - x(t))(y(t) - z(t))y'(t) = f(t), (z(t) - x(t))(z(t) -$

Maple: cpu = 1.030 (sec), leaf count = 1121

$$\left\{ [\left\{ x(t) = \int 6 \frac{f(t)}{\_C1^3 + 11664\,\_C2^2 - 23328\,\_C2 \int f(t)\,\mathrm{d}t + 11664 \left(\int f(t)\,\mathrm{d}t \right)^2} \left(\_C1^4 + 11664 \left(\int f \right. \right. \right.$$

10.28 ODE No. 1940

$$
\begin{aligned}
x_1'(t) \sin(x_2(t)) &= x_4(t) \sin(x_3(t)) + x_5(t) \cos(x_3(t)) \\
x_2'(t) &= x_4(t) \cos(x_3(t)) - x_5(t) \sin(x_3(t)) \\
x_1'(t) \cos(x_2(t)) + x_3'(t) &= a \\
x_4'(t) - a(1-\lambda) x_5(t) &= -m \sin(x_2(t)) \cos(x_3(t)) \\
a(1-\lambda) x_4(t) + x_5'(t) &= m \sin(x_2(t)) \sin(x_3(t))
\end{aligned}
$$

Mathematica: cpu = 0.007001 (sec), leaf count = 118

DSolve[{x1′(t) sin(x2(t)) = x4(t) sin(x3(t)) + x5(t) cos(x3(t)), x2′(t) = x4(t) cos(x3(t)) − x5(t) sin(x3(t))

Maple: cpu = 0 (sec), leaf count = 0

hanged